# Sudden Valley Community Association

360-734-6430
4 Clubhouse Circle Bellingham, WA 98229
**www.suddenvalley.com**


# CAPITAL REQUEST MEMO

**To:** **Sudden Valley Community Association Board of Directors**

**From:** **Jo Anne Jensen, General Manager**

**Date:** **September 28th, 2023**

**Subject:** **Capital Request – Barn 8 Repairs**
**Change Order to Capital Code 9722.09**

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**Purpose**

To request funding for repairs to Barn 8 as per PNW's summary dated September 26, 2023.

**Background**

On October 27, 2022, this project was brought to the Board for approval to start design and permitting. This scope has been completed as identified in PNW's summary and is now ready to be issued for bid with construction proposed to start in April 2024. After design work began, it was identified that the existing HVAC system in Barn 8 was due for replacement per the reserve study. The equipment was inspected by Berona Engineering and confirmed to be at or near the end of its lifecycle. This additional scope has been added to the project.

**Analysis**

The design has been completed, and the permit was approved by Whatcom County on September 8, 2023. The permit will be issued after contract award, when we notify the county which contractor has been chosen. Construction has been proposed for 2024 with an anticipated start in April. PNW incurred additional design and permitting fees because of the addition of the HVAC replacement. Also, the design and permitting process took longer than anticipated because the project had to be submitted to Whatcom County under 3 separate packages that were then combined into 1 permit. We are now requesting funding approval to cover the additional design, as well as funding to move the project forward to bid. After bidding the project will be brought back to the Board for contract award approval.

**Proposal**

I am asking the board to provide funding for remodeling Barn 8 per PNW's proposal dated September 26, 2023. This includes:

- Additional funding for design, permitting, and bid process in the amount of $17,725.00.
- Construction funding in the amount of $751,265.90.

Approval of this request will result in a change order to the funding of project 9722.09 in the amount of $768,990.90.

**Request**

Request $768,990.90 from CRRRF for project change order funding to move project 9722.09 forward to bid.

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**Motion**

Move that the Board of Directors approve the allocation of $768,990.90 from CRRRF to SVCA Capital Code 9722.09.

**Board of Directors Approval**

Approved: _____ Not Approved: _____ SVCA Board of Directors

September 26, 2023

Sudden Valley Community Association
Attn: Jo Anne Jensen
4 Clubhouse Circle
Bellingham, WA 98229

RE: Project Scope Letter
**Barn 8 Remodel – Construction Estimate**

PNW is providing this overall project scope letter to SVCA for the proposed Barn 8 Remodel. On 10-27-22 this project was brought to the Board for approval to start design and permitting. Design has been completed, and the permit application was approved by Whatcom County on 9-8-23. The permit will be issued upon contract award, and Whatcom County being notified of who the contractor is to list on the permit. Summary of the project:

- Design, Permitting, & Contractor Bids
  - Design and permitting was updated to include replacement of Barn 8's existing HVAC system that was identified for replacement per the reserve study. This additional design and permitting scope is identified below.
  - The coordination with Whatcom County thru design and permitting took longer than anticipated with additional work required beyond what was anticipated in 2022. The permitting process required the project to be submitted in 3 separate submittals (siding and flat roof replacement, HVAC, and covered bridge) that was then combined into 1 permit package from Whatcom County. Below is a summary of anticipated costs to finish bid documents, and complete the bidding process.

- Construction
  - Construction is proposed to start in April of 2024. Construction is anticipated to take approximately 5 months to complete. The permitting timeline on this project has been unknown for when the final review would be completed by Whatcom County, and thus construction was planned for 2024. Lead and asbestos testing has been completed, and those results will be included with the bid package.
  - Existing flat roof will be replaced. This is proposed to be completed during summer 2024. During replacement the flat roof will be rebuilt to provide positive drainage. Currently the roof is too flat with the low point being in the middle not allowing water to drain. The existing roof membrane will be removed, new framing installed on top of the old framing, and a new membrane installed. It is unknown if any framing damage will be discovered when the existing membrane is removed. The budget below contains an allowance for some repairs. Repairs will be at the direction of the structural engineer and architect.
  - Existing siding will be removed, and new siding installed. Fiber cement siding is proposed, not wood, to minimize bird damage. It is unknown if any structural damage will be found that needs replacing until after the existing siding is

removed. The budget below contains some allowance for repairs. Repairs will be at the direction of the structural engineer and architect. Siding replacement will be completed in stages by wall to maintain access to the barn. When the front is being completed access will be through the back entry, and then the opposite. The south and west sides (pool and playground sides) are proposed to be completed before the pool opening Memorial Day Weekend 2024.

- Existing windows and exterior doors will be replaced with new. New installations will be energy efficient, and meet current code requirements. Exterior lighting will be replaced as part of the project.
- An ERV, Energy Recovery Ventilator, will be installed to provide proper ventilation in the upstairs main room. Currently this room has inadequate ventilation, and is only heated by overhead propane heaters. The new system will provide air flow per current code requirements. Air conditioning is not being installed as part of this unit as this would require the entire building to be brought up to current energy code requirements, and be a much larger project. The existing electrical system will be updated to accommodate this additional load requirement. New louvers will be installed in the exterior wall prior to siding installation. New ducting as required will be installed inside.
- Replacement of existing HVAC system. All HVAC elements in Barn 8 are at or near the end of their lifecycle. Each unit will be replaced in kind with a new unit. This was identified on the reserve study, and confirmed by Berona Engineers.
- The 2nd story covered entry bridge will be replaced. This scope of the project is deferred to 2024. The current bridge has rot damage, and is sloping towards the barn so rainwater is constantly trapped against the building. A new structure similar to the existing will be built at the same location. The new design meets current code requirements, and is properly sloped to provide drainage away from the building. In addition, the project will replace the asphalt entry, concrete approach, trench drainage, fence/railing, and provide minor landscaping improvements. This scope of work is anticipated to cost approximately $225,000.00.
- Interior remodel of upstairs kitchenette. The upstairs kitchenette is being reduced in size to accommodate the ERV system being installed, and with this new cabinets will be installed. Drawing A2.02 refers to this room as New Kitchen, but it is only a kitchenette as confirmed by Whatcom County in the permit approval.

Summary of anticipated costs:

| | |
|---|---|
| Additional HVAC Scope – Design & Permitting | |
| - Berona Engineers Inc. – Design & Permitting for Existing HVAC Replacement | $3,000.00 |
| - Sarah Brown Architecture & Design – Incorporate HVAC Replacement into Drawings & Permit Package | $3,000.00 |
| - PNW Services, Inc. – Per Attached | $1,080.00 |
| Subtotal | $7,080.00 |
| | |
| Bid Package – Final Design Review & Contract Documents | |
| - Sarah Brown Architecture & Design | $2,000.00 |
| - Kingworks Structural Engineers | $1,000.00 |
| - Berona Engineers Inc. | $1,000.00 |
| - Lead and Asbestos Sampling | $3,000.00 |
| - PNW Services, Inc. – Per Attached | $3,645.00 |
| Subtotal | $10,645.00 |
| | |
| **Total – Additional Design, Permitting, Contractor Bids** | **$17,725.00** |
| | |
| Construction Oversight | |
| - Sarah Brown Architecture & Design – Assumes 20 Week Construction Period at 4 Hours per Week. | $14,800.00 |
| - Kingworks Structural Engineers – Assumes 20 Week Construction Period at 3 Hours per Week. | $9,660.00 |
| - PNW Services Inc. – Per Attached | $27,000.00 |
| Subtotal – Construction Oversight | $51,460.00 |
| | |
| Construction Estimate | |
| - Flat Roof Removal, Reframing, and New Roof | $77,500.00 |
| - Siding Removal and Replacement | $219,000.00 |
| - Exterior Doors and Windows | $60,000.00 |
| - New Ventilation System on 2nd Floor – ERV System, Electrical, and Framing Modifications | $115,000.00 |
| - Existing HVAC System Replacement | $80,000.00 |
| - Covered Bridge Replacement – Deferred to 2024 | N/A |
| - Interior Remodel – Upstairs Kitchenette | $30,000.00 |
| Subtotal Construction Estimate | $581,500.00 |
| WSST @ 8.6% | $50,009.00 |
| Total Construction Estimate w/ WSST | $631,509.00 |
| | |
| Total Construction Oversight & Construction | $682,969.00 |
| Contingency @ 10% | $68,296.90 |
| **Total Construction with Contingency** | **$751,265.90** |

Please let me know if you have any questions, or if you would like any further information.

Sincerely,

Tyler Andrews
President

PO Box 30498 • Bellingham, WA 98228 • p: 425-954-9614

## GENERAL NOTES

**GENERAL NOTES**

1. IN GENERAL, PLAN DIMENSIONS SHOWN ARE TO FACE OF STUD OR FACE OF CONCRETE, UNLESS OTHERWISE NOTED. DO NOT SCALE THESE DRAWINGS. USE CALCULATED DIMENSIONS ONLY. VERIFY ALL DIMENSIONS, DATUM AND LEVELS PRIOR TO CONSTRUCTION. NOTIFY ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES.
2. PERSONS USING THE INFORMATION IN THESE CONSTRUCTION DOCUMENTS WITHOUT PERMISSION OF THE ARCHITECT DOES SO AT THEIR OWN RISK AND BY SUCH AGREES TO INDEMNIFY THE ARCHITECT AS WELL AS ARCHITECT'S EMPLOYEES AND CONSULTANTS, AND TO HOLD HARMLESS FOR ANY INJURY OR LOSS OF DAMAGE THAT MAY OCCUR.
3. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ARCHITECT HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ARCHITECT.
4. THE CONTRACTOR SHALL HAVE AND MAINTAIN INSURANCE AS APPROVED BY THE BUILDING OWNER AND THE TENANT IF TENANT IS THE CONTRACTORS CLIENT.
5. CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES TO ENSURE THAT ALL PROPERTY IS PROTECTED DURING THIS CONSTRUCTION. ANY DAMAGE OR CHANGED CONDITIONS SHALL BE REPAIRED AND RESTORED TO A CONDITION EQUAL TO THAT EXISTING AT THE COMMENCEMENT OF THE WORK. CONTRACTOR SHALL RESTORE ANY DAMAGE AT HIS OWN EXPENSE. WHERE EXISTING WORK IS DAMAGES, CUT OR DEFACED DUE TO PERFORMANCE OF NEW WORK, THE CONTRACTOR SHALL PATCH AND REPAIR SAME TO MATCH ADJOINING SURFACES. REPAIRED FINISHES SHALL BE EXTENDED TO THE NEAREST VISUAL BREAK LINES SUCH AS CORNER, CEILING LINES, TOP OF BASE OR SIMILAR.
6. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO INITIATING THE WORK. NOTIFY ARCHITECT OF ANY DISCREPANCIES.
7. WHERE A CONSTRUCTION DETAIL IS NOT SHOWN OR NOTED, THE DETAIL SHALL BE THE SAME AS FOR OTHER SIMILAR WORK.
8. ALL WORK SHALL COMPLY WITH THE 2009 IBC, IFC, IPC, IMC AS AMENDED BY WASH. STATE. PROJECT SHALL ALSO COMPLY W/ JURISDICTIONAL CODE AMENDMENTS BY THE LOCAL AGENCY. CONTRACTOR IS RESPONSIBLE FOR OBTAINING NECESSARY PERMITS & INSPECTIONS TO COMPLETE THE WORK. CONTRACTOR TO HAVE CURRENT VALID CITY OR COUNTY BUSINESS LICENSE PRIOR TO ISSUANCE OF PERMIT. WHEN REQUIRED BY LAW.
9. ERRORS, OMISSIONS AND DISCREPANCIES, IF ANY, SHALL BE REFERRED TO THE ARCHITECT IMMEDIATELY FOR DIRECTION OF HOW TO PROCEED.
10. VERIFY ALL ROUGH-IN DIMENSIONS FOR EQUIPMENT PROVIDED IN THE CONTRACT BY OTHERS PROVIDE ALL BLOCK-OUTS, BLOCKING, BACKING AND JACKS REQUIRED FOR DUCTS, PIPES, CONDUITS, EQUIPMENT, FIXTURES AND CABINETS. VERIFY SIZE AND LOCATION.
11. DO NOT SIGNIFICANTLY VARY OR MODIFY THE WORK SHOWN, EXCEPT UPON WRITTEN INSTRUCTIONS OF THE ARCHITECT.
12. VERIFY LOCATION OF ALL EXISTING UTILITIES INCLUDING BUT NOT LIMITED TO SEWER, SEPTIC, WATER, GAS, POWER AND TELEPHONE. CAP. MARK AND PROTECT.
13. DETAILS ARE INTENDED TO SHOW THE INTENT OF THE DESIGN, MINOR MODIFICATION MAY BE REQUIRED TO SUIT THE FIELD DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK OF THE CONTRACT.
14. PROVIDE CLOSURE, MEETING THE REQUIREMENTS OF ALL GOVERNING AUTHORITIES, AT RATED PARTITIONS, FLOORS, CEILINGS, AND ROOF LOCATIONS. ALL REQUIRED FIRE-RATED PARTITIONS SHALL BE CONTINUOUS FROM FLOOR TO UNDERSIDE OF STRUCTURE ABOVE.
15. NO BUILDING OR PORTION OF A BUILDING SHALL BE OCCUPIED OR USED FOR STORAGE PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
16. THE CONTRACTOR SHALL CONSULT PLANS OF ALL TRADES, INCLUDING DESIGN-BUILD DOCUMENTS REQUIRED BY CONTRACT DOCUMENTS, TO VERIFY SIZE, WEIGHT, POWER, LOCATION AND OTHER REQUIREMENTS AND LOCATION OF THOSE ITEMS TO BE INSTALLED PRIOR TO COMMENCEMENT OF WORK.
17. ELECTRICAL, MECHANICAL AND PLUMBING: GENERAL CONTRACTOR TO PROVIDE ALL REQUIRED ENGINEERING, CALCULATIONS, FORMS, APPLY, PAY FOR & OBTAIN ALL REQUIRED PERMITS.
18. GENERAL CONTRACTOR SHALL BRING TO THE OWNER'S ATTENTION ANY DISCREPANCIES WITHIN THE CONTRACT DOCUMENTS, ACTUAL FIELD CONDITIONS AND ANY DESIGN AND LAYOUT CHANGES REQUIRED DUE TO ANY SPECIFIC EQUIPMENT SELECTIONS OR ANY OTHER REASON PRIOR TO PURCHASING EQUIPMENT AND MATERIAL.
19. PROVIDE BARRIER FREE SIGNAGE AT RESTROOMS.
20. MOUNT ALL SINKS AT 34" AFF, UNO. COUNTERS 34" AFF WHEN SINK COUNTER MOUNTED.
21. EXTERIOR BUILDING SIGNAGE IS NIC. CONTRACTOR TO PROVIDE POWER TO SIGN LOCATIONS.
22. THE ARCHITECT HAS NOT BEEN RETAINED OR COMPENSATED TO PROVIDE DESIGN AND/OR CONSTRUCTION REVIEW SERVICES RELATING TO THE CONTRACTOR'S SAFETY PRECAUTIONS OR TO MEANS, METHODS, TECHNIQUES OR PROCEDURES REQUIRED FOR THE CONTRACTOR TO PERFORM HIS WORK. THE UNDERTAKING OF PERIODIC SITE VISITS BY THE ARCHITECT SHALL NOT BE CONSTRUED AS SUPERVISION OF ACTUAL CONSTRUCTION NOR MAKE HIM RESPONSIBLE FOR THE PERFORMANCE OF WORK BY THE CONTRACTOR OR CONTRACTOR'S EMPLOYEES, OR EMPLOYEES OF SUPPLIERS OR SUBCONTRACTORS, OR FOR ACCESS, VISITS, USE, WORK, TRAVEL OR OCCUPANCY BY ANY PERSON.
23. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE WORK.
24. THESE DRAWINGS ARE THE EXCLUSIVE PROPERTY OF THE ARCHITECT AND MAY BE REPRODUCED ONLY WITH THE WRITTEN PERMISSION OF THE ARCHITECT. AUTHORIZED REPRODUCTIONS MUST BEAR THE NAME OF THE ARCHITECT.
25. PROVIDE FIRE BLOCKING, DRAFT STOPS AND FIRE STOPS IN ATTICS, FLOORS AND WALL CAVITIES AS REQUIRED PER THE IBC.
26. CONTRACTOR SHALL RETAIN ONE SET OF THE PLANS TO NOTE AND DOCUMENT ALL CHANGES DURING CONSTRUCTION. THE SET SHALL BE A PART OF THE CONTRACTOR'S CLOSE-OUT PACKAGE TO THE OWNER. CLOSE- OUT PACKAGE SHALL INCLUDE (3) SET OF SHOP DRAWINGS, PRODUCT LITERATURE, EQUIPMENT WARRANTEE MANUALS.
27. CONTRACTOR SHALL PROVIDE SOLID BLOCKING, UNLESS NOTED OTHERWISE AS REQUIRED FOR NAILING OF ALL INTERIOR AND EXTERIOR TRIMS, FINISHES AND FIXTURES. THE CONTRACTOR SHALL PROVIDE FOR ALL THE NECESSARY FRAMING AND BRACING FOR THE INSTALLATION OF OWNER FURNISHED ITEMS.
28. CONTRACTOR SHALL ONLY PROCEED WITH WORK WHERE HAZARDOUS MATERIALS ARE PRESENT AFTER RECEIPT OF THE BUILDING OWNERS HAZARDOUS MATERIALS GOOD FAITH REPORT REQUIRED BY THE STATE. PRIOR TO ANY DEMOLITION VERIFY & PERFORM ADDITIONAL HAZARDOUS MATERIAL TESTING AS REQUIRED. LEGALLY REMOVE HAZARDOUS MATERIALS. PROVIDE LEGAL DOCUMENTATION. CONTRACTOR SHALL COMPLY WITH FEDERAL AND STATE RULES AND REGULATIONS WHEN HANDLING, REMOVING OR ENCAPSULATING HAZARDOUS MATERIALS ON THE PROJECT.
29. LEGALLY REMOVE & DISPOSE OF THE DEMOLITION AND CONSTRUCTION DEBRIS.
30. DIMENSIONS TO STUD FACE UNLESS NOTED AS "CLEAR" OR "CLR" WHICH MEANS TO FACE OF WALL FINISH.

## ARCHITECTURAL ABBREVIATIONS

| | |
|---|---|
| A.H.U. | AIR HANDLING UNIT |
| ALT. | ALTERNATE |
| A.V. | AUDIO / VISUAL |
| BLDG. | BUILDING |
| DIA. | DIAMETER |
| D.S. | DOWNSPOUT |
| ELEC. | ELECTRICAL |
| ELEV. | ELEVATOR |
| EXT. | EXTERIOR |
| F.E. | FIRE EXTINGUISHER |
| F.E.C. | FIRE EXTINGUISHER CABINET |
| F.F. | FINISH FLOOR |
| GA. | GAUGE |
| G.L.B. | GLUE LAMINATED BEAM |
| G.W.B. | GYPSUM WALLBOARD |
| HR. | HOUR |
| INSUL. | INSULATION |
| INT. | INTERIOR |
| MECH. | MECHANICAL |
| MISC. | MISCELLANEOUS |
| N.I.C. | NOT IN CONTRACT |
| O.C. | ON CENTER |
| OPP. | OPPOSITE |
| P.T. | PRESSURE TREATED |
| REF. | REFERENCE |
| RM. | ROOM |
| S.D. | SMOKE DETECTOR |
| SHT. | SHEET |
| SIM. | SIMILIAR |
| SS. | STAINLESS STEEL |
| ST. | STREET |
| STRUCT. | STRUCTURAL |
| T.O.C. | TOP OF CONCRETE |
| TS. | TUBE STEEL |
| TYP. | TYPICAL |
| U.N.O. | UNLESS NOTED OTHERWISE |
| W/ | WITH |
| @ | AT |
| & | AND |

## SYMBOLS

- XXX — DETAIL REFERENCE
- X / XXX — BLDG SECTION
- X / XXX — WALL SECTION
- A / D XXX B / C — INTERIOR ELEVATION
- XXX — DOOR NUMBER
- XXX — ROOM NUMBER
- ELEVATION DATUM
- X — COLUMN GRID
- X — WALL TYPE
- POWER POLE
- CATCH BASIN
- D — STORM DRAIN MANHOLE
- S — SANITARY SEWER MANHOLE
- FIRE HYDRANT

## PROJECT ADDRESS

4 BARN VIEW DRIVE
BELLINGHAM, WA 98229

## BUILDING OWNER

SUDDEN VALLEY COMMUNITY ASSOCIATION
4 CLUBHOUSE CIRCLE
BELLINGHAM, WA
PH: 360.734.8430

## CONTRACTOR

BID SELECTION

## PROJECT NOTES

DOOR NOTES:

1. VERIFY ALL R.O. AND JAMB DEPTHS PRIOR TO ORDERING.
2. ALL DOORS TO HAVE BARRIER FREE HARDWARE AS REQUIRED.
3. DOORS SHALL HAVE LEVER HARDWARE WHICH WILL PERMIT OPERATION BY WRIST OR ARM PRESSURE.
4. ALL POCKET DOORS TO HAVE ADA POCKET DOOR PULLS.

DEMOLITION NOTES:

1. LEGALLY REMOVE DEMOLITION DEBRIS FROM SITE.
2. PROTECT ALL STRUCTURAL MEMBERS AND COLUMNS.
3. DEMOLITION DEBRIS SHALL NOT BE ALLOWED TO DAMAGE OR OVERLOAD THE EXISTING STRUCTURE.

FURNISHING NOTES:

1. ALL FURNITURE NIC

## LAND USE INFORMATION

PARCEL No.: 3704083184570000

ABBREV. LEGAL DESCRIPTION:
TR IN N 1/2 DAF-BEG AT MOST NLY COR ON ELY BNDRY OF SUDDEN VALLEY CLUBHOUSE CLUSTER CONDOMINIUM-TH USING SAME MERIDIAN SHOWN ON SD PLAT S 87 DEG 02'58" E 175.14 FT-TH N 25 DEG 48'04" E 32.49 FT-TH S 60 DEG 52'42" E 223.35 FT-TH N 32 DEG 19'26" E 246.79 FT

## BUILDING CODE REQUIREMENTS

2018 INTERNATIONAL BUILDING CODE, IEBC PRESCRIPTIVE COMPLIANCE METHOD & WA STATE AMENDMENTS.

## PROPERTY CHARACTERISTICS

| | |
|---|---|
| LAND USE: | 74 |
| TAX DIST: | 1015 - 501 R L FSW LWWS |
| LEGAL ACRES: | 11.77 ACRES |
| WATER DIST: | LAKE WHATCOM WATER/SEWER |

## DEFERRED SUBMITTAL

ELECTRICAL, DEFERRED SUBMITTAL


1 VICINITY MAP
SCALE: NTS

N

## PROJECT DESCRIPTION

| | |
|---|---|
| PROJECT DESCRIPTION: | THIS PROJECT CONSISTS OF THE REPLACEMENT OF WINDOWS, DOORS AND SIDING ON AN EXISTING COMMUNITY CENTER. THE EXISTING SECOND FLOOR ENTRY BRIDGE WILL BE REPLACED WITH A NEW STRUCTURE , THERE WILL BE NEW VENTILATION WITH HVAC REPAIRS THROUGHOUT. THE ONE STORY PORTION OF THE BUILDING WILL BE RE-ROOFED. NO NEW FLOOR AREA. MINIMAL TENANT IMPROVEMENT MODIFICATIONS MADE ON THE FIRST AND SECOND FLOOR.<br><br>NOTE: UPGRADES TO THE EXISTING BRIDGE STRUCTURE WILL IMPROVE THE FACILITY FOR COMMUNITY USE. ADA MITIGATION WILL OCCUR OUTSIDE OF THIS SCOPE WITH DEDICATED ADA IMPROVEMENTS GOING INTO THE SUDDEN VALLEY DOCK UPGRADES (SEPARATE PERMIT) |
| CODE: | 2018 IEBC, 2018 IBC & ALL APPLICABLE CODES |
| ALTERATION LEVEL: | LEVEL II |
| CONSTRUCTION TYPE: | VB, NON SPRINKLERED |
| FLOOR AREAS: | GROUND FLOOR: 13,176 SQ FT<br>SECOND FLOOR: 8,856 SQ FT |
| OCCUPANCY: | GROUP : A-3 ASSEMBLY |
| OCCUPANCY LOAD | EXERCISE 2385 SQFT /50 = 48 OCCUPANTS<br>OFFICE 1400 SQFT /150 = 9 OCCUPANTS<br>ASSEMBLY 803 SQFT /15 = 54 OCCUPANTS<br>LOCKER ROOMS 809 SQFT /50 = 16 OCCUPANTS<br><br>SECOND FLOOR : 450 OCCUPANTS (POSTED) |
| ALTERED TI AREA: | ARCHIVE ROOM 109 - 981 SQFT<br>MECHANICAL/KITCHENETTE 202 - 591 SQFT<br>TOTAL 1,572 SQFT |
| RESTROOMS: | NO WORK |
| FIRE SPRINKLERS: | NONE |
| FIRE ALARM: | PROVIDE & LOCATE FIRE ALARM NOTIFICATION APPLIANCE(S) STATION(S) AND SENSOR(S) PER CODE AND AS REQUIRED BY FIRE DEPARTMENT |

## WSEC - ALTERATION COMPLIANCE

| | |
|---|---|
| WINDOWS: | U=.30 AND SHGC=0.45 |
| OPAQUE MAN DOORS: | U=.37 |
| NEW WALL CAVITIES: | R21; U-.054 |
| NEW LIGHTING: | SHALL COMPLY WITH THE WSEC<br>PROVIDE EXTERIOR PHOTOCELL ON NORTH SIDE OF BUILDING AND TIME CLOCK FOR EXTERIOR LIGHTING CONTROL. PHOTOCELL TO ENERGIZE EXTERIOR LUMINARIES AT SUNSET AND TIME CLOCK TO SHED HALF OF THE EXTERIOR LUMINARIES AT MIDNIGHT. COORDINATE LOCATION OF TIME CLOCK WITH ARCHITECT PRIOR TO ROUGH IN. TIME CLOCK SHALL BE INTERMATIC NO. T101P OR APPROVED EQUAL. |
| NEW HVAC: | SHALL COMPLY WITH THE WSEC |
| NEW VENTILATION: | SHALL COMPLY WITH THE IMC |

## DRAWING INDEX




Sarah Brown ARCHITECTURE + DESIGN
3222 EAGLERIDGE WAY, BELLINGHAM, WA 98226
C) 360.920.5498
E) SARAH@SBARCHDESIGN.COM


11122 REGISTERED ARCHITECT
SARAH A BROWN
STATE OF WASHINGTON

# SUDDEN VALLEY REC CENTER

4 BARN VIEW CT
BELLINGHAM, WA

SB JOB NO: 202205.27

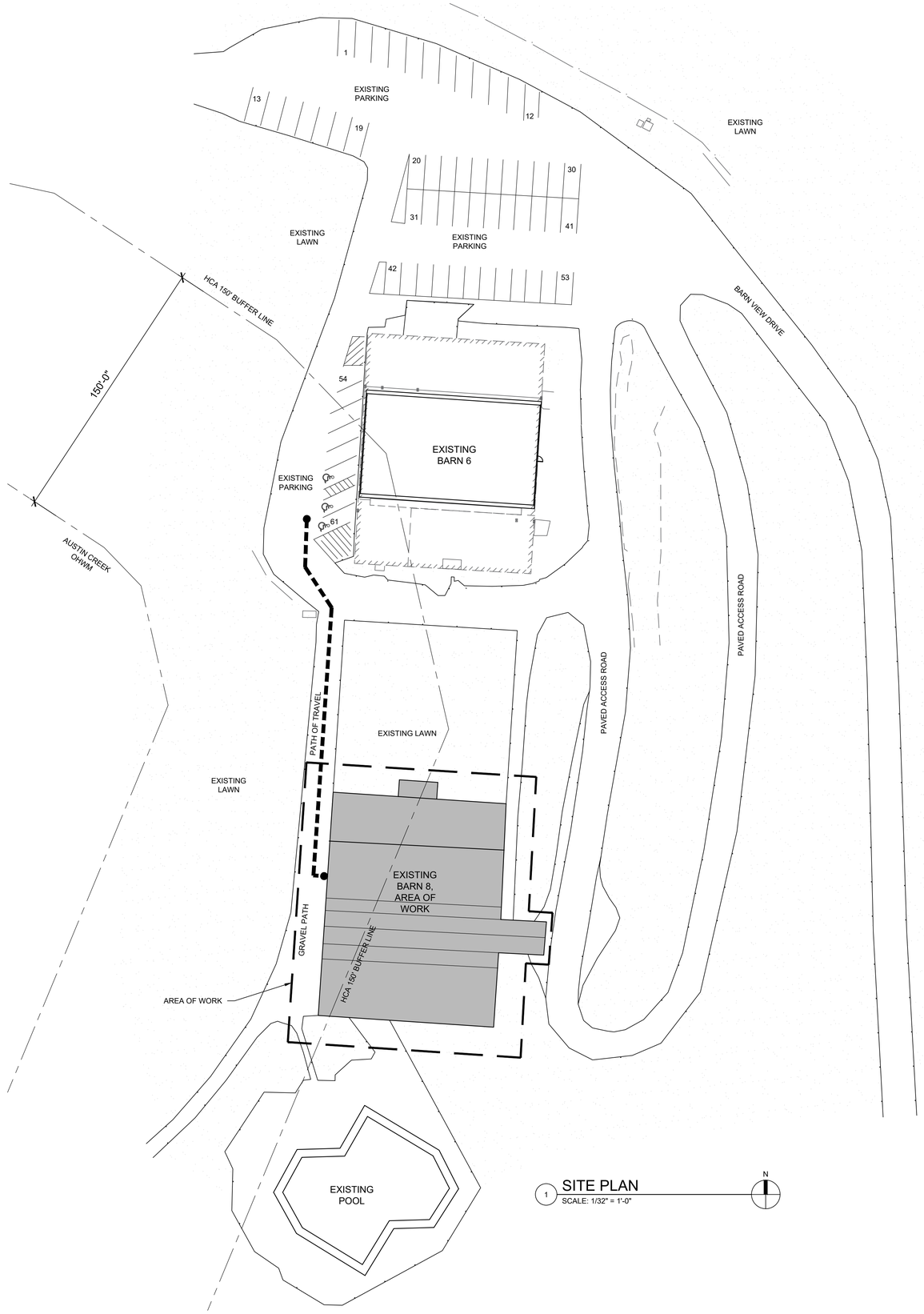
DATE: 06.09.2023

**BID SET**

| No. | ISSUED FOR | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**TITLE PAGE & PROJECT INFORMATION**

# A1.01




Sarah Brown
ARCHITECTURE + DESIGN

3222 EAGLERIDGE WAY, BELLINGHAM, WA 98226
C) 360.920.5498
E) SARAH@SBARCHDESIGN.COM

11122 REGISTERED ARCHITECT
SARAH A BROWN
STATE OF WASHINGTON

# SUDDEN VALLEY REC CENTER

4 BARN VIEW CT
BELLINGHAM, WA

SB JOB NO: 202205.27
DATE: 06.09.2023

**BID SET**

| No. | ISSUED FOR | DATE |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
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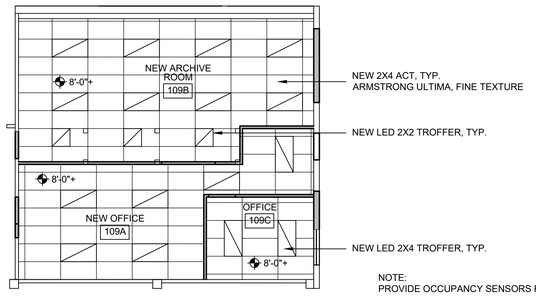
**SITE PLAN**

A1.02



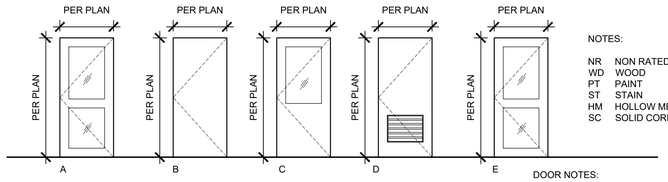

NOTE:
PROVIDE OCCUPANCY SENSORS FOR LIGHTING IN ALL OFFICE AND STORAGE AREAS. PROVIDE DAYLIGHT SENSORS FOR LIGHTING IN ALL ROOMS WITH EXTERIOR WINDOWS.

## 4 REFLECTED CEILING PLAN

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

**SUDDEN VALLEY REC. CENTER - BARN 8 : DOOR SCHEDULE**

| MARK | WIDTH | HEIGHT | ROOM TYPE | DOOR TYPE | CONSTRUCTION | FINISH | GLASS | FRAME TYPE | DOOR HARDWARE | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| 100 | 6'-0" | 7'-0" | ENTRY HALL | AA | STOREFRONT | ALUMINUM | TI | MFR. | PANNIC HARDWARE | KAWNEER/500 TUFFLINE |
| 103 | 3'-0" | 7'-0" | SNACK BAR | B | METAL INSULATED | PAINT | | HM | LEVER | |
| 109A | 3'-0" | 7'-0" | ARCHIVE RM | C | HOLLOW METAL | PAINT | TI | HM | LEVER | |
| 109B | 3'-0" | 7'-0" | ARCHIVE RM | BB | HOLLOW METAL | PAINT | | HM | LEVER | |
| 109C | 3'-0" | 7'-0" | ARCHIVE RM | C | HOLLOW METAL | PAINT | TI | HM | LEVER | |
| 109D | 3'-0" | 7'-0" | ARCHIVE RM | B | METAL INSULATED | PAINT | | | | |
| 113 | 6'-0" | 7'-0" | EXERCISE RM. | BB | METAL INSULATED | PAINT | | HM | PANNIC HARDWARE | |
| 119 | 3'-0" | 7'-0" | MULTI-PURP. | C | METAL INSULATED | PAINT | TI | HM | LEVER | |
| 125 | 3'-0" | 7'-0" | MENS RM. | B | METAL INSULATED | PAINT | | HM | LEVER | |
| 126A | 3'-0" | 7'-0" | STORAGE | B | METAL INSULATED | PAINT | | HM | LEVER | |
| 126B | 3'-0" | 7'-0" | STORAGE | B | METAL INSULATED | PAINT | | HM | LEVER | |
| 129 | 3'-0" | 7'-0" | WOMENS RM. | B | METAL INSULATED | PAINT | | HM | LEVER | |
| 132 | 3'-0" | 7'-0" | POOL DRY RM. | D | METAL INSULATED | PAINT | | HM | LEVER | |
| 135A | 3'-0" | 7'-0" | POOL RM. | D | METAL INSULATED | PAINT | | HM | LEVER | |
| 135B | 3'-0" | 7'-0" | POOL RM. | D | METAL INSULATED | PAINT | | HM | LEVER | |
| 147 | 6'-0" | 7'-0" | STAIR HALL | BB | METAL INSULATED | PAINT | | HM | PANNIC HARDWARE | |
| 200A | 6'-0" | 7'-0" | DANCE HALL | AA | STOREFRONT | ALUMINUM | TI | MFR. | PANNIC HARDWARE | KAWNEER/500 TUFFLINE |
| 200B | 6'-0" | 7'-0" | DANCE HALL | AA | STOREFRONT | ALUMINUM | TI | MFR. | PANNIC HARDWARE | KAWNEER/500 TUFFLINE |



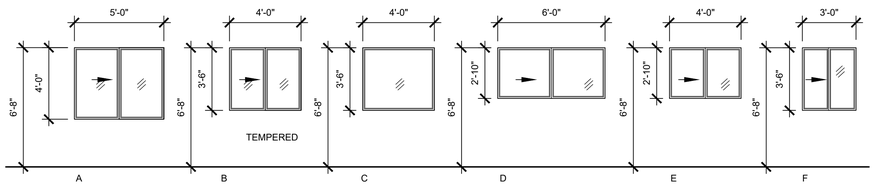

NOTES:

| | |
|---|---|
| NR | NON RATED |
| WD | WOOD |
| PT | PAINT |
| ST | STAIN |
| HM | HOLLOW METAL |
| SC | SOLID CORE |

## 3 DOOR TYPES

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

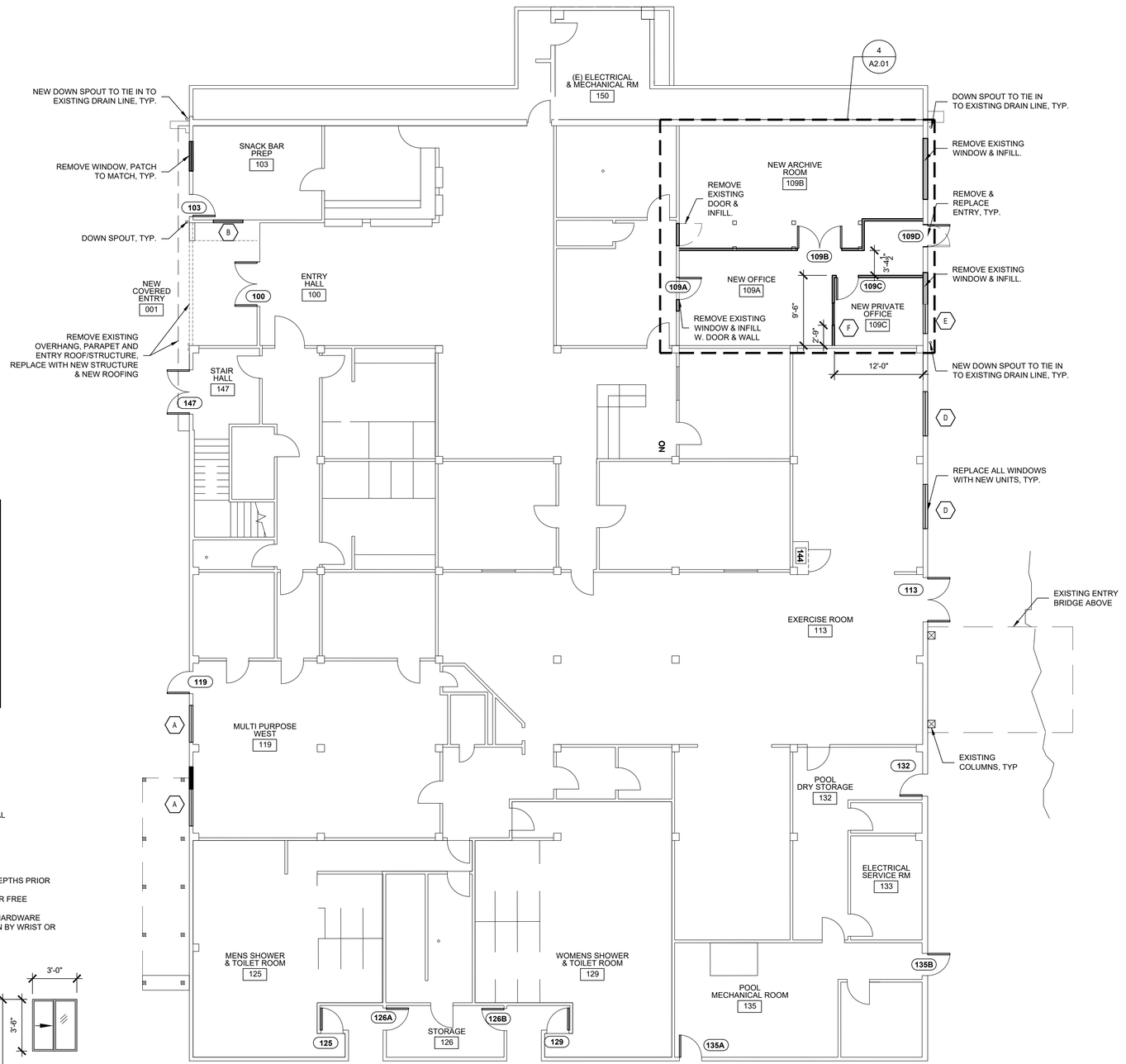
DOOR NOTES:
1. VERIFY ALL R.O. AND JAMB DEPTHS PRIOR TO ORDERING.
2. ALL DOORS TO HAVE BARRIER FREE HARDWARE AS REQUIRED.
3. DOORS SHALL HAVE LEVER HARDWARE WHICH WILL PERMIT OPERATION BY WRIST OR ARM PRESSURE.




## 2 WINDOW TYPES

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

NOTE:
ALL WINDOWS VINYL
BASIS OF DESIGN: WESTECK WINDOWS AND DOORS
COLOR: BRONZE




## 1 FIRST FLOOR - EXISTING FLOOR PLAN

SCALE: 1/8"=1'-0"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SARAH A BROWN
STATE OF WASHINGTON

## WALL KEY

- NEW WALL
- EXISTING WALL
- DEMO WALL

# SUDDEN VALLEY REC CENTER

4 BARN VIEW CT
BELLINGHAM, WA

SB JOB NO: 202205.27

DATE: 06.09.2023

**BID SET**

| No. | ISSUED FOR | DATE |
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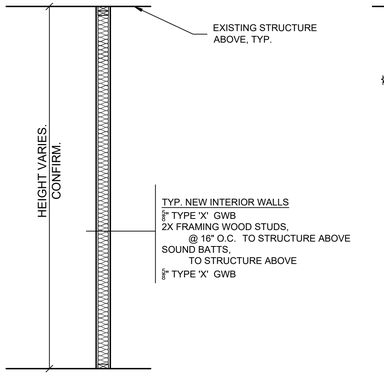
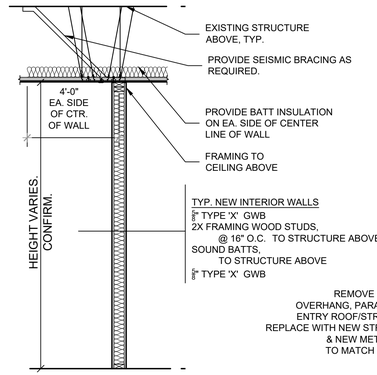
**FIRST FLOOR PLAN**

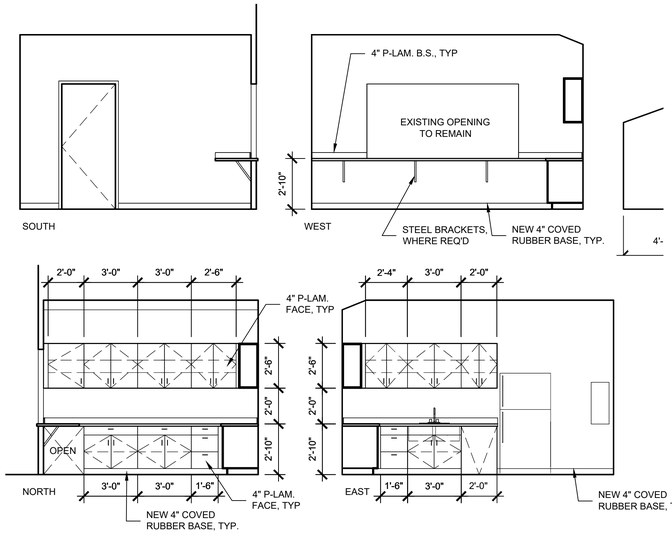
# A2.01



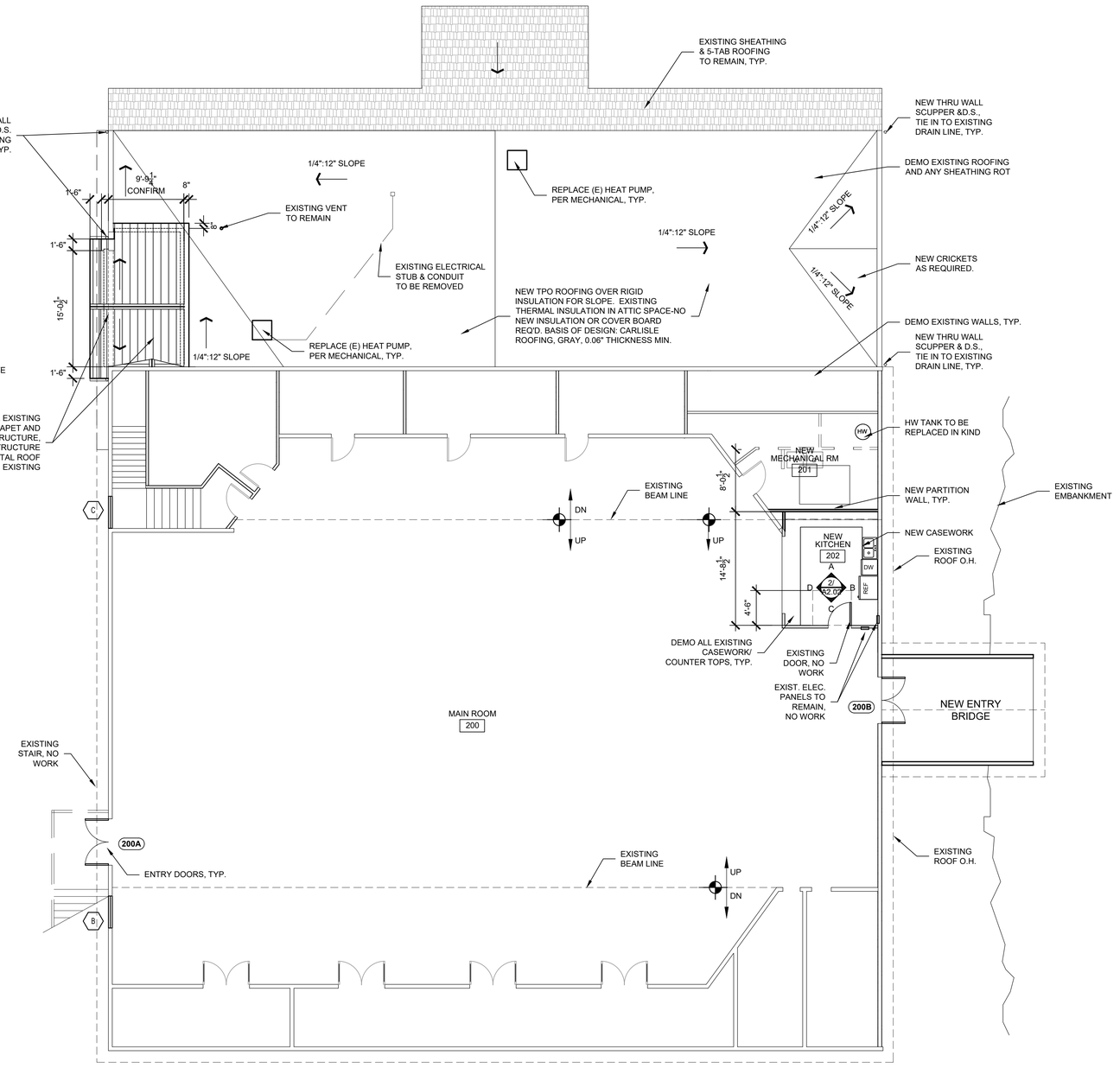

3 TYP INTERIOR WALL SECTION TO STRUCTURE ABOVE
SCALE: 1/2"=1'-0"




4 TYP INTERIOR WALL SECTION TO ACT ABOVE
SCALE: 1/2"=1'-0"




2 NEW KITCHEN-INTERIOR ELEVATIONS
SCALE: 1/4"=1'-0"




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

N

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STATE OF WASHINGTON

WALL KEY

NEW WALL
EXISTING WALL
DEMO WALL

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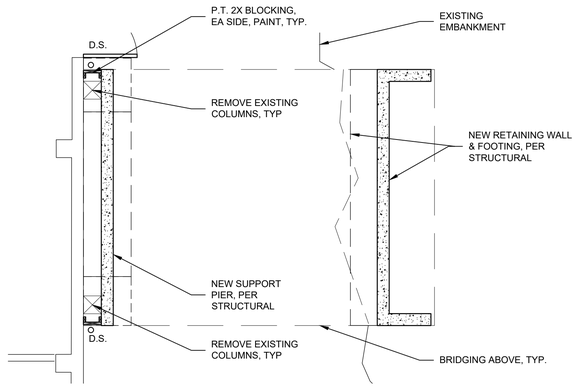
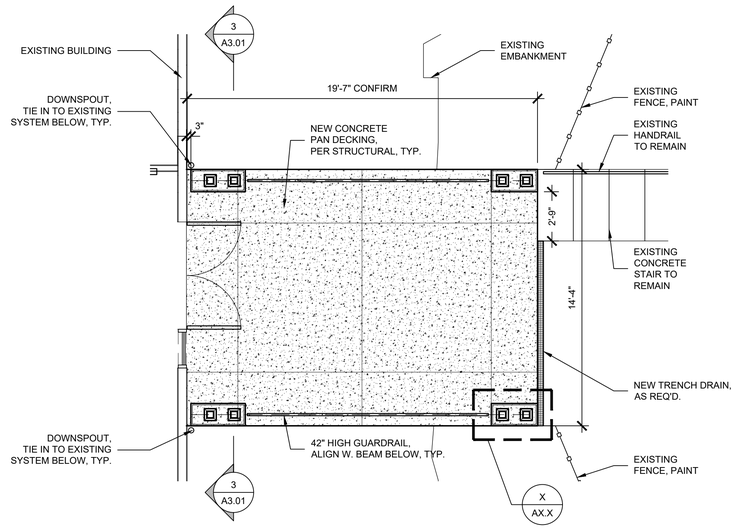
## SECOND FLOOR PLAN

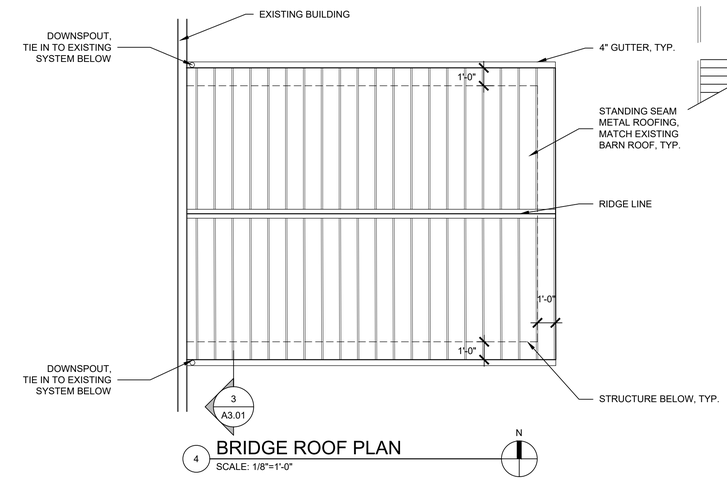
A2.02



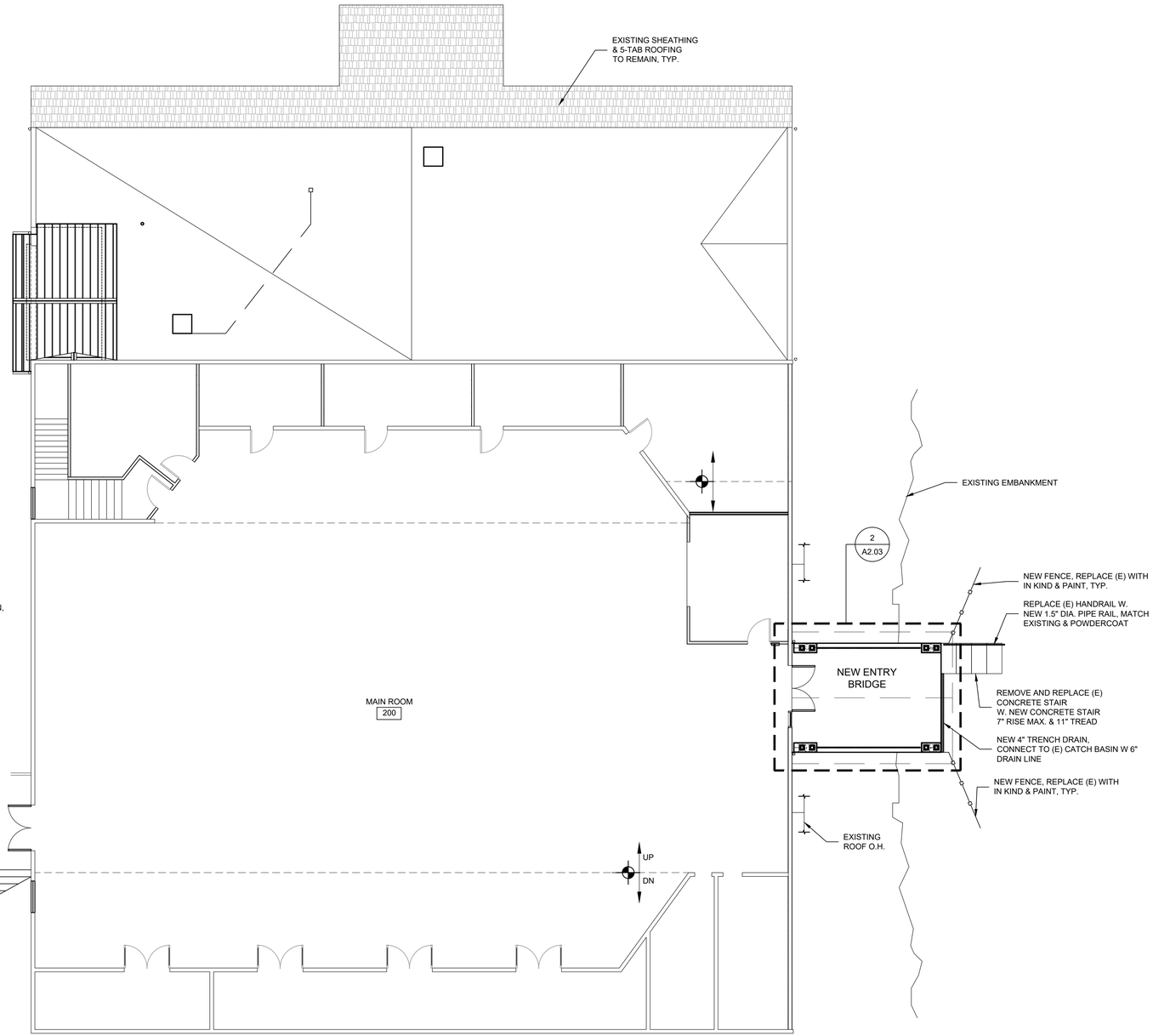

2 FIRST FLOOR BRIDGE PLAN
SCALE: 1/8"=1'-0"




3 SECOND FLOOR BRIDGE PLAN
SCALE: 1/8"=1'-0"




4 BRIDGE ROOF PLAN
SCALE: 1/8"=1'-0"




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

NOTE:
ANY EXPOSED PIPE ON SLOPE TO BE SCHEDULE 40 PVC AND BE PROPERLY ANCHORED

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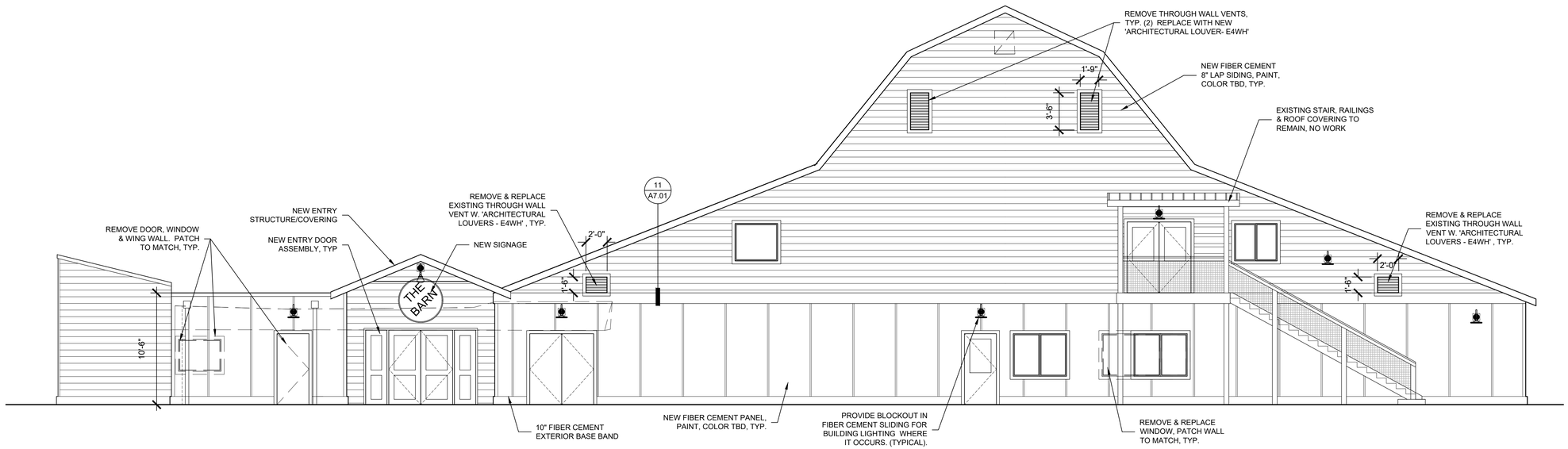
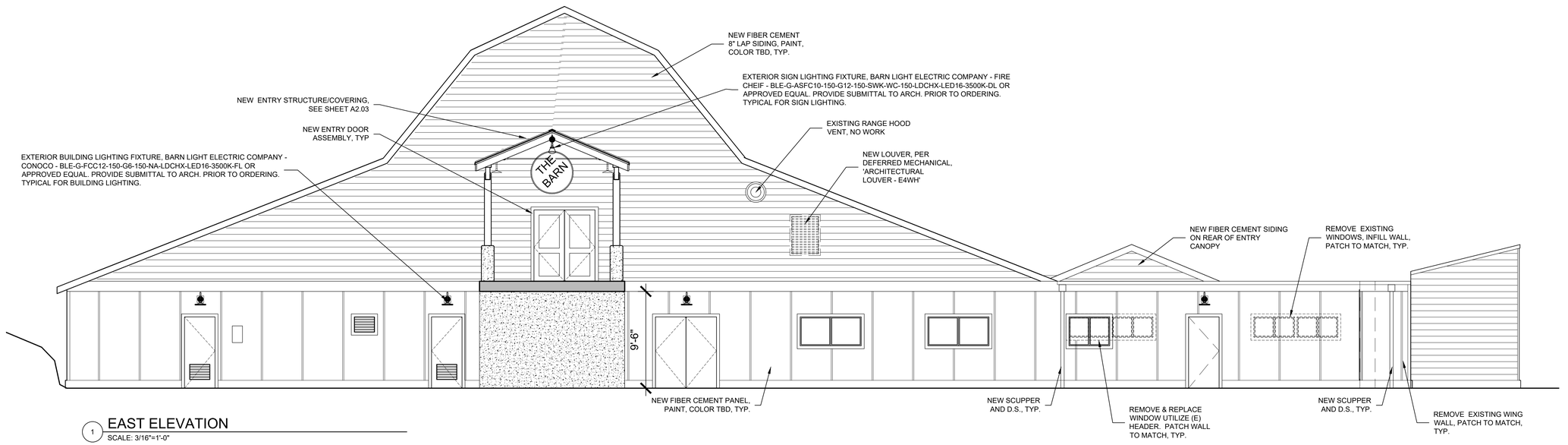
## SECOND FLOOR BRIDGE PLAN

# A2.03




2 WEST ELEVATION

SCALE: 3/16"=1'-0"




1 EAST ELEVATION

SCALE: 3/16"=1'-0"

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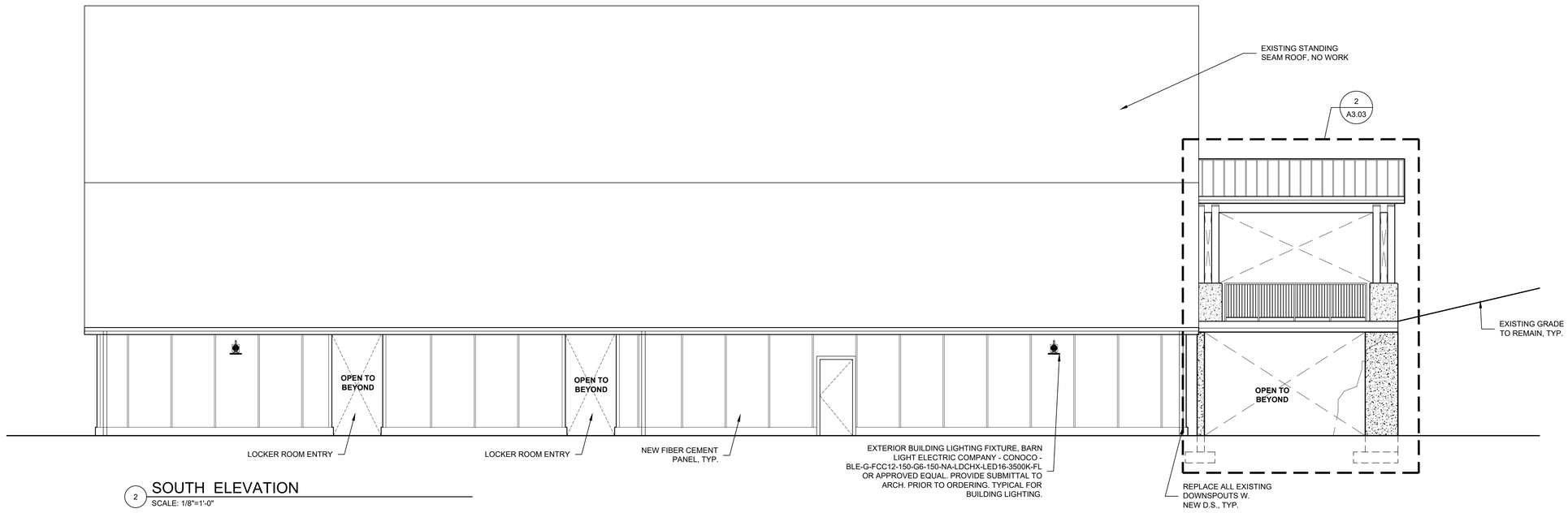
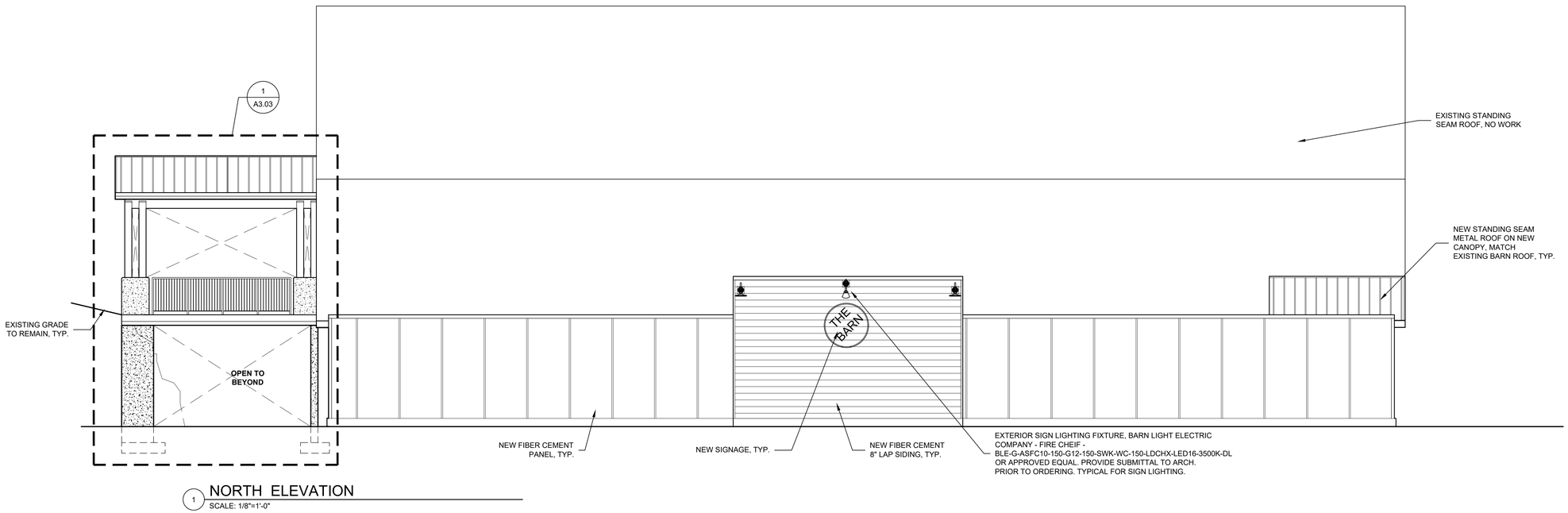
## ELEVATIONS

A3.01




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




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

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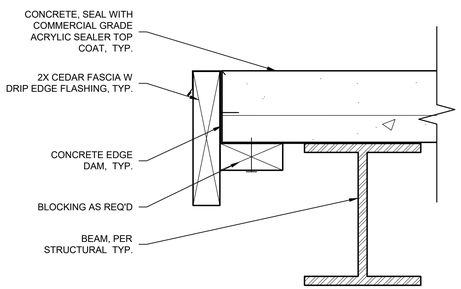
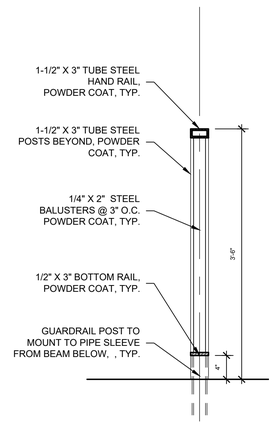
ELEVATIONS

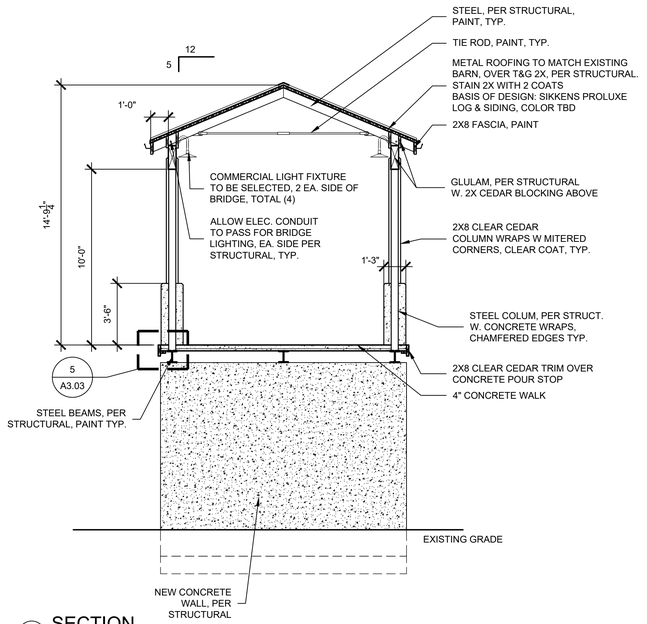
A3.02



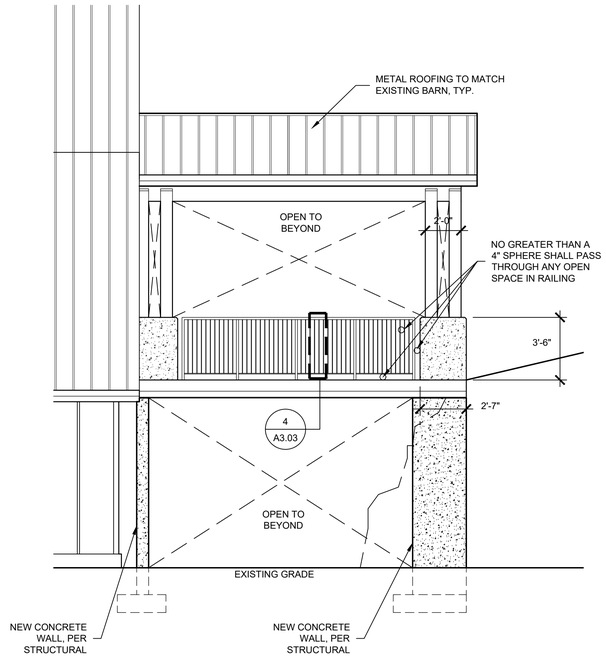

5 DECKING FASCIA DETAIL
SCALE: 3"=1'-0"



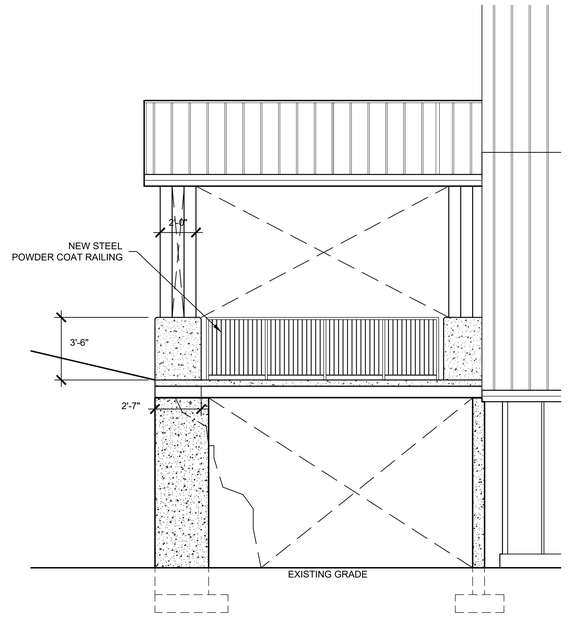

4 GUARDRAIL DETAIL
SCALE: 1/4"=1'-0"




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




2 SOUTH ELEVATION
SCALE: 1/4"=1'-0"




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

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## BRIDGE ELEVATIONS & SECTION

# A3.03

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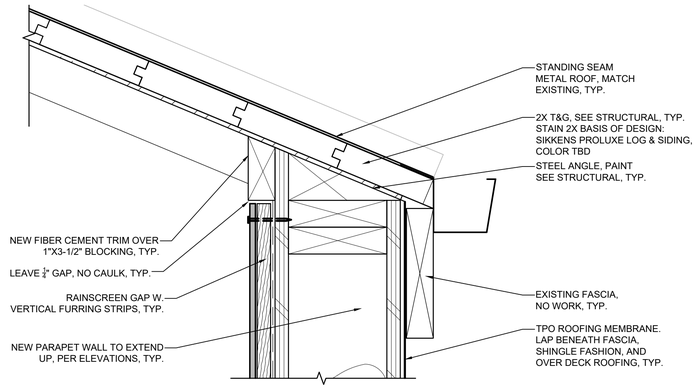
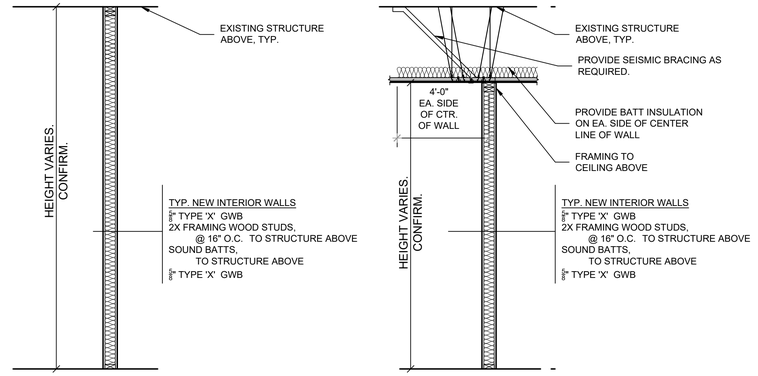



3 MAIN ENTRY CANOPY DETAIL
SCALE: 3"=1'-0"




2 TYP INTERIOR WALL SECTION TO STRUCTURE ABOVE
SCALE: 1/2"=1'-0"

1 TYP INTERIOR WALL SECTION TO ACT ABOVE
SCALE: 1/2"=1'-0"

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## SECTIONS

A4.01

Sarah Brown Architecture + Design | Kennedy Interior Design

For Bid Purposes Only

# BARN 8 FINISH SCHEDULE

8/30/2023

## FLOORING

| | | |
|---|---|---|
| ITEM: | Vinyl Flooring | |
| LOCATION: | ROOM 109A, 109B, 109C | |
| CODE: | LVP-1 | |
| MANUFACTURER: | K-Trade | |
| PRODUCT: | SERIES: | Rigid Core |
| | FINISH/COLOR: | Vivara - LLP151 |
| | SIZE: | 41"x10" |
| | DETAILS: | 20 mil |
| INSTALLATION: | Full spread adhesive, as per manufacture reccomendations | |
| LINK: | ktrade - tiber | |

## PAINT

| | | |
|---|---|---|
| ITEM: | Wall Paint | |
| LOCATION: | ROOM 109A, 109B, 109C, 201 & 202 | |
| CODE: | P-1 | |
| PRODUCT: | PRODUCT: | Sherwin Williams ProMar 200, Zero VOC Interior Latex or approved. |
| | COLOR: | Wordly Gray #SW-7043 |
| | FINISH/SHEEN: | Low Sheen Eggshell (one sheen above flat) |
| NOTES: | Can be mixed in Benjamon Moore or Cloverdale equivilant products with prior approval | |

| | | |
|---|---|---|
| ITEM: | Trim Paint | |
| LOCATION: | Doors and Trim | |
| CODE: | P-2 | |
| PRODUCT: | PRODUCT: | Sherwin Williams ProMar 200, Zero VOC Interior Latex or approved. |
| | PRODUCT for METAL: | Sherwin Williams Classic 99 Satin Enamel A40 Series or approved |
| | COLOR: | match Rubber Base color |
| | FINISH/SHEEN: | Satin |
| NOTES: | Can be mixed in Benjamon Moore or Cloverdale equivilant products with prior approval | |

## COUNTERTOP

| | | |
|---|---|---|
| ITEM: | Countertop & Backsplash | |
| LOCATION: | Kitchen 202 | |
| CODE: | PLAM-1 | |
| MANUFACTURER: | Wilsonart | |
| PRODUCT: | | Premium Laminate |
| | SERIES: | AEON Stirach Resistance |
| | COLOR: | Polished Concrete |
| | FINISH: | Antique Finish |
| | CODE: | 5022K-22 |
| | EDGE: | Matching self edge/edge banding |
| INSTALLATION: | | |
| LINK: | Wilsonart - Countertop | |

## CABINETRY and WINDOW SILLS

| | | |
|---|---|---|
| ITEM: | Vertical/Cabinetry Face Laminate | |
| LOCATION: | ROOM 109A, 109B, 109C, 201 & 202 | |
| CODE: | PLAM-2 | |
| MANUFACTURER: | Wilsonart | |
| PRODUCT: | FINISH: | Pewter Mesh 4878-58 |
| | SIZE: | Fine Velvet |
| | FINISH: | Standard Laminate |
| INSTALLATION: | Matching self edge/edge banding | |
| NOTES: | See drawings A2.02 | |

## TRIM

| | | |
|---|---|---|
| ITEM: | Rubber Base | |
| LOCATION: | ROOM 109A, 109B, 109C, 201 & 202 | |
| CODE: | RB-1 | |
| MANUFACTURER: | | |
| PRODUCT: | TYPE: | Coved Rubber Base |
| | FINISH: | Rubber, matte |
| | SIZE: | 4" |
| INSTALLATION: | Per Manufacturers recommendations | |
| NOTES: | | |

## DOOR HARDWARE

| | | |
|---|---|---|
| ITEM: | Interior Door Hardware | |
| LOCATION: | All Interior Doors | |
| MANUFACTURER: | Schlage | |
| PRODUCT: | SERIES: | Match Existing |
| | FINISH: | Match Existing |
| | DOOR STOPS: | Match Existing |
| LINK: | | |
| NOTES: | Owner to confirm which interior doors are to receive locks | |

| | | |
|---|---|---|
| ITEM: | Door Stops | |
| CODE: | | |
| MANUFACTURER: | Emtek | |
| PRODUCT: | SERIES: | Door Accessories Collection |
| | FINISH: | Match Existing |
| | DOOR STOPS: | Half Dome door Stop or Equal |
| LINK: | Emtek - Door Stop | |
| NOTES: | | |

## MILLWORK HARDWARE

| | | |
|---|---|---|
| ITEM: | Cabinetry Hardware | |
| LOCATION: | Kitchen 202 | |
| PRODUCT: | FINISH: | Satin Chrome |
| | SIZE: | 5" |
| LINK: | Amerock - Cabinet Handle | |
| NOTES: | | |

| | | |
|---|---|---|
| ITEM: | Kitchen Faucet | |
| LOCATION: | Meeting Room Kitchenette 100 | |
| MANUFACTURER: | Kohler | |
| PRODUCT: | MODEL: | Simplice Collection |
| | NAME: | Single Hole Pull Down Kitchen Faucet - No Escutcheon |
| | FINISH: | Vibrant Stainless |
| LINK: | Kohler - Kitchen Faucet | |
| NOTES: | | |

| | | |
|---|---|---|
| ITEM: | Kitchen Sink | |
| LOCATION: | Meeting Room Kitchenette 100 | |
| MANUFACTURER: | Ruvati | |
| PRODUCT: | MODEL: | Tirana Collection |
| | NAME: | Tirana 30" Undermount Single Basin 16 Gauge Sink |
| | FINISH: | Stainless Steel |
| | SIZE: | 28"L x 18"W x 10"D |
| LINK: | Build.com - Kitchen sink | |
| NOTES: | | |

| | | |
|---|---|---|
| ITEM: | Corner Guards | |
| LOCATION: | Hall & Locker Room to Shower Room | |
| PRODUCT: | MODEL: | |
| | NAME: | Corner Guard |
| | FINISH: | Polycarbonate Clear |
| | SIZE: | 90 Deg. 4ft x 2" x 2" |
| INSTALLATION: | Double stick clear tape and/or screw - Per Manufacturer | |

## WINDOW COVERING

| | | |
|---|---|---|
| ITEM: | Horizontal Aluminum Window Blinds | |
| LOCATION: | All Exterior Windows and Interior R-1 Relites | |
| MANUFACTURER: | Graber | |
| PRODUCT: | SERIES: | Insignia 1" Aluminum Blinds |
| | COLOR: | Lace' |
| | SIZE: | Per drawings and field measurements by Installer |

CEILING SUSPENSION NOTES:

1. BRACING DESIGN BASED ON THE NORTHWEST WALL & CEILING BUREAU FIELD TECHNICAL INFORMATION DOCUMENT 401, DATED 6/2005.
2. ALL NEW SUSPENDED CEILINGS ARE TO BE CONSTRUCTED PER IBC VERTICAL AND LATERAL RESTRAINT REQUIREMENTS AND ASCE 7-10 13.5.6.2.2 AND THE APPLICABLE ASTM STANDARDS. WHERE IBC, ASCE, AND ASTM STANDARDS AND REQUIREMENTS CONFLICT WITH THE DRAWINGS, THE IBC, ASCE, AND ASTM STANDARDS AND REQUIREMENTS SHALL GOVERN.
3. ALL MAIN TEES ARE TO BE HEAVY-DUTY (HD). ALL CROSS TEES SHALL BE CAPABLE OF CARRYING THE DESIGN LOAD WITHOUT EXCEEDING DEFLECTION OF 1/360 OF ITS SPAN.
4. SUSPENDED ACOUSTICAL LAY-IN CEILING DESIGN INTENDED FOR SYSTEMS (GRID, PANEL/TILE, LIGHT FIXTURES AND MECHANICAL FIXTURES) WEIGHING NO MORE THAN 4 LBS. PER SQUARE FOOT. NOTIFY ARCHITECT IF WEIGHT OF INSTALLED SYSTEMS WILL EXCEED RECOMMENDED WEIGHT LIMIT.
5. ALL WIRE TIES TO BE THREE TIGHT TURNS MINIMUM WITHIN 3". HANGER WIRE TO BE 12-GAUGE MINIMUM, SPACED AT 4'-0" ON CENTER.
6. LATERAL FORCE BRACING IS REQUIRED FOR CEILINGS OVER 1,000 SQUARE FEET, AND NOT REQUIRED FOR CEILINGS LESS THAN 1,000 SQUARE FEET, PROVIDED THEY ARE SURROUNDED BY 4 WALLS AND BRACED TO STRUCTURE. FOR CEILING AREAS EXCEEDING 2,500 SQUARE FEET, A SEISMIC SEPARATION JOINT OR FULL-HEIGHT WALL PARTITION THAT BREAKS THE CEILING SHALL BE PROVIDED. REFER TO PLANS FOR LOCATIONS OF SEISMIC SEPARATION JOINTS.
7. LATERAL BRACING SHALL BE PROVIDED AT 12'-0" ON CENTER, AND BEGIN NO FARTHER THAN 6'-0" FROM WALLS. CEILINGS WITH PLENUMS LESS THAN 12" TO STRUCTURE ARE NOT REQUIRED TO HAVE LATERAL BRACING.
8. VERTICAL STRUTS (COMPRESSION POSTS) MUST BE POSITIVELY ATTACHED TO STRUCTURE ABOVE, AND TO SUSPENSION SYSTEMS. REFER TO NORTHWEST WALL & CEILING BUREAU FIELD TECHNICAL INFORMATION DOCUMENT 401 FOR MAXIMUM RECOMMENDED LENGTHS FOR VERTICAL STRUTS.
9. BRACING WIRES SHALL BE ATTACHED TO THE GRID AND TO THE STRUCTURE IN SUCH A MANNER THAT THEY SUPPORT THE GREATER NUMBER OF EITHER A DESIGN LOAD OF NOT LESS THAN 200 POUNDS, OR THE ACTUAL DESIGN LOAD WITH A SAFETY FACTOR OF 2. RIGID BRACING MAY BE USED IN LIEU OF SPLAY WIRES.
10. LIGHT FIXTURES WEIGHING LESS THAN 10 POUNDS SHALL HAVE ONE 12-GAUGE HANGER WIRE CONNECTED FROM THE FIXTURE TO THE STRUCTURE ABOVE. THIS WIRE MAY BE SLACK. LIGHT FIXTURES WEIGHING MORE THAN 10 POUNDS AND LESS THAN 56 POUNDS SHALL HAVE (2) 12-GAUGE WIRES ATTACHED AT OPPOSING CORNERS OF THE LIGHT FIXTURE TO THE STRUCTURE ABOVE. THESE WIRES MAY BE SLACK. LIGHT FIXTURES WEIGHING MORE THAN 56 POUNDS SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE. THESE WIRES MUST BE TAUT.
11. PENDANT FIXTURES SHALL BE DIRECTLY SUPPORTED FROM THE STRUCTURE ABOVE USING A 9-GAUGE WIRE OR AN APPROVED ALTERNATE SUPPORT WITHOUT USING THE CEILING SUSPENSION SYSTEM FOR DIRECT SUPPORT.
12. TANDEM FIXTURES MAY UTILIZE COMMON WIRES.
13. MECHANICAL TERMINALS OR SERVICES WEIGHING BETWEEN 20 AND 56 POUNDS MUST HAVE (2) 12-GAUGE WIRES CONNECTING THEM TO THE CEILING SYSTEM HANGERS OR TO THE STRUCTURE ABOVE. THESE WIRES MAY BE SLACK. TERMINALS OR SERVICES WEIGHING MORE THAN 56 POUNDS MUST BE INDEPENDENTLY SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE. THESE WIRES MUST BE TAUT.
14. FOR CEILINGS WITHOUT RIGID BRACING, SPRINKLER HEAD PENETRATIONS SHALL HAVE A 2 INCH OVERSIZE RING, SLEEVE, OR ADAPTER THROUGH THE CEILING TILE TO ALLOW FREE MOVEMENT OF AT LEAST 1 INCH IN ALL HORIZONTAL DIRECTIONS. FLEXIBLE HEAD DESIGN THAT CAN ACCOMMODATE 1 INCH OF FREE MOVEMENT SHALL BE PERMITTED AS AN ALTERNATE.

**ROOM FINISH SCHEDULE**

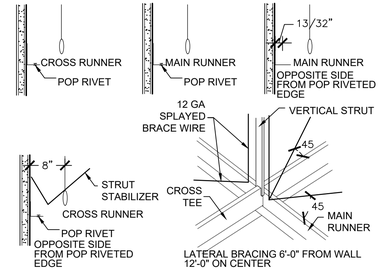
| RM # | Room Use | Floor | Wall Base | CLG | North Wall | East Wall | South Wall | West Wall | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 109A | OFFICE | LVP-1 | RB-1 | SAT-1 | GB/P | GB/P | GB/P | GB/P | |
| 109B | ARCHIVE ROOM | LVP-1 | RB-1 | SAT-1 | GB/P | GB/P | GB/P | GB/P | |
| 109C | OFFICE | LVP-1 | RB-1 | SAT-1 | GB/P | GB/P | GB-P | GB/P | |
| 201 | MECHANICAL ROOM | LVP-1 | RB-1 | (E) GWB; NEW P | GB/P | GB/P | GB/P | GB/P | |
| 202 | KITCHEN | LVP-1 | RB-1 | (E) GWB; NEW P | GB/P, CAB. | GB/P, CAB. | GB/P | GB/P, CAB. | |
| | | | | | | | | | |

**Abbreviations:**

| | | | | | |
|---|---|---|---|---|---|
| CAB | Cabinetry | GB-P | Gypsum Board / Paint | SAT | Susp. Acoust. Tile |
| CPT | Carpet | LVP | Lux. Vinyl Plank | RB | Rubber Base |
| | | SV | Sheet Vinyl | | |

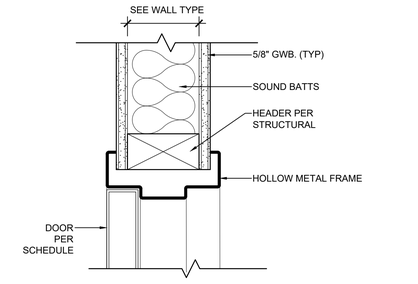
*END OF FINISH SCHEDULE*

(SUPPORT SUSPENDED CEILING ASSEMBLIES AS REQUIRED PER I.B.C. SECTION 1621.5.2.2, TYP. ALL LOCATIONS)



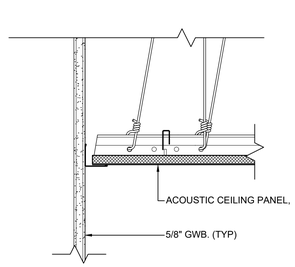

6 ACT BRACING

SCALE: 3"=1'-0"



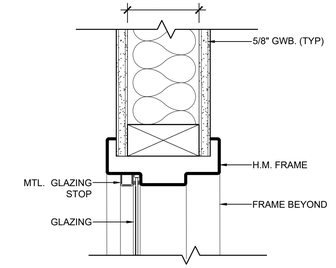

3 H.M. DOOR HEAD, JAMB SIM.

SCALE: 3"=1'-0"



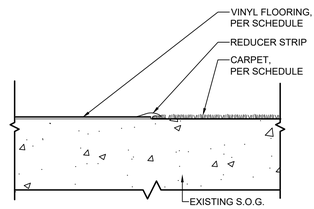

5 ACT SUSPEN. SYSTEM

SCALE: 3"=1'-0"



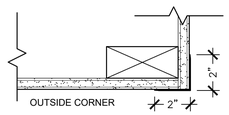

2 H.M. RELITE HEAD, JAMB SIM.

SCALE: 3"=1'-0"




4 VINYL TO CARPET TRANSITION

SCALE: 3"=1'-0"




1 CORNER GUARD

SCALE: 3"=1'-0"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11122 REGISTERED ARCHITECT Sarah Brown SARAH A BROWN STATE OF WASHINGTON

# SUDDEN VALLEY REC CENTER

4 BARN VIEW CT
BELLINGHAM, WA

SB JOB NO: 202205.27

DATE: 06.09.2023

**BID SET**

| No. | ISSUED FOR | DATE |
|---|---|---|
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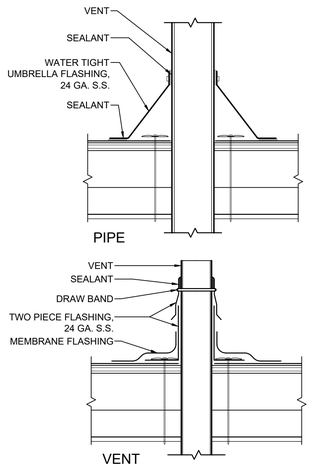
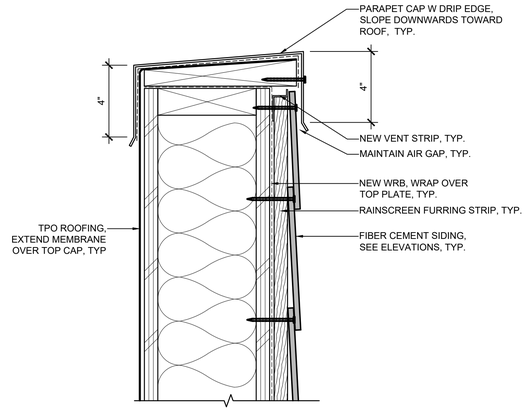
**INTERIOR SCHEDULE & DETAILS**

A5.01



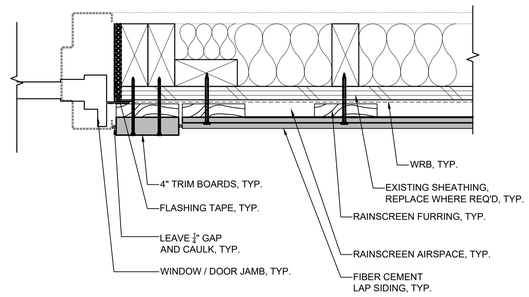

## 12 FLAT ROOF PENETRATIONS

SCALE: 3"=1'-0"



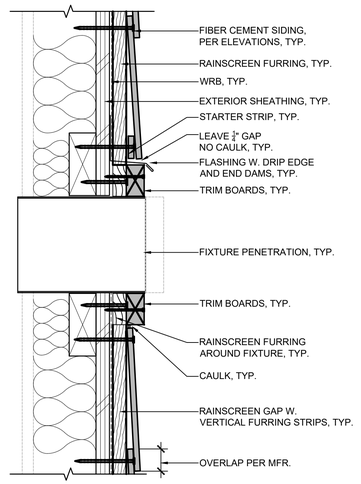

## 9 PARAPET - RAINSCREEN

SCALE: 3"=1'-0"




## 6 WINDOW/DOOR JAMB - RAINSCREEN

SCALE: 3"=1'-0"




## 3 FIXTURE PENETRATION - RAINSCREEN

SCALE: 3"=1'-0"

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STATE OF WASHINGTON




## 11 MID WALL BAND DETAIL

SCALE: 3"=1'-0"




## 8 HARDSCAPE CLEARANCES - RAINSCREEN

SCALE: 3"=1'-0"




## 5 WINDOW/DOOR HEAD - RAINSCREEN

SCALE: 3"=1'-0"




## 2 OUTSIDE CORNER - RAINSCREEN

SCALE: 3"=1'-0"




## 10 HEADWALL @ LOW SLOPE ROOF

SCALE: 3"=1'-0"




## 7 TYP. RAKE - RAINSCREEN

SCALE: 3"=1'-0"




## 4 WINDOW SILL - RAINSCREEN

SCALE: 3"=1'-0"




## 1 INSIDE CORNER - RAINSCREEN

SCALE: 3"=1'-0"

# SUDDEN VALLEY REC CENTER

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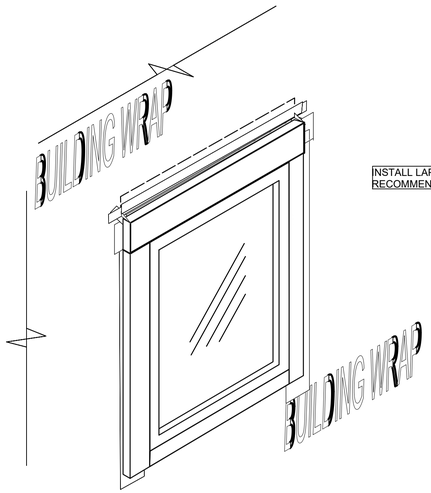
**EXTERIOR DETAILS**

# A 7.01




INSTALL LAP SIDING PER MFRS RECOMMENDED PROCEDURES

5 STEP 7
SCALE: NTS

GENERAL WEATHERPROOFING INSTALLATION NOTES:

INSTALL FLASHING, MEMBRANES AND SEALANT DURING FAVORABLE WEATHER CONDITIONS. INSURE PROPER ADHESION, CONTACT AND SEAL PRIOR TO COVERING

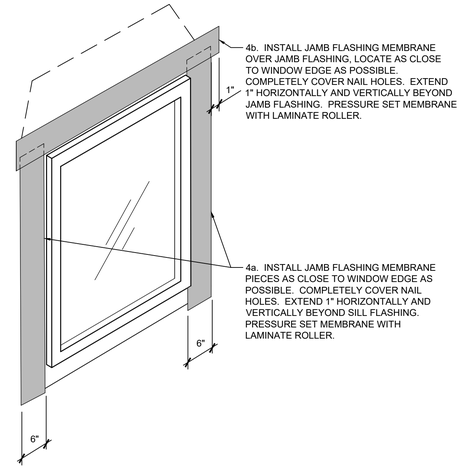
VERIFY COMPATIBILITY WITH DISSIMILAR MATERIALS. CONFIRM EXPANSION TOLERANCES WITH MANUFACTURE PRIOR TO INSTALLATION.

INSTALL LIKE PRODUCTS ACCORDING TO MANUFACTURES GUIDELINES.

DO NOT COVER SUBSTANDARD OR SUSPECT INSTALLATION OF ANY OTHER TRADE.

ALL EXTERIOR WALL & ROOF OPENINGS, FLASHING, COUNTER-FLASHING, EXPANSION JOINTS, BACKER-ROD, SEALANT AND FASTENERS TO BE CONSTRUCTED IN IN A WORKMAN LIKE MANNER REQUIRED TO MAKE THEM WEATHERPROOF AND WATERTIGHT.

WARRANTY ALL WORK FOR ONE YEAR MINIMUM.




4 STEP 4
SCALE: NTS



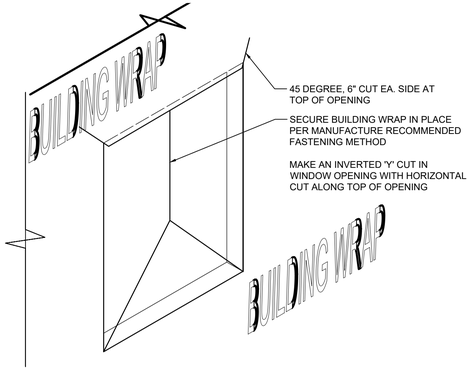

5 STEP 5
SCALE: NTS




5 STEP 6
SCALE: NTS

THE UNDERSIGNED HAS PROVIDED BUILDING ENCLOSURE DOCUMENTS THAT IN MY PROFESSIONAL JUDGMENT ARE APPROPRIATE TO SATISFY THE REQUIREMENTS OF RCW 64.55.055 THROUGH 64.55.090. DETAILS INCORPORATE USE OF EXISTING WIDELY USED BUILDING ENVELOPE PROTECTION TECHNOLOGIES. DETAILS SUBJECT TO REVIEW AND UPDATE AS SYSTEMS ADVANCE.

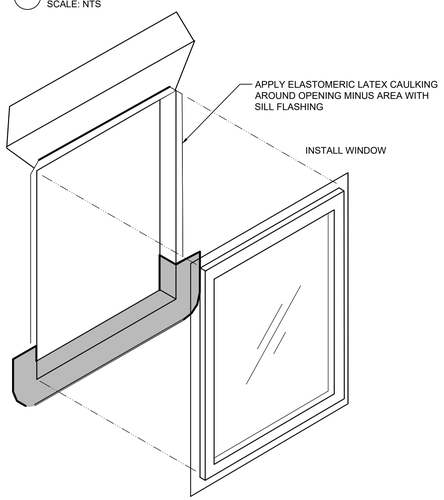
THIRD PARTY INSPECTION AND CERTIFICATION REQUIRED FOR WEATEHR ENVELOPE SYSTEM




1 STEP 1
SCALE: NTS




2 STEP 2
SCALE: NTS




3 STEP 3
SCALE: NTS

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# SUDDEN VALLEY REC CENTER

4 BARN VIEW CT
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## EXTERIOR DETAILS

# A7.02

## -- GENERAL NOTES --

This project is limited to the replacement of an entry roof, the substantiation of the existing framing for new roof insulation and a new ERV unit, and the replacement of a covered pedestrian bridge structure. The bridge structure provides access to the upper floor of the existing barn but is structurally independent from the barn. In regard to gravity loads to the existing structure, the insulation and ERV unit does not create more than a 5% increase in demand. In regard to lateral loads to the existing structure, the work shown in these drawings does not modify the existing building's lateral system, the building's wind profile is not significantly changed, and the added seismic load does not create more than a 10% increase in demand. No further anaylsis or alterations are required per 2018 IEBC Section 502.5.

DESIGN BASIS: Designed in accordance with the 2018 International Building Code (IBC).

RISK CATEGORY: II (per IBC Table 1604.5)

DESIGN DEAD / LIVE LOADS

- Existing Low Roof Dead Load: 11 PSF Typical (Incl. Framing)
- Bridge Floor Dead Load: 50 PSF (Incl. Framing)
- Bridge Roof Dead Load: 15 PSF (Incl. Framing)
- Existing Low Roof Live Load: 20 PSF Assumed (Typical)
- Bridge Floor Live Load: 100 PSF
- Bridge Roof Live Load: 20 PSF

DESIGN SNOW LOADS (ASCE 7-16)

- Ground Snow Load: Pg = 20 PSF
- Flat Roof Snow Load: Pf = 25 PSF
- Minimum Uniform Roof Snow Load = 25 PSF (unreducible)
- Themal Factor: Ct = 1.0 / Exposure Factor: Ce = 1.0 / Snow Load Importance Factor: Is = 1.0

DESIGN WIND LOADS (ASCE 7-16)

- V = 98 MPH / V(asd) = 76 MPH
- Exposure: B / Internal Pressure Coefficient: +/- 0.18
- Components & Cladding: Components and cladding-wind pressures to be used for the design of exterior components and cladding (by others) shall be determined in accordance with ASCE 7 and the IBC.

DESIGN SEISMIC LOADS (ASCE 7-16)

- Site Class = D (default)
- Seismic Design Category = D / Importance Ie = 1.0
- Ss = 0.967g / S1 = 0.341g
- Sds = 0.774g / Sd1 = 0.445g
- Building System: Bearing Wall System for Existing, Cantilevered Column for Bridge
- SFRS for Existing: Light Frame Wood Walls with Structural Wood Shear Panels
- SFRS for Bridge: Steel Ordinary Cantilevered Column
- Response Modification Factor Used: R = 6.5 for Existing, R = 1.25 for Bridge
- Seismic Response Coefficient: Cs = 0.119 for Existing, Cs = 0.619 for Bridge
- Analysis Procedure: Equivalent Lateral Force Procedure

QUALITY: Contractor shall ensure high standards of worksmanship throughout, with strict adherence to the contract documents and all governing codes and standards.

DESIGN RESPONSIBILITY: Kingworks is responsible only for the design of the primary structural system as shown in the contract documents. Design of all secondary structure or non-structural elements are by others.

DISCREPANCIES: Notify the Architect immediately of any discrepancies between these notes, the contract drawings, the specification, or the governing code. The Architect shall reply in writing. Any related work performed by the Contractor prior to receiving a reply from the Architect is at the Contractor's sole risk. For purposes of bidding, the most stringent of the conflicting documents shall apply.

VERIFICATIONS: Verify all existing conditions; verify all dimensions in the field; verify architectural, mechanical and electrical openings for size, location and number; notify the Architect of any discrepancies, substandard existing conditions, or conditions not included in or contrary to the Contract Documents prior to shop drawing submittal or construction.

DRAWING COORDINATION: Coordinate the structural drawings with drawings from all other disciplines (including but not limited to Architectural, Civil, Mechanical, and Electrical).

COMPLETED FORM: The structure shown in these drawings is designed to be stable and to resist the loads above only in a fully completed form. Contractor shall ensure that the structure is adequately braced and shored during construction for all temporary loads until all elements are in place, and shall ensure that temporary loadings do not exceed the allowable capacity of any structural elements both before and after these elements are in place.

MEANS AND METHODS: Contractor is solely responsible for site safety, coordination, procedures, construction methodology, shoring, bracing, sequencing, and all other "means and methods" of construction except where specifically shown in the Contract Documents.

PROTECTION AND BRACING: Contractor is solely responsible for the protection of existing buildings, utilities, streets, equipment, etc. during construction. Provide temporary bracing and protection as required.

SCALING: Do not scale drawings. See architectural drawings for dimensions, and notify the Architect of any discrepancies.

ALTERATIONS: Any holes or other alterations to the structure which are not specifically detailed on the Contract Drawings shall be submitted to the engineer for approval.

LOAD COORDINATION: The design of all pre-engineered components shall include provisions for precise locations and weights of all mechanical units and other concentrated loads. Concentrated loads are not necessarily indicated on the Structural Drawings, and must be coordinated by the General Contractor, who shall also inform the Architect of any significant loads not shown in the contract documents. The Contractor shall assume full responsibility for coordination of weights, locations, hanger spacings, methods of attachment and seismic bracing of all mechanical units, sprinklers, pipes, ductwork, and other miscellaneous MEP assemblies.

MEP CONNECTIONS TO STRUCTURE: Unless specifically shown otherwise in the Contract Documents, all anchorage, support, and seismic bracing of mechanical and electrical equipment, piping, ceilings, fixtures and other non-structural components shall be designed by a Washington State Licensed Professional Engineer and installed by the Contractor. The engineer shall be retained by the Contractor, and the Contractor is responsible for all associated engineering, component, and installation costs. Design shall be per ASCE 7 Chapter 13.

DELIVERY, STORAGE AND HANDLING: All products shall be delivered, stored, and handled according to the Manufacturer's recommendations and installation instructions. Protect all items from damage, moisture, corrosion, or other deterioration before, during and after installation.



## -- SUBMITTALS --

1 GENERAL: Provide PDF of all submittals to the Architect. Allow two weeks for review. Submittals will be reviewed for general conformance to the contract documents. Responsibility for adherence to the contract documents lies solely with the Contractor, including but not limited to dimensions, sizes, connections, and quantities.

2 CONTRACTOR REVIEW: Contractor shall review, mark, and stamp all submittals before submittal to the Architect. Unreviewed or unstamped submittals will be returned to the Contractor without review.

3 RESUBMITTALS: Resubmittals shall have all revisions clearly identified with "drawing clouds" and revision dates. KW shall not be responsible for review of any unmarked revisions.

4 SHOP DRAWINGS: To include typical and unique conditions and all connections, shall be submitted to the Structural Engineer of Record for the following products prior to fabrication. Shop drawings shall clearly demonstrate the Contractor's understanding of the contract documents. The following shall be considered minimum structural submittals for this project:

- Structural Steel

5 SUBMITTAL REVIEW COMMENTS: Engineer marks and comments on shop drawings and other submittals are a normal and expected part of the submittal process, and are not to be used as a basis for change orders except in cases where these marks result in or derive from substantial changes to the Contract Drawings. Time required to revise and resubmit any submittal shall be considered inherent to the submittal review process and shall not be deemed a change order. If discrepancies are discovered between the submittals and the Contract Documents (either before, during, or after submittal review), the Contract Documents shall govern and be implemented unless specifically directed otherwise.

## -- SPECIAL INSPECTIONS, TESTING, AND STRUCTURAL OBSERVATION --

1 GENERAL: A special inspection agency shall be retained by the owner to perform inspections according to IBC Chapter 17. The following scheduled structural special inspection and testing regimen shall be cross-referenced with the IBC and its referenced standards for more specific requirements and exceptions. Special inspection and test reports shall be submitted to the Building Official, Architect and Structural Engineer in accordance with IBC 1704.2.4.

2 STRUCTURAL OBSERVATION: Kingworks will perform Structural Observations in accordance with IBC Section 1704.6 if/as required. These observations provide intermittent checks of general conformance to the design intent and are in addition to (not replacing) the third-party special inspection regimen. It shall be the Contractor's responsibility to keep the Structural Engineer apprised of the general schedule of construction, such that observations may be made at appropriate stages before significant structural components (such as reinforcing bars, framing members, or wall holdowns) are obscured.

### -- STRUCTURAL SPECIAL INSPECTION SCHEDULE --

| | STRUCTURAL ITEM | FREQUENCY (C=continuous, P=periodic) | REFERENCE (2018 IBC Section, uon) |
|---|---|---|---|
| 1 | STEEL | | 1705.2, 1705.12.1 |
| | - Material Verification - Steel Members | P | AISC 360-16 Chap N |
| | - High Strength Bolting - Material Verification & Installation | P | AISC 360-16 Chap N |
| | - Weld Filler Material Verification | P | AISC 360-16 Chap N |
| | - Complete Joint Penetration and Partial Joint Penetration Groove Welds | C | AISC 360-16 Chap N |
| | - Multipass Fillet Welds | C | AISC 360-16 Chap N |
| | - Single Pass Fillet Welds > 5/16 | C | AISC 360-16 Chap N |
| | - Plug and Slot Welds | C | AISC 360-16 Chap N |
| | - Single Pass Fillet Welds ≤ 5/16 | P | AISC 360-16 Chap N |
| | - SLRS Steel | Varies | AISC 360-16 Chap N, AISC 341-16 Appx Q,1705.13 |
| | - Steel Deck | P | 1705.2.2 |
| 2 | CONCRETE | | 1705.3, ACI 318-14 26.13 |
| | - Reinf Placement | P (and prior to all pours) | Table 1705.3, ACI 318-14 26.6.2 |
| | - Anchor Placement | P (and prior to all pours) | Table 1705.3 |
| | - Concrete Placement | C | Table 1705.3 |
| | - Concrete Testing | Per ACI 318-14 26.12 | Table 1705.3 |
| | - Formwork & Curing | P | Table 1705.3 |
| 3 | POST-INSTALLED ANCHORS | | Table 1705.3 |
| | - Epoxy or Adhesive Anchors Used in Horizontal or Overhead Position | C | See ICC-ES report |
| | - All Other Anchors Installed in Hardened Concrete or Masonry | P (except where C req'd by ICC-ES report) | See ICC-ES report |
| 4 | SOILS & FOUNDATIONS | | 1705.6, Table 1705.6, Geotech Report |
| | - Subgrade Adequacy | P (beneath fill and/or foundations) | Table 1705.6 |
| | - Excavation Depth | P | Table 1705.6 |
| | - Fill Materials | P | Table 1705.6 |
| | - Fill Placement & Compaction | C | Table 1705.6 |

## -- FOUNDATIONS & SUBGRADE --

1 IBC PRESUMPTIVE SOIL PARAMETERS (T-1806.2): Material Class 4 or 5, Allowable Bearing Pressure = 1,500 PSF min.

2 SUBGRADE PREPARATION: Foundations and slabs shall be constructed on competent, unyielding native subgrade (or compacted structural fill over same). All topsoil, organic, soft or otherwise incompetent materials beneath foundations or slabs shall be removed and replaced with compacted imported structural fill in 12" max lifts. Native subgrade and structural fill shall be compacted to 95% of MDD per ASTM D 1557.

3 GEOTECHNICAL VERIFICATION: No geotechnical report has been prepared for this project. The structural design relies upon minimum IBC Presumptive Soil parameters indicated above. These parameters require field verification. The Owner shall retain a geotechnical inspection agency to inspect all excavations in accordance with IBC Chapter 17, and to confirm that the presumptive parameters are achieved. All recommendations of the inspection agency shall be followed and communicated with the design team via inspection report. Contractor shall coordinate this inspection effort with the Owner.

4 UTILITIES: Utilities are not to pass through or beneath footings, stemwalls, and other concrete work on grade except as shown in specific details.

5 MISCELLANEOUS VERIFICATIONS: Verify sizes, slopes and locations of tunnels, electrical cells, pits, pipes, floor drains, trenches and floor recesses with architectural, mechanical and electrical contractors.

6 ALIGNMENT: All footings shall be centered below columns and walls, unless dimensioned otherwise.

7 BACKFILL: Do not backfill against below-grade walls until strength has been achieved and floor framing is in place.

8 FROST PROTECTION: Maintain minimum 1'-6" soil cover, measured from finished grade to the bottom of the footing, for perimeter wall foundations and isolated exterior foundations.

9 EXCAVATION SLOPE: Excavation slope shall not exceed that permitted by local regulation, except as specifically approved by the geotechnical engineer.

## -- REINFORCED CONCRETE --

1 REFERENCED STANDARDS: Reinforced concrete shall conform to the requirements of the following documents, except as modified in these drawings.

- ACI 301-16 "Standards Specifications for Structural Concrete"
- ACI 318-14 "Building Code Requirements for Structural Concrete"

2 MATERIALS

- Conform to following concrete material schedule requirements.

**-- CONCRETE MATERIAL SCHEDULE --**

| | f'c (PSI) | W/CM (MAX) | COARSE AGG (MAX) | AIR CONTENT | MIN FLY ASH AND/OR SLAG |
|---|---|---|---|---|---|
| FOUNDATIONS / STEMWALLS | 4500 | 0.45 | 1" | SEE NOTES | 20% |
| SLAB ON METAL DECK & PLINTHS | 4500 | 0.45 | 3/4" | 6% | 20% |

- Required concrete strength "f'c" shall be evaluated at 28 days (56 days OK for fly ash or slag concrete).
- Cementitious Materials: Provide Type I or II Cement per ASTM C150 (Type III OK for Precast) or Type IL Blended Hydraulic Cement per ASTM C595. Cementitious materials for use in concrete exposed to soil or weather must meet or exceed the S1 exposure class per ACI 318-14 Table 19.3.2.1.
- Fly Ash: Class F per ASTM C618.
- Slag: GGBF Slag per ASTM C989, Grade 100 minimum.
- Air Entrainment: Provide air entrainment per concrete mix table +/- 1.5%, all other locations exposed to weather shall have air entrainment of 6% (+/- 1.5%).
- Typical Reinforcing Steel: ASTM A615, Grade 60

3 SPLICES: All reinforcing steel lap splices are to be per typical schedule unless noted otherwise. All welded wire reinforcement lap slices shall be the greater of one space plus 2 inches or 6 inches, unless otherwise noted.

4 CONTINUITY: Horizontal reinforcing steel in walls and wall footings shall be continuous around corners, same size and spacing. At intersections of walls or footings, extend all bars as far as possible into continuous element and terminate with standard hook.

5 CLEAR COVER: Provide clear cover from outermost reinforcing to surface of concrete in accordance with the following:

- Elements cast against and permanently exposed to earth: 3" clr
- Elements formed and exposed to earth or weather: 2" clr (#6-#18), 1 1/2" clr (#3-#5)

6 ACCESSORIES: Provide all accessories, chairs, spacer bars and supports necessary to secure steel In accordance with ACI Code of Standard Practice.

7 CHAMFER: Chamfer all exposed corners and edges above grade per the Architect.

8 FORM STRIPPING: Do not strip forms until concrete has reached adequate strength.

9 SLEEVES / OPENINGS: Furnish and place all sleeves and openings as shown on the drawings or as specified.

10 REINFORCING FABRICATION: All reinforcing shall be shop fabricated. Exception: #3 or #4 bars may be field bent one time in any location, do not rebend or restraighten.

11 HOOKS: All hooked bars shall be a standard shop fabricated hook with bend radii and length per ACI 318, UON.

12 TESTING: Test cylinders shall be taken by qualified personnel according to ACI 318-14 Section 26.12

13 WEATHER PROVISIONS: Observe all ACI recommendations for hot or cold weather concreting cure slabs using an approved curing compound or wet cure system per ACI recommendations, with special consideration for slag and fly ash concrete as appropriate.

## -- ANCHORAGE TO CONCRETE --

1 MATERIALS (unless noted otherwise in the drawings)

- Concrete or grout must cure for a minimum of 21 days prior to drilling any holes or placing post-installed anchors.
- Anchor type shall be according to the drawings. All post-installed anchors installed in concrete shall have ICC-ES reports demonstrating IBC compliance for use in cracked concrete and for seismic loading. Substitutions not permitted without written permission by KW.
- Pre-approved Epoxy for post-installed threaded rod or reinforcing in concrete base material: HILTI HIT-RE 500 V3 or Simpson SET-3G.
- Pre-approved "Screw Anchors" in concrete base material: HILTI HUS-EZ or Simpson Titen HD or DEWALT/Powers Screw-Bolt+.
- Post-installed or Cast-in-Place Threaded Rod (Anchor): ASTM A36
- Post-installed Reinforcing: ASTM A615 Grade 60

2 EMBEDMENT: Anchor embedment in base material shall be per the drawings, which shall govern over the typical values shown below. Where not otherwise indicated, provide embedment as follows:

## -- ANCHORAGE TO CONCRETE --

- Epoxy to Concrete: Min Embed = 12 x (Rod/Bar Ø) for 5/8"Ø (#5) or smaller, 14 x (Rod/Bar Ø) for 3/4"Ø (#6) or larger
- Screw Anchor to Concrete: Min Embed = 9 x (Anchor Ø)
- Cast-In-Place Anchor: Min Embed = 7" to top of embedded washer or hook

3 INSTALLATION: Post-installed anchor hole diameter, drilling depth, cleaning and installation procedure shall be in accordance with the current Manufacturer's Printed Installation Instructions (MPII) provided in the ICC/ES report. Holes shall be drilled with rotohammer equipment. Core-drilled holes are not permitted unless specifically noted otherwise.

4 COLD-WEATHER INSTALLATION: Do not use epoxy or adhesive anchors outside of their rated temperature range. Contact the Structural Engineer for alternate if the base material temperature may be less than 40 degrees during installation or curing.

5 CAST-IN-PLACE ANCHORS: Cast-in-place anchors shall have nut and washer at embedded end, UON. Anchors shall be affixed to the form to prevent movement during pouring, vibration, or set-up and shall not be "stabbed" into wet concrete or grout. Verify adequate length of exposed thread to fully engage all attached work.

6 FINISHES: All anchors used at exterior, or where subject to moisture, or where in contact with pressure treated wood, shall be hot-dip galvanized per ASTM A153 or stainless steel, including matching washers and nuts.

7 REINFORCEMENT LOCATIONS: All post-installed anchors shall be located to avoid drilling into reinforcement, unless specifically approved by the Engineer. Reinforcement shall be placed with consideration for locations of post-installed anchors. Do not damage reinforcing during drilling operations.

## -- STRUCTURAL STEEL --

1 REFERENCED STANDARDS: Fabrication, erection and dimensional tolerances of structural steel members shall be in accordance with AISC 303-16 "Code of Standard Practice for Steel Buildings and Bridges" and ASTM A6.

2 MATERIALS (unless otherwise noted on drawings)

- Wide Flange and WT shapes: ASTM A992, fy=50 ksi.
- Hollow Structural Sections (HSS): A500 Grade B, Rectangular fy=46 ksi, Round fy=42 ksi.
- Bolts: A325(-X or -N or -SC per details) Type 1 high strength bolts with A563 nuts and F436 washers unless noted otherwise.
- Welding Electrodes: E70XX
- Anchor Rods: ASTM F1554 Grade 36
- Headed Studs: ASTM A108 Grade 1010 - 1020 (Type 2, Fu=60 ksi min)
- Angles / Channels / Plates / Rods / Miscellaneous: ASTM A36

3 WELDING: All welding to be performed by qualified welders and shall conform to A.W.S. D1.1.

4 GALVANIZING: All steel elements and fasteners exposed to the exterior shall be hot-dip galvanized in accordance with ASTM A153/A123, except where a suitable exterior-grade paint system is indicated by the Architect.

5 GALVANIZING REPAIR: Repair all damage to hot-dip galvanized coating by hot-stick or high-zinc paint method in accordance with ASTM A780. Where welding of galvanized steel is required, all galvanizing on the area of steel to be welded, plus 3/4-inch each side of the welded area, shall be ground off prior to welding; affected area shall be repaired per ASTM A780.

6 PRIMING: All structural steel and miscellaneous metals shall be prime painted with minimum one (1) shop coat of primer (zinc-rich primer at exterior applications), except where hot-dip galvanized or specified otherwise by the architect. Touch up all disturbed areas.

7 PAINT SYSTEM: Paint system, where required, shall be per the Architect. Touch up all disturbed areas.

8 ERECTION: Contractor shall comply with all current OSHA/WISHA requirements concerning steel erection. This may require additional bolts, shims, guys, bracing, and other elements that are not detailed in the Contract Documents but remain the Contractor's responsibility to implement.

9 BOLT SPECIFICATION: All bolted connections shall conform to the current "RCSC Specification for Structural Joints Using High-Strength Bolts". "-SC" bolts shall be approved twist-off tension-control type per ASTM F1852 or shall utilize compressible-washer-type direct tension indicators per ASTM F959.

10 BOLT INSTALLATION: Bolts shall be snug-tightened (-ST) unless noted as "-SC". "-ST" bolts shall be tightened as needed to bring all plies of the connection into firm contact, achieved by a few impacts of an impact wrench or the full effort of an iron worker using an ordinary spud wrench. "-SC" bolts shall be pretensioned with Class A faying surfaces per the RCSC Spec.

11 BOLT HOLES: Bolt holes in steel shall be 1/16" larger than bolt diameter, except where specifically detailed otherwise.

12 GROUT: Grout for baseplates, sleeves, and embedded steel shall be an approved nonshrink cementitious grout containing natural aggregates delivered to the job site in factory prepackaged containers requiring only the addition of water. The minimum 28-day compressive strength shall be at least 1000 psi higher than the supporting concrete strength, UON. Grout shall be mixed, applied, and cured strictly in accordance with the manufacturer's printed instructions. For grouting under base plates, grout shall be proportioned as a flowable mix. When a flowable mix does not provide the required strength, an epoxy grout shall be used. Grout thickness shall be per the typical details.

## -- WOOD FRAMING --

1 REFERENCED STANDARD: All work shall conform to 2018 IBC unless otherwise indicated.

2 MATERIALS (unless otherwise noted in the drawings)

- Solid Sawn Studs: Hem Fir #2
- Sills / Plates: Equal to stud grade
- Glulam (GLB): 24F-V4 (1.8E) per AITC 117
- Blocking / Bridging: Hem Fir 'Stud'
- Heavy Timber Decking: Doug Fir 'Select' T&G per AITC 112
- Bolts / Lags: ASTM A36 or A307, hex-head, washer under head & nut

3 MOISTURE CONTENT: All sawn lumber, including heavy timber, shall be kiln-dried to a maximum moisture content of 19%. For pressure-treated framing, kiln-drying shall occur after treatment.

4 NAILS: Nail sizes shown are 'common' (not 'box') uon. 8d = 0.131"x2.5", 10d = 0.148"x3", 12d = 0.148"x3.25", 16d = 0.162"x3.5". Typical nailing not otherwise shown in the drawings shall be per IBC Table 2304.10.1. Where nailing occurs in two or more rows, the on-center spacing indicated in the drawings shall be for each row. Where on-center nail spacing for a single row is less than 6" (for 12d and larger) or less than 4" (for 10d and smaller), stagger each row of nails into two rows offset by 1/2" min. All nails shall maintain 3/8" min to framing or sheathing edges.

## -- WOOD FRAMING --

5 HOLES: Bolt holes in wood for through-bolt connections shall equal bolt diameter plus 1/16" maximum, 1/32" minimum. Bolt holes in steel fixtures shall be per the steel section of these notes. Wood screws and lag screws (lag bolts) shall be hex head and shall have predrilled pilot holes equal to approximately 60% of the fastener diameter (70% for 7/8" and larger lag screws) and shall be installed by turning; do not hammer into hole. Soap lubrication on threads is acceptable. Provide cut washer beneath all hex heads and nuts uon.

6 SPLITTING: Though very tight nail and screw spacings are used in some locations on this project, splitting of wood members by driving nails or screws is not acceptable. If splitting occurs, or if splitting may occur as wood dries in place, predrill all holes as required to approximately 60% of the nail or screw diameter. Omission of predrilling for fasteners is at the Contractor's sole risk, and as such, all split members shall be replaced at the Contractor's sole expense.

7 ALTERATIONS: Do not any structural wood members. See typical detail for allowable hole locations and sizes (for mechanical or electrical utility passage).

8 STUD WALLS: All stud walls shown on the structural plans are structural walls and shall be constructed per the structural notes and details of these drawings. Typical structural walls are 2x6@16" on center, unless noted otherwise. Wall callouts (such as "WL-D2") shall apply to the entire wall line at which the callout occurs, uon. Typical structural walls are constructed with single sill and double top plate. Continue multiple stud and solid sawn posts and jambs in walls from level indicated down to the foundation, including same size or equiv holdown at each level below. Note that posts and multiple studs and jambs indicated on an upper level are not always indicated on the level below, but shall be provided (as desribed above) regardless.

9 STUD WALL BRACING: All bearing walls rely on GWB and/or sheathing to brace the studs against buckling. Where GWB or sheathing is not provided on at least one face of studs, provide full depth blocking at 4'-0" max on-center in each stud bay, in addition to diagonal bracing for full length of wall (Simpson WB in "X"-configuration at approximately 45-deg, install per catalog, typ uon).

10 SISTERING (BUILT-UP MULTIPLE STUDS AND BLOCKING): Where multiple 2x studs or blocking occur, each added ply after the first shall be sistered to the previous plies by face nailing. At shearwalls, sistering nails for studs or blocking shall be 0.148"x3" at spacing equal to 'EN' per schedule. At non-shearwall multiple studs, sistering nails shall be 0.148"x3" at 12" on-center, uon. Sistering nails shall be staggered in all instances.

11 CONNECTORS: Connectors and/or fasteners called out by letters & numbers in the drawings shall be manufactured by Simpson Strong-Tie, or approved equal. All connecting hardware shall be installed per the Manufacturer's recommendations and requirements, as per current catalog and related publications. Fill all fastener holes with the fastener type (diameter and length) indicated by the Manufacturer, uon. Where light-gage connector occurs at steel column, weld 1/8" all-around, uon.

12 HEAVY TIMBER DECKING: Decking shall be 2x6 nominal in accordance with AITC 112. Layup shall be "simple span" with splices and ends occurring only over supports (no visible splices). Cantilevered decking shall be continuous one piece with backspan equal or greater than two times the cantilever length. Fasten per the details; predrill to avoid splitting and countersink heads flush if required. Nails of ply sheathing above T&G shall be 8d (1-1/2" max); care shall be taken to not overdrive nails and no penetrations of the visible lower deck surface will be permitted.

13 PRESSURE TREATMENT: Except where specifically noted otherwise, the following member types shall be pressure treated in accordance with the following guidelines, in addition to any such members noted in the plans or details. Minimum treatment retention shall be as recommended by AWPA for the "Use Category" appropriate to each application. Treatment shall be non-ammonia formulation in all cases.

- Lumber exposed to exterior, humidity, or within 8" of soil): AWPA C2
- Lumber directly against concrete or masonry: AWPA C31
- Borate-treated lumber is acceptable in locations where protected from rainfall or other potential repeated moisture, such as sill plates in an enclosed wall cavity and interior ledgers.

14 FIELD TREATMENT: Field treat all cuts, ends, and holes in pressure treated lumber with copper naphthenate applied per manufacturer's recommendations.

15 EXTERIOR WOOD PROTECTION: Provide flashings, sealants and finishes per the Architect in order to protect all exterior wood surfaces and post/beam ends from moisture.

16 GALVANIZING: All steel components, hardware, or fasteners for wood framing members exposed to moisture, high humidity, or in contact with pressure treated lumber shall be hot-dip galvanized per ASTM A153. Light gage connectors shall be galvanized per ASTM A653, G185 minimum (Simpson "Z-max" or approved equal). The above described galvanizing requirements specifically include, but are not limited to: nails, screws, bolts, washers, nuts, anchor bolts, threaded rods, cast-in-place and post-installed anchors, Simpson hardware, and weldments. (Exception: not required for SBX/DOT borate-treated wood protected from weather.)

17 MEMBRANE PROTECTION: Where specified steel hardware in contact with pressure treated wood is unavailable in HDG or G185 finish, Grace Vycor (or approved eq) membrane shall be placed per manufacturer's recommendations to isolate the hardware from the treated wood. HDG fasteners shall be used in such instances.

18 SHEATHING: Place roof and floor sheathing with face grain oriented in the direction of span. Offset adjacent rows of sheathing panels by 24" minimum, with all panel ends bearing on joists, beams, trusses or walls. Place cants or crickets over continuous basic roof sheathing with drilled vent holes per the Architect. Install wall sheathing in either the horizontal or up-right orientation. Adjust all sheathing layouts so that no panel is less than 24" in length or width. Where edges are not required to be blocked per schedule, provide Simpson PSCA clips at spacing per catalog recommendation. All sheathing shall be APA rated, with type/blocking/fastening per the following schedule. Provide 1/8" gaps between abutting sheet edges, typical.

19 SHEATHING FASTENING: Minimum nailing per the following schedule shall apply at all locations, except where larger nails and/or smaller spacing are required by plans or details. Shearwall nailing is shown by schedule on the plans. Where "boundary nailing" (BN) and/or "edge nailing" (EN) are referenced in these drawings, panel edge values per the schedule shall apply. Blocking for edges shall be 2x4 flat, minimum, unless a greater size is required to avoid splitting. See plans for zones of special nailing requirements.

**-- WOOD SHEATHING SCHEDULE --**

| USE | TYPE | BLOCK EDGES | MIN EDGE NAILING | MIN FIELD NAILING |
|---|---|---|---|---|
| Walls | 15/32" PLY OR OSB | No | 8d @ 6" | 8d @ 12" |
| Bridge Roof | 3/8" PLY | No | 8d @ 6" (BN) | 8d @ 12" |

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BID SET

Revision Schedule

| Date | No. | Description |
|---|---|---|
| 24-Aug-2023 | 1 | Bid Set |

Verify Scale:
Enclosing box measures 1/2 inch tall x 2 1/2 inch wide when drawings are printed at full scale.

Sudden Valley Barn 8

Sudden Valley, WA

STRUCTURAL NOTES

JOB No: 22166
DATE: 12-JUNE-2023
DRAWN BY: THeidersdorf
CHECKED BY: QHanks

SHEET: S1.1

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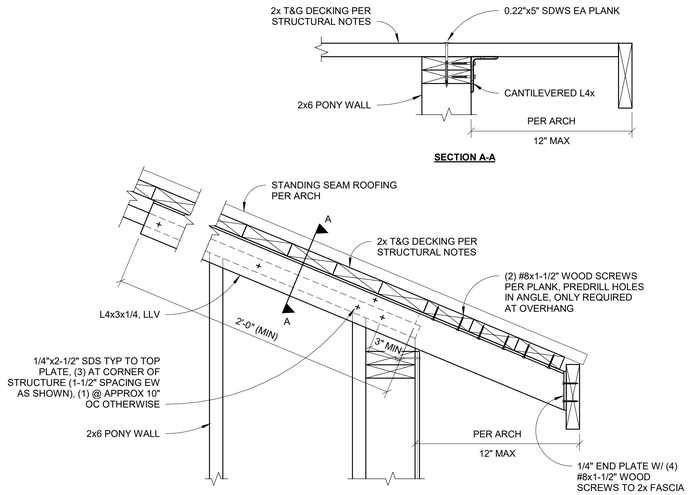
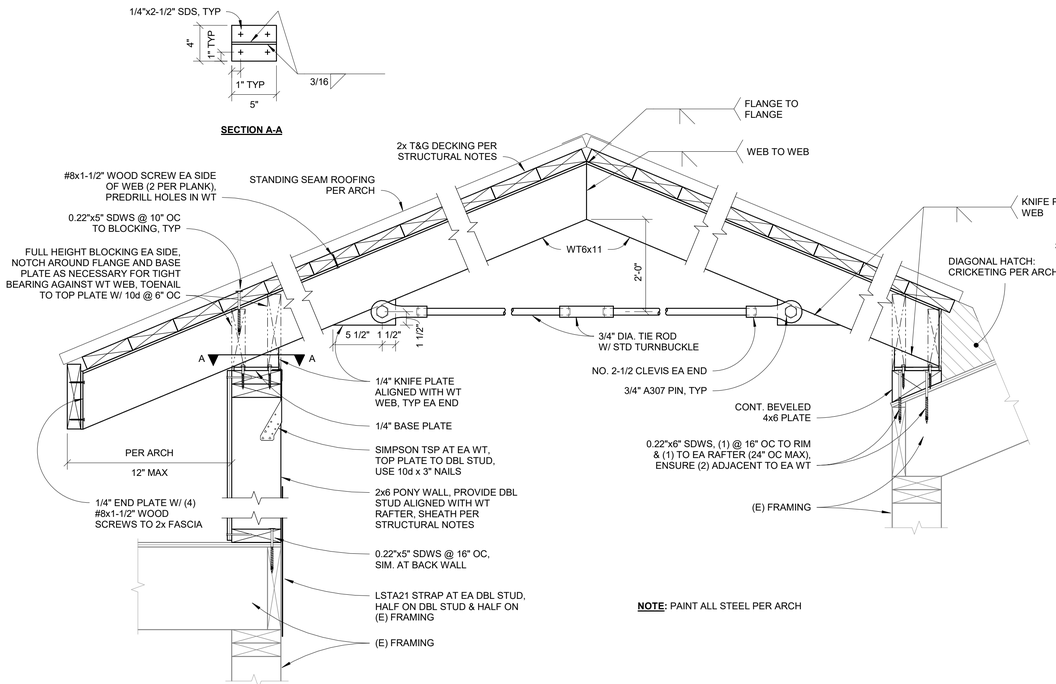
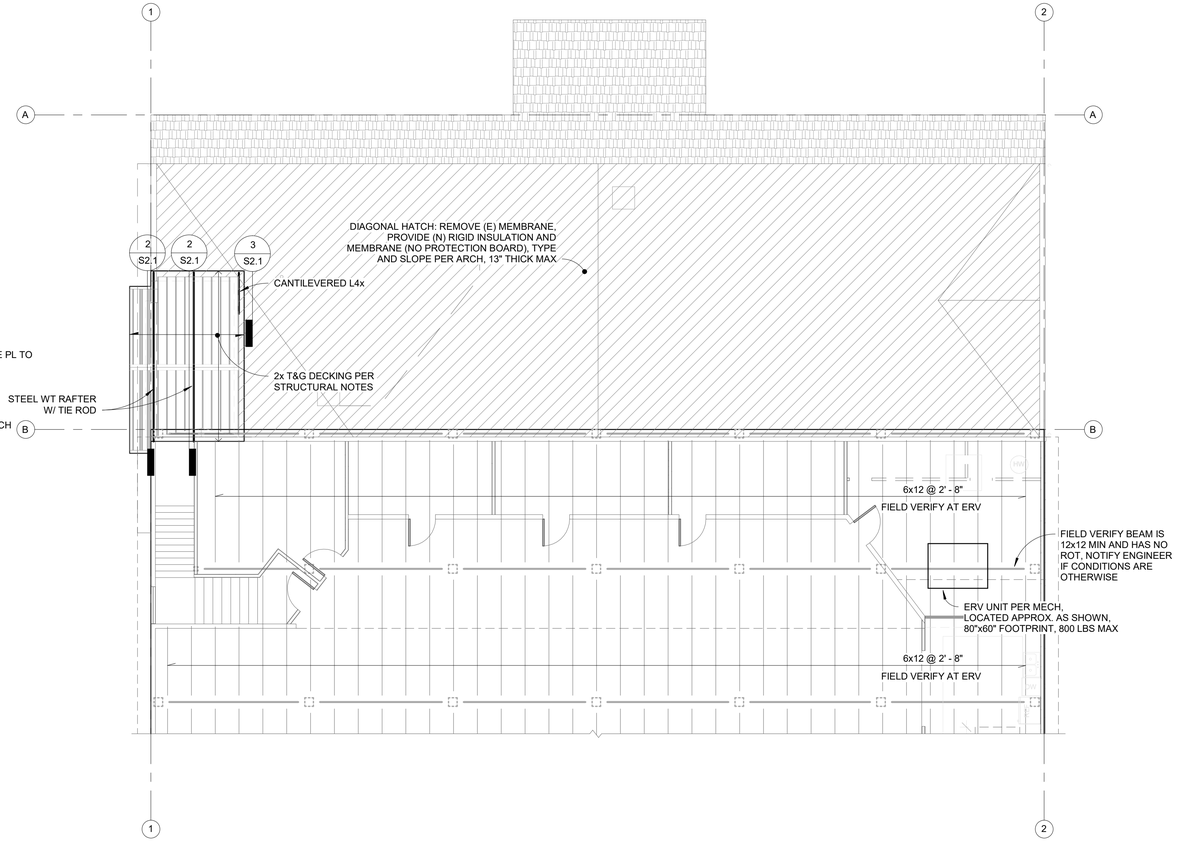



3 COVERED ENTRY CORNER
1 1/2" = 1'-0"




2 COVERED ENTRY SECTION
1 1/2" = 1'-0"




1 LOW ROOF / UPPER FLOOR FRAMING PLAN
1/8" = 1'-0"


BID SET

Revision Schedule

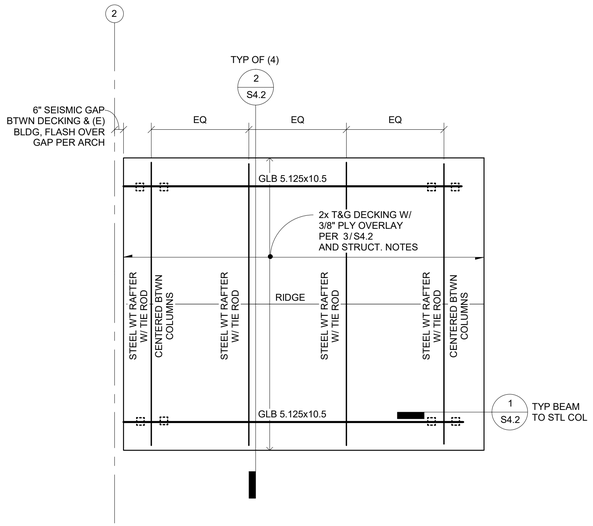
| Date | No. | Description |
|---|---|---|
| 24-Aug-2023 | 1 | Bid Set |

Verify Scale:
Enclosing box measures 1/2 inch tall x 2 1/2 inch wide when drawings are printed at full scale.

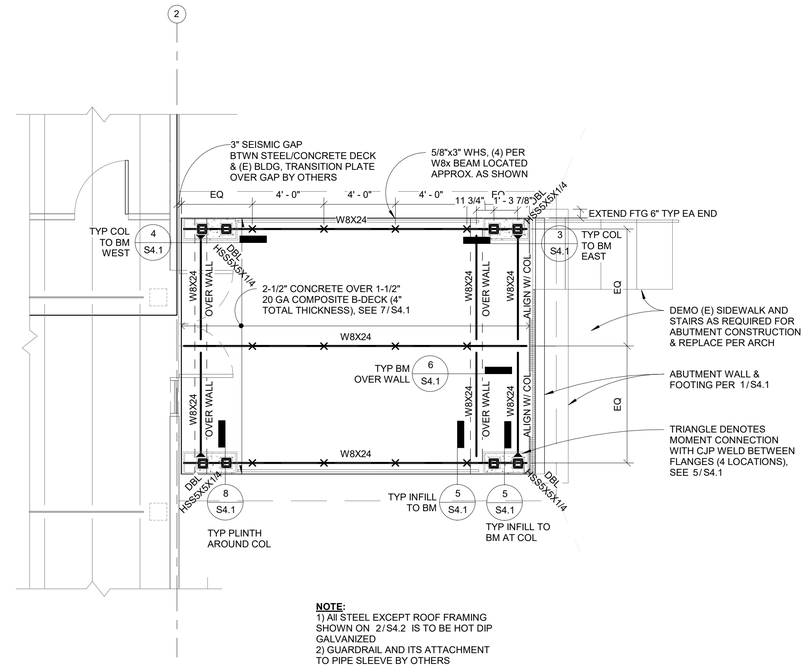
Sudden Valley Barn 8
Sudden Valley, WA
LOW ROOF & UPPER FLOOR FRAMING PLAN

JOB No: 22166
DATE: 27-JAN-23
DRAWN BY: THeidersdorf
CHECKED BY: QHanks

SHEET: S2.1

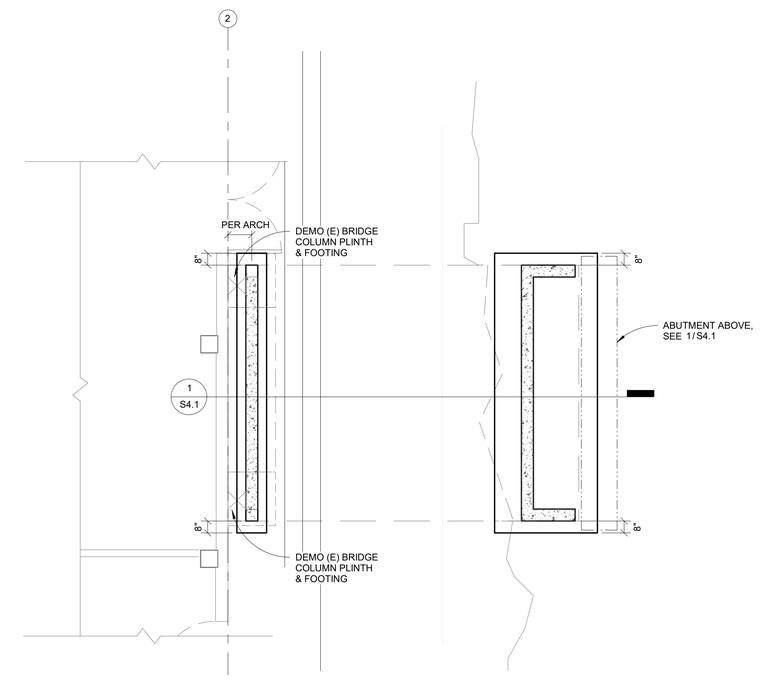



3 ROOF FRAMING PLAN
1/4" = 1'-0"




**NOTE:**
1) All STEEL EXCEPT ROOF FRAMING SHOWN ON 2/S4.2 IS TO BE HOT DIP GALVANIZED
2) GUARDRAIL AND ITS ATTACHMENT TO PIPE SLEEVE BY OTHERS

2 UPPER FLOOR FRAMING PLAN
1/4" = 1'-0"




1 FOUNDATION & MAIN FLOOR FRAMING PLAN
1/4" = 1'-0"

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Revision Schedule

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| 24-Aug-2023 | 1 | Bid Set |

Verify Scale:
Enclosing box measures 1/2 inch tall x 2 1/2 inch wide when drawings are printed at full scale.

Sudden Valley Barn 8
Sudden Valley, WA
PEDESTRIAN BRIDGE FRAMING PLANS

| | |
|---|---|
| JOB No: | 22166 |
| DATE: | 12-JUNE-2023 |
| DRAWN BY: | THeidersdorf |
| CHECKED BY: | QHanks |

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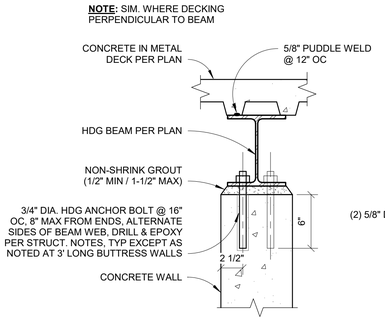
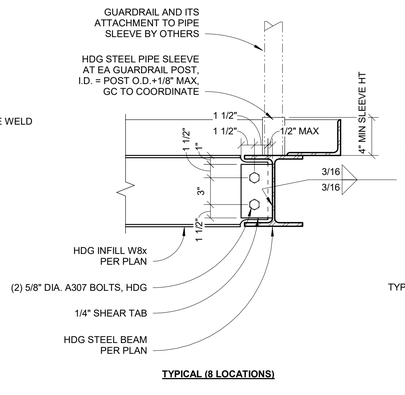
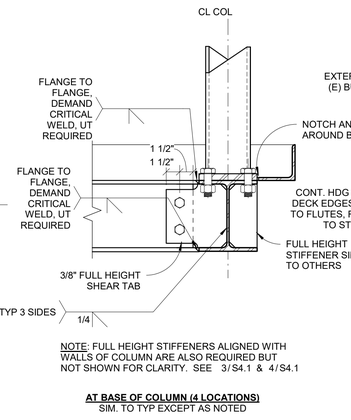



6 TYP STEEL BEAM OVER CONCRETE WALL
1 1/2" = 1'-0"




**TYPICAL (8 LOCATIONS)**

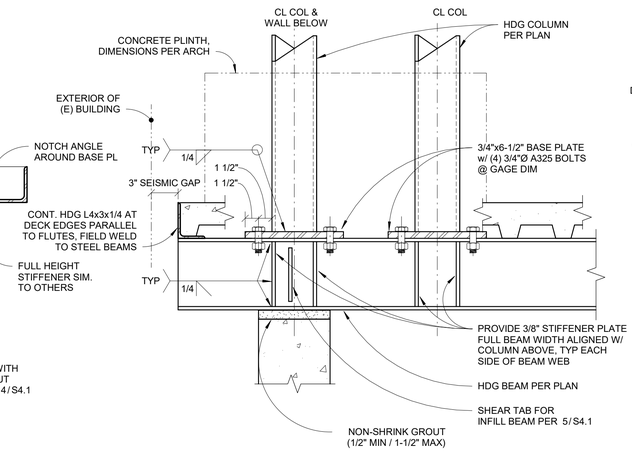
5 TYP STEEL BEAM TO STEEL BEAM
1 1/2" = 1'-0"



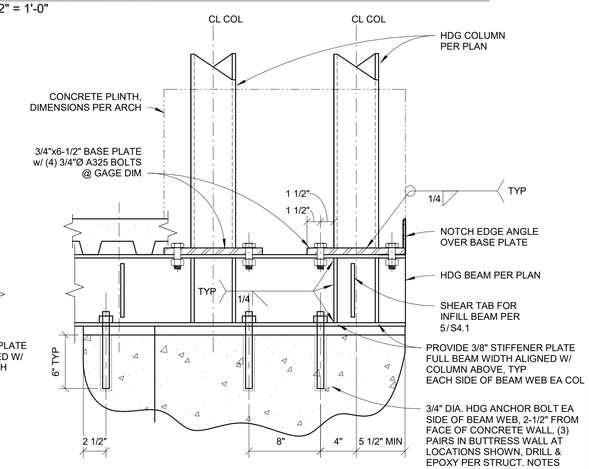

NOTE: FULL HEIGHT STIFFENERS ALIGNED WITH WALLS OF COLUMN ARE ALSO REQUIRED BUT NOT SHOWN FOR CLARITY. SEE 3/S4.1 & 4/S4.1

**AT BASE OF COLUMN (4 LOCATIONS)**
SIM. TO TYP EXCEPT AS NOTED

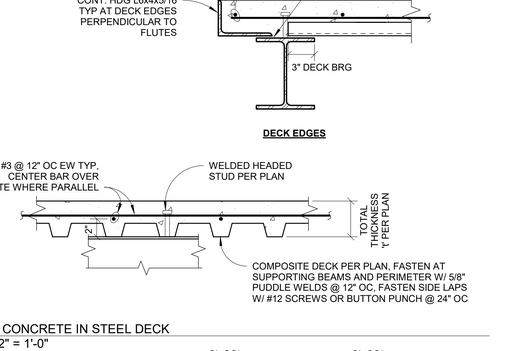
8 TYP CONCRETE PLINTH AROUND STEEL COLUMN
1 1/2" = 1'-0"




4 TYP COLUMN TO BEAM BELOW - WEST
1 1/2" = 1'-0"



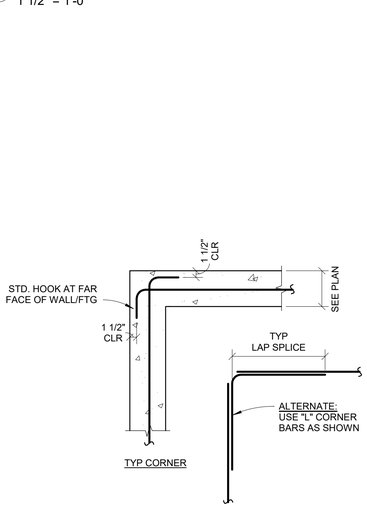

3 TYP COLUMN TO BEAM BELOW - EAST
1 1/2" = 1'-0"




**DECK EDGES**



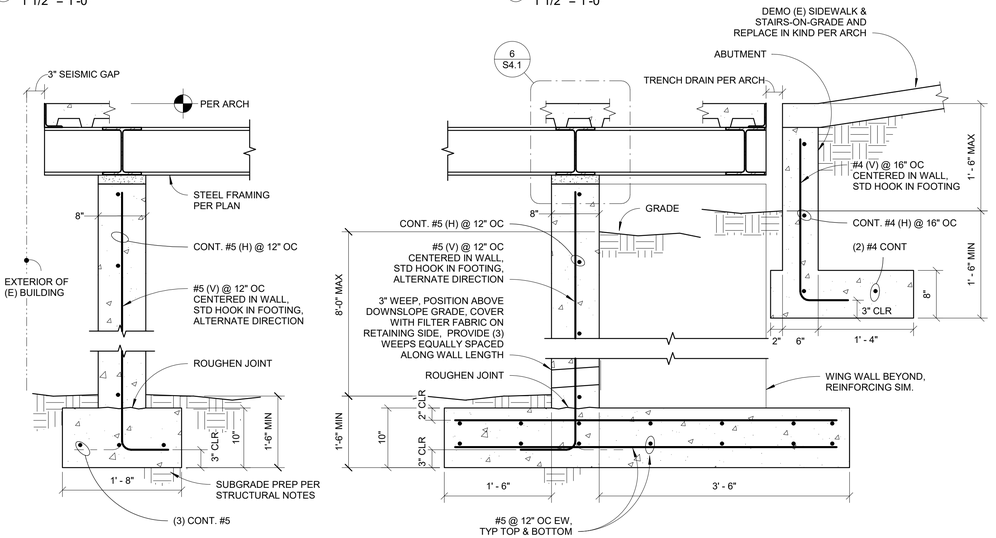

7 TYP CONCRETE IN STEEL DECK
1 1/2" = 1'-0"




2 TYP CONCRETE REINFORCING
3/4" = 1'-0"

| TYP REINF DEVELOPMENT / LAP SPLICE LENGTHS | | |
|---|---|---|
| BAR SIZE | TOP | OTHER |
| #3 | 17 IN. | 13 IN. |
| #4 | 23 IN. | 18 IN. |
| #5 | 28 IN. | 22 IN. |

DEVELOPMENT / LAP SPLICE NOTES:
1. TENSION DEVELOPMENT LENGTH AND LAP SPLICE LENGTHS ARE CALCULATED PER ACI 318.
2. BAR c. - c. SPACING MUST BE 6" OR GREATER WITH 1-1/2" MIN. COVER.
3. "TOP" BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 12 INCHES OF FRESH CONCRETE CAST BELOW THE BARS.




1 FOUNDATION WALL SECTION
1" = 1'-0"

BID SET

Revision Schedule

| Date | No. | Description |
|---|---|---|
| 24-Aug-2023 | 1 | Bid Set |

Verify Scale:
Enclosing box measures 1/2 inch tall x 2 1/2 inch wide when drawings are printed at full scale.

Sudden Valley Barn 8
Sudden Valley, WA
PEDESTRIAN BRIDGE DETAILS

JOB No: 22166
DATE: 12-JUNE-2023
DRAWN BY: THeidersdorf
CHECKED BY: QHanks

SHEET: S4.1

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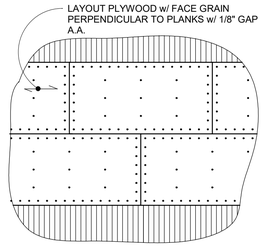
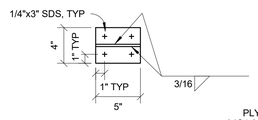


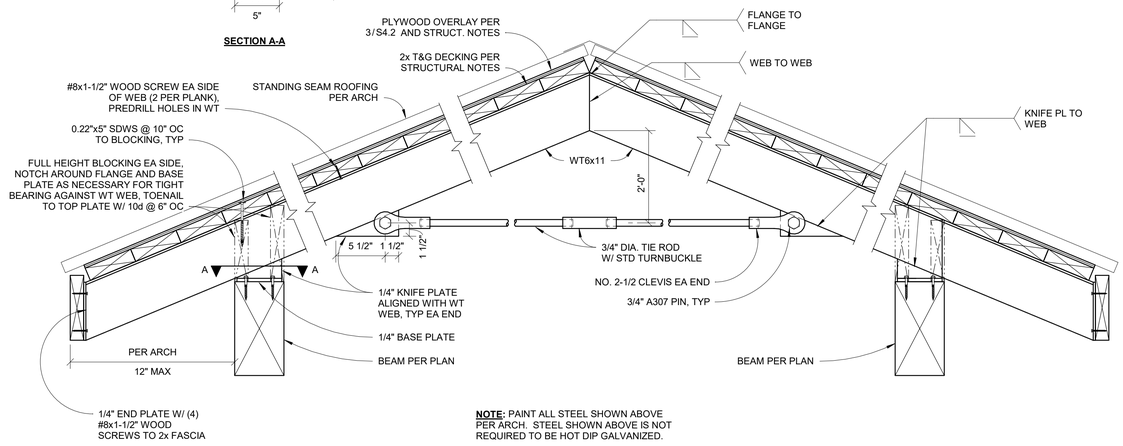

PLYWOOD OVERLAY FASTENING TO PLANKS w/ 16ga GALV 1.5" STAPLE WITH 7/16" MIN CROWN WIDTH INSTALLED WITH CROWN PARALLEL TO DIRECTION OF PLANKS

BOUNDARY (BN) SPACING: 6" OC
FIELD SPACING: 12" OC
ALONG LINES APPROX 24" OC

3 TYP FASTENING FOR PLYWOOD OVERLAY ON ROOF DECKING
1/4" = 1'-0"

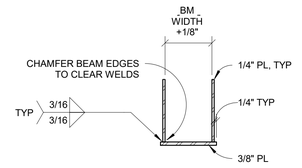



**SECTION A-A**

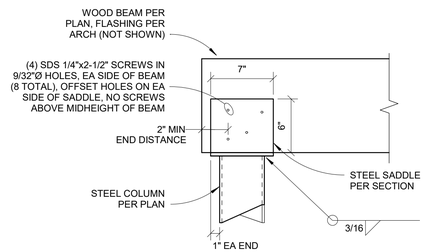



**NOTE:** PAINT ALL STEEL SHOWN ABOVE PER ARCH. STEEL SHOWN ABOVE IS NOT REQUIRED TO BE HOT DIP GALVANIZED.

2 COVERED ENTRY SECTION
1 1/2" = 1'-0"




**SADDLE SECTION**




**SINGLE BEAM END AT COLUMN**

**NOTE:** COLUMN AND SADDLE TO BE HDG

1 TYP WOOD BEAM ON STEEL COLUMN
1 1/2" = 1'-0"

BID SET

| Revision Schedule | | |
|---|---|---|
| Date | No. | Description |
| 24-Aug-2023 | 1 | Bid Set |

Verify Scale:
Enclosing box measures 1/2 inch tall x 2 1/2 inch wide when drawings are printed at full scale.

Sudden Valley Barn 8

Sudden Valley, WA

PEDESTRIAN BRIDGE ROOF DETAILS

JOB No: 22166
DATE: 12-JUNE-2023
DRAWN BY: THeidersdorf
CHECKED BY: QHanks

SHEET: S4.2

## GENERAL

NORTH ARROW

SECTION CALLOUT

DETAIL CALLOUT

POINT OF CONNECTION

REVISION NOTE

FLAG NOTE (CONSTRUCTION)

EF-3 EQUIPMENT IDENTIFIER

LIGHT LINE WEIGHT INDICATES EXISTING WORK

BOLD LINE WEIGHT INDICATES NEW WORK

LIGHT DASHED LINES INDICATE WORK TO BE ABANDONED OR REMOVED

SLASHED LINES INDICATE EXISTING WORK TO BE DEMOLISHED

## HVAC

CUBIC FEET PER MINUTE

CENTER LINE

ROUND DUCT INDICATOR

THERMOSTAT LINE

RISE DIRECTION OF RISE FOR DUCT

24x12 DUCT (FIRST FIGURE DENOTES VIEW SHOWN)

24x12 10x8 SINGLE LINE DUCTWORK INDICATES DUCT WITH VIEW DIMENSION LESS THAN 12 INCHES

SUPPLY OR EXHAUST TAKEOFF

SUPPLY DUCT TURNING TOWARD, UP

SUPPLY DUCT TURNING AWAY

EXHAUST DUCT TURNING TOWARD, UP

EXHAUST DUCT TURNING AWAY

ROUND DUCT TURNING TOWARD, UP

ROUND DUCT TURNING AWAY

CONICAL WYE

CONICAL TEE

VOLUME DAMPER(VD)

FIRE SMOKE DAMPER(FSD)

MOTORIZED DAMPER(FD)

FIRE DAMPER(FD)

3-WAY SUPPLY DIFFUSER

2-WAY SUPPLY DIFFUSER

2-WAY CORNER SUPPLY DIFFUSER

1-WAY SUPPLY DIFFUSER

DOUBLE LINE, LINED DUCT/ ACOUSTIC DUCT

SINGLE LINE, LINED DUCT/ ACOUSTIC DUCT

TV RECTANGULAR 90° ELBOW W/ TURNING VANES TYPICAL

30X20 18"ø RECTANGLE TO ROUND FITTING

SOUND ATTENUATOR

ACCESS DOORS

FLEXIBLE DUCT

T (S) THERMOSTAT OR TEMPERATURE SENSOR

T THERMOSTAT OR TEMPERATURE SENSOR(CEILING)

DSD DUCT SMOKE DETECTOR

DPT DIFFERENTIAL PRESSURE TRANSDUCER

ROUND SUPPLY AIR DIFFUSER

ROUND SUPPLY AIR DIFFUSER WITH PORTION BLANKED OFF

## HVAC (CONT.)

LINEAR SUPPLY AIR DIFFUSER

SQUARE SUPPLY AIR DIFFUSER

SQUARE RETURN AIR GRILLE

SQUARE EXHAUST AIR GRILLE

SIDEWALL SUPPLY AIR GRILLE OR REGISTER

SIDEWALL RETURN/EXHAUST AIR GRILLE OR REGISTER

AIR FLOW DIRECTION THRU DOOR GRILLE OR UNDERCUT

## ABBREVIATIONS

| | |
|---|---|
| AC | AIR CONDITIONING |
| ACF | AIR CURTAIN FAN |
| ADA | AMERICAN DISABILITIES ACT |
| AD | AREA DRAIN |
| ADJ | ADJACENT, ADJUST, ADJUSTABLE, ADJUSTMENT |
| AFF | ABOVE FINISHED FLOOR |
| AL | ACOUSTIC LINED |
| ALIGN | ALIGNMENT |
| AP | ACCESS PANEL |
| APPROX | APPROXIMATELY |
| ARCH | ARCHITECTURAL |
| ASME | AMERICAN SOCIETY OF MECHANICAL ENGINEERS |
| AVG | AVERAGE |
| BFF | BELOW FINISH FLOOR |
| BHP | BRAKE HORSEPOWER |
| BLDG | BUILDING |
| BOD | BOTTOM OF DUCT |
| BOP | BOTTOM OF PIPE |
| BPD | BACKFLOW PREVENTION DEVICE |
| BTU | BRITISH THERMAL UNIT |
| BTUH | BRITISH THERMAL UNITS PER HOUR |
| BV | BALANCING VALVE |
| CD | CEILING DIFFUSER |
| CFM | CUBIC FEET PER MINUTE |
| CG | CEILING GRILLE |
| CI | CAST IRON |
| CLG | CEILING |
| CO | CLEANOUT |
| CONN | CONNECT, CONNECTED, CONNECTION |
| CONST | CONSTRUCTION |
| CONT | CONTINUOUS, CONTINUATION |
| COORD | COORDINATE |
| CORR | CORRIDOR |
| COTG | CLEANOUT TO GRADE |
| CU FT | CUBIC FEET |
| CU IN | CUBIC INCHES |
| CW | COLD WATER |
| DB | DRY BULB TEMPERATURE |
| DCV | DEMAND CONTROL VENTILATION |
| DCVA | DOUBLE CHECK VALVE ASSEMBLY |
| DEG | DEGREE |
| DET | DETAIL |
| DFU | DRAINAGE FIXTURE UNIT |
| DIA | DIAMETER |
| DIFF | DIFFERENTIAL, DIFFERENT, DIFFUSER |
| DIM | DIMENSION |
| DISCH | DISCHARGE |
| DN | DOWN |
| DOM | DOMESTIC |
| DR | DRAIN |
| DS | DOWNSPOUT |
| DSD | DUCT SMOKE DETECTOR |
| DWG | DRAWING |
| EA | EACH |
| EAT | ENTERING AIR TEMPERATURE |
| EF | EXHAUST FAN |
| EFF | EFFICIENCY |
| EG | EXHAUST GRILLE |
| ELECT | ELECTRICAL |
| ELEV | ELEVATION |
| EMERG | EMERGENCY |
| ENT | ENTERING |
| EXH | EXHAUST |
| EXIST | EXISTING |
| EXP | EXPANSION |
| F | FAHRENHEIT |
| FC | FANCOIL |
| FCO | FLOOR CLEANOUT |
| FD | FIRE DAMPER, FLOOR DRAIN |
| FDC | FIRE DEPARTMENT CONNECTION |
| FIO | FURNISHED AND INSTALLED BY OWNER |
| FLA | FULL LOAD AMP |
| FLEX | FLEXIBLE |
| FLR | FLOOR |
| FOB | FLAT ON BOTTOM |
| FOIC | FURNISHED BY OWNER INSTALLED BY CONTRACTOR |
| FOT | FLAT ON TOP |
| FPM | FEET PER MINUTE |
| FPS | FEET PER SECOND |
| FSD | FIRE SMOKE DAMPER |
| FT | FOOT, FEET |
| FU | FIXTURE UNITS |
| G | GAS |
| GA | GAGE |
| GAL | GALLON |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GEN | GENERAL |
| GND | GROUND |
| GPH | GALLONS PER HOUR |
| GPM | GALLONS PER MINUTE |
| GW | GREASE WASTE |
| H | HEIGHT, HIGH |
| HB | HOSE BIBB |
| HP | HORSEPOWER |
| HR | HOUR |
| HTG | HEATING |
| HVAC | HEATING VENTILATING AND AIR CONDITIONING |
| HW | HOT WATER |
| HWC | HOT WATER CIRCULATING |
| HWR | HOT WATER HEATING RETURN |
| HWS | HOT WATER HEATING SUPPLY |
| HZ | HERTZ |

## ABBREVIATIONS (CONT.)

| | |
|---|---|
| IBC | INTERNATIONAL BUILDING CODE |
| ID | INDIRECT DRAIN |
| IE | INVERT ELEVATION |
| IMC | INTERNATIONAL MECHANICAL CODE |
| IN | INCH |
| INSUL | INSULATE, INSULATION |
| IW | INDIRECT WASTE |
| KW | KILOWATT |
| KWH | KILOWATT HOUR |
| L | LENGTH |
| LAV | LAVATORY |
| LAT | LEAVING AIR TEMPERATURE |
| LBS | POUNDS |
| LF | LINEAL FOOT |
| LVG | LEAVING |
| MA | MIXED AIR |
| MAX | MAXIMUM |
| MBH, MBTU | THOUSAND BRITISH THERMAL UNITS PER HOUR |
| MCA | MINIMUM CIRCUIT AMPACITY |
| MCC | MOTOR CONTROL CENTER |
| MD | MOTORIZED DAMPER |
| MECH | MECHANICAL |
| MFR | MANUFACTURER |
| MIN | MINIMUM, MINUTE |
| MISC | MISCELLANEOUS |
| MOD | MOTOR OPERATED DAMPER |
| MTD | MOUNTED |
| MTG | MOUNTING |
| NA | NOT APPLICABLE |
| NC | NOISE CRITERIA |
| NIC | NOT IN CONTRACT |
| NTS | NOT TO SCALE |
| OAC | OUTDOOR AIR CONDITIONER |
| OAT | OUTSIDE AIR TEMPERATURE |
| OD | OUTSIDE DIAMETER, OVERALL DIAMETER |
| OH | OVERHEAD |
| ORD | OVERFLOW ROOF DRAIN |
| OSA | OUTSIDE AIR |
| P | PUMP |
| PD | PRESSURE DROP, PIT DRAIN |
| PH | PHASE |
| POC | POINT OF CONNECTION |
| PRELIM | PRELIMINARY |
| PRESS | PRESSURE |
| PRV | PRESSURE REDUCING VALVE |
| PSI | POUNDS PER SQUARE INCH |
| PSIG | POUNDS PER SQUARE INCH GAGE |
| RA | RETURN AIR |
| RD | ROOF DRAIN |
| RECIRC | RECIRCULATING |
| RECT | RECTANGULAR |
| REF | REFERENCE |
| REG | REGULATOR |
| REQD | REQUIRED |
| RND | ROUND |
| RPBP | REDUCED PRESSURE BACKFLOW PREVENTER |
| RPM | REVOLUTIONS PER MINUTE |
| RV | RELIEF VALVE |
| SAN | SANITARY |
| SCHED | SCHEDULE |
| SD | SUPPLY DIFFUSER |
| SF | SUPPLY FAN, SQUARE FEET |
| SG | SUPPLY GRILLE |
| SO | SCREENED OPENING |
| SOV | SHUT OFF VALVE |
| SP | STATIC PRESSURE |
| SPEC | SPECIFICATION |
| SPECD | SPECIFIED |
| SST | STAINLESS STEEL |
| SS | SOIL STACK, SANITARY SEWER |
| STRUCT | STRUCTURAL |
| SWG | SUPPLY WALL GRILLE |
| SWR | SUPPLY WALL REGISTER |
| TBD | TO BE DETERMINED |
| TEMP | TEMPERATURE, TEMPORARY |
| TSTAT | THERMOSTAT |
| THRU | THROUGH |
| TOD | TOP OF DUCT |
| TOP | TOP OF PIPE |
| TP | TRAP PRIMER |
| TS | TEMPERATURE SENSOR |
| TV | TURNING VANE |
| TW | TEMPERED WATER |
| TWR | TEMPERED WATER RECIRCULATE |
| TYP | TYPICAL |
| UPC | UNIFORM PLUMBING CODE |
| UTR | UP THRU ROOF |
| V | VENT |
| VAV | VARIABLE AIR VOLUME |
| VB | VACUUM BREAKER |
| VD | VOLUME DAMPER |
| VEL | VELOCITY |
| VERT | VERTICAL |
| VOL | VOLUME |
| VS | VENT STACK |
| VTR | VENT TO ROOF |
| W | WASTE |
| WCO | WALL CLEAN OUT |
| WB | WET BULB TEMPERATURE |
| WEF | WALL EXHAUST FAN |
| WG | WATER GAGE |
| WHA | WATER HAMMER ARRESTOR |
| W/ | WITH |
| W/O | WITHOUT |
| WS | WASTE STACK |
| WT | WEIGHT |
| WSFU | WATER SUPPLY FIXTURE UNIT |

## DRAWING LIST



## GENERAL NOTES:

1. COMPLETE INSTALLATION OF THE MECHANICAL SYSTEM SHALL BE PER THE LATEST ADOPTED VERSION OF INTERNATIONAL BUILDING CODE (IBC), INTERNATIONAL MECHANICAL CODE (IMC), WASHINGTON STATE ENERGY CODE (WSEC), UNIFORM PLUMBING CODE (UPC), INTERNATIONAL FUEL GAS CODE (IFGC), INTERNATIONAL FIRE CODE (IFC), NFPA AND HEALTH CODES AND REGULATIONS AS ADOPTED BY THE LOCAL JURISDICTIONS.
2. CONTRACTOR SHALL COORDINATE DIFFUSER, GRILLE AND REGISTER LOCATIONS AND DUCT ROUTING CLEARANCES WITH THE STRUCTURAL, REFLECTED CEILING AND LIGHTING PLANS.
3. MAKE ACCEPTABLE ACCESS PROVISIONS FOR REMOVAL OF FILTER AND MAINTENANCE FOR ALL INDOOR UNITS. REFER TO MANUFACTURER'S INSTALLATION GUIDE.
4. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE.
5. WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR.
6. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE DOCUMENTS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
7. ALL GAS EQUIPMENT SHALL BE INSTALLED PER THEIR LISTINGS, IMC, UPC, IFGC AND LOCAL CODES.
8. ALL ROOF PENETRATIONS SHALL BE MINIMUM OF 5 FEET AWAY FROM THE AREA/OCCUPATION SEPARATION WALLS. ALL PIPE, DUCT AND CONDUIT PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRE AND SMOKE STOPPED PER CODE.
9. ALL EQUIPMENT, DAMPERS, PIPING, AND ACCESSORIES IN CONCEALED SPACES REQUIRING ACCESS SHALL HAVE ACCESS DOORS. ALL ACCESS DOORS IN FIRE RATED STRUCTURE SHALL BE FIRE RATED. COORDINATE LOCATIONS WITH ARCHITECT. CONTRACTOR TO PROVIDE ACCESS DOORS.
10. ALL EQUIPMENT SHALL BE FREE FROM DEFECTS IN MATERIAL, WORKMANSHIP, AND SHALL BE OF THE KIND AND QUALITY DESCRIBED HEREIN.
11. COORDINATE WITH THE STRUCTURAL ENGINEER AND GENERAL CONTRACTOR TO PROVIDE STRUCTURAL SUPPORT AND SEISMIC RESTRAINTS FOR ALL EQUIPMENT.
12. ALL EQUIPMENT SHALL BE APPROVED FOR INSTALLATION IN THE STATE OF WASHINGTON AND SHALL HAVE ALL CERTIFICATIONS AND RATINGS REQUIRED TO MEET ALL ENERGY, POLLUTION, ENVIRONMENTAL, SEISMIC, ETC. CODES AND REGULATIONS.
13. VERIFY ALL THE MECHANICAL EQUIPMENT'S ELECTRICAL LOADS VOLTAGE/PHASE, ETC. WITH ELECTRICAL CONTRACTOR PRIOR TO ORDERING.
14. WHERE MULTIPLE RISERS OR HORIZONTAL LOOPS ARE USED, BALANCING VALVES IN THE RETURN LINES ARE REQUIRED. A CHECK VALVE SHALL BE PROVIDED IN EACH RETURN TO PREVENT TEMPORARY REVERSAL OF FLOW.
15. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY IMC, UPC, IBC, WASHINGTON STATE ENERGY CODE AND ALL APPLICABLE LOCAL AMENDMENTS.
16. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
17. COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, ELECTRICAL WORK, ETC., SHOWN ON CONTRACT DOCUMENT DRAWINGS.
18. ALL TESTS SHALL BE COMPLETED BEFORE ANY MECHANICAL EQUIPMENT OR PIPING INSULATION IS APPLIED.
19. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). TESTING, ADJUSTING, AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THE NEBB STANDARDS. AABC ACCEPTABLE PENDING AGENCY APPROVAL.
20. WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
21. LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
22. REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.
23. AIR AND FLUID FLOW RATES SHALL BE TESTED AND BALANCED WITHIN THE TOLERANCES DEFINED IN SPECIFICATIONS OR SHOWN ON PLANS. SYSTEMS SHALL BE BALANCED IN A MANNER TO FIRST MINIMIZE THROTTLING LOSSES, THEN ADJUSTED TO MEET DESIGN FLOW CONDITIONS.
24. RECORD DRAWINGS SHALL BE PROVIDED TO THE OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE AS REQUIRED BY SECTION C103.6 OF THE WSEC. THE DRAWINGS SHALL INDICATE THE LOCATION AND PERFORMANCE DATA OF EQUIPMENT, GENERAL CONFIGURATION OF DUCTWORK AND PIPING DISTRIBUTION SYSTEMS, INCLUDING FLOW RATES AS A MINIMUM, THAT HAVE BEEN DEVIATED FROM THESE DOCUMENTS. A COMPLETE RECORD OF CHANGES SHALL BE KEPT TO DATE ON A DAILY BASIS AND MADE ACCESSIBLE TO OWNER AND ENGINEER.

## GENERAL HVAC NOTE:

1. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
2. LOCATE ALL TEMPERATURE, DEVICES IN DUCTWORK LOCATIONS WITH STRAIGHT SECTION OF DUCT UP AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
3. COORDINATE AND PROVIDE ALL DUCT TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT DIMENSIONS BEFORE FABRICATION.
4. ALL EQUIPMENT, DUCTWORK, ETC., SHALL BE SUPPORTED AS REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION, AND SEISMICALLY BRACED AS REQUIRED. PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
5. CERTAIN ITEMS SUCH AS RISES AND DROPS IN DUCTWORK, ACCESS DOORS, VOLUME DAMPERS, ETC. ARE INDICATED ON THE CONTRACT DOCUMENT DRAWINGS FOR CLARITY FOR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THESE ITEMS.
6. UNLESS OTHERWISE SHOWN, LOCATE ALL ROOM THERMOSTATS 4'-0" (CENTERLINE) ABOVE FINISHED FLOOR. NOTIFY THE ENGINEER OF ANY ROOMS WHERE THE ABOVE LOCATION CANNOT BE MAINTAINED OR WHERE THERE IS A QUESTION ON LOCATION.
7. ALL DUCTWORK SHALL CLEAR DOORS AND WINDOWS.
8. PROVIDE ALL 90 DEGREE SQUARE ELBOWS WITH DOUBLE RADIUS TURNING VANES UNLESS OTHERWISE INDICATED. PROVIDE ACCESS DOORS UPSTREAM OF ALL ELBOWS WITH TURNING VANES.
9. UNLESS OTHERWISE NOTED, ALL DUCTWORK IS OVERHEAD, TIGHT TO THE UNDERSIDE OF THE STRUCTURE (WITHIN TRUSSES), WITH SPACE FOR INSULATION IF REQUIRED.
10. MAXIMUM LENGTH OF FLEXIBLE DUCTS LOCATED ABOVE HARD CEILINGS SHALL BE AS CODE PERMITS BUT NO LONGER THAN 4 FEET.
11. ALL DUCTWORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS ,INCLUDING DIVIDED DUCTS AND TRANSITIONS AROUND OBSTRUCTIONS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.

## 2018 WASHINGTON STATE ENERGY CODE (WSEC) NOTES

1. HVAC EQUIPMENT SHALL HAVE MINIMUM PERFORMANCE AT SPECIFIED RATING CONDITIONS NOT LESS THAN THE VALUES INDICATED IN TABLE C403.3.2(1) THRU C403.3.2(12) OF THE WSEC AND AS INDICATED ON THE CONTRACT DOCUMENTS.
2. PROVIDE DEADBAND BETWEEN HEATING/COOLING SPACE SENSOR SETPOINTS OF 5 DEGREES AS REQUIRED BY SECTION C403.4.1.2 OF THE WSEC OR AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES, IF PROVIDED.
3. HVAC SYSTEMS SHALL BE EQUIPPED WITH AUTOMATIC CONTROLS CAPABLE OF ACCOMPLISHING SETBACK OR SHUTDOWN DURING UNOCCUPIED PERIODS AS REQUIRED BY SECTION C403.4.2 OF THE WSEC AND AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES, IF PROVIDED.
4. PROVIDE BALANCING DEVICES IN ALL BRANCH DUCTS AND PIPE RUNS TO TERMINAL DEVICES AS REQUIRED BY SECTION C408.2.2 AND C408.2.2.1 OF THE WSEC AND AS INDICATED ON THE CONTRACT DOCUMENTS.
5. ALL DUCTWORK SHALL COMPLY WITH SMACNA STANDARDS FOR CONSTRUCTION OF GALVANIZED DUCTWORK. ALL DUCTWORK SHALL BE SEALED AS REQUIRED BY SECTION C403.10.1 "DUCT AND PLENUM INSULATION AND SEALING" OF THE WSEC. DUCT TAPE NOT ALLOWED.
6. ALL DUCTWORK SHALL BE INSULATED AS REQUIRED BY SECTION C403.10.1 "DUCT AND PLENUM INSULATION AND SEALING" OF THE WSEC.
7. ALL PIPING SHALL BE INSULATED AS REQUIRED BY SECTION C403.10.3 OF THE WSEC.
8. HEATING AND COOLING EQUIPMENT FANS, CIRCULATION PUMPS AND TERMINAL UNIT FANS SHALL BE SHUT OFF DURING UNOCCUPIED PERIODS AS REQUIRED BY SECTION C403.3.5.2 OF THE WSEC AND AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES, IF PROVIDED.
9. SUPPLY AIR AND WATER TEMPERATURES SHALL BE AUTOMATICALLY RESET AS REQUIRED IN SECTION C403.4.4 AND C403.6.4 OF THE WSEC OR AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES, IF PROVIDED.
10. ALL AIR SYSTEMS SHALL BE PROVIDED WITH A 100% CAPABLE AIR ECONOMIZER CAPABILITY AS REQUIRED BY THE SECTION C403.5 OF THE WSEC AND AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES, IF PROVIDED.
11. AIR ECONOMIZERS SHALL BE CAPABLE OF PROVIDING PARTIAL COOLING EVEN WHEN ADDITIONAL MECHANICAL COOLING IS REQUIRED TO MEET THE REMAINDER OF THE COOLING LOAD, AS REQUIRED IN SECTION 403.5.1 OF THE WSEC.
12. SIMULTANEOUS HEATING AND COOLING TO INDIVIDUAL ZONES SHALL BE PROHIBITED AS DESCRIBED IN THE TEMPERATURE CONTROL SEQUENCES EXCEPT WHERE PERMITTED IN SECTION C403.4.1, EXCEPTIONS 1 THROUGH 3 OF THE WSEC.
13. MOTOR EFFICIENCY SHALL NOT BE LESS THAN THE MINIMUM CALLOUTS PER SECTION C405.8 OF THE WSEC FOR FULL LOAD EFFICIENCIES.
14. HVAC SYSTEMS SHALL BE BALANCED AS REQUIRED BY SECTION C408.2 OF THE WSEC.
15. OPERATION AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE OWNER AS REQUIRED BY SECTION C103.6.2 OF THE WSEC. AS A MINIMUM, THE MANUALS SHALL INCLUDE:
    - A. SUBMITTAL DATA.
    - B. OPERATION AND MAINTENANCE DATA FOR EQUIPMENT.
    - C. NAMES AND ADDRESSES OF SERVICE AGENCIES.
    - D. HVAC CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION.
16. THE MECHANICAL SYSTEM SHALL COMPLY WITH ALL THE REQUIREMENTS OF SECTION C403.6 "DEDICATED OUTDOOR AIR SYSTEMS (DOAS) OF THE WSEC.
17. IF NOT SPECIFICALLY STATED ABOVE, CONTRACTOR SHALL COMPLY WITH THE WSEC ITEMS THAT DO APPLY TO THIS PROJECT.

## APPLICABLE CODES

2018 INTERNATIONAL BUILDING CODE W/ WA STATE AMENDMENTS
2018 INTERNATIONAL MECHANICAL CODE WITH WA STATE AMENDMENTS
2018 WA STATE ENERGY CODE
2018 UNIFORM PLUMBING CODE

## GENERAL HVAC NOTES (CONT.)

12. PROVIDE ACCESS DOORS IN DUCTWORK TO PROVIDE ACCESS FOR ALL VOLUME DAMPERS AND OTHER ITEMS LOCATED IN THE DUCTWORK WHICH REQUIRE SERVICE AND/OR INSPECTION.
13. ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTIONS WITH FLEXIBLE COPPER GROUNDING GROUNDING STRAPS SHALL BE BOLTED OR SOLDERED TO BOTH THE EQUIPMENT AND THE DUCT.
14. ALL OSA, RELIEF/EXHAUST AIR, AND RETURN AIR DAMPERS SHALL BE MOTORIZED CONTROL AND SHALL HAVE A MAX LEAKAGE OF 4CFM/FT$^2$ @ 1.0"WG IN ACCORDANCE W/ AMCA 500D.ACCEPTABLE ACCESS PROVISIONS FOR REMOVAL OF FILTER AND MAINTENANCE FOR ALL INDOOR UNITS.
15. ALL AIR DISTRIBUTION SUPPLY OUTLETS AND RETURN/EXHAUST INLETS SHALL HAVE VOLUME CONTROL DEVICES.
16. ALL 90 DEGREE TRUNK DUCT ELBOWS SHALL BE SMOOTH-ROUND OR SQUARE WITH TURNING VANES.
17. CONTRACTOR SHALL LOCATE AND COORDINATE EXACT LOCATION OF DUCTWORK WITHIN THE STRUCTURE AT SITE.
18. ALL FAN SYSTEMS WITH OVER 2000 CFM SHALL HAVE SMOKE/DUCT DETECTORS TO SHUT-DOWN FAN UPON DETECTION. DUCT/SMOKE DETECTORS FURNISHED AND INSTALLED BY ELECTRICAL AND WIRED BY ELECTRICAL. DUCT/SMOKE DETECTORS SHALL BE LISTED BY AN APPROVED AGENCY AND FOR INSTALLATION IN AIR DUCTS PER IMC.
19. ALL DUCT PENETRATIONS THROUGH RATED ENCLOSURES SHALL BE FIRE DAMPERED AND/OR SMOKE DAMPERED AS REQUIRED.
20. ALL MECHANICAL HEATING AND VENTILATION EQUIPMENT SHALL CONFORM TO SMACNA, LOCAL AND STATE REGULATIONS FOR SEISMIC RESTRAINT (INCLUDING PIPING AND DUCTWORK). COORDINATE WITH STRUCTURAL.
21. ALL RECTANGULAR DUCTWORK SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS. SUPPLY AND RETURN DUCTWORK FOR HVAC TO HAVE 1" SOUNDLINING FOR THE FIRST 10 FEET FROM UNIT DISCHARGE OUTLET. ALL DUCT LINING TO MEET AND EXCEED MOLD, HUMIDITY, EROSION RESISTANT, ETC. TO MEET 1MC CHAPTER 6. ALL DUCTWORK TO BE CLASS-I AIR DUCTS. CLASS-II DUCTS SHALL NOT BE USED.
22. PROVIDE COMPLETE REFRIGERATION PIPING, INSULATION AND CONTROLS TO ALL MECHANICAL REFRIGERANT EQUIPMENT.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REVISIONS

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TITLE

**LEGENDS AND NOTES**

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| CHECKED | RR |
| DATE | 8/29/2023 |
| CADD FILE | 2022.37 M0.0.DWG |
| JOB NUMBER | 2022.37 |

BID SET 8-29-2023

**M0.0**

# MECHANICAL GENERAL PROVISIONS

PART 1 - GENERAL

1. SECTION INCLUDES
   A. BASIC GENERAL PROVISIONS SPECIFICALLY APPLICABLE TO DIVISION 23 SECTIONS, IN ADDITION TO DIVISION 1 - GENERAL REQUIREMENTS.
2. GENERAL REQUIREMENTS
   A. CONDITIONS:
      a. CONFORM TO ALL BIDDING REQUIREMENTS, GENERAL CONDITIONS AND AMENDMENTS TO THE GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS AND SPECIAL CONDITIONS AND GENERAL REQUIREMENTS, DIVISION 1, WHICH GOVERN THE WORK SPECIFIED HEREIN.
      b. THE CONTRACTOR IS OBLIGATED TO COMPLY WITH THE ABOVE IN ADDITION TO THE REQUIREMENTS OF THIS SECTION.
      c. MODIFICATIONS BY THIS SECTION DO NOT NULLIFY ANY OTHER PORTIONS OF THE ABOVE REFERENCED CONDITIONS.
   B. PLANS AND SPECIFICATIONS:
      a. PLANS AND SPECIFICATIONS SHALL BE TAKEN TOGETHER.
      b. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, MATERIALS AND WORK SHOWN ON THE PLANS AND/OR CALLED FOR IN THESE SPECIFICATIONS.
      c. PROVIDE WORK SPECIFIED AND NOT INDICATED ON PLANS, OR WORK INDICATED ON PLANS AND NOT SPECIFIED, AS THOUGH MENTIONED IN BOTH.
      d. WHEN DISCREPANCIES OCCUR BETWEEN PLANS AND SPECIFICATIONS OR WITHIN THE PLANS AND SPECIFICATIONS, THE ARCHITECT SHALL DETERMINE WHICH TAKES PRECEDENCE AND THE CONTRACTOR SHALL PERFORM THE SELECTED REQUIREMENT WITHOUT ADDITIONAL COST.
      e. MECHANICAL DRAWINGS:
         - MECHANICAL DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL ARRANGEMENT OF PIPING, DUCTWORK, EQUIPMENT, ETC. FOLLOW AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT. BECAUSE OF SMALL SCALE OF MECHANICAL DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, AND ACCESSORIES, WHICH MAY BE REQUIRED.
         - CONSIDER ARCHITECTURAL STRUCTURAL AND ELECTRICAL DRAWINGS PART OF THIS WORK INSOFAR AS THESE DRAWINGS FURNISH INFORMATION RELATING TO DESIGN AND CONSTRUCTION OF BUILDING.
         - INVESTIGATE STRUCTURAL AND FINISH CONDITIONS AFFECTING THIS WORK AND ARRANGE WORK ACCORDINGLY, PROVIDING SUCH FITTINGS, VALVES, AND ACCESSORIES REQUIRED MEETING CONDITIONS.
   C. READ AND BECOME FAMILIAR WITH BIDDING DOCUMENTS AND ALL OTHER DIVISIONS OF THIS SPECIFICATION AS THEY DO APPLY TO WORK IN DIVISION 23.
3. DEFINITIONS AND ABBREVIATIONS
   A. THE WORD "PROVIDE," AS USED IN DIVISION 23, MEANS "FURNISH AND INSTALL."
   B. THE WORD "CONTRACTOR," AS USED IN THESE SPECIFICATIONS, MEANS THE MECHANICAL CONTRACTOR.
   C. THE WORD "APPROVED," AS USED IN THESE SPECIFICATIONS, MEANS APPROVAL OF THE ARCHITECT.
   D. ABBREVIATIONS:
      - AABC - ASSOCIATED AIR BALANCE COUNCIL
      - AMCA - AIR MOVING AND CONDITIONING ASSOCIATION
      - ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE
      - AHRI - AIR CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE
      - ASHRAE - AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS
      - ASME - AMERICAN SOCIETY OF MECHANICAL ENGINEERS
      - ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS
      - AWWA - AMERICAN WATER WORKS ASSOCIATION
      - AWS - AMERICAN WELDING SOCIETY
      - CISPI - CAST IRON SOIL PIPE INSTITUTE
      - FM - FACTORY MUTUAL ENGINEERING CORPORATION
      - NEBB - NATIONAL ENVIRONMENTAL BALANCING BUREAU
      - NEC - NATIONAL ELECTRICAL CODE
      - NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
      - NFPA - NATIONAL FIRE PROTECTION ASSOCIATION
      - OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
      - SEC - SEATTLE ENERGY CODE
      - SMACNA - SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC.
      - UBC - UNIFORM BUILDING CODE
      - UPC - UNIFORM PLUMBING CODE
      - UL - UNDERWRITERS LABORATORY
      - WSEC - WASHINGTON STATE ENERGY CODE
4. CODES, PERMITS AND INSPECTIONS
   A. CODES: UNLESS OTHERWISE STATED OR SHOWN AS TO MEET OR EXCEED CODES. WORK SHALL BE INSTALLED AS A MINIMUM IN CONFORMITY WITH APPLICABLE LOCAL ORDINANCES AND STATUTES. STANDARDS AND SIZES, WHICH EXCEED PRECEDING REQUIREMENTS, SHALL BE INSTALLED AS DRAWN OR SPECIFIED. NOTHING IN THE SPECIFICATIONS SHALL BE CONSTRUED TO PERMIT DEVIATION TO LESS THAN THE REQUIREMENTS OF GOVERNING CODES.
   B. CODES AND STANDARDS: APPLICABLE CODES AND STANDARDS SHALL INCLUDE, BUT NOT NECESSARILY BE LIMITED TO:
      a. UNIFORM PLUMBING CODE, BY INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS.
      b. INTERNATIONAL MECHANICAL CODE, BY INTERNATIONAL CODE COUNCIL.
      c. INTERNATIONAL BUILDING CODE, BY INTERNATIONAL CODE COUNCIL.
      d. REQUIREMENTS OF OSHA, EPA AND WISHA.
      e. NATIONAL FIRE PROTECTION ASSOCIATION CODES.
      f. ASME CODES FOR BOILER AND PRESSURE VESSELS.
      g. SMACNA HVAC DUCT CONSTRUCTION STANDARDS, LATEST EDITION.
      h. ALL LOCAL AND STATE AMENDMENTS.
      i. REQUIREMENTS OF ALL AGENCIES HAVE JURISDICTIONAL AUTHORITY OVER INSTALLATION OF MECHANICAL SYSTEMS.
   C. AGENCIES HAVING JURISDICTIONAL AUTHORITY OVER MECHANICAL INSTALLATION.
      a. LOCAL MUNICIPAL BUILDING DEPARTMENT
      b. LOCAL SEWER AND WATER DISTRICT REQUIREMENTS
      c. STATE AND COUNTY DEPARTMENT OF HEALTH
      d. LOCAL FIRE MARSHAL
      e. STATE BOILER INSPECTOR
   D. PERMITS, FEES AND INSPECTIONS:
      a. CONTRACTOR SHALL ARRANGE AND PAY FOR ALL PERMITS, FEES AND INSPECTIONS REQUIRED IN CONNECTION WITH THIS INSTALLATION. THE CONTRACTOR SHALL PRESENT THE OWNER WITH PROPERLY SIGNED CERTIFICATES OF FINAL INSPECTION BEFORE THE WORK WILL BE ACCEPTED.
      b. CONTRACTOR SHALL CALL FOR ALL INSPECTIONS BY LOCAL BUILDING OFFICIAL(S) WHEN THEY BECOME DUE, AND SHALL NOT COVER ANY WORK UNTIL APPROVED BY THESE GOVERNING AUTHORITIES.
      c. CONTRACTOR SHALL MAKE ALL ARRANGEMENTS WITH UTILITY COMPANIES FOR WATER, STEAM, GAS AND DRAINAGE SERVICES, ETC., ASSOCIATED WITH THE WORK AND INCLUDE REQUIRED PAYMENTS FOR METERS, PIPING, SERVICES, CONNECTION CHARGES AND MATERIALS FURNISHED AND INSTALLED BY UTILITY COMPANIES. WORK AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH RULES OF RESPECTIVE AUTHORITIES.
   E. UNDERWRITERS APPROVAL: WHERE UNDERWRITERS LABORATORY STANDARDS EXIST, ALL ITEMS OF ELECTRICAL EQUIPMENT OR ITEMS PARTIALLY COMPOSED OF ELECTRICAL EQUIPMENT SHALL CARRY UNDERWRITERS' LABORATORY LABEL EITHER FOR THE ENTIRE UNIT OR FOR THE ELECTRICAL PORTION OF THE EQUIPMENT. IF STANDARDS DO NOT EXIST, EQUIPMENT WILL BE APPROVED IF THE ITEM HAS BEEN SUBMITTED TO THE TESTING LABORATORY AND THE MANUFACTURER CERTIFIES COMPLIANCE WITH UNDERWRITERS LABORATORY STANDARDS ESTABLISHED FOR SIMILAR ITEMS.
   F. ASME CODE STAMP: ASME CODE STAMP REQUIRED ON ALL PRESSURE VESSELS AND RELIEF VALVES. CERTIFICATE REQUIRED FROM THE STATE BOILER INSPECTOR SHOWING APPROVAL OF THE EQUIPMENT AND ITS INSTALLATION.
5. WORK INCLUDED
   A. WORK UNDER THIS DIVISION SHALL INCLUDE FURNISHING ALL MATERIALS, LABOR, EQUIPMENT, TOOLS, APPLIANCES, HOISTING, SCAFFOLDING, SUPERVISION AND OVERHEAD FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK.
   B. ALL EQUIPMENT, MATERIALS AND PRODUCTS AS NOTED IN PART 2 OF EACH SECTION SHOULD BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS.
   C. PROVIDE ALL ADDITIONAL PIPING, DUCTS, CAPS AND VALVES NOT SHOWN ON DRAWINGS, TO MAINTAIN FULLY OPERATIONAL SYSTEMS DURING THE PROJECT AT NO ADDITIONAL COST TO THE OWNER.
   D. SOME EQUIPMENT MAY REQUIRE TEMPORARY INSTALLATION DURING ONE PHASE AND REQUIRE RELOCATION TO FINAL LOCATION UNDER ANOTHER PHASE. PROVIDE ALL ASSOCIATED LABOR AND MATERIALS TO ACCOMMODATE THIS PHASING.
   E. MECHANICAL SYSTEMS - INCLUDING BUT NOT LIMITED TO:
      a. PLUMBING SYSTEMS.
      b. AUTOMATIC SPRINKLER SYSTEMS.
      c. HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS.
      d. TEMPERATURE CONTROLS SYSTEM.
   F. DEMOLITION:
      a. PERFORM ALL DEMOLITION OR INTERFACE WORK REQUIRED IN THE EXISTING BUILDING FOR THE REMOVAL OF OR INTERFACES WITH EXISTING MECHANICAL EQUIPMENT, DUCTWORK, TUBING, OR PIPING. RELOCATE OR MODIFY THE EXISTING PIPING, TUBING AND DUCTWORK AS REQUIRED BY ANY GENERAL CONSTRUCTION ALTERATIONS OR BY THE INSTALLATION OF NEW DUCTWORK, TUBING, OR PIPING IN THE EXISTING BUILDING.
      b. EXISTING MATERIALS, REMOVAL AND DISPOSITION:
         - SCOPE: FOR MECHANICAL ITEMS, WHICH REMAIN THE PROPERTY OF THE OWNER, REFER TO DRAWINGS.
         - IN COORDINATION WITH THE OWNER'S REPRESENTATIVES, THESE MATERIALS SHALL BE MADE AVAILABLE FOR THEIR INSPECTION AND DECISION AS TO WHETHER THE OWNER WILL RETAIN POSSESSION. ITEMS SELECTED FOR RETENTION SHALL BE DELIVERED TO A LOCATION ON THE PREMISES SELECTED BY THE OWNER AND TURNED OVER TO THEM. TAKE REASONABLE CARE TO AVOID DAMAGE TO THIS MATERIAL.
         - ALL MATERIAL NOT SELECTED FOR RETENTION BY THE OWNER AND THE CONTRACTOR SHALL DISPOSE OF DEBRIS.
      c. REUSE OF MATERIALS: DO NOT REUSE PIPING IN GENERAL, BUT CAST-IRON SOIL PIPE MAY BE REUSED IN NEW WORK IF OF PROPER ARRANGEMENT, WALL THICKNESS AND PRESSURE RATING.
      d. NOTIFY ARCHITECT OF DISCOVERY OF ANY HAZARDOUS MATERIALS SUCH AS ASBESTOS, ETC.
6. WORK SEQUENCE
   A. CONTRACTOR SHALL FOLLOW ALL PHASING FOR THIS PROJECT AS PROVIDED IN THE ARCHITECTURAL DRAWINGS.
   B. INSTALL WORK IN STAGES TO ACCOMMODATE OWNER'S OCCUPANCY REQUIREMENTS DURING THE CONSTRUCTION PERIOD. COORDINATE MECHANICAL SCHEDULE AND OPERATIONS WITH OWNER.
7. QUALITY ASSURANCE
   A. REFERENCES HEREINAFTER IN DIVISION 23 OF THIS SPECIFICATION TO MATERIAL OR TYPE OF CONSTRUCTION ARE FOR THE PURPOSE OF ESTABLISHING A STANDARD OF QUALITY. ANY EQUIPMENT OR MATERIAL THAT IS PROPOSED BY THE CONTRACTOR AND IS NOT SPECIFICALLY IDENTIFIED IN THE CONTRACT DOCUMENTS SHALL REQUIRE ENGINEER'S APPROVAL.
   B. PROVIDE MATERIALS BEARING LEGIBLE MARKINGS SHOWING THE STANDARDS TO WHICH THEY CONFORM: I.E. ASTM, ANSI, COMMERCIAL STANDARDS, AMCA, ARI, ETC.
   C. WHERE SPECIFICALLY NOTED, PROVIDE MANUFACTURERS' CERTIFICATION THAT MATERIALS MEET OR EXCEED MINIMUM REQUIREMENTS SPEC. CERTIFICATION SHALL BE SIGNED AND DATED BY MANUFACTURER'S EXECUTIVE OR AUTHORIZED REPRESENTATIVE.
   D. MAKE COMPLETE INSTALLATION, CONNECTING TO ALL EQUIPMENT SHOWN ON THE CONTRACT DOCUMENTS, PLANS, OR CALLED FOR IN THE SPECIFICATIONS. CONTRACTOR TO PROVIDE ALL EXTRA DAMPERS AND VALVES AS REQUIRED AND "NOT SHOWN ON PLANS" TO OBTAIN DESIGN CRITERIA AS REQUIRED BY THE BALANCING CONTRACTOR.
   E. ALL WORK, MATERIAL AND EQUIPMENT TO BE FREE OF DEFECT.
8. SUBSTITUTIONS A. MANUFACTURERS:
   A. THE USE OF BRAND NAMES IS FOR THE PURPOSE OF DESCRIPTION AND ESTABLISHING LEVEL OF QUALITY AND DOES NOT ELIMINATE THE REQUIREMENTS OF MEETING SPECIFICATIONS.
   B. MANUFACTURERS LISTED IN CONTRACT DOCUMENTS ARE APPROVED TO BID THE PROJECT FOR THE ITEMS INDICATED WITHOUT OBTAINING PRIOR APPROVAL. OTHER MANUFACTURERS DESIRING TO BID THE PROJECT REQUIRE PRIOR APPROVAL.
   C. THE PRIOR APPROVAL LISTING OF A MANUFACTURER DOES NOT NECESSARILY MEAN THAT THE PRODUCTS OF THAT MANUFACTURER ARE EQUAL TO THOSE SPECIFIED. THE LISTING IS ONLY AN INDICATION OF THOSE MANUFACTURERS WHICH MAY BE CAPABLE OF MANUFACTURING, OR HAVE IN THE PAST MANUFACTURED, ITEMS EQUIVALENT TO OR EXCEEDS THOSE SPECIFIED, AND IS INTENDED TO AID THE CONTRACTOR IN IDENTIFYING MANUFACTURERS.
   D. EXCEPTIONS: OTHER BRANDS NOT ACCEPTED WHERE AN ITEM OR CLASS OF MATERIAL IS SPECIFIED EXCLUSIVELY BY TRADE NAME AND FOLLOWED BY THE WORD ONLY.
   E. THE APPROVAL OF A MANUFACTURER APPLIES TO THE MANUFACTURER ONLY AND DOES NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY OF MEETING ALL APPLICABLE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
   F. REQUESTS FOR SUBSTITUTIONS (PRIOR APPROVALS) SHALL BE FURNISHED NO LATER THAN 10 WORKING DAYS PRIOR TO BID DATE OR REQUEST MAY NOT BE CONSIDERED. ALL SUBSTITUTION REQUESTS REVIEWED AND ACCEPTED WILL BE DESCRIBED AND LISTED IN AN ADDENDUM ISSUED PRIOR TO BID DATE. PRIOR APPROVALS ARE FOR MANUFACTURERS ONLY AND NOT SPECIFIC STYLES OR MODELS OF EQUIPMENT OR MATERIALS AND DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
9. PLANS AND SPECIFICATIONS
   A. THE CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS ARE INTENDED TO COVER THE WORK, UNLESS OTHERWISE INDICATED. PROVIDE MATERIALS, WHICH ARE NECESSARY FOR THE PROPER COMPLETION OF THE INSTALLATION OR OPERATION OF THE EQUIPMENT.
   B. THE DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW EXACT OR COMPLETE PIPING AND DUCTWORK CONFIGURATIONS OR THE NECESSARY NUMBER AND TYPES OF FITTINGS. INCLUDE LABOR AND MATERIALS REQUIRED TO COMPLETE THE WORK.
   C. MINOR DEVIATIONS:
      a. CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INDICATE EXTENT AND GENERAL ARRANGEMENT OF SYSTEMS. GENERALLY FOLLOW THE LAYOUTS SHOWN AND COORDINATE THE INSTALLATION OF WORK WITH THAT OF THE OTHER TRADES.
      b. MINOR DEVIATIONS MAY BE MADE ON THE JOB WITH THE WRITTEN APPROVAL OF THE ARCHITECT/ENGINEER, PROVIDED NO ADDITIONAL CHARGES WILL BE MADE TO THE OWNER FOR SUCH DEVIATION.
10. WORKMANSHIP
    A. THE CONTRACTOR SHALL PROVIDE COMPLETED SYSTEMS WITH A NEAT AND FINISHED APPEARANCE. IF, IN THE JUDGMENT OF THE ENGINEER, ANY PORTION OF THE WORK HAS NOT BEEN PERFORMED IN A WORKMANLIKE MANNER OR IS LEFT IN A ROUGH, UNFINISHED STATE, THE CONTRACTOR WILL BE REQUIRED TO REMOVE, REINSTALL OR REPLACE SAME AND PATCH AND PAINT SURROUNDING SURFACES IN A MANNER ACCEPTABLE TO THE ENGINEER, WITHOUT ADDITIONAL COST TO THE OWNER.
11. SAFETY AND PROTECTION
    A. SAFETY MEASURES TO BE TAKEN: THE ENGINEER HAS NOT BEEN RETAINED OR COMPENSATED TO PROVIDE DESIGN AND CONSTRUCTION REVIEW SERVICES RELATING TO THE CONTRACTOR'S SAFETY PRECAUTIONS OR TO MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED FOR THE CONTRACTOR TO PERFORM HIS WORK. THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK.
    B. HEAD PROTECTION: PROVIDE HEAD PROTECTION WHERE DUCT ANGLES, PIPE HANGERS, EQUIPMENT SUPPORT ANGLES, ETC., ARE EXPOSED IN WALKWAYS, OR IN ACCESS WAYS FOR ANY MAINTENANCE. COVER ALL SUCH POTENTIALLY INJURIOUS PROTRUSIONS OCCURRING LESS THAN 7'-0" ABOVE THE FLOOR WITH PADDING. PADDING SHALL BE SECURELY AND PERMANENTLY FASTENED AND FINISHED COMPARABLE TO ADJACENT FINISHES.
12. RESPONSIBILITY AND GUARANTEES
    A. WITHOUT ADDITIONAL COST TO OWNER, CORRECT ALL DEFECTS AND FAILURES DISCOVERED WITHIN ONE YEAR FROM DATE OF FINAL ACCEPTANCE EXCEPT WHEN, IN THE OPINION OF THE ENGINEER, SUCH CONDITION IS DUE TO NEGLECT OR CARELESSNESS OF THOSE OTHER THAN THE CONTRACTOR.
    B. THE GUARANTEE OF THE CONTRACTOR IS INDEPENDENT OF SHORTER TIME LIMITS BY ANY MANUFACTURER OF EQUIPMENT HE HAS FURNISHED.
    C. MAKE ALL NECESSARY ADJUSTMENTS DURING FIRST YEAR OF OPERATION.
    D. THE PRESENCE OF AN INSPECTOR DURING ANY CONSTRUCTION DOES NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEFECTS DISCOVERED AFTER COMPLETION OF THE WORK.
13. SERVICE A. WHERE REQUIRED BY THE SPECIFICATIONS, EQUIPMENT SUCH AS PACKAGED AIR CONDITIONERS, FURNACES, ETC. SHALL BE FURNISHED AND INSTALLED UNDER SUPERVISION OF FACTORY-TRAINED REPRESENTATIVE.

PART 2 - PRODUCTS

1. SUBMITTALS
   A. GENERAL: CONFORM TO DIVISION 1, WITH ADDITIONAL REQUIREMENTS AS INDICATED BELOW.
   B. PRODUCT DATA, DESIGN DATA:
      a. PROCESS: SUBMIT COMPLETE MECHANICAL SUBMITTAL IN MULTIPLE COMPLETE PACKAGES AS FOLLOWS. INCOMPLETE, PIECE-MEAL SUBMITTALS WILL NOT BE ACCEPTED, AND WILL BE RETURNED TO CONTRACTOR UNREVIEWED. ALLOW MINIMUM 10 WORKDAYS FOR EACH SUBMITTAL REVIEW.
         - ALL MECHANICAL SPECIFICATION SECTIONS, INCLUDING MATERIALS AND EQUIPMENT
         - MATERIALS SHOP AND FIELD INSTALLATION DRAWINGS.
         - MATERIALS AND SHOP DRAWINGS.
      b. BINDING AND FORMAT: BIND IN THREE-RING BINDER(S). LABEL FRONT OF BINDER(S) WITH NAME OF PROJECT, NAME OF OWNER, YEAR OF COMPLETION; TITLE MECHANICAL SUBMITTTALS , NAMES OF ENGINEER AND MECHANICAL CONTRACTOR, AND VOLUME NO. (IF APPLICABLE). LABEL BACK EDGE OF BINDER WITH TITLE, NAME OF PROJECT, OWNER, YEAR OF COMPLETION, AND VOLUME NO. (IF APPLICABLE). FOLD DRAWINGS TO 8 SIZE AND BIND AS ABOVE (WITH REINFORCING AT PUNCHED HOLES) OR PLACE IN CLEAR PLASTIC HOLDER DESIGNED FOR THREE-RING BINDERS.
         - INCLUDE OVERALL TABLE OF CONTENTS OF ITEMS SUBMITTED, ORGANIZED BY SPECIFICATION SECTION.
         - INCLUDE HEAVY, TABBED DIVIDER SHEET FOR EACH SPECIFICATION SECTION, WITH SPECIFICATION SECTION NUMBER AND TITLE ON TAB. INCLUDE TABLE OF CONTENTS FOR EACH SPECIFICATION SECTION, INCLUDING CATALOG NUMBERS OR DRAWING NUMBERS IF APPROPRIATE.
         - SUBMITTAL WILL NOT BE ACCEPTED UNLESS IT CONFORMS TO THESE REQUIREMENTS, AND WILL BE RETURNED TO CONTRACTOR UNREVIEWED.
      c. INCLUDE SUBMITTAL DATA ON MATERIALS AND EQUIPMENT AS INDICATED IN INDIVIDUAL SPECIFICATION SECTIONS. DO NOT ORDER, FABRICATE OR INSTALL UNTIL REVIEWED/ACCEPTED BY ARCHITECT/ENGINEER. INCLUDE DESCRIPTIVE BULLETINS, DATA SHEETS, CATALOG CUTS, DIAGRAMS, COMPLETE DIMENSIONAL DRAWINGS, AND OTHER ADDITIONAL INFORMATION AS REQUIRED.
   C. FABRICATION DRAWINGS. FOR WORK IN THIS DIVISION, PREPARE FABRICATION DRAWINGS. SUBMIT MINIMUM 30 DAYS PRIOR TO STARTING FABRICATION OR INSTALLATION OF WORK. DO NOT FABRICATE OR INSTALL WORK UNTIL REVIEWED/ACCEPTED BY A/E.
      a. PREPARE FABRICATION DRAWINGS FOR THE FOLLOWING AREAS:
         - MECHANICAL (FURNACES, DOMESTIC HOTWATER HEATER) ROOMS.
         - BOILER ROOMS.
         - CHILLER ROOM.
         - VERTICAL CHASES.
         - UTILITY TUNNELS.
         - FILTER ASSEMBLIES
      b. FABRICATION AND INSTALLATION DRAWINGS SHALL BE PRODUCED AND SHOW COMPLETE DIMENSIONED INSTALLATION TO SCALE, CONSISTING OF DETAILED DRAWINGS IN AUTOCAD FORMAT, SAME SIZE AS CONTRACT DRAWINGS, COORDINATING WORK OR OTHER TRADES TO RESULT IN PROPER FIT IN THE AVAILABLE SPACE. DRAWINGS SHALL BE COMPLETED IN TIMELY MANNER, COORDINATED WITH THE CONSTRUCTION SCHEDULE. MINIMUM SCALE ... = 1 -0 .
      c. SHEET METAL: PLANS SHOWING DUCTWORK, HANGERS, SUPPORTS, EQUIPMENT, WORK OF OTHER TRADES IN CLOSE PROXIMITY TO DUCTWORK. VERTICAL ELEVATIONS OR WORK ABOVE FINISHED FLOOR SHOWING CEILINGS, LIGHTS AND OTHER ITEMS NECESSARY TO FULLY COORDINATE THE INSTALLATION.
      d. PIPING: PLANS SHOWING PLUMBING AND HVAC PIPING, HANGERS, SUPPORTS, EQUIPMENT, WORK OF OTHER TRADES IN CLOSE PROXIMITY TO PIPING. VERTICAL ELEVATIONS OR WORK SHOWING FINISHED FLOOR, CEILINGS, LIGHTS AND OTHER ITEMS NECESSARY TO FULLY COORDINATE THE INSTALLATION.
   D. TEST REPORTS AND CERTIFICATES: SUBMIT IN ONE COMPREHENSIVE PACKAGE PRIOR TO SUBSTANTIAL COMPLETION.
   E. BALANCING AND TESTING REPORTS: SUBMIT AS INDICATED.
   F. OPERATION AND MAINTENANCE MANUAL:
      a. PROCESS: SUBMIT COMPLETE O & M MANUAL IN ONE COMPLETE PACKAGE. INCOMPLETE, PIECE-MEAL SUBMITTALS WILL NOT BE ACCEPTED, AND WILL BE RETURNED TO CONTRACTOR UNREVIEWED. INCLUDE MECHANICAL SPECIFICATION SECTIONS, WITH MATERIALS AND EQUIPMENT.
      b. BINDING AND FORMAT:
         - BIND IN THREE-RING BINDER(S). PERMANENTLY IMPRINT FRONT OF BINDER(S) WITH NAME OF PROJECT, NAME OF OWNER, YEAR OF COMPLETION, TITLE MECHANICAL OPERATIONS AND MAINTENANCE MANUAL , NAMES OF ENGINEER AND CONTRACTOR, AND VOLUME NO. (IF APPLICABLE). PERMANENTLY IMPRINT BACK EDGE OF BINDER WITH TITLE, NAME OF PROJECT, OWNER, YEAR OF COMPLETION, AND VOLUME NO. (IF APPLICABLE). FOLD DRAWINGS TO 8 SIZE AND BIND AS ABOVE (WITH REINFORCING AT PUNCHED HOLES) OR PLACE IN CLEAR PLASTIC HOLDER DESIGNED FOR THREE-RING BINDERS.
         - INCLUDE OVERALL TABLE OF CONTENTS OF ITEMS SUBMITTED, ORGANIZED BY SPECIFICATION SECTION.
         - INCLUDE HEAVY, TABBED DIVIDER SHEET FOR EACH SPECIFICATION SECTION, WITH SPECIFICATION SECTION NUMBER AND TITLE ON TAB. INCLUDE TABLE OF CONTENTS FOR EACH SPECIFICATION SECTION, INCLUDING CATALOG NUMBERS OR DRAWING NUMBERS IF APPROPRIATE.
         - O & M MANUAL WILL NOT BE ACCEPTED UNLESS IT CONFORMS TO THESE REQUIREMENTS, AND WILL BE RETURNED TO CONTRACTOR UNREVIEWED.
      c. CONTENTS:
         - INCLUDE COMPLETE SUBMITTAL INFORMATION DESCRIBED UNDER PRODUCT DATA, DESIGN DATA IN THIS SECTION.
         - INCLUDE INSTALLATION INSTRUCTIONS, OPERATION AND MAINTENANCE INFORMATION, START-UP INSTRUCTIONS, AND SPARE PARTS LISTS.
         - INCLUDE NAMES, ADDRESS, TELEPHONE NUMBERS, AND FAX NUMBERS OF MANUFACTURERS AND VENDORS OF MATERIALS AND EQUIPMENT.
         - INCLUDE INFORMATION ON THE SPECIFIC EQUIPMENT INSTALLED FOR THIS PROJECT.
   G. RECORD DRAWINGS:
      a. GENERAL
         - CORRECTIONS AND CHANGES MADE DURING THE PROGRESS OF THE WORK SHALL BE NEATLY RECORDED AS ACTUALLY INSTALLED, INCLUDING ALL CHANGE ORDERS, RFI S, ETC.
         - ONE SET OF PRINTS SHOWING THIS INFORMATION (IN RED), SHALL BE KEPT UP TO DATE AT ALL TIMES. THESE MARKED PRINTS SHALL BE KEPT AT THE JOB SITE AND IN RED .
         - AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL OBTAIN AUTOCAD V 2000, OF CONTRACT DRAWINGS. DRAWING FILES SHALL BE CORRECTED BY THE CONTRACTOR TO INDICATE ALL CHANGES AND CORRECTIONS MADE DURING THE PROJECT.
         - UPON COMPLETION, HE SHALL SUBMIT THE CORRECTED AUTOCAD DRAWING FILES PLUS 2 PLOT COPIES, TO THE ARCHITECT FOR REVIEW.
         - QUALITY OF WORKMANSHIP MUST BE CLEARLY LEGIBLE AND BE CONSISTENT WITH INDUSTRY DRAFTING STANDARDS. DRAWINGS PROVIDED LACKING THESE STANDARDS WILL NOT BE ACCEPTED.
      b. LAYOUT OF FIELD INSTALLATION DRAWINGS BY CONTRACTOR:
         - FOR ALL WORK IN MECHANICAL (FURNACE AND DOMESTIC HOTWATER HEATER) ROOMS, CONTRACTOR SHALL PREPARE ADDITIONAL DETAIL DRAWINGS TO SCALE SIMILAR TO THAT OF THE BIDDING DRAWINGS, PREPARED ON MYLAR PAPER SAME SIZE AS CONTRACT DRAWINGS AND SHALL WITH THESE LAYOUTS, COORDINATE HIS WORK WITH THE DRAWINGS AS TO THE AREA IT APPLIES. SEE 2.1.C.a. ABOVE.
         - SUBMIT THESE DRAWINGS TO THE ARCHITECT FOR REVIEW, BEFORE COMMENCING SHOP FABRICATION OR ERECTION IN THE FIELD, AT COMPLETION OF THE PROJECT, INCLUDE A SET OF SUCH DRAWINGS WITH EACH SET OF RECORD DRAWINGS AND CAD FILES FOR OWNER S PURPOSES.
   H. CERTIFICATIONS: SUBMIT WRITTEN CERTIFICATIONS FROM THE GOVERNING BUILDING AUTHORITIES STATING THAT WORK HAS BEEN INSPECTED, ACCEPTED, AND COMPLIES WITH APPLICABLE CODES AND ORDINANCES.
2. CUTTING & PATCHING
   A. CUTTING:
      a. DO CUTTING, CORE-DRILLING AND SIMILAR WORK REQUIRED FOR INSTALLATION OF SYSTEMS UNDER DIVISION 23.
      b. THROUGH CONCRETE SLABS OR WALLS, ALL ROUND HOLES SHALL BE CORE DRILLED WITH A DIAMOND DRILL AND ALL RECTANGULAR OPENINGS SHALL BE CUT WITH A DIAMOND SAW. CONTRACTOR SHALL MAKE PROVISIONS FOR WATER, CAPTURE WHEN WORKING ABOVE OCCUPIED SPACES OR AREAS SUBJECT TO WATER DAMAGE.
      c. CUT NO STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL OF ARCHITECT/ENGINEER.
      d. DRILLING AND CUTTING OF CONCRETE AND OTHER WORK WHICH MAKES OBJECTIONABLE NOISE IN OCCUPIED BUILDING SHALL BE PERFORMED AT TIMES AS COORDINATED WITH THE OWNER BEFORE DOING THE WORK.
   B. PATCHING OF FINISHED BUILDING ELEMENTS AFTER MECHANICAL INSTALLATION SHALL BE IN ACCORDANCE WITH DIVISION 01, NOT BY DIVISION 23 SUBCONTRACTOR.
3. EXCAVATION AND BACKFILL
   A. CONTRACTOR SHALL DO ALL EXCAVATION AND BACKFILL REQUIRED FOR DIVISION 23 WORK, INCLUDING ANY NECESSARY SHEATHING AND PUMPING.
   B. TRENCH BOTTOMS AND SHELVES SHALL BE CUT TO SUIT REQUIRED GRADES OF MECHANICAL WORK.
   C. PIPING SHALL REST ON UNDISTURBED EARTH OR PEA GRAVEL.
   D. BELL HOLES SHALL BE PROVIDED FOR ALL BELL AND HUB OR MECHANICAL JOINT PIPING.
   E. AFTER WORK HAS BEEN INSPECTED, TESTED AND APPROVED, ALL EXCAVATION SHALL BE BACKFILLED IN LAYERS OF APPROXIMATELY 8 INCHES, EACH LAYER MOISTENED AS DIRECTED AND PNEUMATICALLY TAMPED TO MINIMUM COMPACTION OF 90 PERCENT.
   F. JETTING OR FLOODING WILL NOT BE PERMITTED.
   G. RESTORE ALL SURFACES TO ORIGINAL CONDITION, PROPERLY INSTALLED TO ELIMINATE ANY SETTLEMENT AND SATISFACTORY TO ARCHITECT.
   H. REFER TO STRUCTURAL DRAWINGS FOR DETAILS OF PIPES PASSING THROUGH OR NEAR FOOTINGS AND FOUNDATIONS.
4. PLATES AND ISOLATORS
   A. PLATES:
      a. CHROME PLATED, STAMPED OR CAST BRASS.
      b. GRINNELL FIGURE 10 OR BEATON CORBIN.
   B. ISOLATORS:
      a. STONEMAN TRISOLATOR, NO. 100 FOR STEEL PIPE, NO. 500 FOR COPPER TUBE.
      b. LINK-SEAL TYPE MODEL LS OR PYRO-PAC.
      c. PROCO PRODUCTS INC., PEN.SEAL.
5. SLEEVES
   A. SLEEVES FOR PIPES THROUGH NON -FIRE RATED FLOORS: FORM WITH 18 GAGE GALVANIZED STEEL.
   B. SLEEVES FOR PIPES THROUGH NON -FIRE RATED BEAMS, WALLS, FOOTINGS, AND POTENTIALLY WET FLOORS: FORM WITH STEEL PIPE OR 18 GAGE GALVANIZED STEEL.
   C. SLEEVES FOR PIPES THROUGH FIRE RATED AND FIRE RESISTIVE FLOORS AND WALLS, AND FIREPROOFING: PREFABRICATED FIRE RATED SLEEVES INCLUDING SEALS, UL LISTED.
   D. SLEEVES FOR ROUND DUCTWORK: FORM WITH GALVANIZED STEEL.
   E. SLEEVES FOR RECTANGULAR DU

# MECHANICAL GENERAL PROVISIONS CONTD.

COCKS, BRONZE BALL VALVE SHUT-OFFS, STRAINER, THREADED CONNECTIONS, 175 PSI PRESSURE RATING.
- 2-1/2" AND OVER; EPOXY COATED IRON BODY, BRONZE TRIM, STAINLESS STEEL INTERNAL PARTS, REMOVABLE BRONZE SEATS, GATE VALVE SHUT-OFFS, STRAINER, FLANGED ENDS, 175 PSI PRESSURE RATING.

c. REDUCED PRESSURE TYPE:
- 2" AND UNDER; BRONZE BODY, RUBBER CHECK VALVES WITH REDUCED PRESSURE ZONE, STAINLESS STEEL CHECK SEATS, SHAFTS AND FLANGE BOLTS, BRONZE BALL VALVE TEST COCKS, BRONZE BALL VALVE SHUT-OFFS, STRAINER, THREADED CONNECTIONS, 175 PSI PRESSURE RATING.
- 2-1/2" AND OVER; EPOXY COATED IRON BODY, BRONZE TRIM, STAINLESS STEEL INTERNAL PARTS, REMOVABLE BRONZE SEATS, GATE VALVE SHUT-OFFS, STRAINER, FLANGED ENDS, 175 PSI PRESSURE RATING.

C. WATER PRESSURE REDUCING VALVES:
a. UP TO 2 INCHES
- BRONZE BODY, STAINLESS STEEL AND BRONZE INTERNAL PARTS, FABRIC REINFORCED DIAPHRAGM, INTEGRAL STRAINER, THERMAL EXPANSION BY-PASS, THREADED ENDS.
- WATTS U5B, OR APPROVED.

b. OVER 2 INCHES:
- CAST IRON BODY, BRONZE FITTED, NYLON REINFORCED ELASTOMERIC DIAPHRAGM AND SEAT DISC, FLANGED, PILOT OPERATED, ADJUSTABLE CLOSING SPEED, COPPER CONTROL TUBING WITH BRASS FLARED-END FITTINGS.
- WATTS ACV, CLA-VAL, CASH OR APPROVED.

D. RELIEF VALVES:
a. MANUFACTURERS:
- WATTS.
- B&G.
- AMTROL.
- OTHER MANUFACTURERS OFFERING EQUIVALENT PRODUCTS MAY BE CONSIDERED.

b. BRONZE BODY, TEFLON SEAT, STEEL STEM AND SPRINGS, AUTOMATIC, DIRECT TEMPERATURE AND PRESSURE ACTUATED, CAPACITIES ASME CERTIFIED AND LABELED.

E. CALIBRATED BALANCING VALVES:
a. ADJUSTABLE ORIFICE TYPE:
- MANUFACTURERS:
  - ARMSTRONG MODEL CBV.
  - DAN FOSS.
  - OTHER MANUFACTURERS OFFERING EQUIVALENT PRODUCTS MAY BE CONSIDERED.
- GENERAL:
  - VALVES SHALL BE Y-PATTERN, EQUAL PERCENTAGE GLOBE STYLE PROVIDING PRECISE FLOW MEASUREMENT, PRECISE FLOW BALANCING AND POSITIVE DRIP TIGHT SHUT-OFF.
  - VALVES SHALL HAVE MULTI-TURN ADJUSTMENT: MINIMUM 720°.
  - VALVES SHALL HAVE MEANS OF LOCKING IN BALANCED POSITION.
  - FURNISH VALVES WITH PREFORMED INSULATION WITH COVER.
- CONSTRUCTION:
  - UP TO 2" SIZE: BRASS OR BRONZE BODY WITH THREAD OR SWEAT CONNECTIONS, BRONZE STEM WITH RESIN OR PFTE DISC, AND TWO, 1/4" PRESSURE/TEMPERATURE TEST PORTS WITH NORDEL CHECK VALVES AND GASKETED CAPS, ADDITIONAL PORTS FOR DRAIN CONNECTIONS.
  - 2 " TO 12" SIZE: DUCTILE IRON BODY WITH GROOVED END OR FLANGED CONNECTIONS, BRONZE VALVE STEM AND PLUG DISC, TWO 1/4" TEMPERATURE AND PRESSURE TEST PORTS WITH NORDEL CHECK VALVES AND GASKETED CAPS, ADDITIONAL PORTS FOR DRAIN CONNECTIONS.

b. FIXED ORIFICE TYPE:
- MANUFACTURERS:
  - FDI "FLOWSET".
  - OTHER MANUFACTURERS OFFERING EQUIVALENT PRODUCTS MAY BE CONSIDERED.
- GENERAL:
  - VALVES SHALL BE BALL STYLE WITH INTEGRAL FIXED VENTURI PROVIDING PRECISE FLOW MEASUREMENT, PRECISE FLOW BALANCING AND POSITIVE DRIP TIGHT SHUT-OFF.
  - VALVES SHALL HAVE 90° ADJUSTMENT WITH MEMORY STOP.
  - VALVES SHALL HAVE MEANS OF LOCKING IN BALANCED POSITION.
- CONSTRUCTION:
  - UP TO 3" SIZE: BRONZE BODY WITH UNION ON INLET, THREAD OR SWEAT CONNECTIONS, STAINLESS STEEL OR BRASS BALL WITH TFE SEAT RINGS AND TWO, ... PRESSURE/TEMPERATURE TEST PORTS WITH NORDEL CHECK VALVES AND GASKETED CAPS, ADDITIONAL PORTS FOR DRAIN CONNECTIONS.
  - 4" TO 8" SIZE: DUCTILE OR CAST IRON BODY WITH GROOVED END OR FLANGED CONNECTIONS, BRONZE VALVE STEM AND PLUG DISC AND TWO, 1/4" PRESSURE/TEMPERATURE TEST PORTS WITH NORDEL CHECK VALVES AND GASKETED CAPS, ADDITIONAL PORTS FOR DRAIN CONNECTIONS.

F. AUTOMATIC FLOW CONTROL VALVES:
a. MANUFACTURERS
- IMI HYDRONIC.
- GRISWOLD CONTROLS.
- HAYS FLUID CONTROL.
- OTHER MANUFACTURERS OFFERING EQUIVALENT PRODUCTS MAY BE CONSIDERED.

b. CONSTRUCTION:
- FLOW CONTROL ELEMENT(S): ONE OR MORE BRASS AND/OR STAINLESS STEEL ORIFI AND SPRING.
- UP TO 3 " SIZE: DUCTILE IRON, CAST IRON, BRASS OR WROUGHT COPPER VALVE BODY, THREADED OR SWEAT CONNECTIONS, RATED ANSI CLASS 125. TWO, ... PRESSURE/TEMPERATURE TEST PORTS WITH NORDEL CHECK VALVES AND GASKETED CAPS, AND ADDITIONAL PORTS FOR DRAIN CONNECTIONS.
- 4 " TO 12 " SIZE: DUCTILE IRON, STEEL OR BRONZE VALVE BODY, FLANGED OR GROOVED CONNECTIONS, RATED ANSI GLASS 150. TWO, ... PRESSURE/TEMPERATURE TEST PORTS WITH EXTENSIONS AND NORDEL CHECK VALVES WITH GASKETED CAPS, AND ADDITIONAL DRAIN CONNECTIONS.

c. CALIBRATION:
- CONTROL FLOW WITHIN PLUS OR MINUS 10 PERCENT OF SELECTED RATING OVER OPERATING PRESSURE RANGE OF AT LEAST 10 TIMES MINIMUM PRESSURE REQUIRED FOR CONTROL.
- MAXIMUM ALLOWABLE MINIMUM PRESSURE FOR OPERATING RANGE; 3.5 PSIG.

G. STRAINERS:
a. MANUFACTURERS:
- WATTS.
- ARMSTRONG.
- SPIRAX/SARCO.
- OTHER MANUFACTURERS OFFERING EQUIVALENT PRODUCTS MAY BE CONSIDERED.

b. SIZE 2 INCH AND UNDER: SCREWED BRASS OR IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 1/32 INCH STAINLESS STEEL PERFORATED SCREEN.

c. SIZE 2 -1/2 INCH TO 4 INCH: FLANGED IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 3/64 INCH STAINLESS STEEL PERFORATED SCREEN.

d. SIZE 5 INCH AND LARGER: FLANGED IRON BODY FOR 175 PSIG WORKING PRESSURE, BASKET PATTERN WITH 1/8 INCH STAINLESS STEEL PERFORATED SCREEN.

e. PROVIDE NIPPLE AND BLOWDOWN VALVE WITH PLUG ON ALL STRAINERS 1" PIPE SIZE AND LARGER.

13. HEAT TRACE FOR FREEZE PROTECTION
A. MANUFACTURERS:
a. BASIS FOR DESIGN: RAYCHEM XL-TRACE.
b. SUBSTITUTE MANUFACTURERS MAY BE CONSIDERED SUBJECT TO REVIEW.
c. PROPOSED SUBSTITUTIONS SHALL MEET OR EXCEED ALL REQUIREMENTS OF THESE SPECIFICATIONS.
d. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUBSTITUTED EQUIPMENT OR MATERIALS FITTING THE AVAILABLE SPACE AND FOR ANY IMPACTS TO OTHER TRADES.

B. CONSTRUCTION:
a. THE SELF-REGULATING HEATER SHALL CONSIST OF TWO (2) 16 AWG TINNED-COPPER BUS WIRES EMBEDDED IN PARALLEL IN A SELF-REGULATING POLYMER CORE THAT VARIES ITS POWER OUTPUT TO RESPOND TO TEMPERATURE ALL ALONG ITS LENGTH, ALLOWING THE HEATER TO BE CROSSED OVER ITSELF WITHOUT OVERHEATING, TO BE USED DIRECTLY ON METALLIC OR PLASTIC PIPE, AND TO BE CUT TO LENGTH IN THE FIELD.
b. THE HEATER SHALL BE COVERED BY A RADIATION CROSS-LINKED MODIFIED POLYOLEFIN DIELECTRIC JACKET.
c. TO PROVIDE A GROUND PATH AND TO ENHANCE THE HEATING CABLE'S RUGGEDNESS, THE HEATER SHALL HAVE AN OUTER BRAID OF TINNED-COPPER AND AN OUTER JACKET OF MODIFIED POLYOLEFIN (-CR).

C. REQUIREMENTS:
a. SYSTEM SHALL MEET REQUIREMENTS OF CURRENT NATIONAL ELECTRIC CODE (NEC), SECTION 427.
b. THE HEATER SHALL OPERATE ON LINE VOLTAGE OF 120 VOLTS WITHOUT THE USE OF TRANSFORMERS.
c. IN ORDER TO PROVIDE ENERGY CONSERVATION AND TO PREVENT OVERHEATING, THE HEATER SHALL HAVE A SELF-REGULATING FACTOR OF A LEAST 90 PERCENT. THE SELF-REGULATION FACTOR IS DEFINED AS THE PERCENTAGE REDUCTION, WITHOUT THERMOSTATIC CONTROL, OF THE HEATER OUTPUT GOING FROM 40°F PIPE TEMPERATURE OPERATION TO 150°F PIPE TEMPERATURE OPERATION. PROVIDE SUFFICIENT HEAT CABLE, AS SIZED IN ACCORDANCE WITH FOLLOWING TABLE TO KEEP THE PIPE SURFACE AT 40°F WITH 10°F OUTDOOR AMBIENT TEMPERATURE. THE REQUIRED HEATER OUTPUT RATING IS IN WATTS PER FOOT AT 50°F. (HEATER SELECTION BASED ON 1" FIBERGLASS INSULATION ON METAL PIPING).

| HEAT TRACE WATTAGE BASED ON AMBIENT TEMPERATURE | | | | |
|---|---|---|---|---|
| PIPE SIZE | MINIMUM AMBIENT TEMPERATURE | | | |
| | 10°F | 0°F | -10°F | -20°F |
| 1/2 - 3 INCH | 5 WATT | 5 WATT | 5 WATT | 5 WATT |
| 4 INCH | 5 WATT | 5 WATT | 5 WATT | 8 WATT |
| 6 INCH | 5 WATT | 8 WATT | 8 WATT | 8 WATT |
| 8 INCH | 8 WATT | 8 WATT | 2-5 WATT | 2-8 WATT |
| 10 INCH | 8 WATT | 2-5 WATT | 2-8 WATT | 2-8 WATT |
| 12 INCH | 8 WATT | 2-5 WATT | 2-8 WATT | 2-8 WATT |
| 14 INCH | 8 WATT | 2-5 WATT | 2-8 WATT | 2-8 WATT |

D. COMPONENTS:
a. ALL HEATING CABLE COMPONENTS SHALL BE UL LISTED FOR USE AS PART OF THE SYSTEM TO PROVIDE PIPE FREEZE PROTECTION. COMPONENT ENCLOSURES SHALL BE RATED NEMA 4X TO PREVENT WATER INGRESS AND CORROSION.
b. INSTALLATION SHALL NOT REQUIRE THE INSTALLING CONTRACTOR TO CUT INTO THE HEATING CABLE CORE TO EXPOSE THE BUS WIRES.
c. CONNECTION SYSTEMS REQUIRING THE INSTALLING CONTRACTOR STRIP THE BUS WIRES, OR WHICH USE CRIMPS OR TERMINAL BLOCKS SHALL NOT BE ACCEPTABLE.
d. ALL COMPONENTS THAT MAKE AN ELECTRICAL CONNECTION SHALL BE RE-ENTERABLE FOR SERVICING.
e. NO COMPONENT SHALL USE SILICONE TO SEAL THE ELECTRICAL CONNECTIONS.
f. PROVIDE INDICATOR SIGNAL LIGHT TO VERIFY ELECTRICAL POWER AT BEGINNING OF CIRCUIT ON DOWNSTREAM SIDE OF THERMOSTAT.

E. CONTROLS:
a. THE SYSTEM SHALL BE CONTROLLED BY A SWITCH EITHER DIRECTLY OR THROUGH AN APPROPRIATE CONTACTOR.
b. -OR-
c. THE SYSTEM SHALL BE CONTROLLED BY A BULB-SENSING THERMOSTAT SET AT 40°F EITHER DIRECTLY OR THROUGH AN APPROPRIATE CONTACTOR.
d. THERMOSTAT TO INCLUDE NEMA 4X ENCLOSURE, SP-ST SWITCH AND THREE FOOT CAPILLARY AND BULB.
- -OR- THE SYSTEM SHALL BE CONTROLLED BY AN AMBIENT SENSING THERMOSTAT SET AT 40°F EITHER DIRECTLY OR THROUGH AN APPROPRIATE CONTACTOR.

e. THERMOSTAT TO INCLUDE NEMA 4X ENCLOSURE, [STAINLESS STEEL PROBE SENSOR AND SP-ST SWITCH.][SP-ST SWITCH AND THREE FOOT CAPILLARY AND BULB.]

14. ELECTRIC MOTORS
A. MANUFACTURERS:
a. THE FOLLOWING MANUFACTURERS MAY BE CONSIDERED SUBJECT TO REVIEW.
- RELIANCE.
- BALDOR.
- CENTURY.
- GENERAL ELECTRIC.

b. PROPOSED SUBSTITUTIONS SHALL MEET OR EXCEED ALL REQUIREMENTS OF THESE SPECIFICATIONS.
c. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUBSTITUTED EQUIPMENT OR MATERIALS FITTING THE AVAILABLE SPACE AND FOR ANY IMPACTS TO OTHER TRADES.

B. GENERAL:
a. SUBMITTALS: SUBMIT TEST RESULTS VERIFYING NOMINAL EFFICIENCY AND POWER FACTOR FOR THREE PHASE MOTORS ONE (1) HORSEPOWER AND LARGER.
b. OPERATION & MAINTENANCE DATA: INCLUDE ASSEMBLY DRAWINGS, BEARING DATA INCLUDING REPLACEMENT SIZES, AND LUBRICATION INSTRUCTIONS.
c. QUALIFICATIONS: COMPANY SPECIALIZING IN MANUFACTURE OF ELECTRIC MOTORS FOR HVAC AND PLUMBING USE, AND THEIR ACCESSORIES, WITH MINIMUM THREE YEARS DOCUMENTED PRODUCT DEVELOPMENT, TESTING, AND MANUFACTURING EXPERIENCE.
d. REGULATORY REQUIREMENTS:
e. CONFORM TO APPLICABLE ELECTRICAL CODE.
f. CONFORM TO LOCAL ENERGY CODE.
g. PROTECT MOTORS STORED ON SITE FROM WEATHER AND MOISTURE BY MAINTAINING FACTORY COVERS AND SUITABLE WEATHER -PROOF COVERING. FOR EXTENDED OUTDOOR STORAGE, REMOVE MOTORS FROM EQUIPMENT AND STORE SEPARATELY.
h. PROVIDE MINIMUM FIVE YEAR MANUFACTURER'S WARRANTY UNDER PROVISIONS OF DIVISION 23.

C. CONSTRUCTION AND REQUIREMENTS:
a. ELECTRICAL SERVICE: REFER TO DIVISION 26 FOR REQUIRED ELECTRICAL CHARACTERISTICS.
b. MOTORS: DESIGN FOR CONTINUOUS OPERATION IN 40°C ENVIRONMENT, AND FOR TEMPERATURE RISE IN ACCORDANCE WITH ANSI/NEMA MG 1 LIMITS FOR INSULATION CLASS, SERVICE FACTOR, AND MOTOR ENCLOSURE TYPE.
c. EXPLOSION -PROOF MOTORS: UL APPROVED AND LABELED FOR HAZARD CLASSIFICATION, WITH OVER TEMPERATURE PROTECTION.
d. VISIBLE NAMEPLATE: INDICATING MOTOR HORSEPOWER, VOLTAGE, PHASE, CYCLES, RPM, FULL LOAD AMPS, LOCKED ROTOR AMPS, FRAME SIZE, MANUFACTURER'S NAME AND MODEL NUMBER, SERVICE FACTOR, POWER FACTOR, EFFICIENCY.
e. MOTORS POWERED BY VARIABLE FREQUENCY DRIVES (VFDS) SHALL HAVE MINIMUM 1.15 SERVICE FACTOR AND SHALL HAVE CLASS F, OR BETTER, INSULATION.
f. SINGLE PHASE MOTORS: DRIP -PROOF ENCLOSURE: CLASS A (50°C TEMPERATURE RISE) INSULATION, NEMA SERVICE FACTOR, PRELUBRICATED SLEEVE OR BALL BEARINGS.
- ENCLOSED MOTORS: CLASS A (50°C TEMPERATURE RISE) INSULATION, 1.0 SERVICE FACTOR, PRELUBRICATED BALL BEARINGS.

g. SPLIT PHASE MOTORS:
- STARTING TORQUE: LESS THAN 150 PERCENT OF FULL LOAD TORQUE.
- STARTING CURRENT: UP TO SEVEN TIMES FULL LOAD CURRENT.
- BREAKDOWN TORQUE: APPROXIMATELY 200 PERCENT OF FULL LOAD TORQUE.
- PERMANENT -SPLIT CAPACITOR MOTORS:
- STARTING TORQUE: EXCEEDING ONE FOURTH OF FULL LOAD TORQUE.
- STARTING CURRENT: UP TO SIX TIMES FULL LOAD CURRENT.
- MULTIPLE SPEED: THROUGH TAPPED WINDINGS.

h. CAPACITOR START MOTORS:
- STARTING TORQUE: THREE TIMES FULL LOAD TORQUE.
- STARTING CURRENT: LESS THAN FIVE TIMES FULL LOAD CURRENT.
- PULL -UP TORQUE: UP TO 350 PERCENT OF FULL LOAD TORQUE.
- BREAKDOWN TORQUE: APPROXIMATELY 250 PERCENT OF FULL LOAD TORQUE.
- MOTORS: CAPACITOR IN SERIES WITH STARTING WINDING; CAPACITOR -START/CAPACITOR -RUN MOTORS SHALL HAVE TWO CAPACITORS IN PARALLEL WITH RUN CAPACITOR REMAINING IN CIRCUIT AT OPERATING SPEEDS.

i. THREE PHASE MOTORS:
- STARTING TORQUE: BETWEEN ONE AND ONE AND ONE -HALF TIMES FULL LOAD TORQUE.
- STARTING CURRENT: SIX TIMES FULL LOAD CURRENT.
- POWER OUTPUT, LOCKED ROTOR TORQUE, BREAKDOWN OR PULLOUT TORQUE: NEMA DESIGN B CHARACTERISTICS.
- DESIGN, CONSTRUCTION, TESTING, AND PERFORMANCE: CONFORM TO ANSI/NEMA MG 1 FOR DESIGN B MOTORS.
- INSULATION SYSTEM: NEMA CLASS F OR BETTER.
- TESTING PROCEDURE: IN ACCORDANCE WITH ANSI/IEEE 112, TEST METHOD B. LOAD TEST MOTORS TO DETERMINE FREEDOM FROM ELECTRICAL OR MECHANICAL DEFECTS AND COMPLIANCE WITH PERFORMANCE DATA.
- MOTOR FRAMES: NEMA STANDARD T -FRAMES OF STEEL, ALUMINUM, OR CAST IRON WITH END BRACKETS OF CAST IRON OR ALUMINUM WITH STEEL INSERTS.
- BEARINGS: GREASE LUBRICATED ANTI -FRICTION BALL BEARINGS WITH HOUSINGS EQUIPPED WITH PLUGGED PROVISION FOR RELUBRICATION, RATED FOR MINIMUM AFBMA 9, L -10 LIFE OF 200,000 HOURS. CALCULATE BEARING LOAD WITH NEMA MINIMUM V - BELT PULLEY WITH BELT CENTER LINE AT END OF NEMA STANDARD SHAFT EXTENSION. STAMP BEARING SIZES ON NAMEPLATE.
- SOUND POWER LEVELS: TO ANSI/NEMA MG 1.
- PART WINDING START WHERE INDICATED: USE PART OF WINDING TO REDUCE LOCKED ROTOR STARTING CURRENT TO APPROXIMATELY 60 PERCENT OF FULL WINDING LOCKED ROTOR CURRENT WHILE PROVIDING APPROXIMATELY 50 PERCENT OF FULL WINDING LOCKED ROTOR TORQUE.
- WEATHERPROOF EPOXY SEALED MOTORS (WHERE INDICATED): EPOXY SEAL WINDINGS USING VACUUM AND PRESSURE WITH ROTOR AND STARTER SURFACES PROTECTED WITH EPOXY ENAMEL. BEARINGS SHALL BE DOUBLE SHIELDED WITH WATERPROOF NON -WASHING GREASE.
- NOMINAL EFFICIENCY: MEET OR EXCEED VALUES IN SCHEDULES AT FULL LOAD AND RATED VOLTAGE WHEN TESTED IN ACCORDANCE WITH ANSI/IEEE 112.
- NOMINAL POWER FACTOR: MEET OR EXCEED VALUES IN SCHEDULES AT FULL LOAD AND RATED VOLTAGE WHEN TESTED IN ACCORDANCE WITH ANSI/IEEE 112.

j. TEAO, C-FACED MOTORS, THREE PHASE POWER:
- DIRECT DRIVE AIROVER MOTORS REQUIRED FOR VANE AXIAL FANS, CLASS F INSULATION.
- MOTORS SHALL HAVE DUAL RATING ON NAMEPLATE FOR STILL AIR AND AIROVER OPERATION.

D. NEMA OPEN MOTOR SERVICE FACTORS:

| HP | 3600 RPM | 1800 RPM | 1200 RPM | 900 RPM |
|---|---|---|---|---|
| 1/6 - 1/3 | 1.35 | 1.35 | 1.35 | 1.35 |
| 1/2 | 1.25 | 1.25 | 1.25 | 1.15 |
| 3/4 | 1.25 | 1.25 | 1.15 | 1.15 |
| 1-1/4 | 1.15 | 1.15 | 1.15 | 1.15 |
| 1-1/2 - 150 | 1.15 | 1.15 | 1.15 | 1.15 |

E. MINIMUM NOMINAL FULL LOAD EFFICIENCY OF ENERGY EFFICIENT MOTORS:

| HP | OPEN | | | CLOSED | | |
|---|---|---|---|---|---|---|
| | 3600 RPM | 1800 RPM | 1200 RPM | 3600 RPM | 1800 RPM | 1200 RPM |
| 1.0 | - | 82.5% | 80.0% | 75.5% | 82.5% | 80.0% |
| 1.5 | 82.5% | 84.0% | 84.0% | 82.5% | 84.0% | 85.5% |
| 2.0 | 84.0% | 84.0% | 85.5% | 84.0% | 84.0% | 86.5% |
| 3.0 | 84.0% | 86.5% | 85.5% | 85.5% | 87.5% | 87.5% |
| 5.0 | 85.5% | 87.5% | 87.5% | 87.5% | 87.5% | 87.5% |
| 7.5 | 87.5% | 88.5% | 88.5% | 88.5% | 89.5% | 89.5% |
| 10 | 88.5% | 89.5% | 90.2% | 89.5% | 89.5% | 89.5% |
| 15 | 89.5% | 91.0% | 90.2% | 90.2% | 91.0% | 90.2% |
| 20 | 90.2% | 91.0% | 91.0% | 90.2% | 91.0% | 90.2% |
| 25 | 91.0% | 91.7% | 91.7% | 91.0% | 92.4% | 91.7% |
| 30 | 91.0% | 92.4% | 92.4% | 91.0% | 92.4% | 91.7% |

15. MECHANICAL-ELECTRICAL INTERFACE
A. SEPARATION OF WORK BETWEEN TRADES AND SUBCONTRACTORS IS NOT WITHIN THE SCOPE OF THESE SPECIFICATIONS. THE FOLLOWING IS PROPOSED FOR ASSISTANCE IN BIDDING ONLY.
B. UNLESS OTHERWISE INDICATED, MECHANICAL EQUIPMENT AND CONTROLS ARE SUGGESTED TO BE FURNISHED, INSTALLED AND WIRED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE; COORDINATE ALL WORK WITH DIVISION 26, ELECTRICAL:

| MECHANICAL EQUIPMENT AND CONTROLS | | | | |
|---|---|---|---|---|
| ITEM | POWER FURNISHED BY: | CONTROL INSTALLED BY: | POWER WIRING BY: | CONTROL WIRING BY: |
| EQUIPMENT MOTORS: | M | M | E | M |
| MAGNETIC MOTOR STARTERS AUTOMATICALLY CONTROLLED WITH OR WITHOUT HOA SWITCHES: | E | E | E | M |
| MAGNETIC MOTOR STARTERS MANUALLY CONTROLLED: | E | E | E | E |
| FURNISHED W/ MECH. EQUIPMENT, FACTORY-MOUNTED: | M | M | E | M |
| FURNISHED W/MECH. EQUIPMENT, FOR FIELD MOUNTING: | M | E | E | M |
| DISCONNECT SWITCHES, MANUAL MOTOR STARTERS, THERMAL OVERLOAD SWITCHES: | E | E | E | - |
| VALVES, FLOAT CONTROLS, DAMPER MOTORS, EP AND PE SWITCHES, OTHER MISCELLANEOUS | M | M | M | M |
| DIVISION 23 CONROLS | E | M | - | M |
| M = DIVISION 23, MECHANICAL<br>E = DIVISION 26, ELECTRICAL | | | | |

C. MECHANICAL-ELECTRICAL COORDINATION
a. CHECK MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS TO ASSURE PROPER LOCATION AND ELECTRICAL CHARACTERISTICS OF OUTLETS SERVING MECHANICAL AND ELECTRICAL EQUIPMENT.
b. ADVISE THE ARCHITECT/ENGINEER OF ANY MODIFICATIONS REQUIRED TO SUIT EQUIPMENT FURNISHED.
c. PROVIDE FUNCTIONAL TEST OF CONTROL SYSTEM, AIR DISTRIBUTION SYSTEM AND ALL MECHANICAL COMPONENTS. TEST TO BE CONDUCTED IN THE PRESENCE OF THE BUILDING OWNER'S REPRESENTATIVE. WRITTEN VERIFICATION OF TEST TO BE SIGNED BY OWNER'S REPRESENTATIVE. THE TESTS SHALL VERIFY THAT ALL SYSTEMS ARE FUNCTIONAL AND OPERATIONAL PRIOR TO SUBSTANTIAL COMPLETION. ANY WORK NOT PASSING THE TESTS SHALL BE CORRECTED IMMEDIATELY.
d. EXCEPT AS NOTED OTHERWISE, MOTOR STARTERS AND OTHER MEANS FOR OPERATION AND CONTROL OF EQUIPMENT ARE PROVIDED UNDER DIVISION 23, MECHANICAL.

D. WIRING
a. POWER WIRING IS IN DIVISION 26.
b. PROVIDE UNDER DIVISION 23 ALL CONTROL WIRING, LINE OR LOW VOLTAGE, THROUGH THE COILS OF THE MAGNETIC STARTERS AND RELAYS AND THROUGH THE CONTACTS OF THERMOSTATS AND OTHER PILOT DEVICES.
c. PROVIDE UNDER DIVISION 23 CONDUIT FOR ALL LINE VOLTAGE CONTROL WIRING AND EXPOSED LOW VOLTAGE WIRING IN MECHANICAL ROOMS AND CEILING PLENUMS.
d. PROVIDE FLEXIBLE CONDUIT REQUIRED ON SHORT RUNS TO EQUIPMENT SUBJECT TO VIBRATION, I.E., MOTORS, FANS.
e. MOUNT STARTERS, DISCONNECTS AND PANELS ON WALLS WHERE PRACTICAL, NOT ON EQUIPMENT OR ON STAND FROM FLOOR.
f. PROVIDE ELECTRICAL EQUIPMENT FURNISHED UNDER THIS SECTION OF SPECIFICATIONS IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND LOCAL CODES.

PART 3 - EXECUTION

1. PROJECT/SITE CONDITIONS
A. EXAMINE PREMISES AND UNDERSTAND THE CONDITIONS, WHICH MAY AFFECT PERFORMANCE OF WORK OF THIS DIVISION BEFORE SUBMITTING PROPOSALS FOR THIS WORK. NO SUBSEQUENT ALLOWANCE FOR TIME OR MONEY WILL BE CONSIDERED FOR ANY CONSEQUENCE RELATED TO FAILURE TO EXAMINE SITE CONDITIONS.
B. PREPARE DRAWINGS SHOWING PROPOSED REARRANGEMENT OF WORK TO MEET PROJECT CONDITIONS, INCLUDING CHANGES TO WORK SPECIFIED IN OTHER SECTIONS. OBTAIN PERMISSION OF ARCHITECT/ENGINEER BEFORE PROCEEDING.
C. REFER TO RECORD DRAWINGS.
2. GENERAL COORDINATION AND INSTALLATION
A. INFORM OTHER TRADES THRU GENERAL CONTRACTOR AS TO REQUIREMENTS FOR SLEEVES, BOXES, OTHER OPENINGS, AND EMBEDDED ITEMS. COORDINATE WITH OTHER TRADES IN ORDER TO MAINTAIN JOB PROGRESS SCHEDULE AND TO AVOID CONFLICTS IN THE INSTALLATION OF WORK BY OTHER TRADES.
B. FURNISH AND INSTALL PIPE SLEEVES AND EMBEDDED ITEMS REQUIRED UNDER DIVISION 23.
C. CONTRACTOR SHALL BECOME THOROUGHLY ACQUAINTED WITH THE WORK INVOLVED AND SHALL VERIFY AT THE SITE ALL MEASUREMENTS NECESSARY FOR THE PROPER INSTALLATION OF HIS WORK.
D. CONTRACTOR SHALL REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR BUILDING CONSTRUCTION AND OTHER DETAILS WHICH AFFECT THE MECHANICAL INSTALLATION AND SHALL COOPER WITH THOSE TRADES FOR FINISH ADJACENT TO HIS WORK AND ARRANGE TO HAVE VISIBLE PORTIONS OF HIS WORK (SUCH AS ACCESS DOORS, GRILLES, ETC.) FIT IN AND HARMONIZE WITH THE FINISH IN A MANNER SATISFACTORY TO THE ARCHITECT.
E. CEILING HEIGHTS: REFER TO ARCHITECTURAL DRAWINGS FOR CEILING HEIGHT REQUIREMENTS.
F. ACCESSIBILITY OF EQUIPMENT: EQUIPMENT, COILS, VALVES, DAMPERS, ETC. SHALL BE INSTALLED SO AS TO BE ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR, AND ACCESS CLEARANCES SHALL COMPLY WITH ALL APPLICABLE CODES AND AS RECOMMENDED BY RESPECTIVE MANUFACTURER.
G. BELTS, PULLEYS, COUPLINGS, PROJECTING SET SCREWS, KEYS AND OTHER ROTATING PARTS WHICH MAY POSE A DANGER TO PERSONNEL, SHALL BE FULLY ENCLOSED OR GUARDED IN ACCORDANCE WITH OSHA REGULATIONS.
H. PROVIDE OFFSETS AROUND ALL ELECTRICAL PANELS (AND SIMILAR ELECTRICAL EQUIPMENT) TO MAINTAIN SPACE CLEAR ABOVE AND BELOW PANEL TO STRUCTURE AND CLEARANCE OF 3 FEET DIRECTLY IN FRONT OF PANEL, EXCEPT WHERE INDICATED OTHERWISE OR REQUIRED BY NEC TO BE MORE.
3. PLATES AND ISOLATORS
A. PLATES:
a. INSTALL WHERE PIPES PASS THROUGH FINISHED CEILINGS AND FLOORS.
B. ISOLATORS:
a. MODEL 100 OR 500 FOR PIPING THRU FRAME WALLS.
b. MODEL LS FOR PIPING THRU CONCRETE WALLS AND FLOORS.
c. PYRO-PAC IF FLOOR OR WALL IS FIRE RATED.
4. SLEEVES
A. INSTALL 20 GAGE GALVANIZED SLEEVES FOR PIPING THRU CONCRETE FLOORS ABOVEGROUND AND THRU MASONRY, PLASTERED AND FRAME WALLS. CLEARANCE AROUND PIPE FOR INSTALLATION OF ISOLATORS AND SEALS.IRON PIPE SLEEVES FOR PIPING THRU CONCRETE WALLS AND BEAMS. GROUT AROUND SLEEVES THRU WALLS.
B. IRON PIPE SLEEVES THRU CONCRETE FLOORS IN MECHANICAL ROOMS, IN TOILET ROOMS AND OTHER AREAS WITH CONCRETE FLOORS SUBJECT TO FLOODING AND MOPPING. SET TO EXTEND | " ABOVE FINISHED FLOORS. SEALED OR CAULK. NO FLOOR PLATES.
C. WHERE COVERING IS SPECIFIED, MAKE SLEEVES OR CORES PROPER SIZE TO ALLOW FOR ISOLATORS THRU WALLS AND UNFINISHED FLOORS.
D. EXCEPT AS NOTED IN THE FOREGOING, CUT SLEEVES FLUSH WITH SURFACE.
E. SLEEVE PIPES PASSING THRU WALLS OR FLOORS IN FINISHED AREAS, THRU STONEMAN TRISOLATORS, OR LINK-SEAL TYPE LS OR PYRO-SEAL OR 3M FIRE BARRIER FS-195, TO EXTEND THRU BOTH FACES OF THE WALL OR FLOOR. CAULK AROUND SLEEVES TO PREVENT SOUND TRANSMISSION.
F. WHERE SLEEVES ARE OVERSIZE THRU FIRE SEPARATIONS, FILL VOID WITH DOW CORNING 3-6548 SILICONE RTV FOAM, LINK-SEAL PYRO-SEAL, FLAME-SAFE FIRE RETARDANT COMPOUND, OR EQUAL.
G. BORE OPENINGS FOR PIPES THRU CONCRETE AND MASONRY, USING DIAMOND CORE DRILL WHERE SLEEVING NOT DONE DURING CONSTRUCTION. H. MAKE ALL HOLES THRU PLENUMS AIRTIGHT.
5. FIRE-RATED PENETRATION SEALS
A. INSTALL IN ACCORDANCE WITH UBC.
B. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR SEALING FITTINGS AND BARRIER SEALING SYSTEMS.
6. FLASHING
A. PROVIDE FLEXIBLE FLASHING AND METAL COUNTERFLASHING WHERE PIPING AND DUCTWORK PENETRATE WEATHER OR WATERPROOFED WALLS, FLOORS, AND ROOFS.
B. FLASH VENT AND SOIL PIPES PROJECTING 3 INCHES MINIMUM ABOVE FINISHED ROOF SURFACE WITH LEAD WORKED ONE INCH MINIMUM INTO HUB, 8 INCHES MINIMUM CLEAR ON SIDES WITH 24 X 24 INCHES SHEET SIZE. FOR PIPES THROUGH OUTSIDE WALLS, TURN FLANGES BACK INTO WALL AND CAULK, METAL COUNTERFLASH AND SEAL.
C. FLASH FLOOR DRAINS IN FLOORS WITH TOPPING OVER FINISHED AREAS WITH LEAD, 10 INCHES CLEAR ON SIDES WITH MINIMUM 36 X 36 INCH SHEET SIZE. FASTEN FLASHING TO DRAIN CLAMP DEVICE.
D. SEAL FLOOR, SHOWER AND MOP SINK DRAINS, ETC., WATERTIGHT TO ADJACENT MATERIALS.
E. PROVIDE ACOUSTICAL LEAD FLASHING AROUND DUCTS AND PIPES PENETRATING EQUIPMENT ROOMS, INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR SOUND CONTROL.
F. PROVIDE CURBS FOR MECHANICAL ROOF INSTALLATIONS 6 INCH MINIMUM HIGH ABOVE ROOFING SURFACE. FLEXIBLE SHEET FLASH AND COUNTERFLASH WITH SHEET METAL; SEAL WATERTIGHT.
7. INSERTS
A. PROVIDE INSERTS TO GENERAL CONTRACTOR FOR PLACEMENT IN CONCRETE FORMWOR

# MECHANICAL GENERAL PROVISIONS CONTD.

k. CAST IRON PIPE OF ALL TYPES, AND ANY OTHER PIPE JOINED WITH A SHIELD AND CLAMP ASSEMBLY WHERE THE TOP OF THE PIPE IS 12" OR MORE FROM SUPPORTING STRUCTURE SHALL BE BRACED ON EACH SIDE OF A CHANGE IN DIRECTION OF 90◦ OR MORE. RISER JOINTS SHALL BE BRACED OR STABILIZED BETWEEN FLOORS.

l. FOR GAS PIPING, THE BRACING DETAILS, SCHEDULES AND NOTES MAY BE USED EXCEPT THAT TRANSVERSE BRACING SHALL BE AT 20'-0" O.C. MAXIMUM AND LONGITUDINAL BRACING AT 40' - 0" O.C. MAXIMUM. ALSO 1", 1..", 1|", AND 2" DIAMETER PIPES SHALL BE BRACED THE SAME AS 2|" DIAMETER PIPE IN THE SCHEDULE. (NO BRACING IS REQUIRED FOR PIPES —" DIAMETER AND SMALLER).

m. IT IS THE RESPONSIBILITY OF THE USER OF THE GUIDELINES TO ASCERTAIN THAT AN APPROPRIATE SIZE DEVICE BE SELECTED FOR EACH INDIVIDUAL PIECE OF EQUIPMENT.

C. EQUIPMENT RESTRAINTS:

a. MECHANICAL EQUIPMENT ANCHORAGES SUCH AS BOLTS, EXPANSION ANCHORS, SCREWS, ETC., SHALL COMPLY WITH THE FORCE LEVEL REQUIREMENTS ZONE 3 SEISMIC HAZARD.

b. RESTRAINING DEVICES MUST BE PLACED ON ALL SIDES OF THE EQUIPMENT BASE.

c. IT IS THE RESPONSIBILITY OF THE EQUIPMENT MANUFACTURER TO DESIGN HIS EQUIPMENT SO THAT THE STRENGTH AND ANCHORAGE OF THE INTERNAL COMPONENTS OF THE EQUIPMENT EXCEEDS THE FORCE LEVEL USED TO RESTRAIN AND ANCHOR THE UNIT ITSELF TO THE SUPPORTING STRUCTURE.

d. IT IS THE RESPONSIBILITY OF THE INSTALLER TO ASCERTAIN THAT AN APPROPRIATE SIZE DEVICE BE SELECTED FOR EACH INDIVIDUAL PIECE OF EQUIPMENT.

10. ACCESS DOORS

A. WHEN NECESSARY TO GAIN ACCESS TO THE MECHANICAL SYSTEM THRU FINISHED WALLS OR CEILINGS, FURNISH METAL PANEL ACCESS DOORS OF PROPER SIZE, SUITABLE TO INSTALLATION CONDITIONS, FOR THE GENERAL CONTRACTOR TO INSTALL AND GIVE NECESSARY INFORMATION FOR PROPER LOCATION. NOTIFY GENERAL CONTRACTOR OF REQUIREMENTS PRIOR TO BIDDING.

B. FIRE RATED WITH UL LABEL IF LOCATED IN A FIRE SEPARATION.

11. VALVES AND ACCESSORIES

A. RECORD ACTUAL LOCATIONS OF VALVES IN ALL MECHANICAL SYSTEMS ON PROJECT RECORD DRAWINGS.

B. PROVIDE VALVES AND ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

C. PROVIDE CLEARANCE FOR INSTALLATION OF INSULATION AND ACCESS TO VALVES AND FITTINGS.

D. PROVIDE ACCESS WHERE VALVES AND FITTINGS ARE NOT EXPOSED.

E. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL, NOT INVERTED.

F. PROVIDE UNIONS DOWNSTREAM OF VALVES AND AT EQUIPMENT OR APPARATUS CONNECTIONS.

G. INSTALL BRASS MALE ADAPTERS EACH SIDE OF VALVES IN COPPER PIPED SYSTEM. SWEAT SOLDER ADAPTERS TO PIPE.

H. INSTALL GATE, BALL OR BUTTERFLY VALVES FOR SHUT -OFF AND TO ISOLATE EQUIPMENT, PART OF SYSTEMS, OR VERTICAL RISERS.

I. PROVIDE GLOBE, BALL OR BUTTERFLY VALVES FOR THROTTLING, BYPASS, OR MANUAL FLOW CONTROL SERVICES.

J. PROVIDE CHECK VALVES ON DISCHARGE OF WATER PUMPS.

K. PROVIDE PLUG VALVES IN NATURAL GAS SYSTEMS FOR SHUT -OFF SERVICE.

L. PROVIDE BALANCING VALVES OR FLOW CONTROL VALVES IN WATER RECIRCULATING SYSTEMS WHERE INDICATED.

12. HEAT TRACE INSTALLATION

A. APPLY THE HEATING CABLES LINEARLY ON THE PIPE AFTER PIPING HAS BEEN SUCCESSFULLY PRESSURE TESTED. SECURE THE HEATER TO PIPING BEFORE INSULATION WITH CABLE TIES OR FIBERGLASS TAPE AT TWO-FOOT INTERVALS. POWER CONNECTION, END SEAL, SPLICE AND TEE KIT COMPONENTS SHALL BE APPLIED IN THE FIELD. WIRE AT THE ENDS OF CIRCUITS IS NOT TO BE TIED TOGETHER.

B. APPLY "ELECTRIC TRACED" SIGNS TO THE OUTSIDE OF THE THERMAL INSULATION AT TEN FOOT INTERVALS ALONG THE PIPE ON ALTERNATING SIDES.

C. AFTER INSTALLATION, AND BEFORE AND AFTER INSTALLING THE THERMAL INSULATION, SUBJECT HEATER TO TESTING USING A 2500 VDC MEGGER. MINIMUM INSULATION RESISTANCE SHOULD BE 20 TO 1000 MEGAOHMS REGARDLESS OF LENGTH.

D. THE INSTALLER SHALL PROVIDE RESISTANCE TEST FOR BOTH HEATING CABLE WIRES TO VERIFY THE CONNECTION OF ANY SPLICES OR TEES.

E. MECHANICAL CONTRACTOR IS RESPONSIBLE TO COORDINATE INSTALLATION OF HEAT TRACING WITH ELECTRICAL CONTRACTOR AND ALL SUBCONTRACTORS.

13. MECHANICAL IDENTIFICATION INSTALLATION

A. DEGREASE AND CLEAN SURFACES TO RECEIVE ADHESIVE FOR IDENTIFICATION MATERIALS.

B. PREPARE SURFACES IN ACCORDANCE WITH DIVISION 09 FOR STENCIL PAINTING.

C. PLASTIC NAMEPLATES: INSTALL WITH CORROSIVE -RESISTANT MECHANICAL FASTENERS, OR ADHESIVE.

D. PLASTIC OR METAL TAGS: INSTALL WITH CORROSIVE - RESISTANT CHAIN.

E. STENCIL PAINTING: APPLY IN ACCORDANCE WITH DIVISION 09.

F. PLASTIC PIPE MARKERS: INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

G. PLASTIC TAPE PIPE MARKERS: INSTALL COMPLETE AROUND PIPE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

H. UNDERGROUND PLASTIC PIPE MARKERS: INSTALL 6 TO 8 INCHES BELOW FINISHED GRADE, DIRECTLY ABOVE BURIED PIPE.

I. EQUIPMENT: IDENTIFY AIR HANDLING UNITS, PUMPS, HEAT TRANSFER EQUIPMENT, TANKS, AND WATER TREATMENT DEVICES WITH PLASTIC NAMEPLATES. SMALL DEVICES, SUCH AS IN -LINE PUMPS, MAY BE IDENTIFIED WITH PLASTIC OR METAL TAGS.

J. CONTROLS: IDENTIFY CONTROL PANELS AND MAJOR CONTROL COMPONENTS OUTSIDE PANELS WITH PLASTIC NAMEPLATES.

K. VALVES: IDENTIFY VALVES IN MAIN AND BRANCH PIPING WITH TAGS.

L. PIPING: IDENTIFY PIPING, CONCEALED OR EXPOSED, WITH PLASTIC PIPE MARKERS. IDENTIFY SERVICE, FLOW DIRECTION, AND PRESSURE. INSTALL IN CLEAR VIEW AND ALIGN WITH AXIS OF PIPING. LOCATE IDENTIFICATION NOT TO EXCEED 20 FEET ON STRAIGHT RUNS INCLUDING RISERS AND DROPS, ADJACENT TO EACH VALVE AND "T", AT EACH SIDE OF PENETRATION OF STRUCTURE OR ENCLOSURE, AND AT EACH OBSTRUCTION.DUCTWORK: IDENTIFY DUCTWORK WITH STENCILED PAINTING. IDENTIFY AS TO AIR HANDLING UNIT NUMBER, AND AREA SERVED. LOCATE IDENTIFICATION AT AIR HANDLING UNIT, AT EACH SIDE OF PENETRATION OF STRUCTURE OR ENCLOSURE, AND AT EACH OBSTRUCTION.

14. MOTORS

A. APPLICATION:

a. MOTORS DRAWING LESS THAN 250 WATTS AND INTENDED FOR INTERMITTENT SERVICE MAY BE GERMAINE TO EQUIPMENT MANUFACTURER AND NEED NOT CONFORM TO THESE SPECIFICATIONS.

b. MOTORS SHALL BE OPEN DRIP -PROOF TYPE, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE.

c. MOTORS WITH FRAME SIZES 143T AND LARGER SHALL BE ENERGY EFFICIENT TYPE.

d. SINGLE-PHASE MOTORS FOR SHAFT MOUNTED FANS AND CENTRIFUGAL PUMPS SHALL BE SPLIT PHASE TYPE.

e. SINGLE-PHASE MOTORS FOR SHAFT MOUNTED FANS OR BLOWERS SHALL BE PERMANENT SPLIT CAPACITOR TYPE.

f. SINGLE-PHASE MOTORS FOR AIR COMPRESSORS SHALL BE CAPACITOR START TYPE.

g. MOTORS LOCATED IN DIRECT DRIVE VANE-AXIAL FANS SHALL BE TOTALLY ENCLOSED TYPE.

h. MOTORS LOCATED IN EXTERIOR LOCATIONS SHALL BE TOTALLY ENCLOSED WEATHERPROOF EPOXY -SEALED TYPE.

15. MAINTAINING SERVICE

A. THE EXISTING BUILDING WILL REMAIN OCCUPIED DURING CONSTRUCTION.

B. ALL SERVICES SHALL BE MAINTAINED IN THE OCCUPIED AREAS OF THE BUILDING WITH A MINIMUM OF INTERRUPTION.

C. CONTRACTOR SHALL REPAIR OR REPLACE PROMPTLY ANY EXISTING UTILITIES DAMAGED BY THE CONTRACTOR'S OPERATION.

D. CONTRACTOR SHALL COORDINATE PHASING IF APPLICABLE OF CONSTRUCTION WORK WITH GENERAL CONTRACTOR AND SHALL ABIDE BY GENERAL CONTRACTOR'S PHASING SCHEDULE.

16. PRODUCT DELIVERY, STORAGE AND HANDLING

A. USE CARE IN TRANSPORTING, STORAGE AND HANDLING TO AVOID DAMAGE.

B. KEEP MATERIALS AND EQUIPMENT CLEAN, DRY AND FREE FROM HARMFUL AND HAZARDOUS CONDITIONS.

17. PROTECTION AND CLEANING

A. PROTECT ALL MATERIALS, EQUIPMENT, FIXTURES, PIPING AND VALVES FROM DAMAGE AND AGAINST RUST AND DIRTY CONDITIONS DURING PROGRESS OF THE JOB.

B. PROMPTLY REMOVE ALL WASTE MATERIAL AND RUBBISH AT THE END OF EACH WORKDAY.

C. CLEAN UP ALL EQUIPMENT AND FLUSH OUT AND CLEAN ALL PLUMBING FIXTURES AT COMPLETION OF JOB.

D. CLEAN OUT VENTILATION EQUIPMENT BOTH INSIDE AND OUT ON COMPLETION OF THE JOB. INSTALL CLEAN FILTERS.

E. FLUSH OUT ALL PIPING, CLEAN DIRT LEGS AND STRAINERS.

18. INSPECTION

A. DO NOT ALLOW ANY WORK TO BE COVERED UP OR ENCLOSED UNTIL INSPECTED, TESTED AND APPROVED BY ARCHITECT AND OTHER AUTHORITIES HAVING JURISDICTION OVER THE WORK.

B. SHOULD ANY WORK BE ENCLOSED OR COVERED UP BEFORE SUCH INSPECTION AND TEST, CONTRACTOR SHALL, AT ITS OWN EXPENSE, UNCOVER WORK, AND AFTER IT HAS BEEN INSPECTED, TESTED AND APPROVED, MAKE ALL REPAIRS AS NECESSARY TO RESTORE ALL WORK DISTURBED TO ITS ORIGINAL CONDITION.

19. TEMPORARY SYSTEMS

A. AIR SYSTEMS: DO NOT USE AIR SYSTEMS DURING CONSTRUCTION FOR TEMPORARY HEAT OR CONSTRUCTION VENTILATION. COVER DUCT AND GRILLE OPENINGS WITH TAPED-ON PLASTIC SHEET OR EQUIVALENT TO KEEP ALL CONSTRUCTION DUST OUT OF THE DUCTWORK.

B. TEMPORARY HEAT:

a. MAKE SEPARATE TEMPORARY HEATING SYSTEM AVAILABLE AND OPERATE AS EARLY AS PRACTICAL FOR TEMPORARY HEATING OF BUILDING DURING CONSTRUCTION.

b. FUEL AND POWER WILL BE THE RESPONSIBILITY OF CONTRACTOR.

20. OPERATING & MAINTENANCE INSTRUCTIONS

A. FOLLOWING INITIAL OPERATION OF MECHANICAL SYSTEMS AND PRIOR TO ACCEPTANCE BY THE OWNER, PERFORM THE FOLLOWING SERVICES:

a. AT LEAST TWO WEEKS PRIOR TO EACH INSTRUCTION PERIOD GIVE WRITTEN NOTIFICATION OF READINESS TO PROCEED TO THE ARCHITECT/ENGINEER AND THE OWNER, AND OBTAIN MUTUALLY ACCEPTABLE DATES.

b. CONDUCT DEMONSTRATIONS AND INSTRUCTIONS FOR THE OWNER'S REPRESENTATIVES, POINTING OUT REQUIREMENTS FOR SERVICING AND MAINTAINING EQUIPMENT AND SYSTEMS PROVIDED UNDER THIS CONTRACT.

c. IF REQUESTED BY THE ARCHITECT/ENGINEER, FURNISH QUALIFICATIONS OF CONTRACTORS' PERSONNEL IN CHARGE OF THE INSTRUCTION; FOREMAN POSITION IS MINIMUM ACCEPTABLE.

d. OWNER'S REPRESENTATIVE MAY INCLUDE PERSONNEL FROM OPERATIONS, FACILITIES ENGINEERING AND MAINTENANCE DEPARTMENTS.

e. INCLUDE PRELIMINARY DISCUSSION, INFORMATION FROM MAINTENANCE MANUAL AND CONTRACT DRAWINGS; CONDUCT TOURS OF THE NEW CONSTRUCTION, EXPLAINING MAINTENANCE, OPERATION AND ADJUSTMENT OF EACH PIECE OF EQUIPMENT.

f. MINIMUM DURATION OF INSTRUCTION PERIODS:

- HEATING, VENTILATING, AND AIR CONDITIONING; 8 HOURS
- CONTROLS; 16 HOURS

g. PROVIDE WRITTEN OUTLINE OF MATERIAL TO BE COVERED IN INSTRUCTION PERIODS FOR REVIEW TWO WEEKS MINIMUM PRIOR TO SESSIONS.

h. INSTRUCTION PERIODS SHALL OCCUR AFTER O&M MANUALS HAVE BEEN REVIEWED AND APPROVED AND SHALL INCORPORATE MANUALS IN THE COURSE MATERIAL.

21. FUNCTIONAL TESTING

A. PRIOR TO PERFORMING THE FUNCTIONAL TEST IN THE PRESENCE OF THE ENGINEER AND BUILDING OWNER'S REPRESENTATIVE, THE CONTRACTOR SHALL HAVE TESTED ALL MECHANICAL SYSTEMS, COMPONENTS AND CONTROLS TO FULLY PROVE FUNCTIONALITY. MAKE ALL FINAL CALIBRATIONS, ADJUSTMENTS AND REPAIRS PRIOR TO CALLING FOR FUNCTIONAL TEST TO BE WITNESSED.

B. PROVIDE FUNCTIONAL TEST OF ALL MECHANICAL SYSTEMS, COMPONENTS AND CONTROL SYSTEM. SYSTEMS AND COMPONENTS SHALL BE RUN THROUGH ALL MODES OF OPERATION DEMONSTRATING THAT SYSTEMS AND COMPONENTS ARE FULLY FUNCTIONAL. TEST SHALL BE CONDUCTED IN THE PRESENCE OF THE ENGINEER AND BUILDING OWNER'S REPRESENTATIVE. PROVIDE WRITTEN TEST PROCEDURE TWO WEEKS PRIOR TO SCHEDULED TEST. PROVIDE WRITTEN VERIFICATION OF TEST TO BE SIGNED BY OWNER'S REPRESENTATIVE. PROVIDE OWNER WITH COPY OF SIGNED VERIFICATION.

C. SHOULD SYSTEMS NOT FUNCTION PROPERLY IN FUNCTIONAL TEST WITNESSED BY ENGINEER OR SYSTEMS, IN-PART OR WHOLE, NOT READY AND/OR COMPLETE FOR TEST, CONTRACTOR SHALL REIMBURSE ENGINEER FOR TIME AND EXPENSES, MINIMUM OF $800/WORK DAY, REQUIRED TO WITNESS ADDITIONAL TESTS OF SYSTEMS OR COMPONENTS NOT PERFORMING ACCEPTABLY OR NOT COMPLETE FOR A FULL TEST. THIS PORTION OF THE BID CONTRACT SHALL BE DEEMED NON-CONFORMING IN FUNCTIONAL TEST IS NOT COMPLETED AS SCHEDULED. PAYMENT TO ENGINEER FOR THE NON-CONFORMING FUNCTIONAL TEST MUST BE MADE PRIOR TO ANY ADDITIONAL FUNCTIONAL TESTS.

22. PROJECT CLOSEOUT

A. REQUIREMENTS FOR FINAL INSPECTION:

a. ALL OF THE FOLLOWING ITEMS SHALL BE COMPLETED PRIOR TO FINAL INSPECTIONS. NO EXCEPTIONS WILL BE MADE AND NO APPROVAL FOR FINAL PAYMENT WILL BE MADE UNTIL ALL ITEMS ARE COMPLETED:

b. CLEANING EQUIPMENT AND PREMISES

c. PROOF OF FUNCTIONAL TESTING

d. OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

e. OPERATOR TRAINING SESSIONS

f. TESTING, ADJUSTING AND BALANCING

g. APPROVALS OF ALL CODE AUTHORITIES AND BUILDING OFFICIALS

h. RECORD DRAWINGS ("AS-BUILT")

i. GUARANTEE

B. REFER TO DIVISION 01 FOR ADDITIONAL REQUIREMENTS.

BID SET 8-29-2023

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SUDDEN VALLEY
RECREATIONAL CENTER
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REVISIONS

| NO | DATE | BY | DESCRIPTION |
|---|---|---|---|
| - | 04/20/23 | RR | PERMIT SET |

TITLE

**SPECIFICATIONS**

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|---|---|
| DESIGNED | RR |
| DRAWN | RR |
| CHECKED | RR |
| DATE | 8/29/2023 |
| CADD FILE | 2022.37 M0.0.DWG |
| JOB NUMBER | 2022.37 |

**M0.3**