

KLAPPRICH WARMING HOUSE

340 Park St. E Wayzata, MN 55391

CONSTRUCTION DOCUMENTS

March 17th, 2025

ABBREVIATIONS INDEX

| ABBREVIATION | COMPONENT |
|--------------|---|
| A | |
| ACT | ACOUSTICAL CEILING TILE |
| ADA | AMERICANS WITH DISABILITIES ACT |
| ADJ | ADJACENT |
| AFF | ABOVE FINISH FLOOR |
| AHJ | AUTHORITY HAVING JURISDICTION |
| ALT | ALTERNATE |
| ALUM | ALUMINUM |
| APPROX | APPROXIMATELY |
| ARCH | ARCHITECT / ARCHITECTURAL |
| AVG | AVERAGE |
| B | |
| BD | BOARD |
| BLDG | BUILDING |
| BLKG | BLOCKING |
| BRG | BEARING |
| C | |
| C/C | CENTER TO CENTER |
| CAB | CABINET |
| CFMF | COLD FORMED METAL FRAMING |
| CG | CORNER GUARD |
| CIP | CAST IN PLACE |
| CJ | CONTROL JOINT |
| CL | CENTER LINE |
| CLG | CEILING |
| CLR | CLEAR |
| CMU | CONCRETE MASONRY UNIT |
| COL | COLUMN |
| CONC | CONCRETE |
| CONST | CONSTRUCTION |
| CONT | CONTINUOUS |
| CONTR | CONTRACTOR |
| CORR | CORRIDOR |
| CPT | CARPET |
| CT | CERAMIC TILE |
| CTR | CENTER |
| CUH | CABINET UNIT HEATER |
| D | |
| DBL | DOUBLE |
| DEPT | DEPARTMENT |
| DET | DETAIL |
| DF | DRINKING FOUNTAIN |
| DIA | DIAMETER |
| DIAG | DIAGONAL |
| DN | DOWN |
| DR | DOOR |
| DS | DOWNSPOUT |
| DWG | DRAWING |
| E | |
| EIFS | EXTERIOR INSULATION & FINISH SYSTEM |
| EJ | EXPANSION JOINT |
| ELEC | ELECTRICAL |
| ELEV | ELEVATION |
| EQ | EQUAL |
| EQUIP | EQUIPMENT |
| EXIST | EXISTING |
| EXT | EXTERIOR |
| F | |
| F/T | FIRE TREATED |
| FD | FLOOR DRAIN |
| FE | FIRE EXTINGUISHER |
| FEC | FIRE EXTINGUISHER CABINET |
| FIN | FINISH |
| FIX | FIXTURE |
| FLR | FLOOR |
| FT | FEET |
| G | |
| GALV | GALVANIZED |
| GYP | GYPSUM |
| H | |
| HB | HOSE BIBB |
| HD | HAND DRYER |
| HDW | HARDWARE |
| HM | HOLLOW METAL |
| HORIZ | HORIZONTAL |
| HR | HOUR |
| HVAC | HEATING, VENTILATING AND AIR CONDITIONING |
| I | |
| INSUL | INSULATION |
| INT | INTERIOR |

ABBREVIATIONS INDEX

| ABBREVIATION | COMPONENT |
|--------------|-------------------------|
| J | |
| JAN | JANITOR |
| L | |
| LAV | LAVATORY |
| LF | LINEAR FEET |
| LVL | LEVEL |
| M | |
| M.O. | MASONRY OPENING |
| MAINT | MAINTENANCE |
| MAX | MAXIMUM |
| MECH | MECHANICAL |
| MFR | MANUFACTURER |
| MH | MANHOLE |
| MIN | MINIMUM |
| MTL | METAL |
| N | |
| NIC | NOT IN CONTRACT |
| NO | NUMBER |
| NOM | NOMINAL |
| NTS | NOT TO SCALE |
| O | |
| OC | ON CENTER |
| OPNG | OPENING |
| P | |
| PART | PARTITION |
| PERP | PERPENDICULAR |
| PLAM | PLASTIC LAMINATE |
| PLBG | PLUMBING |
| PLYWD | PLYWOOD |
| PREFIN | PREFINISHED |
| PROJ | PROJECTION / PROJECTOR |
| Q | |
| QT | QUARRY TILE |
| R | |
| RB | RESILIENT BASE |
| RCP | REFLECTED CEILING PLAN |
| RD | ROOF DRAIN |
| REC | RECOMMENDATION / RECORD |
| REF | REFERENCE |
| REINF | REINFORCED |
| RM | ROOM |
| RO | ROUGH OPENING |
| ROW | RIGHT OF WAY |
| S | |
| SCH | SCHEDULE |
| SIM | SIMILAR |
| SPEC | SPECIFICATIONS |
| ST STL | STAINLESS STEEL |
| STL | STEEL |
| STOR | STORAGE |
| STRUCT | STRUCTURAL |
| T | |
| TOPO | TOPOGRAPHY |
| TOS | TOP OF STEEL |
| TOW | TOP OF WALL |
| TWF | THRU WALL FLASHING |
| TYP | TYPICAL |
| U | |
| UG | UNDERGROUND |
| UH | UNIT HEATER |
| V | |
| VB | VINYL BASE |
| VCT | VINYL COMPOSITION TILE |
| VERT | VERTICAL |
| VEST | VESTIBULE |
| VFY | VERIFY |
| VIF | VERIFY IN FIELD |
| VWC | VINYL WALL COVERING |
| W | |
| W/ | WITH |
| W/O | WITHOUT |
| WC | WATER CLOSET |
| WDW | WINDOW |
| Y | |
| YD | YARD |

MATERIALS LEGEND

| | | | |
|--|-----------------------|--|------------------------|
| | EARTH | | MASONRY |
| | GRAVEL/COMPACTED FILL | | TILE |
| | CONCRETE | | MARBLE / SOLID SURFACE |
| | STEEL | | GLASS |
| | ALUMINUM | | FINISH MILLWORK |
| | CMU | | WOOD BLOCKING |
| | BATT/LOOSE INSULATION | | GYPSUM WALL BOARD |
| | RIGID INSULATION | | PLYWOOD |
| | SPRAY FOAM INSULATION | | PARTICLE BOARD |
| | MORTAR/GROUT | | STONE |

ANNOTATION LEGEND

| | | | |
|--|----------------------------|--|----------------------------|
| | EXTERIOR WALL TAG | | ELEVATION MARKER |
| | INTERIOR PARTITION TAG | | REVISION TAG |
| | DOOR TAG | | INTERIOR ELEVATION KEYNOTE |
| | EXTERIOR ELEVATION KEYNOTE | | FLOOR PLAN KEYNOTE |
| | CEILING PLAN KEYNOTE | | DEMO KEYNOTE |
| | EXTERIOR ELEVATION MARKER | | INTERIOR ELEVATION MARKER |
| | BUILDING SECTION | | WALL SECTION |
| | DETAIL SECTION | | CALLOUT |
| | Room name | | Room name |
| | NORTH | | |

| SHEET INDEX - ARCHITECTURAL | |
|-----------------------------|--|
| SHEET NUMBER | SHEET NAME |
| a0.0 | COVER SHEET |
| a0.1 | CODE REVIEW |
| a0.5 | ACCESSIBILITY DIAGRAMS |
| a1.1d | DEMOLITION PLAN |
| a2.1 | FLOOR PLAN |
| a2.1fe | FURNITURE & EQUIPMENT PLAN |
| a2.1i | FINISH PLANS |
| a2.2 | ROOF PLAN |
| a3.1 | EXTERIOR ELEVATIONS |
| a4.1 | BUILDING SECTIONS |
| a4.2 | WALL SECTIONS |
| a5.1 | TYP. WALL ASSEMBLIES |
| a5.2 | PLAN DETAILS |
| a5.3 | LARGE SCALE DETAILS |
| a5.4 | FIREPLACE DETAILS |
| a5.5 | FIREPLACE DETAILS |
| a7.1 | MILLWORK DETAILS - ICE SKATE RENTAL DESK |
| a8.1 | DOOR SCHEDULE & DETAILS |
| a9.1 | REFLECTED CEILING PLANS |

| SHEET INDEX - STRUCTURAL | |
|-------------------------------|--------------|
| Sheet Name | Sheet Number |
| STRUCTURAL COVER SHEET | s0.0 |
| GENERAL STRUCTURAL NOTES | s0.1 |
| TYPICAL DETAILS - FOUNDATION | s0.2 |
| FIRST FLOOR - FOUNDATION PLAN | s2.1 |
| ROOF - FRAMING PLAN | s2.2 |
| FOUNDATION DETAILS | s5.1 |
| FRAMING DETAILS | s6.0 |

| SHEET INDEX - MECHANICAL | |
|------------------------------------|------------|
| Sheet Number | Sheet Name |
| MECHANICAL COVER SHEET | M0.0 |
| MECHANICAL FLOOR PLAN - DEMOLITION | M2.1D |
| MECHANICAL FLOOR PLAN | M2.1 |
| MECHANICAL DETAILS | M5.1 |

| SHEET INDEX - PLUMBING | |
|----------------------------------|------------|
| Sheet Number | Sheet Name |
| PLUMBING COVER SHEET | P0.0 |
| PLUMBING FLOOR PLAN - DEMOLITION | P2.1D |
| PLUMBING FLOOR PLAN | P2.1 |
| PLUMBING RISER AND SCHEDULE | P4.1 |
| PLUMBING DETAILS | P5.1 |
| PLUMBING SPECIFICATIONS | P9.1 |
| PLUMBING SPECIFICATIONS | P9.2 |

| SHEET INDEX - ELECTRICAL | |
|--|------------|
| Sheet Number | Sheet Name |
| ELECTRICAL COVER SHEET | E0.0 |
| ELECTRICAL FLOOR PLAN - DEMOLITION | E2.1D |
| ELECTRICAL FLOOR PLAN - LIGHTING | E2.1 |
| ELECTRICAL FLOOR PLAN - POWER AND SYSTEMS | E3.1 |
| ELECTRICAL SINGLE LINE DIAGRAM AND SCHEDULES | E4.1 |
| ELECTRICAL SPECIFICATIONS | E9.1 |
| ELECTRICAL SPECIFICATIONS | E9.2 |

GENERAL NOTES

- CONTRACTOR SHALL VERIFY ALL DIMENSIONS, CONDITIONS ETC. AND REPORT ANY DISCREPANCIES TO THE ARCHITECT.
- CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED FOR CONSTRUCTION AND PAY ALL INSPECTION FEES FOR ALL PORTIONS OF THE WORK.
- CONTRACTOR SHALL VISIT THE SITE (INCLUDING MECHANICAL & ELECTRICAL SUB-CONTRACTORS) TO VERIFY ALL EXISTING CONDITIONS AND TO DETERMINE THE FULL EXTENT OF THE WORK REQUIRED TO COMPLETE THE DESIGN SHOWN ON THE PLANS.
- ALL CONTRACTORS SHALL MEET OR EXCEED ALL STATE OF MINNESOTA AND CITY OF WAYZATA CODES AND STANDARDS. EXISTING CODE REQUIREMENTS SHALL TAKE PRECEDENCE OVER WHAT IS SHOWN ON PLANS.
- CONTRACTOR SHALL PROVIDE ADEQUATE VENTILATION FOR WORKERS & ALL EMPLOYEES WHEN PAINTING OR USING ADHESIVES OR TOXIC CHEMICALS. PAINTING MAY HAVE TO BE DONE ON WEEKENDS IN OCCUPIED AREAS.
- CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL SURFACES DAMAGED DUE TO CONSTRUCTION.

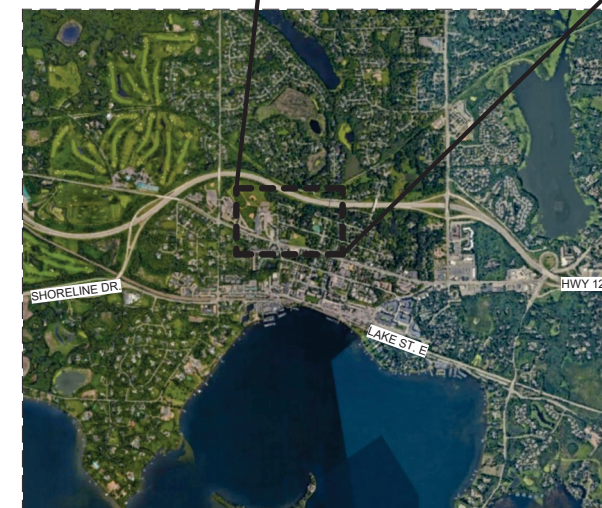
CONTRACTOR REQUIREMENTS

THIS WORK FOR THIS PROJECT INCLUDES ALL WORK NECESSARY TO COMPLETE THE GENERAL CONSTRUCTION.

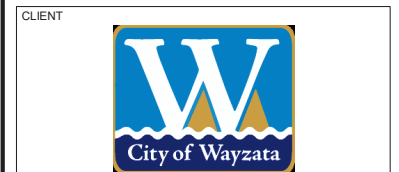
UNDER THIS CONTRACT THE CONTRACTOR SHALL:

- COORDINATE USE OF PREMISES WITH THE OWNER.
- CONTRACTOR'S WORK SHALL CONFORM TO THE OWNER'S WORK RULES AND SPECIFICATIONS.
- REPAIR OR REPLACE SITE DAMAGE TO CONDITIONS WHICH EXISTED PREVIOUS TO STARTING WORK.
- PLAN WORK SEQUENCE WITH OWNER AND ARCHITECT AND OBTAIN THEIR APPROVAL BEFORE STARTING WORK.
- NOTIFY OWNER AND ARCHITECT OF EXISTING SITE CONDITIONS THAT ARE IN CONFLICT WITH THE INTENT OF THESE DOCUMENTS.
- COORDINATE ALL WORK ON THE PROJECT. GENERAL CONTRACTOR SHALL PROVIDE A PROJECT SUPERINTENDENT TO MANAGE AND SUPERVISE THE WORK.
- EACH CONTRACTOR AND SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED TO COMPLETE THEIR WORK.
- CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR PROTECTION AND SAFEKEEPING OF PRODUCTS UNDER THIS CONTRACT.
- IT IS THE RESPONSIBILITY OF SUPPLIERS TO PROVIDE MANUFACTURER'S SPECS AND SHOP DRAWINGS FOR FIXTURES AND EQUIPMENT TO THE ARCHITECT FOR APPROVAL. IT IS THE RESPONSIBILITY OF THE RELATED SUB-CONTRACTORS FOR FIELD VERIFICATION AND REVIEW OF SHOP DRAWINGS PRIOR TO FABRICATION APPROVAL OR FIELD CONSTRUCTION OF ANY RELATED WORK.
- PROVIDE A WASTE CONTAINER AND PAY FOR REMOVAL SERVICE OF ALL REFUSE AND WASTE MATERIALS GENERATED BY ALL PRIME CONTRACTORS AND SUB-CONTRACTORS. EACH SUB-CONTRACTOR WILL BE RESPONSIBLE FOR CLEAN-UP AND REMOVAL OF THEIR OWN WASTE MATERIALS FROM THE SITE. LEAVE THE SPACE VACUUM AND BROOM CLEAN. CLEAN ALL GLASS AND MIRRORS.
- RECEIVE AND VERIFY ALL OWNER SUPPLIED MATERIALS AND EQUIPMENT. ALL SHORTAGES AND DAMAGES SHALL BE DOCUMENTED ON RECEIVING TICKETS AND REPORTED TO OWNER AND ARCHITECT IMMEDIATELY UPON RECEIPT.
- FINAL CLEANING SHALL BE DONE BY A PROFESSIONAL CLEANING SERVICE OR EQUAL.
- PROVIDE OWNER WITH LABOR AND MATERIAL WARRANTIES AND SERVICE CONTRACTS FROM ALL SUB-CONTRACTORS AND EQUIPMENT AND MATERIAL MANUFACTURERS. THESE WARRANTIES SHALL BE IN EFFECT FOR A PERIOD OF ONE (1) YEAR FROM INSTALLATION DATE.

PROJECT LOCATION



1 SITE LOCATION
NO SCALE



Architect
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the state of Minnesota.

Signature:
Typed or Printed Name: Matt Lysne
Date: 3/17/2025 License Number: 44878

| REVISION | DATE | DESCRIPTION |
|----------|-----------|------------------------|
| | 3/17/2025 | CONSTRUCTION DOCUMENTS |

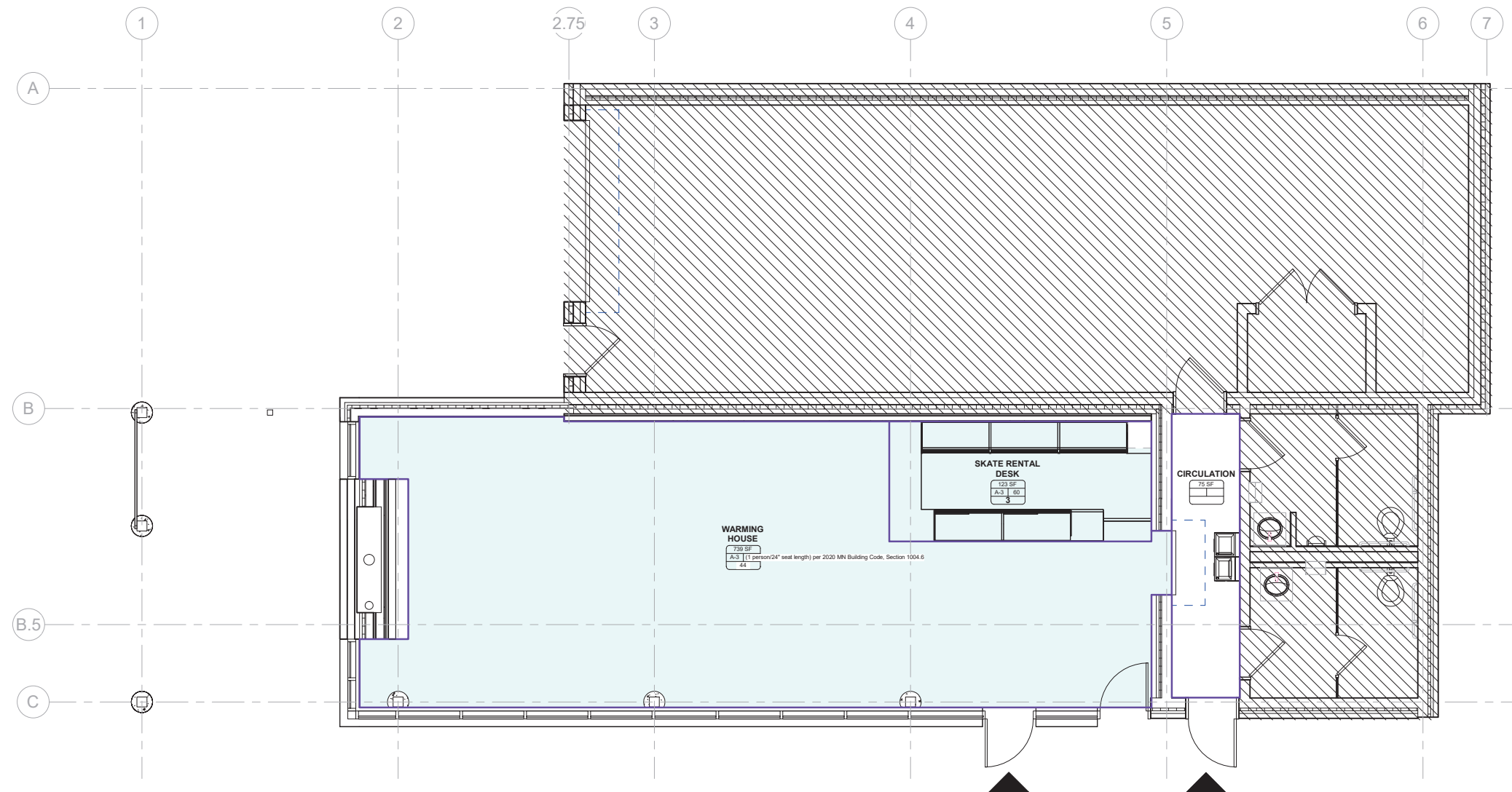
CLIENT
340 Park St. E
Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

DRAWING TITLE
COVER SHEET

DRAWING NUMBER
a0.0

PROJECT NUMBER 2424



OCCUPANCY TYPE / SPACE FUNCTION

A-3

1 CODE PLAN
1/4" = 1'-0"

PROJECT INFORMATION

Address: 340 Park St. E, Wayzata, MN 55391
 Owner: City of Wayzata
 PID: 0611722240060
 Site Parcel Area: 8.88 Acres (386,910 sq ft)

Building Code Review

B. Applicable Codes
 Minnesota State Building Code - 2020
 Minnesota State Accessibility Code - 2020
 Minnesota Fire Code - 2020
 Minnesota Energy Code - 2024

C. Proposed Building

The project is a renovation of the existing Klapprich Park Warming House in Wayzata, MN. The renovation efforts seek to update the space for increased public use and a more modern interior.

D. Occupancy Classifications

(2020 Minnesota Building Code, Ch. 3)

The proposed building will have the following Occupancy Groups:
 • Group A3 - Assembly, Fixed Seating
 • Group A3 - Skate Rental Desk

E. Building Construction Type V-B (Non-Sprinklered)

(2020 Minnesota Building Code, Ch. 6 & Table 601)
 Primary Structural Frame 0 HR
 Bearing Walls - exterior 0 HR
 Bearing Walls - interior 0 HR
 Nonbearing Walls - exterior 0 HR per Table 602
 Nonbearing Walls - interior 0 HR
 Floor Construction 0 HR
 Roof Construction 0 HR

F. Construction Type and Allowable Building Height & Area

(2020 Minnesota Building Code, Table 504.3, 504.4 & 506.2)
 Type V-B (Non-Sprinklered) 40' Max Height above grade
 Max 1 Stories above grade permitted
 Max Area of 6,000 SF

G. Exit Requirements

(2020 Minnesota Building Code, Table 1004.5, Section 1005)

A Occupancy

47

Total Occupancy = 47

Exiting

Occupant Load 47 Occupants
 Egress Width (46 x 0.2) 9.4 inches
 Door Width (46 x 0.2) 9.4 inches ≤ 36" provided

Accessible Egress Component sizing will exceed minimum requirements stated in 2020 Minnesota Building Code Sections 1009 & 1010

H. Accessibility

All spaces shall comply with 2020 Minnesota Accessibility Code

I. Plumbing Fixture Requirements

(2020 Minnesota Building Code, Table 2902.1)

See Example Below:

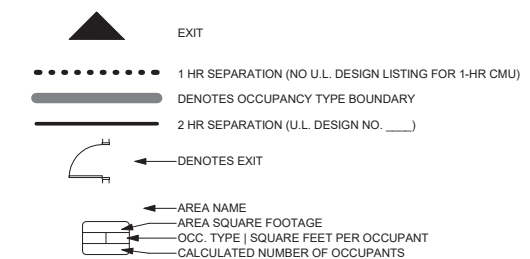
A3-Occupancy: 46 Occupants (23 Male / 23 Female)

Male (23 Occupants):
 • Water Closets Required Existing to Remain
 • Lavatories Required Existing to Remain

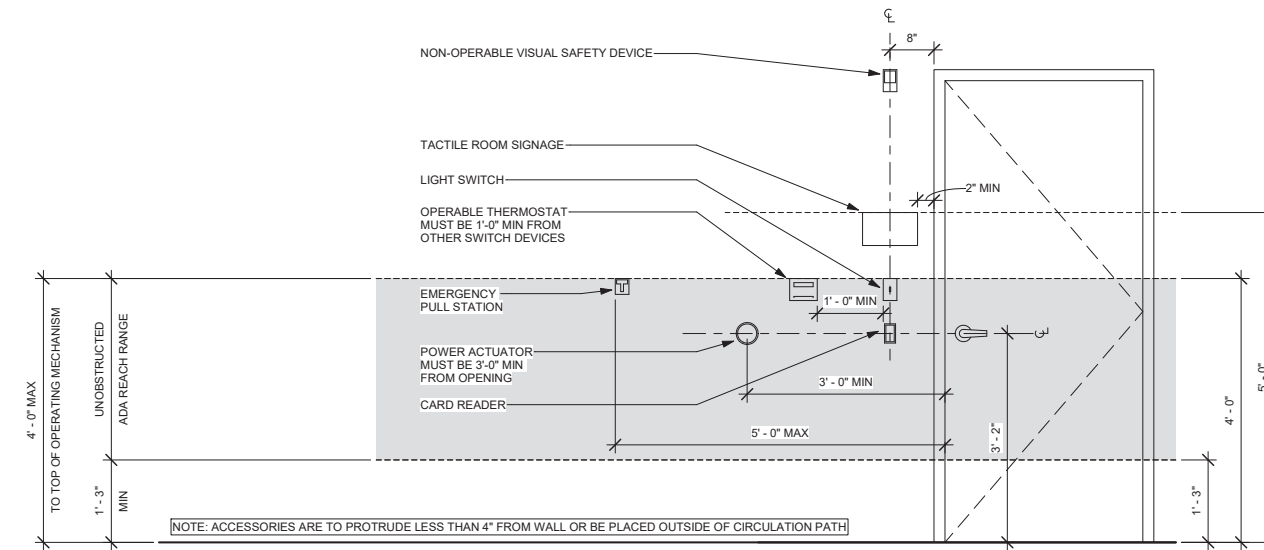
Female (23 Occupants):
 • Water Closets Required Existing to Remain
 • Lavatories Required Existing to Remain

Drinking Fountains:
 • (1 per 100 occupants) Total Req'd / Total Provided = 1/1

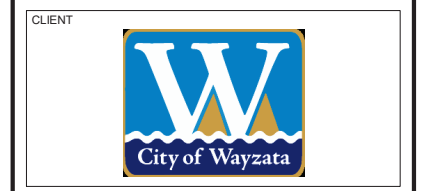
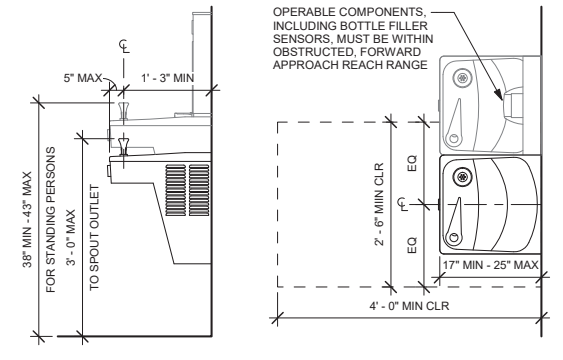
Service Sinks: Existing to Remain



| REVISION | DATE | DESCRIPTION |
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NOTE: SINGLE DRINKING FOUNTAIN INSTALLATIONS SHALL BE ACCESSIBLE. FOUNTAINS FOR STANDING PERSONS MAY BE PROVIDED ONCE ACCESSIBLE REQUIREMENTS ARE MET.



Architect
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the state of Minnesota.

Signature: *Matt Lysne*

Typed or Printed Name: Matt Lysne

Date: 3/17/2025 License Number: 44878

| REVISION | DATE | DESCRIPTION |
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| | 3/17/2025 | CONSTRUCTION DOCUMENTS |
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CLIENT

340 Park St. E
Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

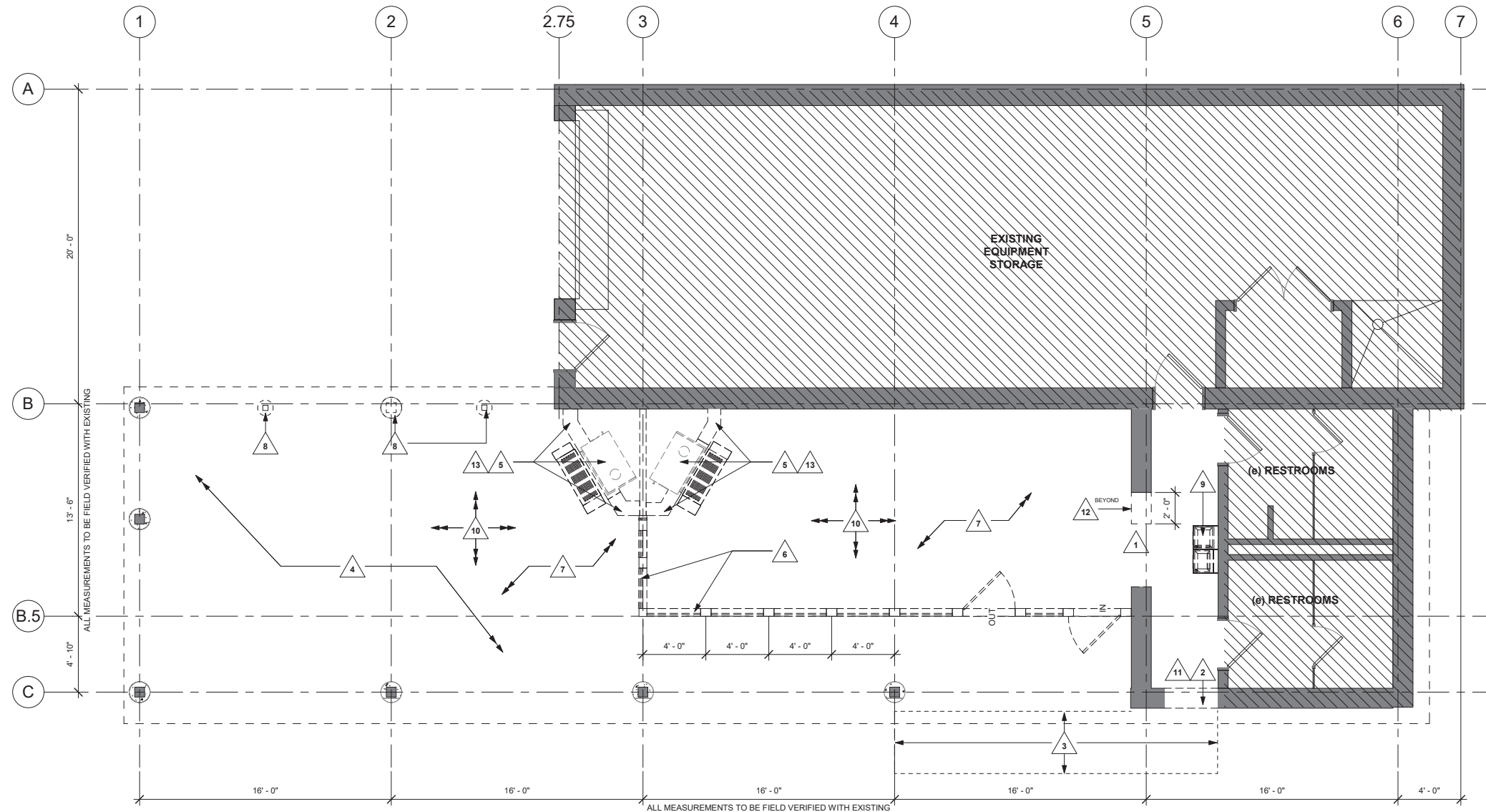
DRAWING TITLE

ACCESSIBILITY DIAGRAMS

DRAWING NUMBER

a0.5

PROJECT NUMBER 2424



1 DEMOLITION FLOOR PLAN
1/4" = 1'-0"









| KEYNOTES - DEMO | |
|-----------------|--|
| Number | Description |
| 1 | PREPARE OPENING FOR COILING SECURITY SHUTTER |
| 2 | DEMOLISH 3'-4" W x 7'-4" H OPENING FOR NEW DOOR AND FRAME |
| 3 | EXCAVATE TO ACCOMMODATE NEW STRUCTURAL STOOP - SEE STRUCT. |
| 4 | REMOVE ANY PATIO EQUIPMENT / FURNITURE DURING CONSTRUCTION - SALVAGE FOR OWNER |
| 5 | DEMOLISH FIREPLACE AND ADJACENT WALLS IN THEIR ENTIRETY |
| 6 | DEMOLISH ENTIRE EXTERIOR PARTITION ASSEMBLY INCLUDING: -CMU FOUNDATION WALL TWO COURSES BELOW FINISHED FLOOR - SEE STRUCT. -KNEE WALL -STOREFRONT SYSTEM -WALL ABOVE STOREFRONT SYSTEM |
| 7 | DEMOLISH SLAB AS NECESSARY FOR NEW FROST FOOTINGS AND HEATED FLOOR SYSTEM - SEE STRUCT. AND PLUMB. |
| 8 | DEMOLISH POST AND PIER DOWN TO 8" BELOW FINISHED FLOOR - SEE STRUCT. |
| 9 | REMOVE EXISTING WATER FOUNTAIN, PLUMBING HOOKUP TO REMAIN AND PREPARE FOR NEW HI/LOW DRINKING FOUNTAIN WITH WATER BOTTLE FILLER - SEE MEP |
| 10 | PREPARE ENTIRE UNDERSIDE OF ROOF (INTERIOR AND EXTERIOR) TO RECEIVE WOOD STAIN - SEE #2.11 |
| 11 | PARTIALLY DEMOLISH INTERIOR SLAB AND PREPARE FOR NEW STRUCTURAL STOOP - SEE STRUCT. FOR EXTENTS |
| 12 | DEMOLISH FOUNDATION DOWN TO 8" BELOW FINISHED FLOOR - SEE STRUCT. |
| 13 | DEMOLISH CMU FOUNDATION AT FIREPLACE DOWN TWO COURSES - SEE STRUCT. |


DEMOLITION FLOOR GENERAL NOTES

- CONTRACTOR TO VERIFY ALL CONDITIONS AND REPORT DISCREPANCIES TO THE ARCHITECT OR OWNER, PRIOR TO BEGINNING CONSTRUCTION.
- CONTRACTOR TO REPAIR OR REPLACE ANY DAMAGED AREAS TO THE CONDITION WHICH EXISTED PRIOR TO STARTING WORK.
- REMOVE ALL CEILING TILE AND GRID ASSEMBLY, LIGHTING, MECHANICAL DIFFUSERS/RETURNS, ETC. COMPLETELY TO PREPARE FOR NEW LAYOUT.
- WALLS MARKED FOR DEMOLITION TO BE REMOVED IN THEIR ENTIRETY - INCLUDING ALL WALL MOUNTED FIXTURES/ACCESSORIES U.O.
- REFER TO MECHANICAL NARRATIVE FOR EXTENTS OF DEMOLITION SCOPE.
- REFER TO ELECTRICAL NARRATIVE FOR EXTENTS OF DEMOLITION SCOPE.
- THE GENERAL CONTRACTOR SHALL ACCEPT THE PROJECT AS IT EXISTS. EXISTING CONDITIONS, WHETHER OR NOT SPECIFICALLY NOTED ON THE DRAWINGS, SHALL BE VERIFIED BY THE GENERAL CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORK.
- DEMOLITION DRAWINGS INDICATE GENERAL SCOPE OF WORK ONLY. NOT ALL DEMOLITION WORK NECESSARY IS SPECIFICALLY INDICATED. THE EXTENT AND METHOD OF DEMOLITION SHALL BE AS NEEDED TO ACCOMMODATE THE NEW WORK AS DETAILED.
- THE NOTATION "NO WORK" INDICATES THAT SUBSTANTIAL DEMOLITION ACTIVITIES ARE NOT ANTICIPATED IN THE DESIGNATED ROOM OR AREA. INCIDENTAL MODIFICATION OR DEMOLITION MAY BE REQUIRED TO ACCOMMODATE NEW WORK / SYSTEMS AS INDICATED ON OTHER DRAWINGS.
- ACCESS ITEMS INDICATED FOR DEMOLITION IN A MANNER DESIGNED TO MINIMIZE IMPACT ON EXISTING WORK INDICATED TO REMAIN, WHENEVER POSSIBLE. PERFORM DEMOLITION ACTIVITIES FROM AREAS TO BE CONCEALED BY NEW WORK.
- PATCH AND REPAIR EXISTING CONSTRUCTION WHICH IS DAMAGED OR DISTURBED TO MATCH EXISTING OR RESTORE TO ORIGINAL CONDITION. WHERE AREAS OR ITEMS THAT ARE INDICATED TO BE REMOVED ADJUT OR ADJOIN EXISTING CONSTRUCTION INDICATED TO REMAIN, SAWCUT OR OTHERWISE REMOVE TO PROVIDE A CLEAN EDGE. IF EVIDENCE OF DEMOLITION WILL NOT BE CONCEALED BY NEW WORK, PATCH AND/OR REPAIR TRANSITION TO MATCH ADJACENT SURFACE AND FINISH.
- ITEMS TO BE SALVAGED FOR THE OWNER HAVE BEEN INDICATED ON THE DRAWINGS OR IN THE SPECIFICATIONS OR WILL BE REMOVED BY THE OWNER PRIOR TO THE START OF DEMOLITION. OTHER ITEM(S) SHALL BECOME THE CONTRACTOR'S PROPERTY AND SHALL BE REMOVED ENTIRELY FROM THE SITE.
- CONSTRUCTION SCHEDULING AND SEQUENCING SHALL BE COORDINATED WITH THE OWNER PRIOR TO BEGINNING ANY WORK. COORDINATE DEMOLITION WORK TO ACCOMMODATE OWNER'S NORMAL OPERATIONS.
- ERECT TEMPORARY PARTITIONS/BARRIERS AS REQUIRED TO PREVENT CONTAMINATION OF ADJACENT AREAS THAT ARE OR WILL BE USED BY THE OWNER FROM DUST, DEBRIS, AND EXCESSIVE NOISE CAUSED BY DEMOLITION ACTIVITIES.
- SHORE AND/OR BRACE EXISTING WORK AS REQUIRED TO SAFELY REMOVE ITEM(S) OR EXISTING CONSTRUCTION WITHOUT DAMAGE TO EXISTING CONSTRUCTION INDICATED TO REMAIN.
- DO NOT MODIFY EXISTING STRUCTURE UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS OR APPROVED IN ADVANCE BY BOTH THE ARCHITECT AND STRUCTURAL ENGINEER.
- REFER TO MECHANICAL AND ELECTRICAL DEMOLITION DRAWINGS FOR SPECIFIC DEMOLITION OF RELATED ITEM(S).


DEMOLITION - SYMBOL KEY


-  EXISTING PARTITIONS TO REMAIN
-  NEW PARTITIONS, SEE PARTITION TYPES
-  EXISTING PARTITION TO BE REMOVED
-  EXISTING DOOR TO REMAIN
-  EXISTING DOOR TO BE REMOVED
-  NO WORK IN THIS AREA

HAGEN, CHRISTENSEN & MCILWAIN
ARCHITECTS
4221 DECAF AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 804-1332 - FAX: (612) 804-9366

CLIENT

City of Wayzata

CONSULTANT 1
ERA
STRUCTURAL ENGINEERING

CONSULTANT 2


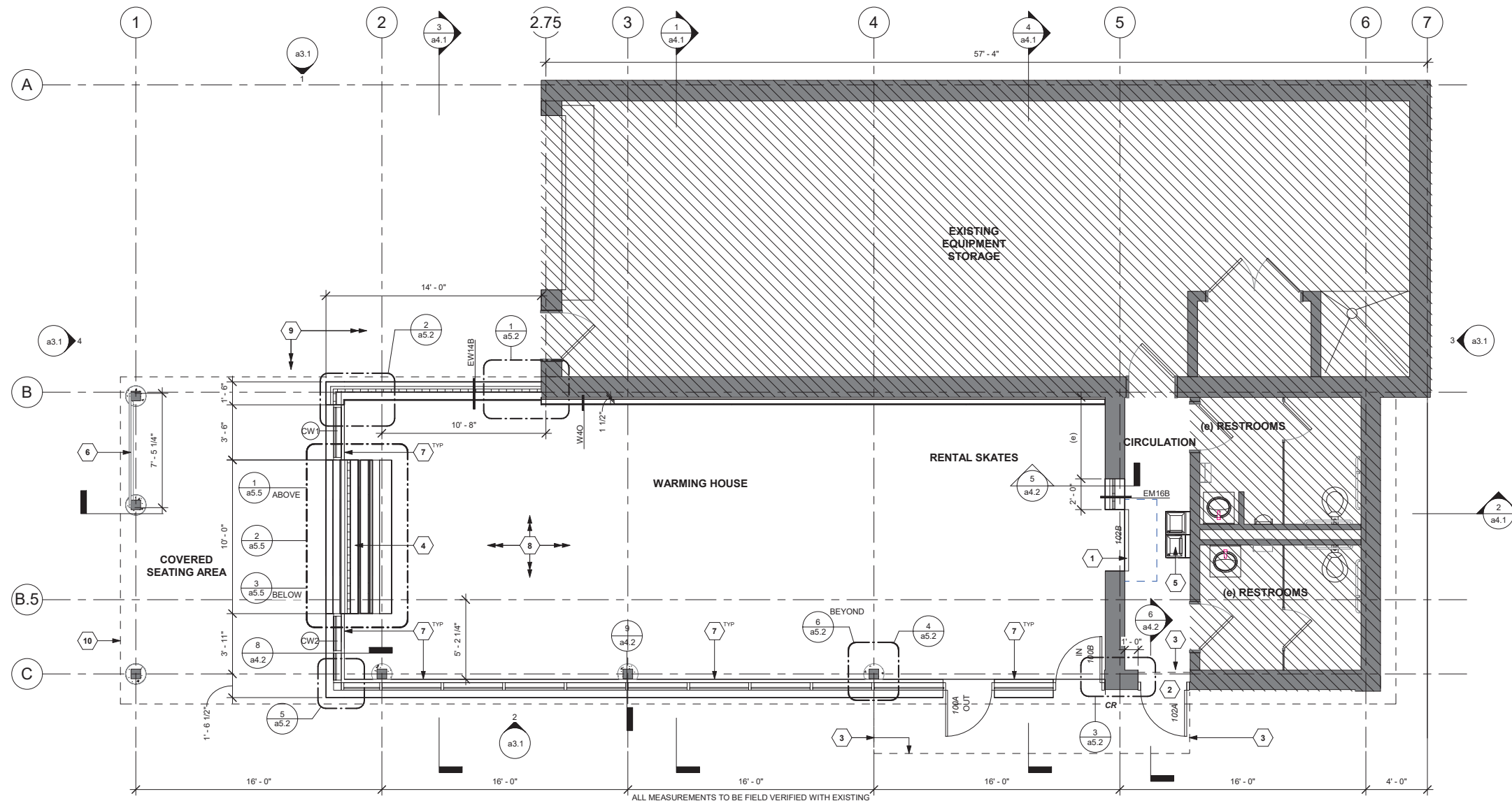
Architect
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the state of Minnesota.
Signature: 
Typed or Printed Name: Matt Lysne
Date: 3/17/2025 License Number: 44878

| REVISION | DATE | DESCRIPTION |
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CLIENT
340 Park St. E
Wayzata, MN 55391
KLAPPRICH WARMING HOUSE

DRAWING TITLE
DEMOLITION PLAN

DRAWING NUMBER
a1.1d
PROJECT NUMBER 2424

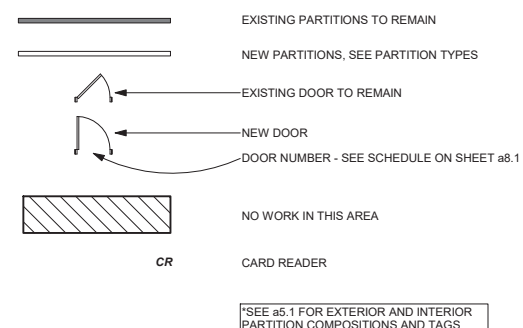


1 FLOOR PLAN
1/4" = 1'-0"



| KEYNOTES - FLOOR PLANS | |
|------------------------|--|
| Number | Description |
| 1 | COILING SECURITY SHUTTER |
| 2 | NEW EXTERIOR DOOR IN EXISTING CMU WALL |
| 3 | LINE OF STRUCTURAL STOOP - SEE STRUCT. |
| 4 | TWO-SIDED GAS FIREPLACE - SEE FURNITURE & EQUIPMENT PLAN a2.11e |
| 5 | H/LOW DRINKING FOUNTAIN WITH WATER BOTTLE FILLER - SEE MEP |
| 6 | 3/8" STEEL BAR @ 2'-0" A.F.F. FOR ACCESSIBILITY. MECHANICALLY FASTEN TO COLUMNS, MATCHING EXISTING CROSS BRACING, PAINT. |
| 7 | KNEE WALL SUPPORTING CURTAINWALL FROM TOP OF SLAB TO 2'-0" A.F.F. (EW14B) |
| 8 | NEW SLAB WITH RADIANT HEATING SYSTEM - SEE STRUCT. AND PLUMB. |
| 9 | NEW SLAB - SEE STRUCT. |
| 10 | LINE OF EXISTING ROOF ABOVE |

FLOOR PLAN - SYMBOL KEY



FLOOR PLAN GENERAL NOTES

- CONTRACTOR TO VERIFY ALL CONDITIONS AND REPORT DISCREPANCIES TO THE ARCHITECT OR OWNER, PRIOR TO BEGINNING CONSTRUCTION.
- REFER TO SHEET a8.1 FOR CEILING SCOPE OF WORK.
- REFER TO SHEET a2.11e AND a2.11 FOR FINISHES AND FFE SCOPE OF WORK.
- ALL ROOMS TO RECEIVE ACCESSIBLE ROOM SIGNAGE PER CODE.
- ALL ELECTRICAL OUTLETS, SWITCHES, THERMOSTATS, PRESSURE MONITORS, ETC. TO BE VERIFIED WITH OWNER ON-SITE BEFORE WALLS ARE CLOSED UP.
- SEE CIVIL DRAWINGS FOR FIRST FLOOR ELEVATION EQUIVALENT TO 100'-0" FOR LEVEL 1 IN ARCHITECTURAL DRAWINGS.
- ALL PENETRATIONS THROUGH NON-RATED FLOORS, WALLS AND OTHER ASSEMBLIES SHALL BE SEALED AT BOTH SIDES WITH MATERIALS APPROPRIATE TO THE ASSEMBLY CONSTRUCTION TO REDUCE SOUND TRANSMISSION.
- ALL PENETRATIONS THROUGH FIRE-RATED FLOORS, WALLS, AND OTHER ASSEMBLIES SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAILS THAT CONFORM TO UL OR OTHER APPROVED LISTINGS AND MATCH THE RATING OF THE CONSTRUCTION BEING PENETRATED.
- FLOOR PLAN DIMENSIONS ARE LOCATED FROM THE CENTER LINE OF STUD WALLS AND FINISHED FACE OF ALL OTHER PARTITIONS, UNLESS NOTED OTHERWISE.
- ALL MASONRY DIMENSIONS ARE NOMINAL UNLESS NOTED OTHERWISE.
- THE NOTATION "NO WORK" INDICATES THAT SUBSTANTIAL CONSTRUCTION ACTIVITIES ARE NOT ANTICIPATED IN THE DESIGNATED ROOM OR AREA. INCIDENTAL MODIFICATION OR CONSTRUCTION MAY BE REQUIRED TO ACCOMMODATE NEW WORK / SYSTEMS AS INDICATED ON OTHER DRAWINGS.
- DO NOT SCALE DRAWINGS. DIMENSIONS SHALL GOVERN.
- SEE a5.1 FOR TYP. WALL ASSEMBLIES.
- PROVIDE BLOCKING AS REQUIRED TO SUPPORT ALL WALL MOUNTED ITEMS SUCH AS MILLWORK AT SKATE RENTAL DESK.
- VERIFY CLEARANCES REQUIRED FOR INSTALLATION OF ALL RECESSED OR SEMI-RECESSED EQUIPMENT AND FIXTURES (E.G. CABINETS, DISPENSERS, PANELS, ETC.). NOTIFY ARCHITECT IMMEDIATELY IF SPECIFIED WALL TYPES DO NOT PROVIDE ADEQUATE SPACE FOR PROPER INSTALLATION.

HAGEN, CHRISTENSEN & MCILWAIN
ARCHITECTS

4221 DEER AVENUE, SUITE 200, MINNEAPOLIS, MN 55412
TEL: (612) 804-1332 FAX: (612) 804-7366

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CONSULTANT 1

ERA
STRUCTURAL ENGINEERING

CONSULTANT 2

Architect
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the state of Minnesota.

Signature:

Typed or Printed Name: Matt Lysne
Date: 3/17/2025 License Number: 44878

| REVISION | DATE | DESCRIPTION |
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| | 3/17/2025 | CONSTRUCTION DOCUMENTS |
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340 Park St. E
Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

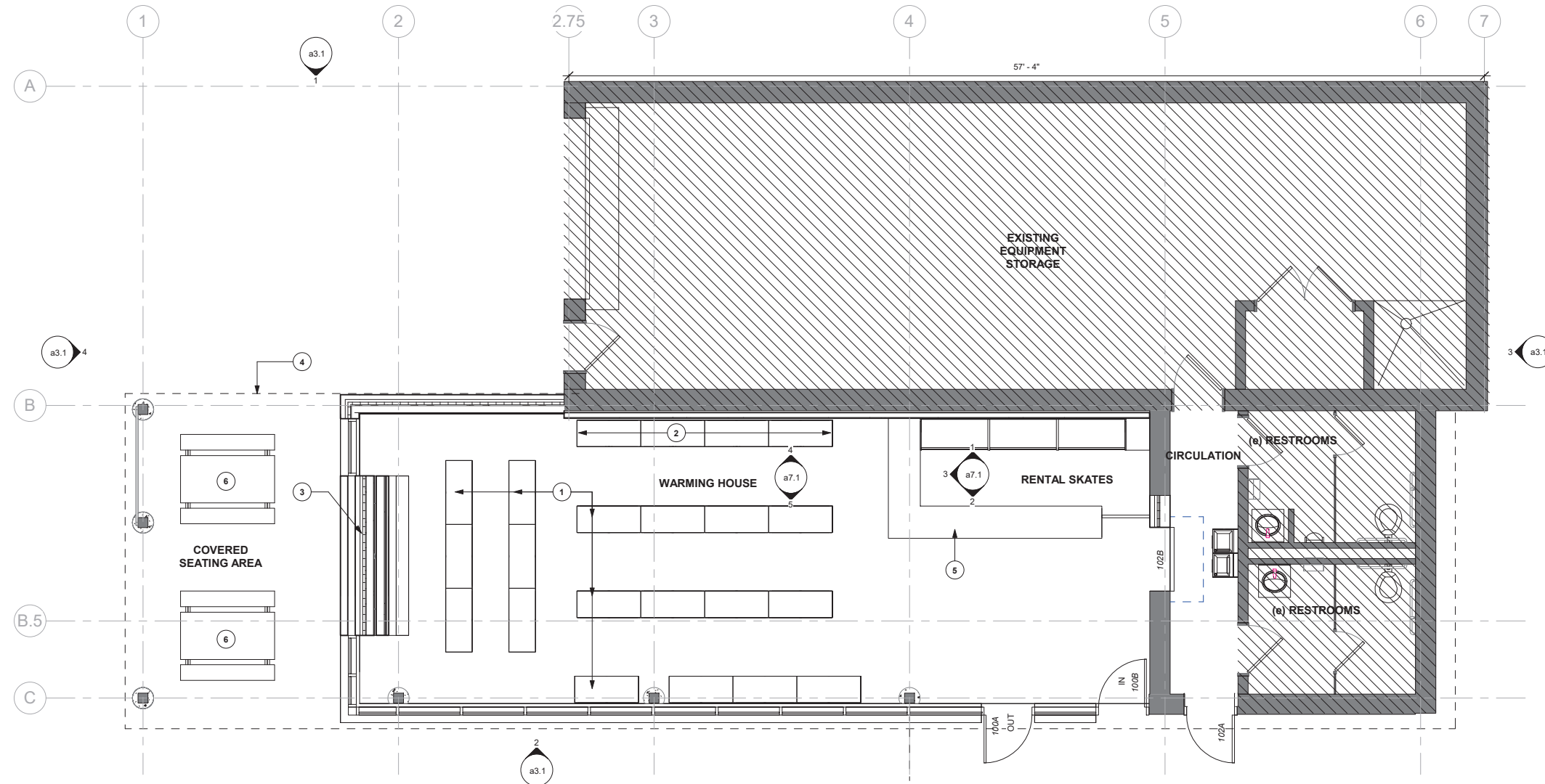
DRAWING TITLE

FLOOR PLAN

DRAWING NUMBER

a2.1

PROJECT NUMBER 2424



1 FURNITURE PLAN
1/4" = 1'-0"



| KEYNOTES - FURNITURE & EQUIPMENT | |
|----------------------------------|---|
| Number | Description |
| 1 | BENCH, TYP. - SEE 5/a7.1 AND 7/a7.1 |
| 2 | BENCH WITH LOCKING CUBBIES - SEE 4/a7.1 AND 6/a7.1 |
| 3 | 2-SIDED GAS FIREPLACE, HEAT&GLO PRIMO II B.O.D. - SEE a5.4 AND a5.5 |
| 4 | LINE OF EXISTING ROOF ABOVE |
| 5 | ICE SKATE RENTAL DESK - SEE a2.1, AND a7.1 |
| 6 | PICNIC TABLE - BY OWNER |

FURNITURE & EQUIPMENT GENERAL NOTES

1. ALL FURNITURE & EQUIPMENT PROVIDED AND INSTALLED BY OWNER - CONTRACTOR TO PROVIDE POWER/DATA AS REQUIRED FOR ALL FURNITURE/EQUIPMENT SHOWN.
2. CONTRACTOR TO VERIFY ALL CONDITIONS PRIOR TO CONSTRUCTION TO NOTIFY OWNER/ARCHITECT OF ANY DISCREPANCIES.
3. FURNITURE IS PROVIDED BY OTHERS AND IS SHOWN FOR COORDINATION PURPOSES ONLY.

FURNITURE & EQUIPMENT - SYMBOL KEY

- EXISTING PARTITIONS TO REMAIN
- NEW PARTITIONS, SEE PARTITION TYPES
- NO WORK IN THIS AREA

HAGEN, CHRISTENSEN & MCILWAIN
ARCHITECTS

4201 DEER AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 904-1332 - FAX: (612) 904-9366

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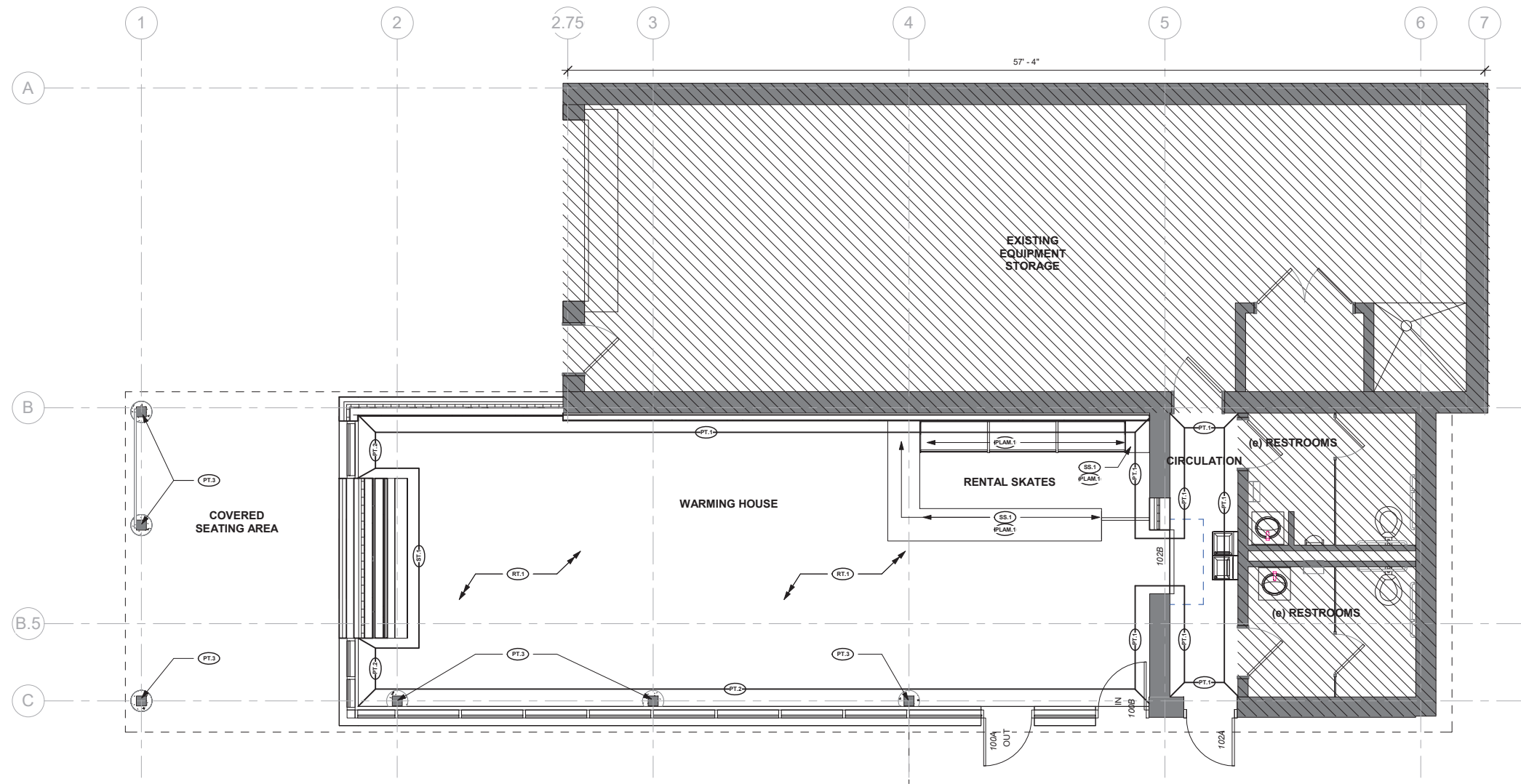
DRAWING TITLE

FURNITURE & EQUIPMENT PLAN

DRAWING NUMBER

a2.1fe

PROJECT NUMBER 2424



① FINISH PLAN
1/4" = 1'-0"
NORTH

FINISH LEGEND

FLOORS

- RT.1 RUBBER TILE**
- MFR: FLEXCO
 - PRODUCT: TUFLEX FORCE PREMIUM ENGINEERED SPORTS FLOORING
 - COLOR: BLACK DAHLIA W/ MEDIUM GRAY, FJORD 01d
 - SIZE: 27"x27"

WALLS

- PT.1 PAINT**
- MFR: SHERWIN WILLIAMS
 - PRODUCT: EMERALD
 - COLOR: SW 7006 EXTRA WHITE
 - FINISH: WALLS = SATIN
- PT.2 PAINT**
- MFR: SHERWIN WILLIAMS
 - PRODUCT: EMERALD
 - COLOR: SW 7006 EXTRA WHITE
 - FINISH: WALLS = SATIN
 - LOCATION: KNEE WALLS BELOW STOREFRONT SYSTEMS
- PT.3 PAINT**
- MFR: SHERWIN WILLIAMS
 - PRODUCT: EMERALD
 - COLOR: SW 6258 TRICORN BLACK
 - FINISH: WALLS = SATIN
 - LOCATION: (e) COLUMNS
 - SPECIAL INSTRUCTIONS: CLEAN, PREP, AND PAINT COLUMN PRIOR TO INSTALL OF GLAZING

CEILINGS

- WS.1 WOOD STAIN**
- MFR: SHERWIN WILLIAMS
 - PRODUCT: WOODSCAPES EXTERIOR ACRYLLIC SOLID COLOR HOUSE STAIN
 - COLOR: SW3001 SHAGBARK
 - FINISH: CEILINGS
 - LOCATION: CEDAR BATTENS ALONG CEILING
- WS.2 WOOD STAIN**
- MFR: SHERWIN WILLIAMS
 - PRODUCT: WOODSCAPES EXTERIOR ACRYLLIC SOLID COLOR HOUSE STAIN
 - COLOR: SW3047 ALMOND TREE
 - FINISH: CEILINGS
 - LOCATION: CEDAR PL YWOOD CEILING (EXCLUDING BATTENS)

WALL BASES

- VB.1 COVED VINYL BASE**
- MFR: JOHNSONITE
 - PRODUCT: TRADITIONAL VINYL 1/8" TYPE TV
 - COLOR: 40 BLACK
 - SIZE: 6 1/8" HIGH

MISCELLANEOUS

- SS.1 SOLID SURFACE COUNTERS**
- MFR: CAMBRIA
 - PRODUCT: SIGNATURE SERIES
 - COLOR: HALEWOOD
 - SIZE: 3CM
 - FINISH: CAMBRIA MATTE
- PLAM.1 PLASTIC LAMINATE**
- MFR: ARBORITE
 - PRODUCT: VERTICAL GRADE POSTFORMING LAMINATE (VGP) 0.028"
 - COLOR: RIFT NATURAL OAK
 - SIZE: 4'x8' OR 5'x12'
 - FINISH: CW (CASUAL WOOD)
- PLAM.2 PLASTIC LAMINATE**
- MFR: ARBORITE
 - PRODUCT: VERTICAL GRADE POSTFORMING LAMINATE (VGP) 0.028"
 - COLOR: MAJESTIC ARTISAN WALNUT
 - SIZE: 4'x8' OR 5'x12'
 - FINISH: CW (CASUAL WOOD)
- ST.1 STONE VENEER**
- MFR: BUECHEL STONE CORP.
 - PRODUCT: BUILDING STONE VENEERS
 - COLLECTION: LEDGESTONE
 - COLOR: SILVER PATINA

FINISHES PLAN GENERAL NOTES:

- CONTRACTOR TO VERIFY ALL CONDITIONS AND REPORT DISCREPANCIES TO THE ARCHITECT OR OWNER, PRIOR TO BEGINNING CONSTRUCTION.
- REFER TO SHEET 09.1 FOR CEILING SCOPE OF WORK
- ALL ROOMS TO RECEIVE ACCESSIBLE ROOM SIGNAGE PER CODE.
- ALL ELECTRICAL OUTLETS, SWITCHES, THERMOSTATS, PRESSURE MONITORS, ETC. TO BE VERIFIED WITH OWNER ON-SITE BEFORE WALLS ARE CLOSED UP.
- PROVIDE TRANSITION STRIPS AT ALL FLOORING FINISH CHANGES WITH A DELTA GREATER THAN 1/4" AND WHERE INDICATED ON FINISH PLANS.
- ALL FLOORING TO CONTINUE UNDER MILLWORK, EQUIPMENT & SEATING, TYP.
- ALL CURTAINWALL SYSTEMS TO BE BLACK ANODIZED FINISH

| FINISH SCHEDULE | | | | | | | | | | |
|-----------------|--------------|--------|--------------|-------------|----------------|--------------|-------------|--------------|-------------|--|
| Number | Name | Area | Floor Finish | Base Finish | Ceiling Finish | North Finish | East Finish | South Finish | West Finish | Comments |
| 100 | WARMING ROOM | 796 SF | RT.1 | VB.1 | WS.1 / WS.2 | PT.1 | PT.2 | PT.2 | PT.1 | FOR MILLWORK FINISHES SEE a7.1 |
| 101 | CIRCULATION | 76 SF | (e) | (e) | WS.1 / WS.2 | PT.1 | PT.1 | PT.1 | PT.1 | MATCH (e) WALL BASE CONDITION WHERE NEW WALL INFILL IS AT EXISTING OPENING |

HAGEN, CHRISTENSEN & MCILWAIN ARCHITECTS
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 TEL: (612) 804-1332 - FAX: (612) 804-7368

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Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

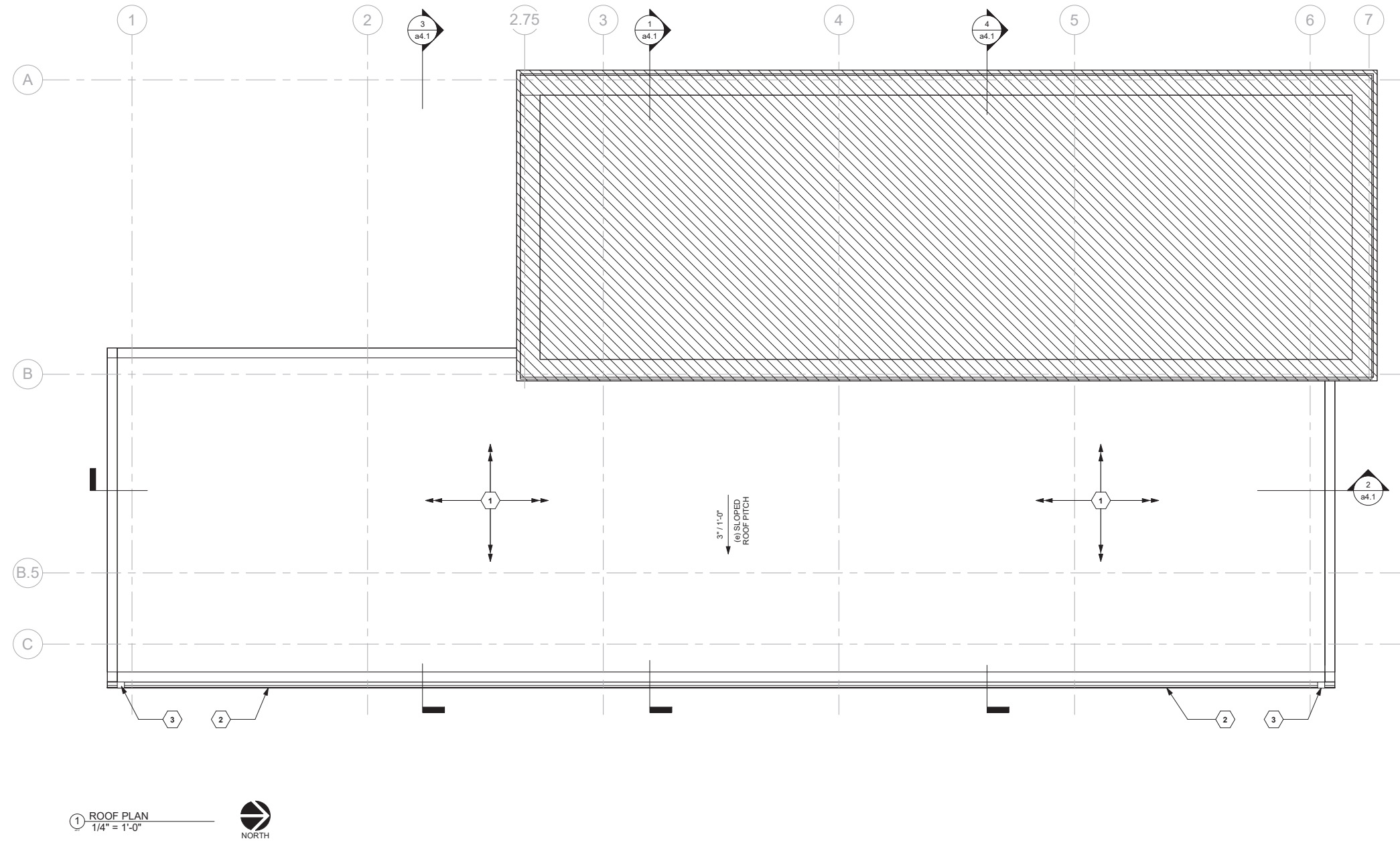
DRAWING TITLE

FINISH PLANS

DRAWING NUMBER

a2.1i


PROJECT NUMBER 2424




ROOF PLAN GENERAL NOTES:

1. CONTRACTOR TO VERIFY ALL CONDITIONS AND REPORT DISCREPANCIES TO THE ARCHITECT OR OWNER, PRIOR TO BEGINNING CONSTRUCTION.
2. ALL PENETRATIONS THROUGH ROOF ASSEMBLIES SHALL BE SEALED AT BOTH SIDES WITH MATERIALS APPROPRIATE TO THE ASSEMBLY.
3. PROVIDE BLOCKING AS REQUIRED TO SUPPORT ALL ROOFTOP EQUIPMENT PER MANUFACTURERS INSTALLATION INSTRUCTIONS.
4. DO NOT SCALE DRAWINGS; DIMENSIONS SHALL GOVERN.

| KEYNOTES - ROOF PLAN | |
|----------------------|--|
| Number | Description |
| 1 | NOTE THAT THE CITY WILL BE RE-ROOFING THE EXISTING ASPHALT SHINGLE ROOF AS PART OF A SEPARATE CONTRACT |
| 2 | PREFINISHED METAL BOX GUTTER ASSEMBLY |
| 3 | PREFINISHED METAL OPEN FACE DOWNSPOUT ASSEMBLY, COORDINATE W/ CIVIL (ISSUED AS SEPARATE PROJECT SCOPE) |


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 TEL: (612) 804-1332 - FAX: (612) 804-9366

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City of Wayzata


CONSULTANT 1


ERA
 STRUCTURAL ENGINEERING

CONSULTANT 2



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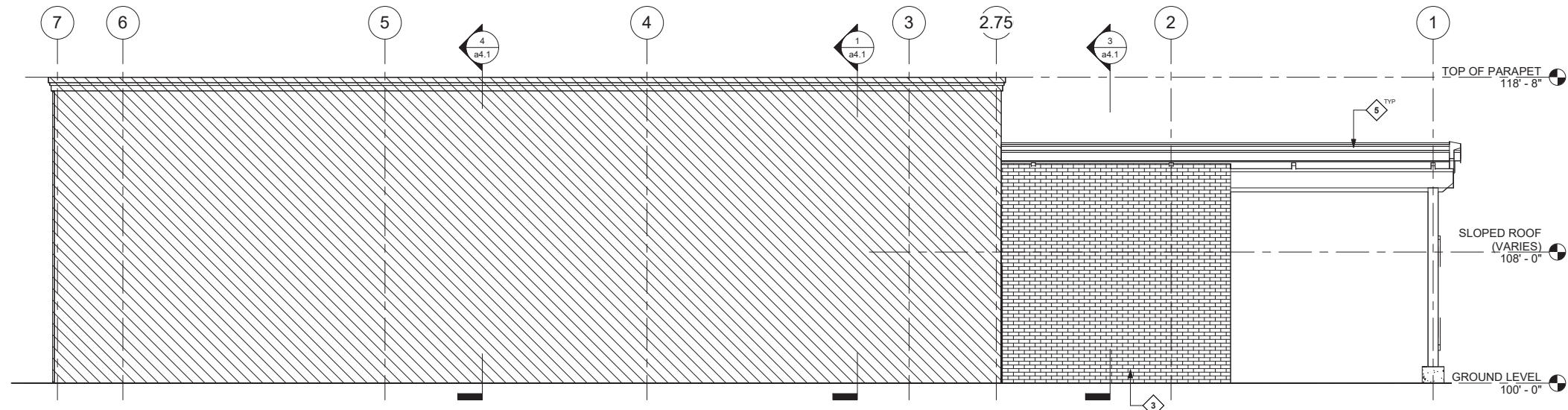
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ROOF PLAN

DRAWING NUMBER

a2.2

PROJECT NUMBER 2424

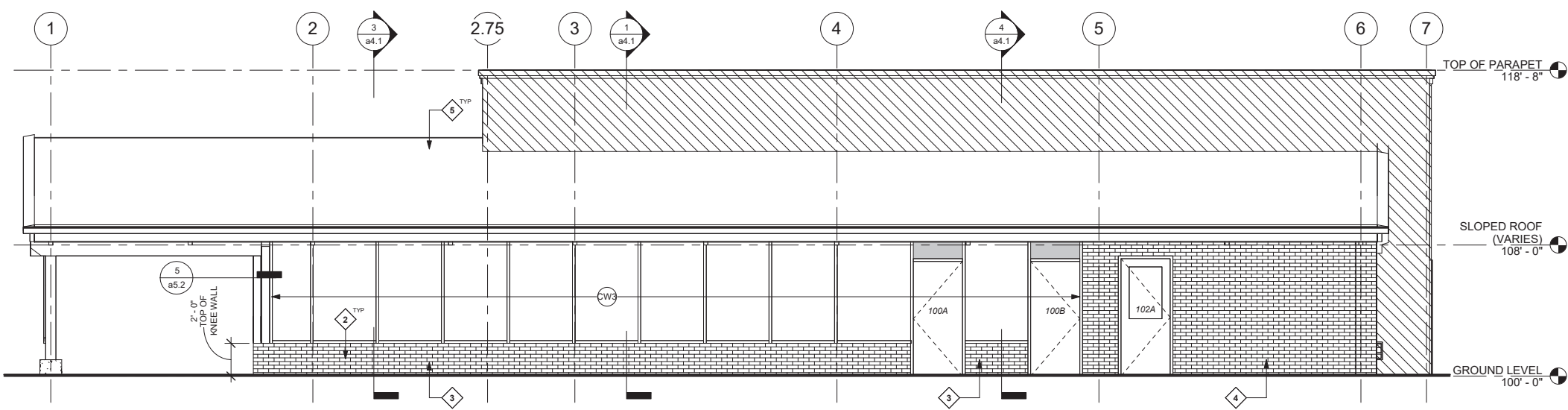


EXTERIOR ELEVATION GENERAL NOTES:

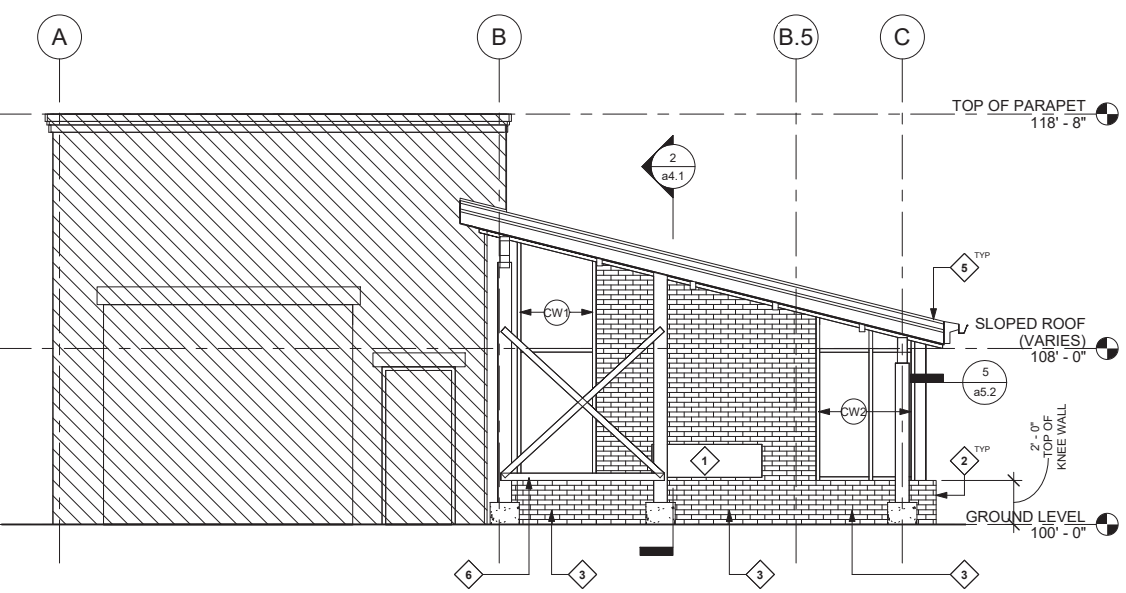
1. CONTRACTOR TO VERIFY ALL CONDITIONS AND REPORT DISCREPANCIES TO THE ARCHITECT OR OWNER, PRIOR TO BEGINNING CONSTRUCTION.
2. SEE a5.1 FOR EXTERIOR WALL TYPES
3. SEE a8.1 DOOR AND WINDOW DETAILS

| KEYNOTES - EXTERIOR ELEVATIONS | |
|--------------------------------|---|
| Number | Description |
| 1 | TWO-SIDED GAS FIREPLACE - SEE FURNITURE & EQUIPMENT PLAN a2.11e, AND DETAILS ON a5.4, a5.5 |
| 2 | KNEE WALL SUPPORTING CURTAINWALL FROM SLAB TO 2'-0" A.F.F. (EW14B) |
| 3 | BRICK VENEER TO MATCH EXISTING |
| 4 | EXISTING BRICK VENEER |
| 5 | EXISTING ROOF SYSTEM TO REMAIN |
| 6 | 3/8" STEEL BAR @ 2'-0" A.F.F. FOR ACCESSIBILITY, MECHANICALLY FASTEN TO COLUMNS, MATCHING EXISTING CROSS BRACING, PAINT |

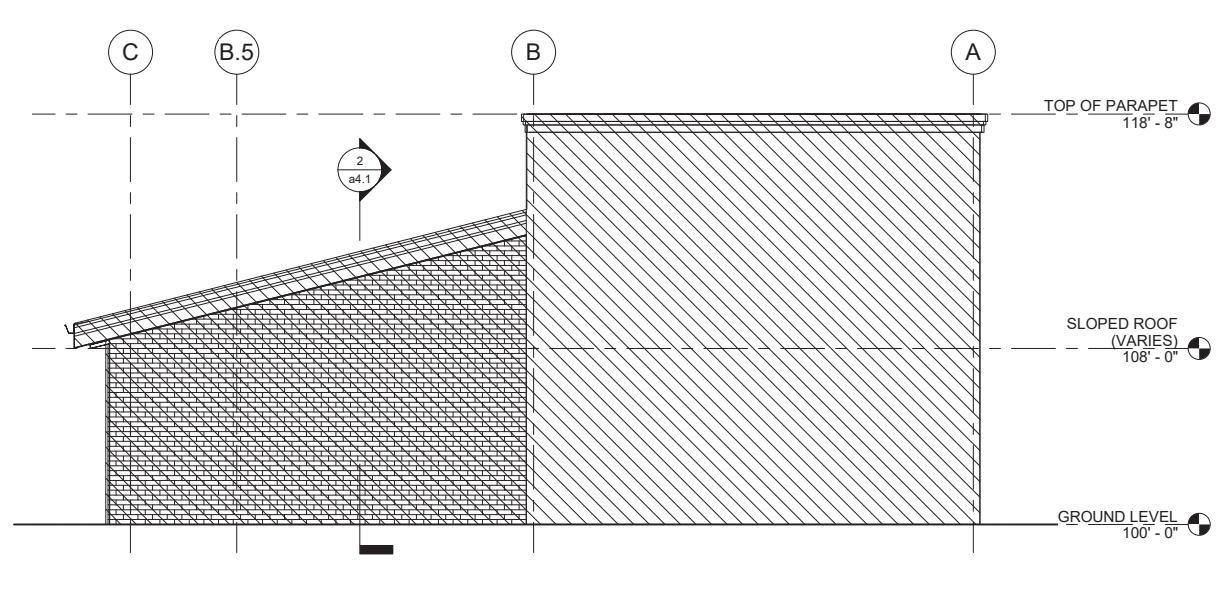
1 WEST ELEVATION
1/4" = 1'-0"



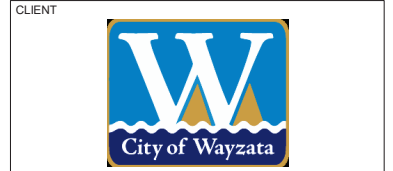
2 EAST ELEVATION
1/4" = 1'-0"



4 SOUTH ELEVATION
1/4" = 1'-0"



3 NORTH ELEVATION
1/4" = 1'-0"



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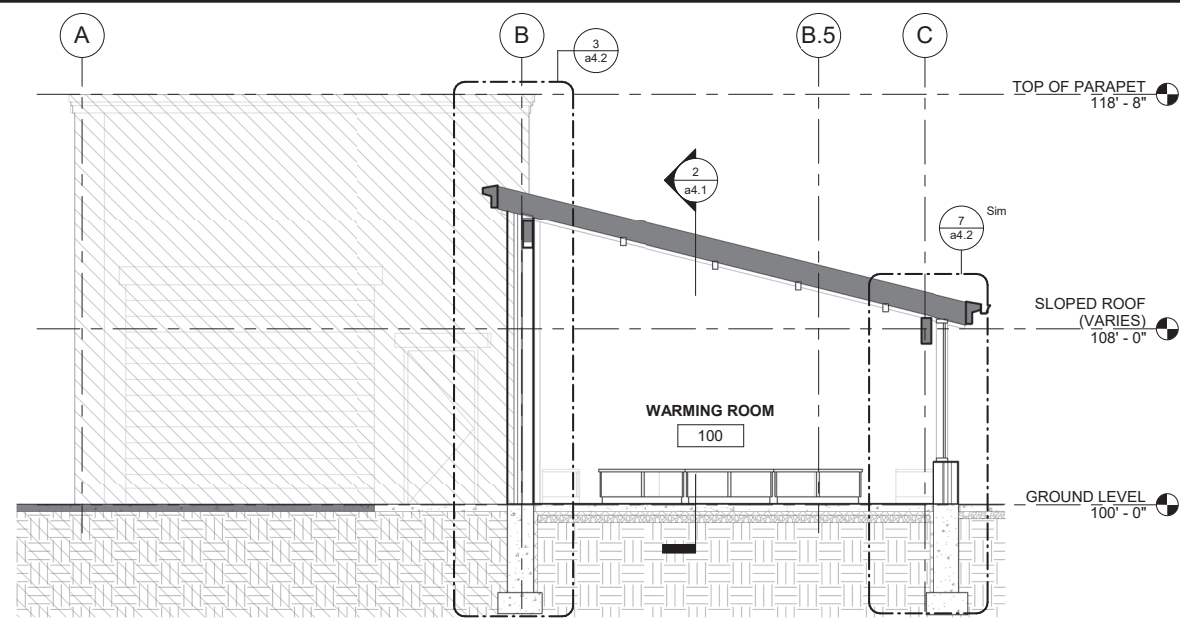
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Wayzata, MN 55391
KLAPPRICH WARMING HOUSE

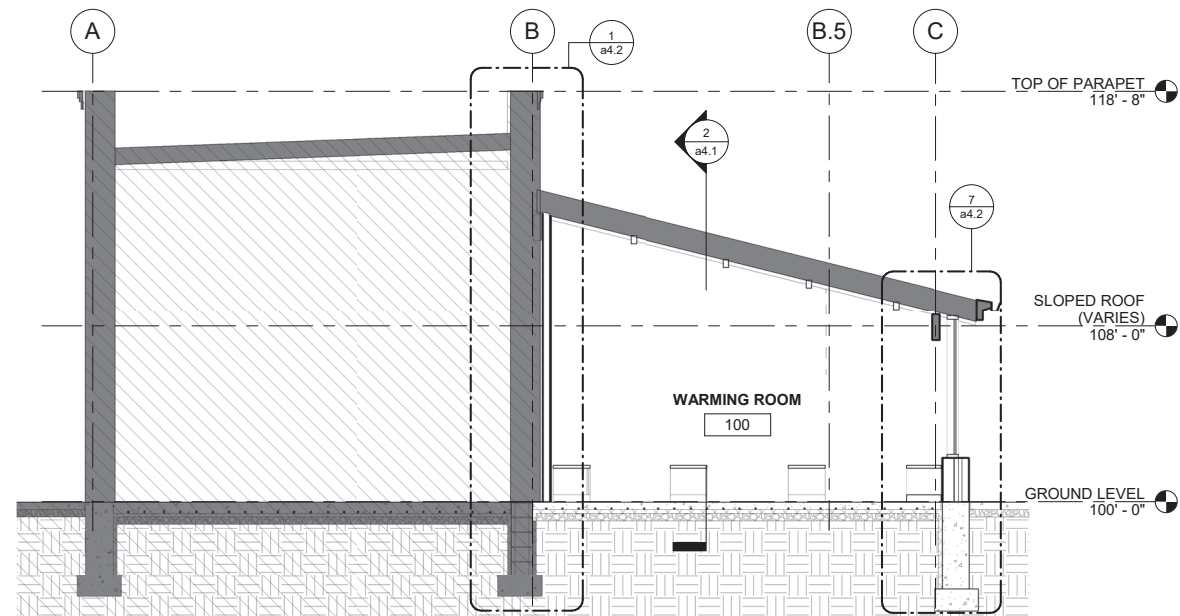
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EXTERIOR ELEVATIONS

DRAWING NUMBER
a3.1
PROJECT NUMBER 2424

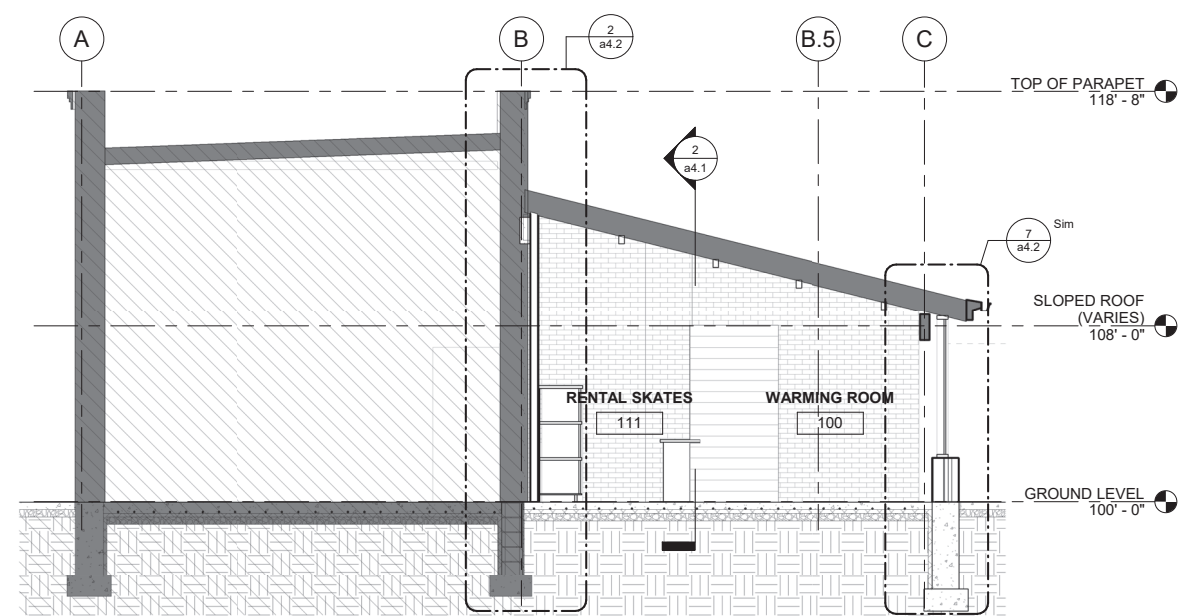
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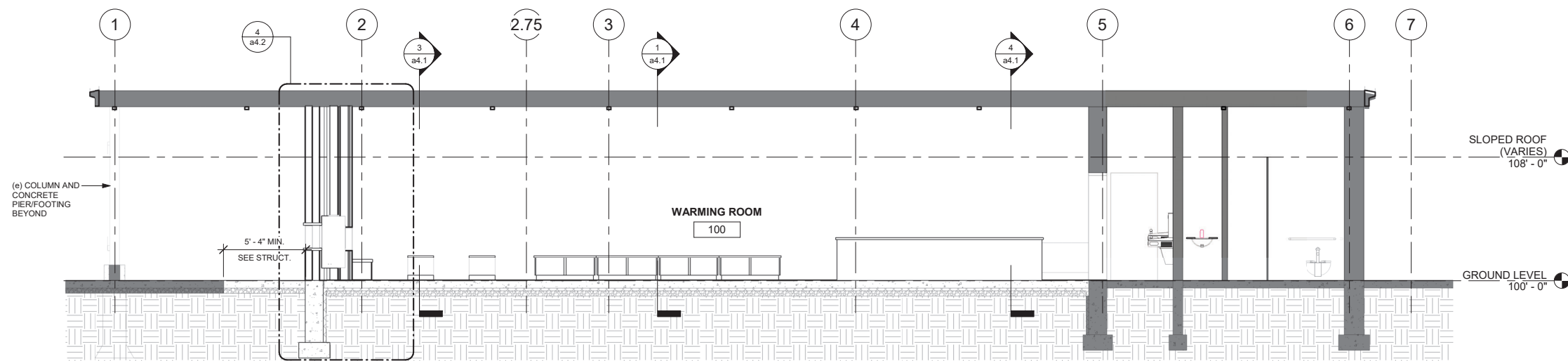
3 PLAN NORTH / SOUTH SECTION 1
1/4" = 1'-0"



1 PLAN NORTH / SOUTH SECTION 2
1/4" = 1'-0"



4 PLAN NORTH / SOUTH SECTION 3
1/4" = 1'-0"



2 PLAN EAST / WEST SECTION
1/4" = 1'-0"

HAGEN, CHRISTENSEN & MCILWAIN
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4221 DEER AVENUE SE • MINNEAPOLIS, MN 55407
TEL: (612) 804-1332 • FAX: (612) 804-9366

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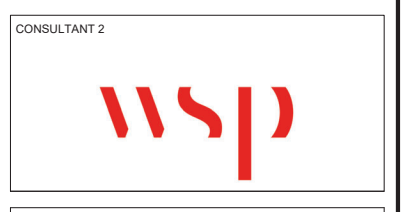
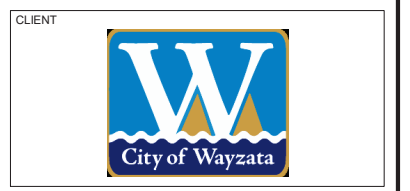
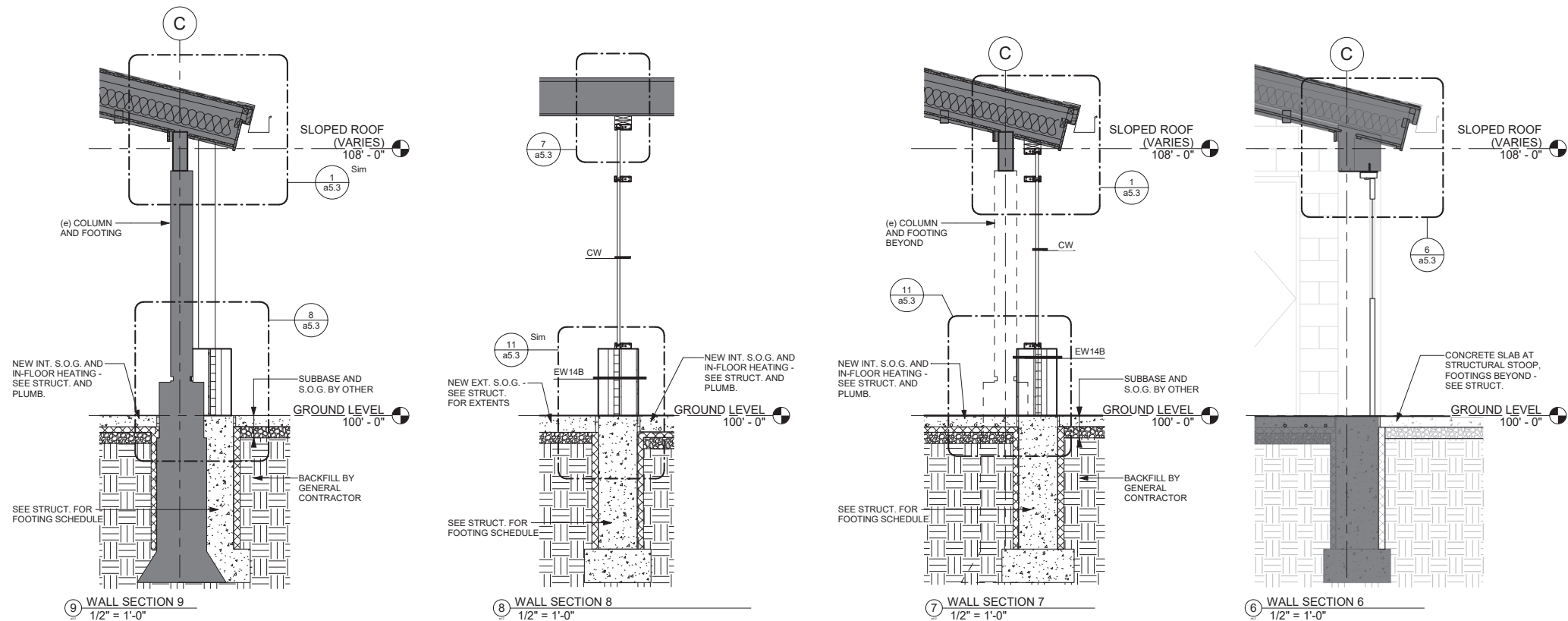
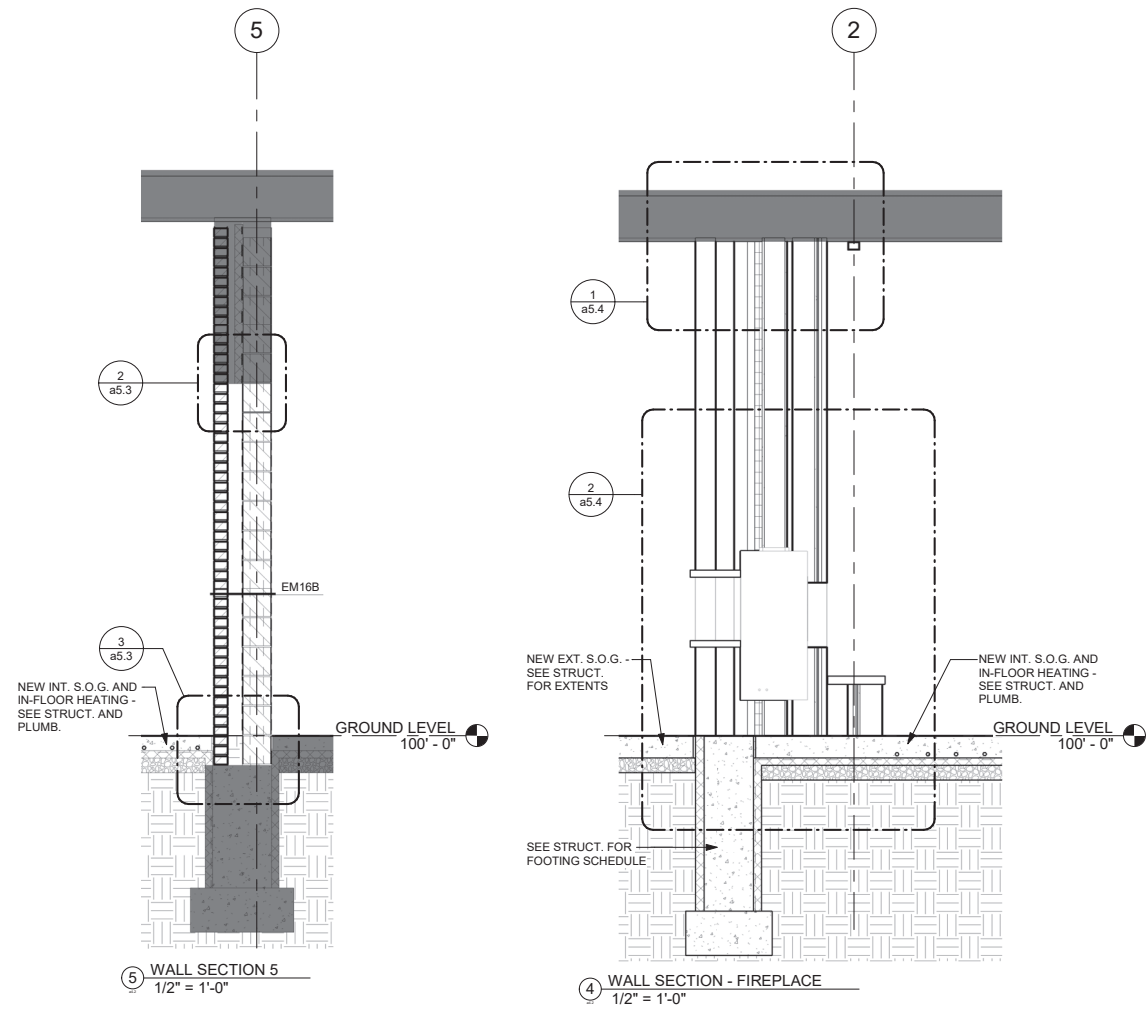
BUILDING SECTIONS

DRAWING NUMBER

a4.1

PROJECT NUMBER 2424

Autodesk Docs/City of Wayzata - Klapprich Park 2424 - Warming House-Klapprich Park.rvt



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KLAPPRICH WARMING HOUSE

DRAWING TITLE

WALL SECTIONS

DRAWING NUMBER

a4.2

PROJECT NUMBER 2424

PARTITION TYPE LEGEND

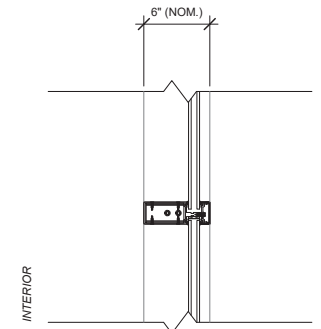
EXTERIOR NOTATION
ALL EXTERIOR WALL ASSEMBLIES DENOTED WITH A "E" *INTERIOR WALL ASSEMBLIES DO NOT CONTAIN THIS SYMBOL

WALL CORE MATERIAL
S - MTL STUD
M - CMU
C - CONCRETE
F - FURRING
P - PRECAST
W - WD STUD

FINISH FEATURE(S)
B - BRICK/MASONRY EXTERIOR FINISH
E - EIFS EXTERIOR FINISH
M - METAL PANEL EXTERIOR FINISH
S - STONE INTERIOR FINISH
U - UNCONDITIONED SPACE
* WALL MAY HAVE MORE THAN ONE FEATURE

ASSEMBLY NOMINAL THICKNESS
REFER TO SHEET a5.1 FOR DETAILED DIMENSIONS AND ASSEMBLY NOTES

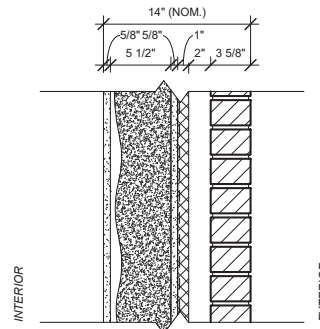
ADDITIONAL NOTES
1. EXTERIOR FINISHES MAY VARY - SEE EXTERIOR ELEVATIONS FOR FINISH LOCATIONS AND FINISH NOTES
2. SEE ENLARGED DETAILS FOR ASSEMBLY CONNECTIONS



EXTERIOR PARTITION TYPE - CW

CW

- 6" DEEP CURTAIN WALL SYSTEM**
- CLEAR ANODIZED THERMALLY BROKEN ALUMINUM FRAMING
 - 1" INSULATED GLAZING UNITS AT EXTERIOR
 - PROVIDE BACK-PAINTED SPANDREL UNITS WHERE NOTED



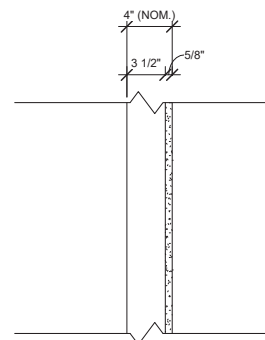
EXTERIOR WALL TYPE - EW14B

EW14B

- EXTERIOR 6" WOOD FRAMED BRICK CAVITY WALL**
- 5/8" GYP BD AT INTERIOR
 - 5 1/2" OPEN CELL SPRAY POLYURETHANE FOAM
 - 2x6 WOOD STUD FRAMING @ 16" O.C.
 - 5/8" EXTERIOR GYP. SHEATHING
 - FLUID APPLIED SEMI-PERMEABLE WEATHER BARRIER (WATER/AIR) (NOTE: STRIP IN FLASHING ASSEMBLIES BETWEEN LAYERS OF WEATHER BARRIER)
 - 1" POLY-ISO INSULATION
 - +/- 2" AIR SPACE MIN
 - 4" (NOM.) FACE MASONRY TO MATCH (e)

NOTE: PROVIDE AND LOCATE MASONRY TIES PER INDUSTRY REC

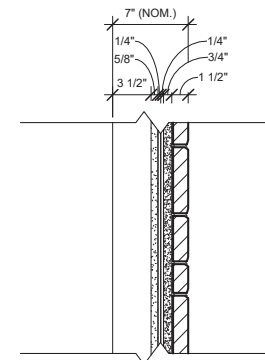
EXTERIOR PARTITIONS



INTERIOR PARTITION TYPE - W4Q

W4Q

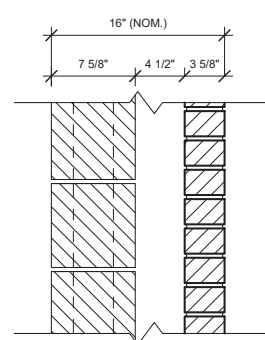
- INTERIOR PARTITION 4" WOOD STUD FRAMED**
- 5/8" GYP. BOARD ONE SIDE
 - 2x4 WOOD STUD FRAMING @ 16" O.C.



INTERIOR WALL TYPE - W7S

W7S

- INTERIOR 4" WOOD FRAMED STONE WALL**
- 2x4 WOOD STUD FRAMING @ 16" O.C.
 - 5/8" GYP. SHEATHING
 - EXPANDED METAL LATH
 - SCRATCH COAT
 - TYPE S MORTAR APPLIED TO BACK OF STONE
 - 1 1/2" (NOM.) STONE VENEER (ST.1)



INTERIOR WALL TYPE - EM16B

EM16B

- INTERIOR 8" CMU BRICK WALL**
- 8" CMU OR 10" CMU - CONTRACTOR'S OPTION
 - 4 1/2" AIR SPACE
 - 4" (NOM.) FACE MASONRY

NOTE: PROVIDE AND LOCATE MASONRY TIES PER INDUSTRY REC

INTERIOR PARTITIONS

HAGEN, CHRISTENSEN & MCILWAIN ARCHITECTS
4201 DEER AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 904-1332 - FAX: (612) 904-9366

CLIENT

CONSULTANT 1

CONSULTANT 2

Architect
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the state of Minnesota.

Signature:

Typed or Printed Name: Matt Lysne
Date: 3/17/2025 License Number: 44878

| REVISION | DATE | DESCRIPTION |
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CLIENT

340 Park St. E
Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

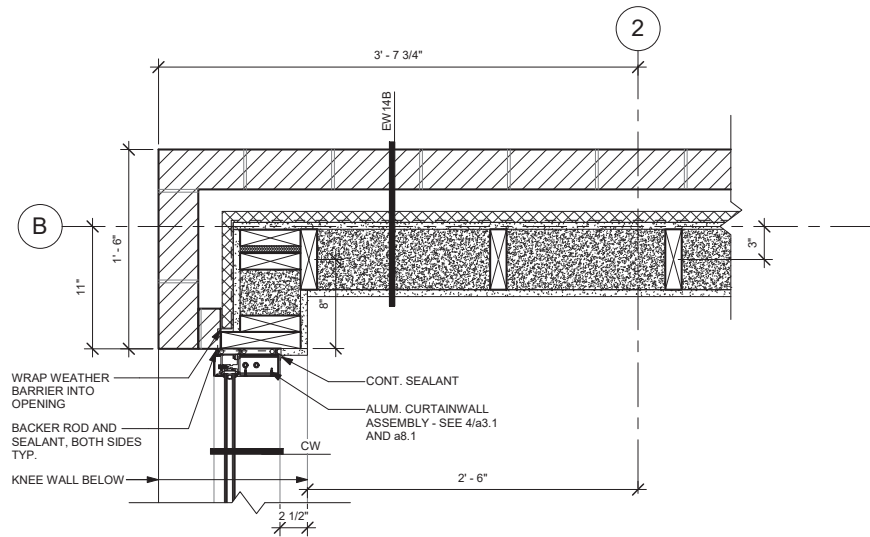
DRAWING TITLE

TYP. WALL ASSEMBLIES

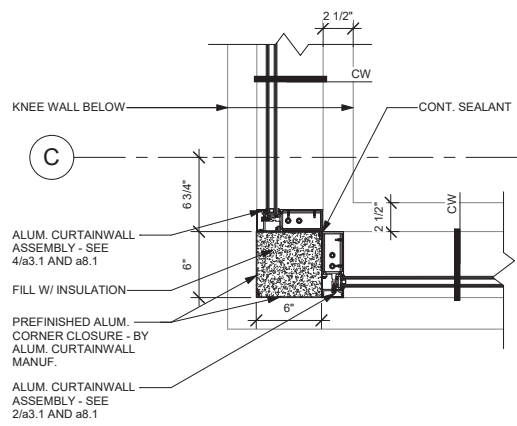
DRAWING NUMBER

a5.1

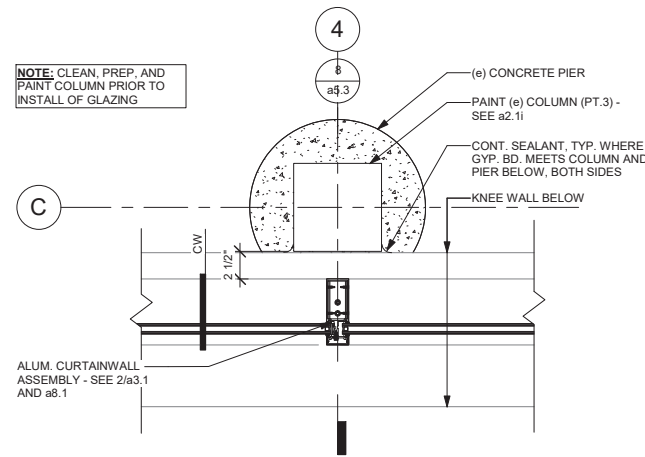
PROJECT NUMBER 2424



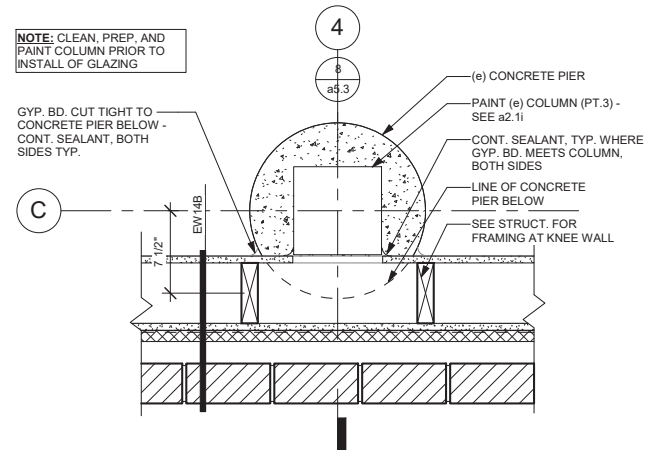
2 PLAN DETAIL - SOUTHWEST CORNER OF WARMING HOUSE
1 1/2" = 1'-0"



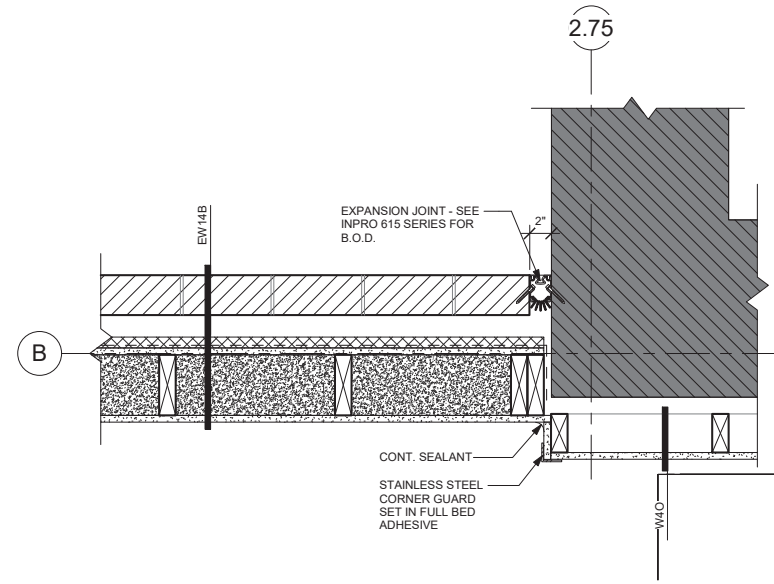
5 PLAN DETAIL - SOUTHEAST CORNER OF WARMING HOUSE
1 1/2" = 1'-0"



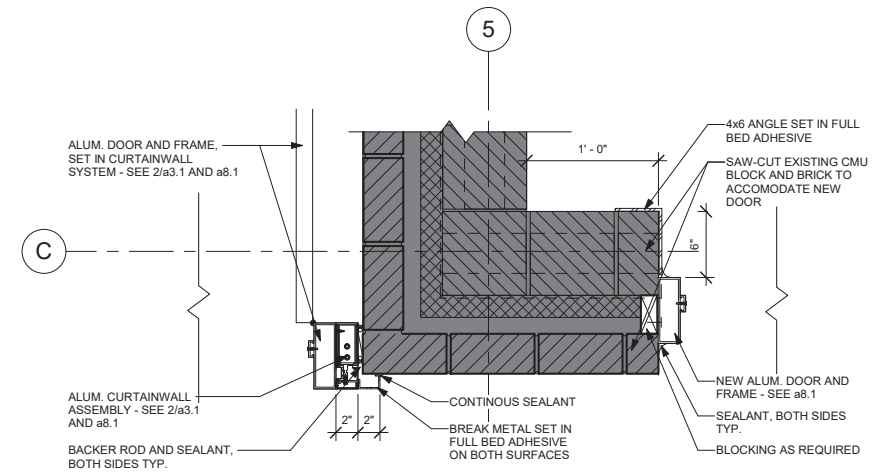
4 PLAN DETAIL - TYP. (e) COLUMN TO CURTAINWALL CONNECTION @ 2'-6" A.F.F.
1 1/2" = 1'-0"



6 PLAN DETAIL - TYP. (e) COLUMN TO CURTAINWALL CONNECTION @ 1'-6" A.F.F.
1 1/2" = 1'-0"

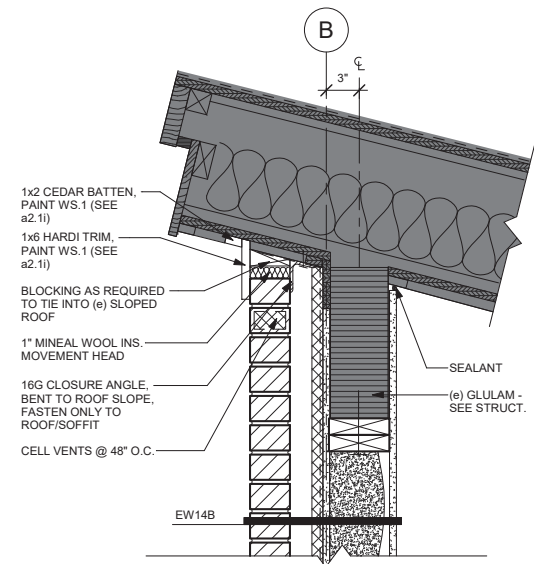


1 PLAN DETAIL - EXISTING STORAGE TO STUD WALL CONNECTION
1 1/2" = 1'-0"

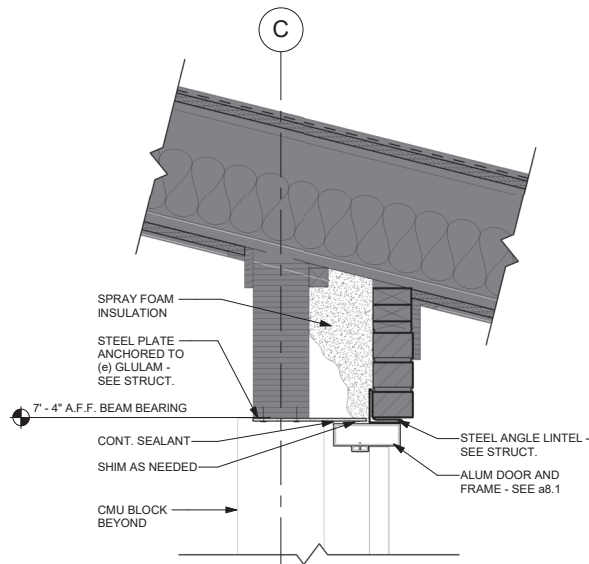


3 PLAN DETAIL - CURTAINWALL CONNECTION AND NEW DOOR OPENING
1 1/2" = 1'-0"

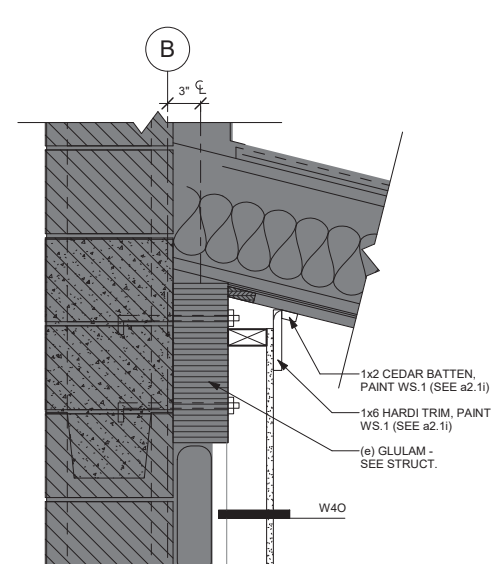
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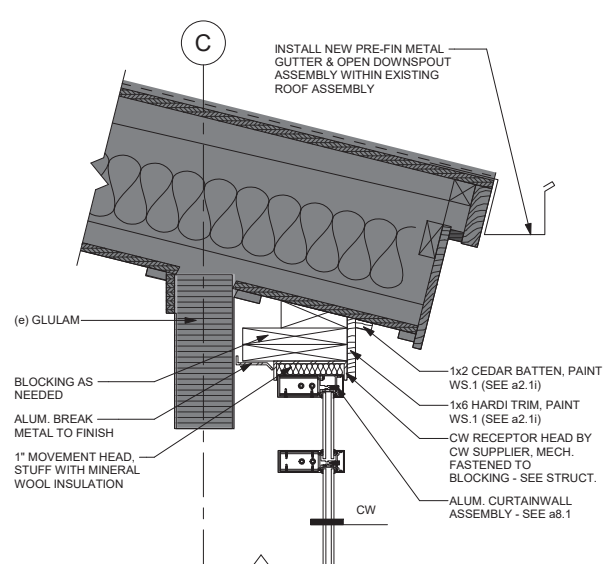
9 SECTION DETAIL - NEW EXT. WALL TO (e) ROOF
1 1/2" = 1'-0"



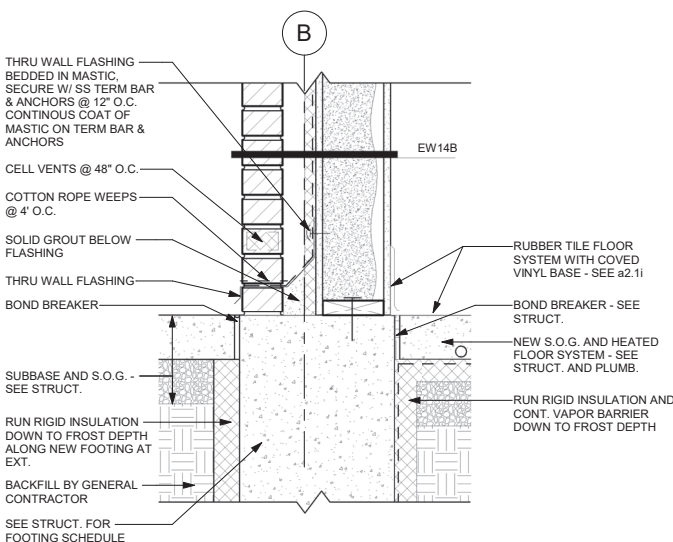
6 SECTION DETAIL 5
1 1/2" = 1'-0"



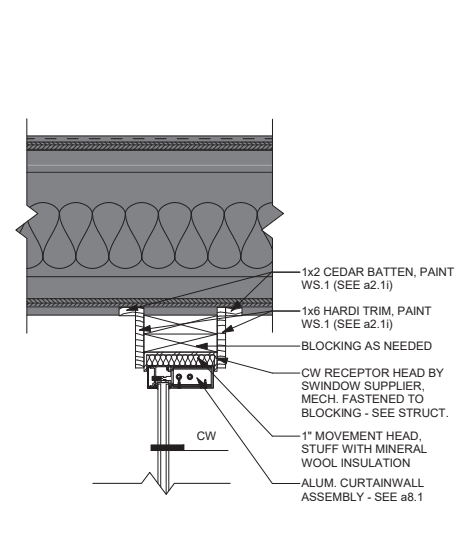
4 SECTION DETAIL - FURRING WALL @ ROOF
1 1/2" = 1'-0"



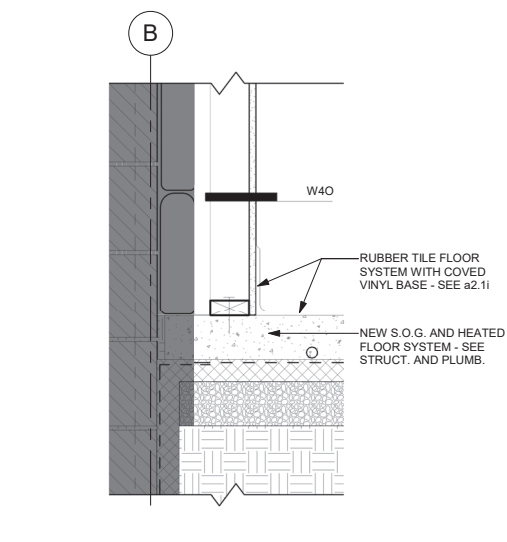
1 SECTION DETAIL - CURTAINWALL TO ROOF @ EAST
1 1/2" = 1'-0"



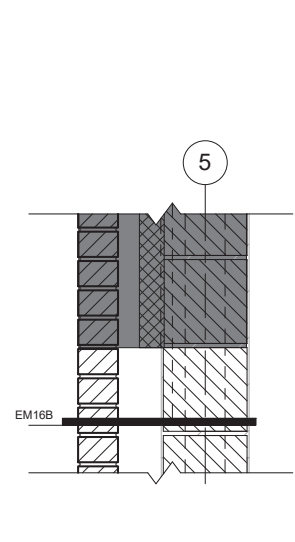
10 SECTION DETAIL - NEW EXT. WALL AND FOUNDATION
1 1/2" = 1'-0"



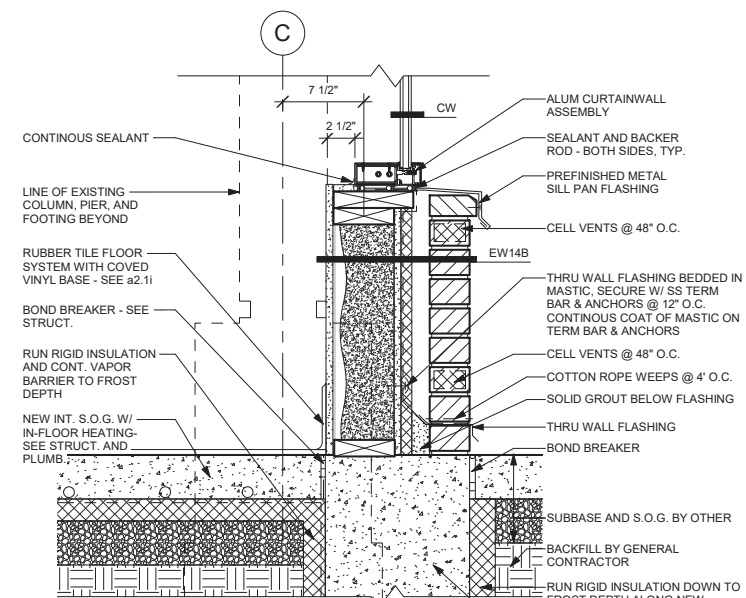
7 SECTION DETAIL - CURTAINWALL TO ROOF @ SOUTH
1 1/2" = 1'-0"



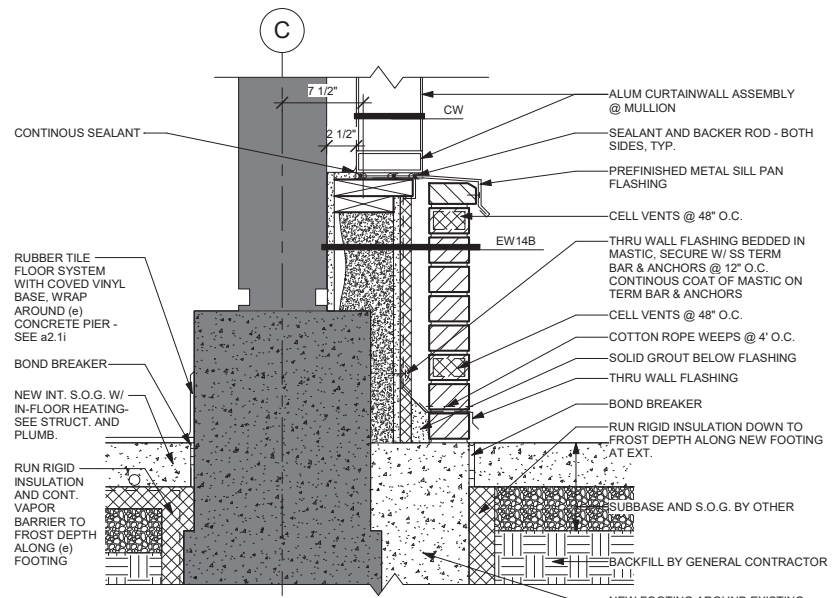
5 SECTION DETAIL - FURRING WALL @ SLAB
1 1/2" = 1'-0"



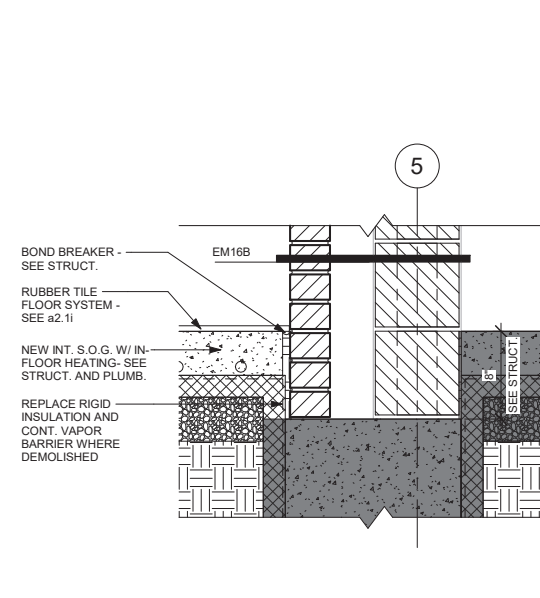
2 SECTION DETAIL - INTERIOR WALL INFILL
1 1/2" = 1'-0"



11 SECTION DETAIL @ NEW KNEE WALL
1 1/2" = 1'-0"

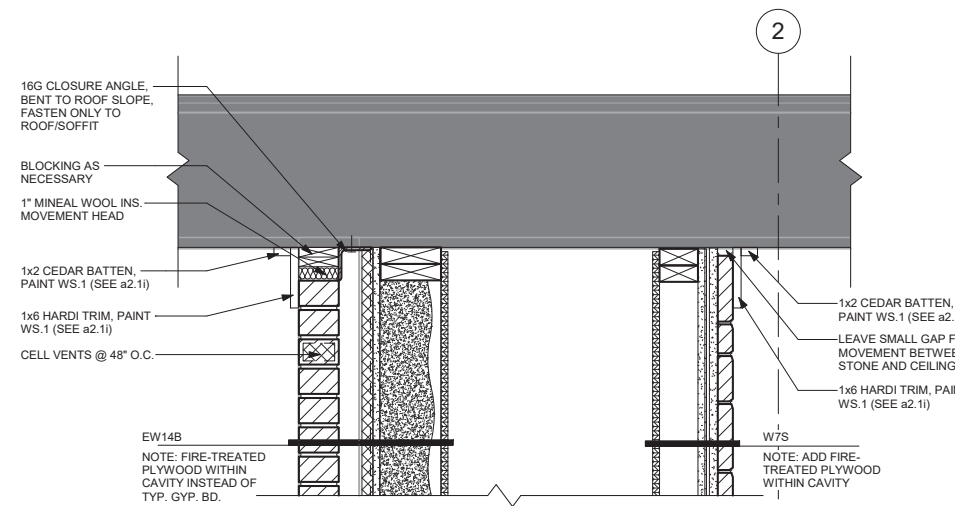


8 SECTION DETAIL @ (e) FOOTING
1 1/2" = 1'-0"

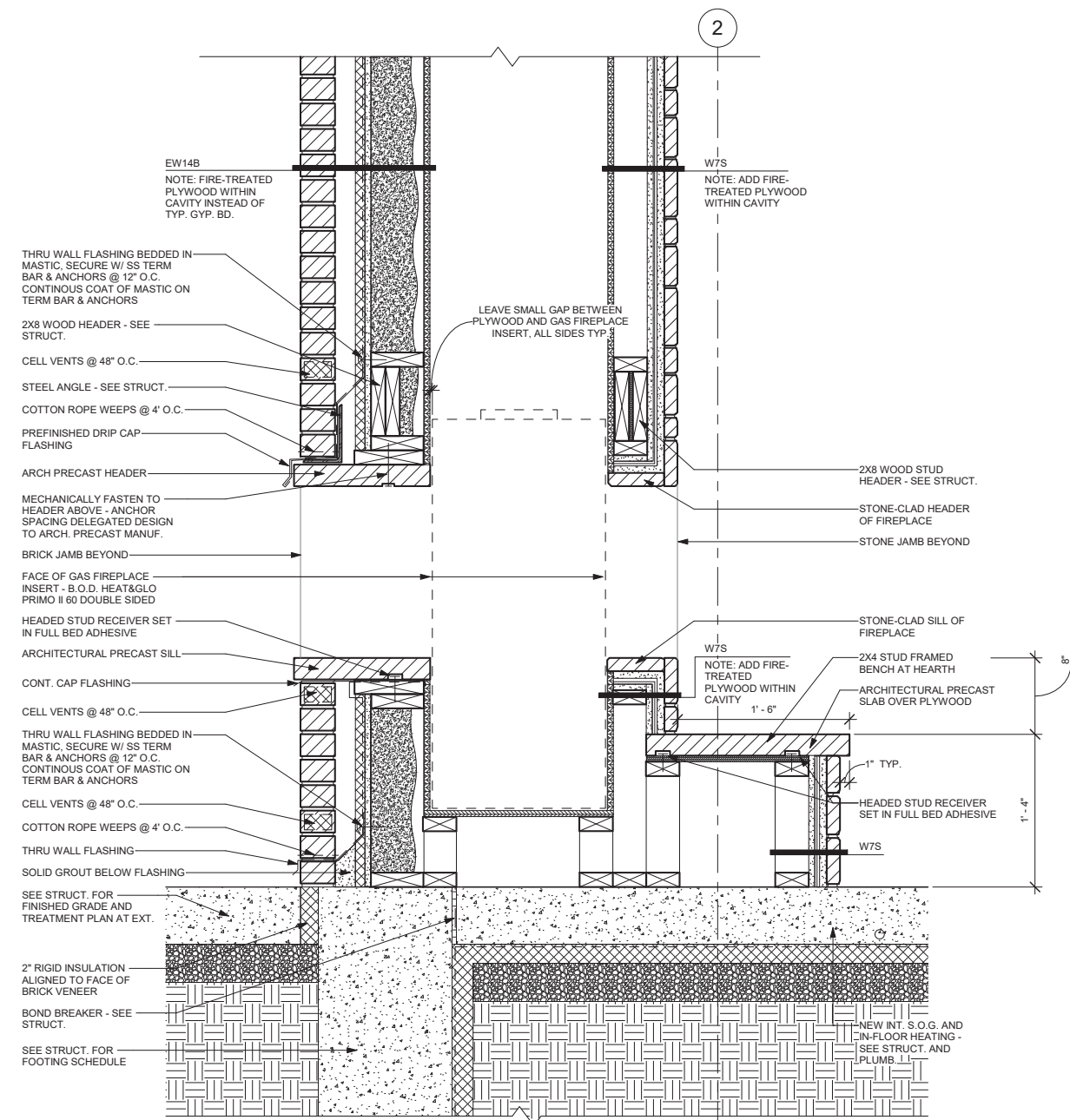


3 SECTION DETAIL - INTERIOR WALL INFILL AT SLAB
1 1/2" = 1'-0"

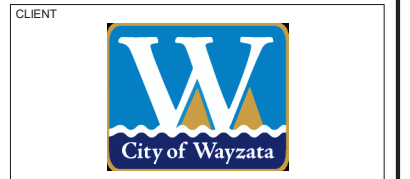
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① SECTION DETAIL - GAS FIREPLACE CAVITY TO ROOF
1 1/2" = 1'-0"



② SECTION DETAIL - GAS FIREPLACE INSERT
1 1/2" = 1'-0"



Architect
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CLIENT

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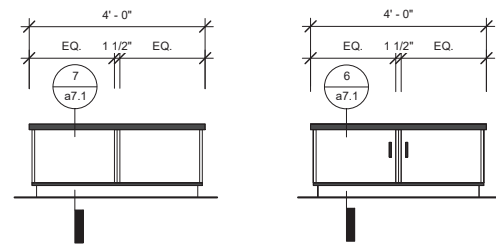
DRAWING TITLE

FIREPLACE DETAILS

DRAWING NUMBER

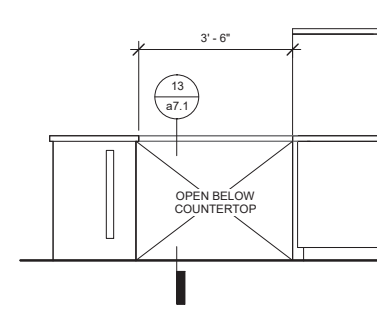
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PROJECT NUMBER 2424

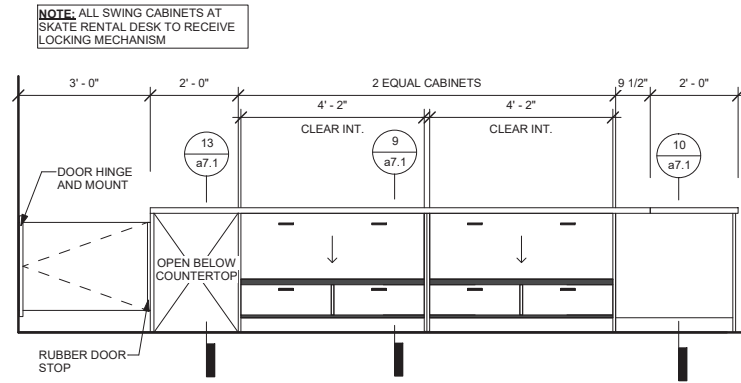


5 NON-LOCKING BENCH, TYP.
1/2" = 1'-0"

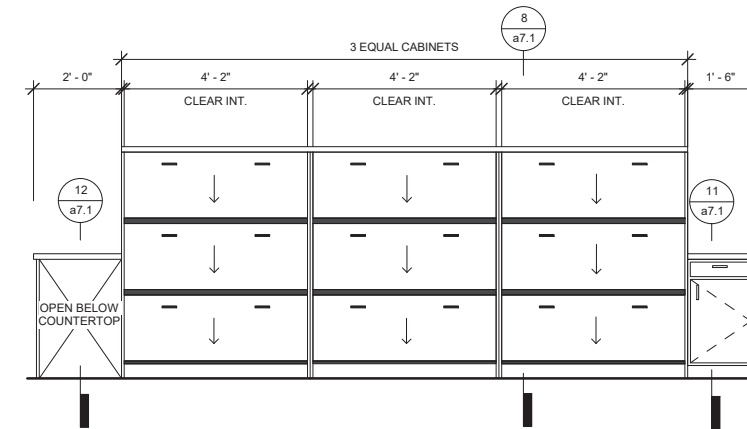
4 LOCKING BENCH, TYP.
1/2" = 1'-0"



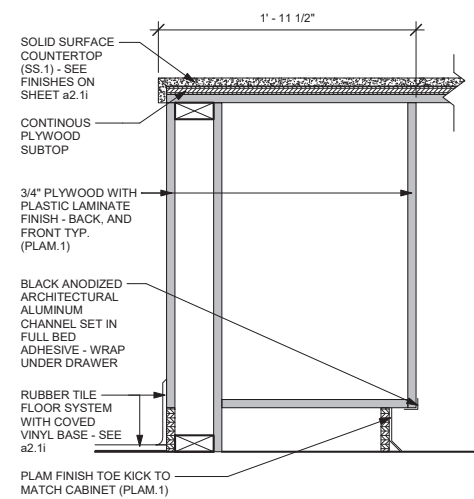
3 INTERIOR ELEVATION - ICE SKATE RENTAL DESK SOUTH
1/2" = 1'-0"



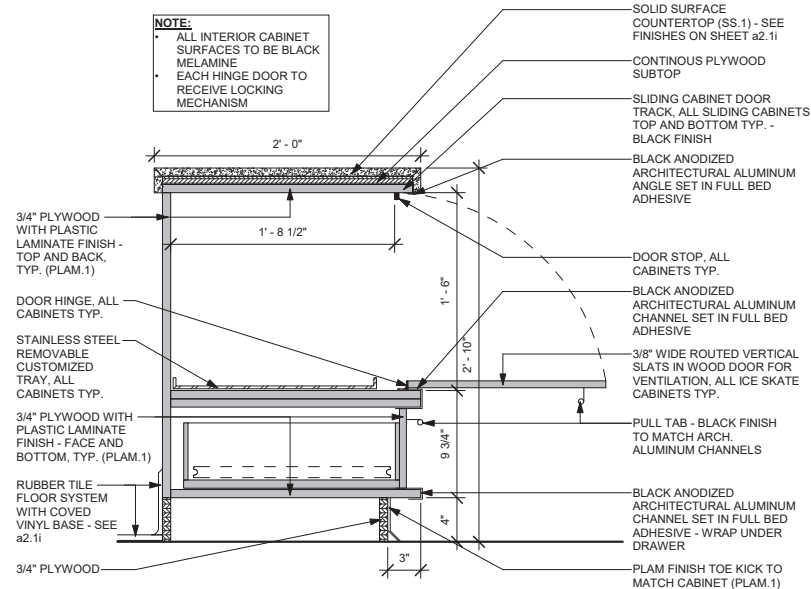
2 INTERIOR ELEVATION - ICE SKATE RENTAL DESK EAST
1/2" = 1'-0"



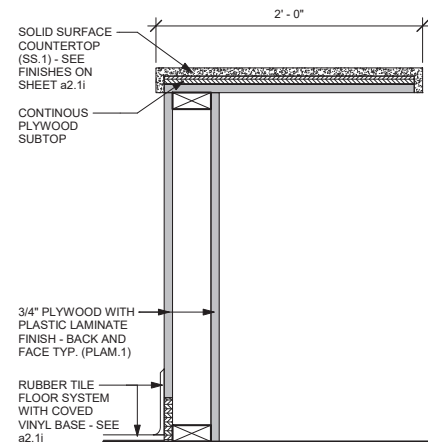
1 INTERIOR ELEVATION - ICE SKATE RENTAL DESK WEST
1/2" = 1'-0"



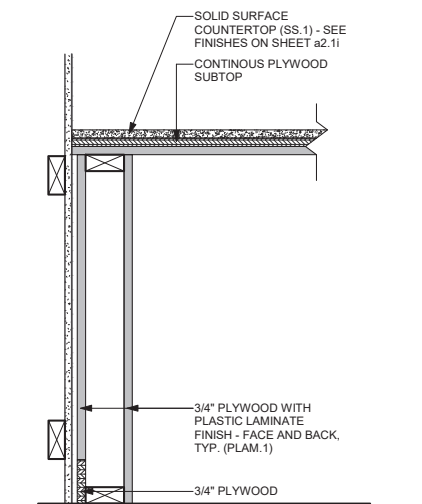
10 MILLWORK DETAIL - CAVITY BENEATH COUNTER
1 1/2" = 1'-0"



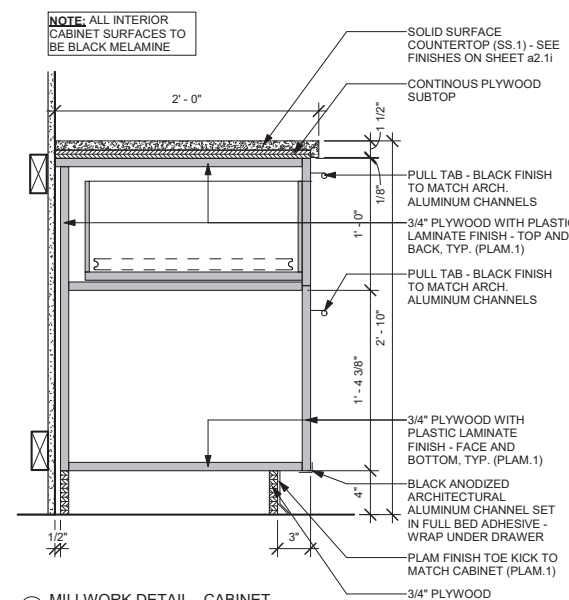
9 MILLWORK DETAIL - ICE SKATE RENTAL SWING CABINET EAST
1 1/2" = 1'-0"



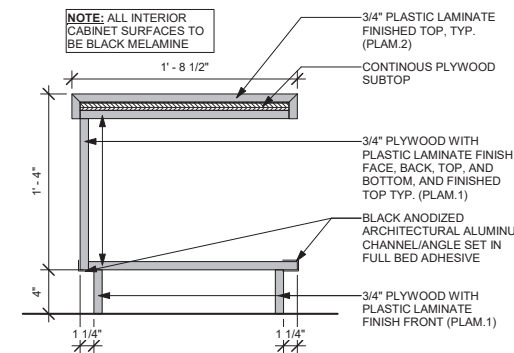
13 MILLWORK DETAIL - STANDALONE COUNTERTOP
1 1/2" = 1'-0"



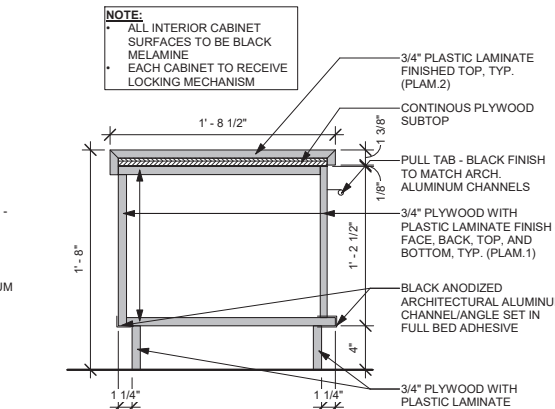
12 MILLWORK DETAIL - COUNTERTOP AGAINST WALL
1 1/2" = 1'-0"



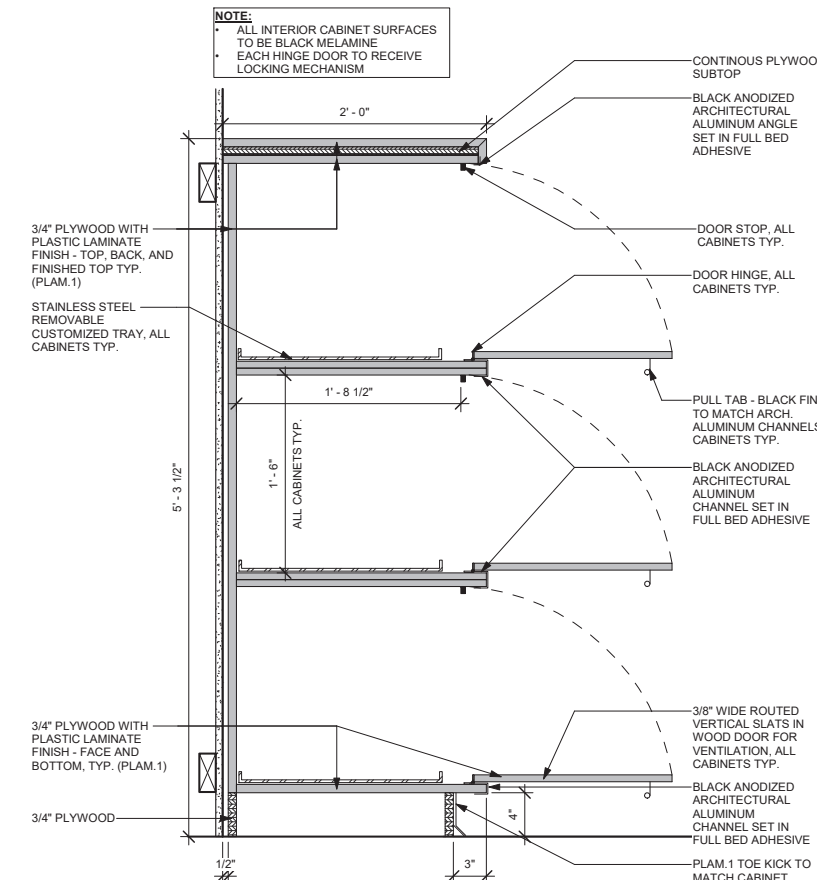
11 MILLWORK DETAIL - CABINET
1 1/2" = 1'-0"



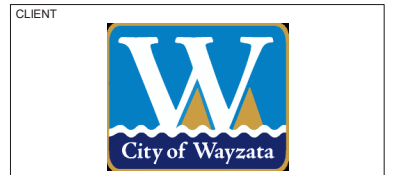
7 MILLWORK DETAIL - OPEN CABINET BENCH
1 1/2" = 1'-0"



6 MILLWORK DETAIL - LOCKING CABINET BENCH
1 1/2" = 1'-0"



8 MILLWORK DETAIL - ICE SKATE RENTAL SWING CABINET WEST
1 1/2" = 1'-0"



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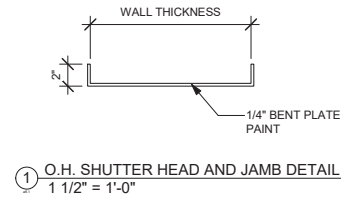
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KLAPPRICH WARMING HOUSE

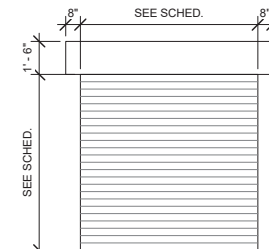
DRAWING TITLE
MILLWORK DETAILS - ICE SKATE RENTAL DESK

DRAWING NUMBER
a7.1
PROJECT NUMBER 2424

| DOOR SCHEDULE | | | | | | | | | | |
|---------------|-----------|----------------|--------|---------------|-------------|------------|----------------|----------|-------------|----------|
| Mark | Type Mark | DOOR / OPENING | | Door Material | Fire Rating | Frame Type | Frame Material | Hardware | Card Reader | Comments |
| | | Width | Height | | | | | | | |
| 100A | D2 | 3'-0" | 7'-0" | ALUM | | F1 | ALUM | | | |
| 100B | D2 | 3'-0" | 7'-0" | ALUM | | F1 | ALUM | | | |
| 102A | D1 | 3'-0" | 7'-0" | ALUM | | F3 | ALUM | | | |
| 102B | O1 | 3'-8" | 6'-10" | ALUM | | F2 | BP | | | |

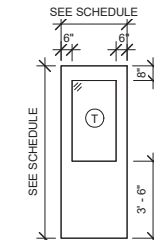


COILING SECURITY SHUTTER

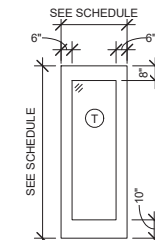


- ① OVERHEAD SECURITY SHUTTER
- ALUMINUM
 - RAYNOR DURASHUTTER B.O.D.
 - VERIFY HEIGHT AND CLEARANCES W/ EXISTING OPENING

DOOR TYPES



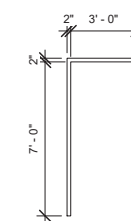
① ALUMINUM (INSULATED)



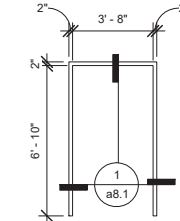
② ALUMINUM (INSULATED)

T = TEMPERED AND/OR LAMINATED SAFETY GLAZING PER MN BUILDING CODE SECTION 2406

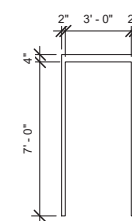
FRAME TYPES



① ALUMINUM



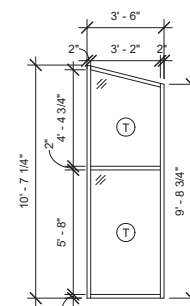
② ALUMINUM



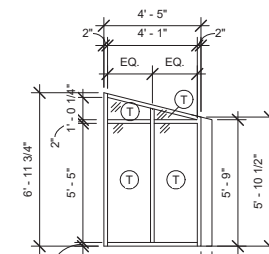
③ ALUMINUM

NOTE: OVERHEAD SECURITY SHUTTER SIZE TO BE FIELD VERIFIED WITH EXISTING OPENING HEAD CLEARANCE BEFORE PURCHASING

STOREFRONT TYPES



① CURTAINWALL 1



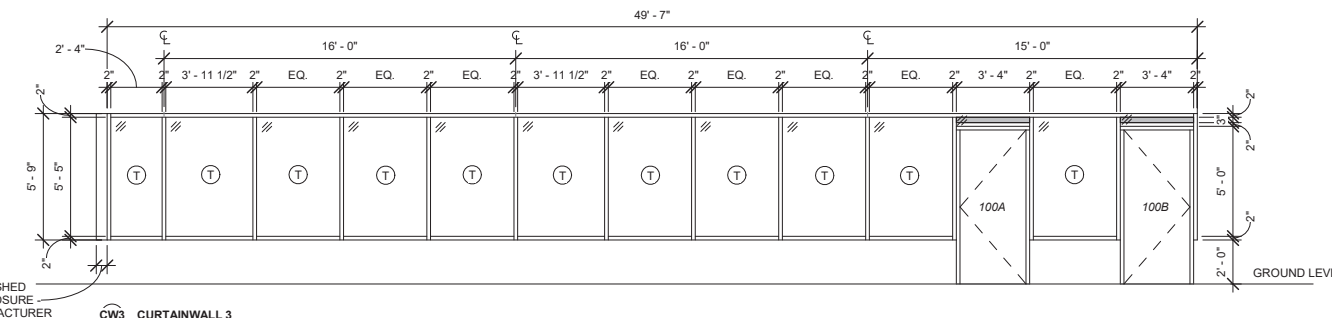
② CURTAINWALL 2

NOTE: ALL CURTAINWALL SIZES TO BE FIELD VERIFIED WITH EXISTING ROOF HEAD CLEARANCE BEFORE PURCHASING

T = TEMPERED AND/OR LAMINATED SAFETY GLAZING PER MN BUILDING CODE SECTION 2406

- CLEAR GLAZING
- BACK PAINTED INSULATED SPANDREL GLAZING

6" WIDE PREFINISHED ALUM. CORNER CLOSURE - BY ALUM. CW MANUFACTURER



6" WIDE PREFINISHED ALUM. CORNER CLOSURE - BY ALUM. CW MANUFACTURER

③ CURTAINWALL 3

HAGEN, CHRISTENSEN & MCILWAIN ARCHITECTS
421 DEER AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 904-1332 - FAX: (612) 904-9366

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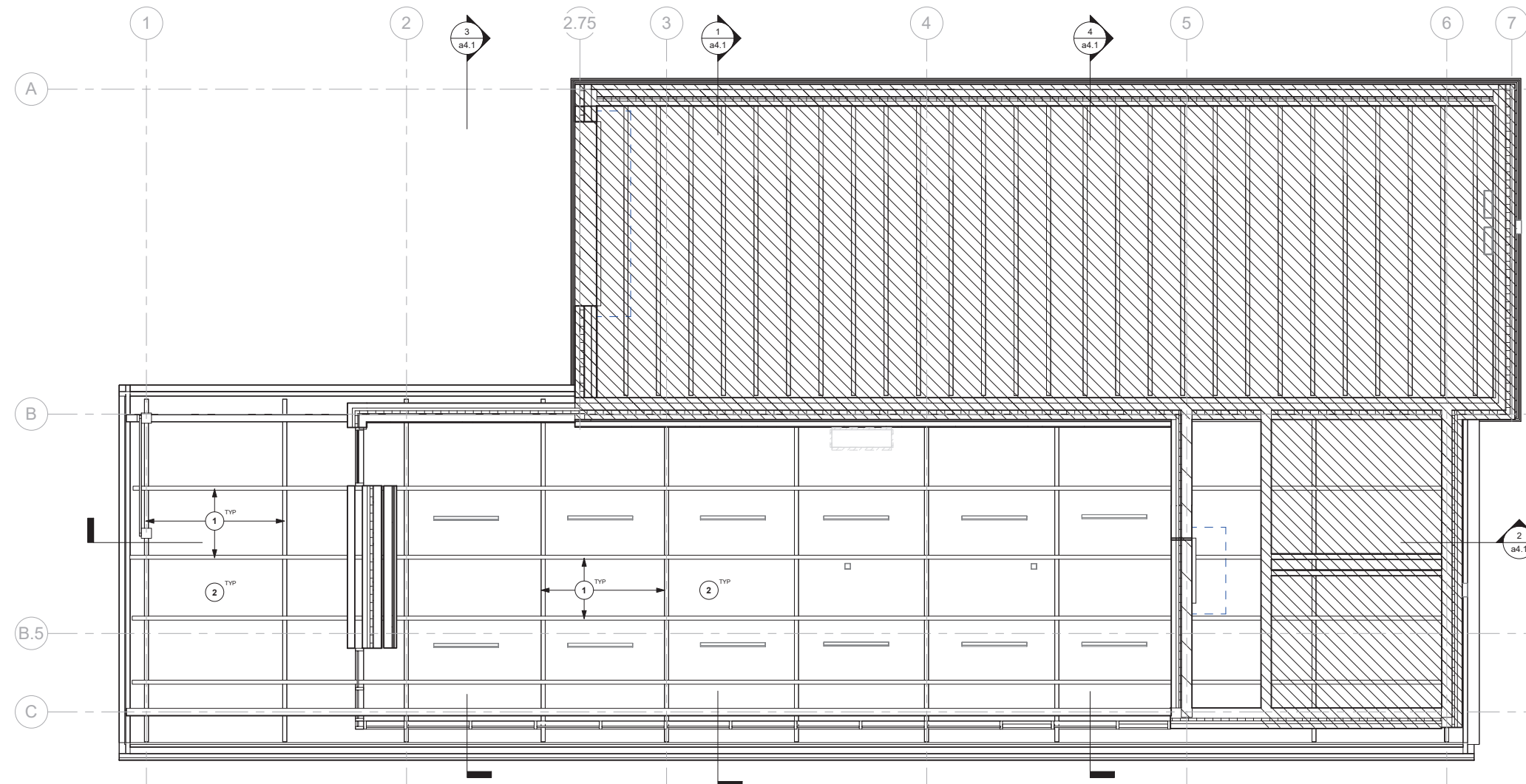
DRAWING TITLE

DOOR SCHEDULE & DETAILS

DRAWING NUMBER

a8.1

PROJECT NUMBER 2424



1 REFLECTED CEILING PLAN
1/4" = 1'-0"



CEILING PLAN GENERAL NOTES

- CONTRACTOR TO VERIFY ALL CONDITIONS AND REPORT DISCREPANCIES TO THE ARCHITECT OR OWNER, PRIOR TO BEGINNING CONSTRUCTION.
- MECHANICAL AND ELECTRICAL INFORMATION SHOWN IS INTENDED ONLY TO COMMUNICATE DESIGN INTENT. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR DETAILED INFORMATION. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES NOTED PRIOR TO COMMENCEMENT OF WORK.
- COORDINATE ALL CEILING MOUNTED EQUIPMENT SUPPORTS, DEVICE LOCATIONS, CLEARANCES, ETC. WITH EQUIPMENT INSTALLERS AND SUPPLIERS PRIOR TO INSTALLATION.
- ALL CEILING MOUNTED ITEMS (LIGHT FIXTURES, SPRINKLER HEADS, SPEAKERS, ETC.) SHALL BE CENTERED IN ACOUSTICAL CEILING PANELS OR GYPSUM BOARD SOFFITS UNLESS OTHERWISE NOTED OR DIMENSIONED.
- SPACE LIGHT FIXTURES EVENLY IN ROOMS, BAYS, SPACES, ETC. AND CENTER BETWEEN EXPOSED STRUCTURAL ELEMENTS WHERE APPROPRIATE.
- DIMENSIONS TO CEILING-INSTALLED ITEMS ARE TO CENTERLINE OF FIXTURE OR EQUIPMENT UNLESS NOTED OTHERWISE.
- LOCATE CONTROL JOINTS IN GYPSUM BOARD CEILINGS, SOFFITS, BULKHEADS, AND FASCIAS AS INDICATED ON DRAWINGS OR AS SPECIFIED AND TO ALIGN WITH THOSE IN WALLS BELOW. VERIFY PROPOSED LAYOUT WITH ARCHITECT PRIOR TO INSTALLATION.
- PAINT ALL CONDUITS, DUCTWORK, SUPPORTS, HANGERS, ETC. THAT WILL REMAIN EXPOSED TO VIEW. MATCH COLOR INDICATED FOR STRUCTURE (PNT-1) UNLESS NOTED OTHERWISE.

CEILING PLAN - SYMBOL KEY

- EXISTING PARTITIONS TO REMAIN
- NEW PARTITIONS, SEE PARTITION TYPES
- NO WORK IN THIS AREA

| KEYNOTES - REFLECTED CEILING PLANS | |
|------------------------------------|--|
| Number | Description |
| 1 | ALL EXISTING CEILING BATTENS TO RECEIVE WS.1 FINISH - SEE a2.11 |
| 2 | EXISTING CEILING STRUCTURAL DECKING TO RECEIVE WS.2 FINISH - SEE a2.11 |

HAGEN, CHRISTENSEN & MCILWAIN
ARCHITECTS

4221 DEER AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 904-1332 - FAX: (612) 904-7368

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340 Park St. E
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KLAPPRICH WARMING HOUSE

DRAWING TITLE

REFLECTED CEILING PLANS

DRAWING NUMBER

a9.1

PROJECT NUMBER 2424

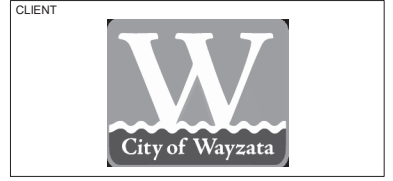
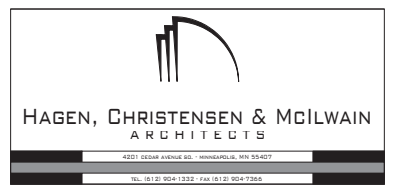
GENERAL STRUCTURAL NOTES

1 DESIGN CRITERIA:
1.1 BUILDING CODES USED FOR DESIGN:
1.1.1 IBC 2018 with state amendments.
1.2 STRUCTURAL TESTS AND SPECIAL INSPECTIONS:
1.2.1 Special inspections shall be performed by an independent testing agency according to IBC Chapter 17.
Table 1705.3 - Concrete Construction
Section 1705.4 - Masonry Construction
Table 1705.6 - Soils
Table 1705.3 - Post-Installed Anchors
1.2.2 Qualifications of special inspectors and frequency of tests and inspections shall be as defined in CASE 962C - Guideline for International Building Code-Mandated Special Inspections and Tests and Quality Assurance.
1.2.3 The Engineer will provide periodic observation to assure conformance with design intent of the construction documents. These observations are not meant to fulfill the requirements of special inspections.
1.2.4 Special inspections of the following items are not within the scope of the structural drawings. Contact the Architect or design professionals with these responsibilities for information about these items.
1.3 FUTURE CONSTRUCTION:
1.3.1 VERTICAL: None.
1.3.2 HORIZONTAL: None.
1.4 DESIGN LOADS:
1.4.1 Risk Category:
From IBC Table 1604.5
Risk Category II
1.4.2 DESIGN LIVE LOADS:
Public Areas 100 PSF
1.4.3 DEAD AND SUPERIMPOSED DEAD LOADS:
Framing and Deck 5 PSF
Roofing 8 PSF
Ceiling, Electrical, Mechanical 7 PSF
1.4.4 WIND LOAD:
Basic Design Wind Speed: . . . 115 MPH
Allowable Design Wind Speed: . . . 90 MPH
Exposure Classification: B
Internal Pressure Coeff: +0.18, -0.18
Wind pressures used for the design of exterior components and cladding shall be calculated by a professional engineer registered in the state where the project is located. Calculations shall be submitted for review.
1.4.5 SNOW LOAD:
Ground Snow Load: 50 PSF
Flat Roof Snow Load: 35 PSF
Snow Exposure Factor: 1.0
Snow Load Importance Factor: . . 1.0
Roof Thermal Factor: 1.0
Roof Slope Factor: 1.0
See plans for snowdrift surcharge loads and widths.
1.4.6 RAIN LOAD:
Rain Intensity: 3.25 IN/HR
Roof Live Load: 20 PSF
1.5 DEFLECTION AND DRIFT
1.5.1 Horizontal framing members are designed for deflections as tabulated. Deflections of horizontal to horizontal framing members are additive. Subcontractors shall make allowance for installation and operation of their systems to accommodate these deflections.
TYPICAL FRAMING MEMBERS
Roof Live Load span/360
FRAMING MEMBER SUPPORTING EXTERIOR WALL
Ext wall + Live + SI Dead Load . span/600 (3/8" max)
1.5.2 Story drifting criteria:
Wind: H/400
Seismic: 0.020 hx
2 DESIGN STRENGTHS:
2.1 CONCRETE:
2.1.1 All concrete shall be stone aggregate unless noted. See Specifications for additional durability requirements.
2.1.2 Lightweight concrete shall have a dry unit weight between 107 and 116 PCF, and entrained air between 4% and 7%.
2.1.3 Minimum concrete 28-day compressive strength shall be as follows:
Class f'c Type Add'l Location
(Psi) Remarks
A 3000 NLT Footings
B 4000 NLT Interior Slabs and Walls
D 4500 NTW, Air Note 1 Exterior Slabs and Walls
Note 1: Limit Water to Cement Ratio to 0.45
2.2 CONCRETE REINFORCEMENT:
Deformed Bars: Fy = 60 KSI ASTM A615
Weldable Deformed Bars: . . . Fy = 60 KSI ASTM A796
Welded Wire Fabric: Fy = 70 KSI ASTM A185
Micro/Macro Synthetic Fibers: ASTM C1116
2.3 COLD-FORMED STEEL: See ASTM A1003
54 mil (16 Gage) and Heavier: Fy = 50 KSI
43 mil (18 Gage) and Lighter: Fy = 33 KSI

2.4 MASONRY:
Assembly
Compressive Strength: . . . f'm = 2,000 PSI
CMU Net Area
Compressive Strength: 2,000 PSI ASTM C90/C140
Masonry Grout: f'g = 3,000 PSI
Deformed Bars: Fy = 60 KSI ASTM A615
Headed Studs Fy = 50 KSI ASTM A108
Deformed Bar Anchors: Fy = 60 KSI ASTM A496
Ladder Joint Reinforcement: Wt. 7 (9 gage) ASTM A951
Mortar for Structural Walls: Type M below grade ASTM C270
Type M or S above grade
2.5 DIMENSIONAL LUMBER:
2.5.1 Structural Framing (beams, joists, studs, plates): Spruce-Pine-Fir #1/#2
Fb = 875 PSI
Fv = 135 PSI
Fc parallel = 1,150 PSI
E = 1,400 KSI
2.5.2 Wood Posts (6x6 and larger): Doug Fir-Larch #2
Fb = 750 PSI
Fv = 170 PSI
Fc parallel = 700 PSI
E = 1,300 KSI
2.6 LAMINATED VENEER LUMBER (LVL): Grade 2.0 E
Fb = 2,950 PSI
Fv = 285 PSI
E = 2,000 KSI
2.7 LAMINATED STRAND LUMBER (LSL)
2.7.1 Rimboard: Grade 1.3 E
Fb = 1700 PSI
Fv = 425 PSI
Fc perp = 710 PSI
E = 1300 KSI
2.8 ORIENTED STRAND BOARD (OSB)
2.8.1 Rimboard: Grade 0.55 E
Fb = 600 PSI
Fv = 140 PSI
Fc perp = 500 PSI
E = 500 KSI
3 FOUNDATIONS AND EARTHWORK:
3.1 EXCAVATIONS:
3.1.1 Should any questionable conditions be encountered during excavation, notify Owner's Representative immediately.
3.1.2 No engineered fill shall be placed until excavation bottoms have been inspected and approved by the Geotechnical Engineer.
3.1.3 Water shall not be permitted to accumulate in footing excavations.
3.1.4 Provide a minimum of 6" of granular fill below all interior slabs-on-grade.
3.1.5 The slab-on-grade design is based on a modulus of subgrade reaction of 150 PCI.
3.2 FOOTINGS:
3.2.1 The foundation design is based on a total load net soil pressure of:
Spread Footings: 1500 PSF
Wall Footings: 1500 PSF
3.2.2 Foundations are assumed to be supported on native material or properly compacted structural fill. All footing excavations shall be inspected, prior to concrete placement, by the Geotechnical Engineer to verify suitable bearing material of capacity as specified.
3.2.3 Notify the Owner's representative when additional excavation is required to reach suitable bearing material.
3.2.4 Footing steps shall be located generally where indicated on the plan, and shall be installed as detailed.
3.2.5 Bottom of exterior building footings surrounding heated areas are to be at least 42" below final outside grade unless dimensioned otherwise. Bottom of exterior building footings at stoops or other unheated areas are to be at least 60" below final outside grade unless dimensioned otherwise.
3.2.6 Contractor shall provide frost protection for all footings when footings may be exposed to freezing conditions. Frost protection may include insulating blankets or at least 60" of soil above the bottom of footing.
3.2.7 All continuous footings shall be centered under walls unless dimensioned otherwise.
3.3 NON-FROST SUSCEPTIBLE FILL
3.3.1 Where non-frost susceptible fill is required, fill should consist of clean, open graded crushed stone. See the geotechnical report for additional requirements.
3.3.2 Non-frost susceptible fill shall extend below the freeze zone.
3.4 BACKFILLING:
3.4.1 Material used for backfill shall be free draining engineered backfill unless noted otherwise. See the Geotechnical Report for additional information.
3.4.2 Both sides of foundation walls shall be backfilled simultaneously so as to prevent overturning or lateral movement of walls. All grade beams shall be adequately braced to prevent lateral movement during backfilling and compaction.
3.4.3 No fill or backfill shall be settled by the use of water.
3.5 FOUNDATION COMPLETION:
3.5.1 The Geotechnical Engineer or Special Inspector shall certify in writing that all foundations were placed and completed as specified.
4 CONCRETE:
4.1 REFERENCES:
ACI 315 ACI Detailing Manual
ACI 318 Building Code Requirements for Reinforced Concrete
CRSI MSP Manual of Standard Practice
AWS D1.4 Structural Welding Code - Reinforcing Steel
CRSI Recommended Practice for Placing Reinforcing Bars
4.2 REINFORCING STEEL:
4.2.1 The reinforcing steel Contractor shall fabricate all reinforcement and furnish all accessories, chairs, spacer bars and supports necessary to secure the reinforcement unless shown otherwise on the plans and/or details.
4.2.2 Concrete reinforcement shall be placed according to ACI and CRSI "Recommended Practice for Placing Reinforcing Bars".
4.2.3 Minimum Clear Cover For Concrete Reinforcement:
Footings 2" Sides, 3" Bottom, 2" Top
Foundation Walls
Exterior Face 2"
Interior Face 2" Against Soil
Slabs on Grade Center of Slab
4.2.4 See typical detail for required bar development lengths and lap splice lengths.
4.2.5 All welded wire fabric shall be spliced by overlapping one full space plus 2" and be wired together.

4.3 ANCHORING TO CONCRETE
4.3.1 Post-installed anchors shall be installed by qualified personnel in accordance with the Manufacturer's Printed Installation Instructions.
4.3.2 Expansion anchors shall not be loaded until concrete has achieved a minimum age of 7 days. Adhesive anchors shall not be loaded until concrete achieved a minimum age of 21 days.
4.3.3 Expansion anchors shall be Hilti Kwik Bolt T22 or approved equal, unless noted otherwise. Embedment shall be as follows unless noted otherwise:
Diameter Embedment Diameter Embedment
3/8" 2" 5/8" 4"
1/2" 3 1/4" 3/4" 4 3/4"
4.3.4 Adhesive anchors shall be Hilti HIT-RE 500 V3 or HIT-HY 200 with HAS Standard rods or approved equal, unless noted otherwise. Embedment shall be as follows unless noted otherwise:
Diameter Embedment Diameter Embedment
3/8" 3 3/8" 5/8" 5 5/8"
1/2" 4 1/2" 3/4" 6 3/4"
4.3.5 Epoxy for dowels drilled into concrete shall be Hilti HIT-RE 500 V3, HIT-HY 200, or approved equal, unless noted otherwise. Embedment shall be as follows unless noted otherwise:
Bar Embedment Bar Embedment
#3 3 1/4" #5 5 3/4"
#4 4 3/8" #6 6"
4.3.6 Anchor capacity is dependent upon spacing between adjacent anchors and proximity of anchors to edge of concrete. Install anchors in accordance with spacing and edge clearances indicated on the drawings.
4.3.7 Contractor shall verify the location of reinforcing bars and/or prestressing tendons via GPR, X-Ray, or other means before drilling anchor holes. Reinforcing steel shall not be damaged.
5 MASONRY:
5.1 REFERENCES:
IBC 2018 Building Code Requirements for Masonry Structures
TMS 402 Specification for Masonry Structures
TMS 602 Structures
5.2 CONCRETE MASONRY UNITS:
5.2.1 Structural walls shall be comprised of Plain Double Corner units, Open End ('A' shaped) units, or Double Open End ('H' shaped) units. Stretcher units shall not be used in structural walls.
5.2.2 Store concrete masonry units off the ground, under cover, and in a dry location.
5.2.3 Masonry lintels shall be comprised of Lintel Block. Reinforcing bars shall be chaired at tied.
5.3 MORTAR:
5.3.1 Face shells and webs of bed joints shall be fully mortared for all starter courses, columns, pilasters, and cells to be grouted.
5.3.2 Head joints shall be mortared a minimum distance from each face equal to the face shell thickness of the unit.
5.3.3 Do not wet concrete masonry before laying up or grouting.
5.4 GROUT:
5.4.1 Vertical cells to be grouted shall be aligned, and unobstructed openings for grout provided.
5.4.2 Masonry walls shall be grouted with lift heights not exceeding 5'. Pour heights shall not exceed 5' unless cleanouts are provided, and 24' when cleanouts are provided per ACI 530. Consolidate lifts exceeding 1' in height by mechanical vibration and reconsolidate after initial water loss and settlement have occurred.
5.5 REINFORCEMENT:
5.5.1 Contractor shall provide Shop Drawings showing lengths, sizes, bending details, and locations of reinforcing steel, wall elevations, and setting diagrams for embedded items.
5.5.2 Secure vertical reinforcement with bar positioners at bar splices, top and bottom of walls, and at intervals not exceeding 10'-0".
5.5.3 Provide 5/8" cover to bed joint reinforcement for exterior walls or walls below grade. Provide 1/2" cover to bed joint reinforcement for other walls.
5.5.4 Provide a minimum of 1 1/2" cover to deformed bar reinforcement.
5.5.5 When using fine grout, provide a minimum of 1/4" clear distance between reinforcing bars and the face of any masonry unit. When using course grout, provide 1/2" clear distance.
5.6 LINTELS:
5.6.1 Provide 24" deep minimum solid masonry below all lintel bearing locations.
5.6.2 Masonry lintels shall be comprised of Lintel Block. Reinforcing bars shall be chaired and tied.
5.6.3 Steel lintels and loose lintels shall be galvanized.
5.7 ANCHORING TO MASONRY:
5.7.1 Headed studs shall be Nelson H4L or S3L unless noted otherwise. Deformed bar anchors shall be Nelson D2L unless noted otherwise.
5.7.2 Anchors installed into grouted cells or bond beams shall be Hilti Kwik Bolt T22 Masonry Anchors or approved equal, unless noted otherwise. Anchors shall not be installed in head joints unless approved by the Engineer. No more than one anchor shall be installed per cell unless approved by the Engineer. Embedment shall be as follows unless noted otherwise:
Diameter Embedment Diameter Embedment
1/4" 2" 5/8" 4"
3/8" 2 1/2" 3/4" 4 3/4"
1/2" 3 1/2"
5.7.3 Anchors installed into hollow cells shall be Hilti HIT-HY 270 with threaded HAS rods with 2" embedment in HIT-SC screen tubes or approved equal, unless noted otherwise. No more than two anchors shall be installed per cell, and anchors shall not be installed in CMU mortar joints, flange, or cell web.
5.1 COLD-FORMED STEEL
5.1.1 All structural members shall be designed by Supplier in accordance with American Iron and Steel Institute (AISI) "Specification for the design of Cold-Formed Structural Members", Latest Edition.
5.1.2 Prior to fabrication of framing, the Contractor shall submit fabrication and erection drawings with supporting calculations to the Architect and Engineer for review. These submittals shall be signed and stamped by a professional engineer registered in the state where the project is located.
6 STRUCTURAL WOOD:
6.1 REFERENCES:
IBC 2018
NFPA National Design Specification for Wood Construction
NFPA Design Values for Wood Construction

6.2 DIMENSION LUMBER:
6.2.1 All member sizes given on plan are nominal dimensions.
6.2.2 Wood lintels shall bear the full length on all trim studs, columns, posts or other supporting members indicated on plan.
6.2.3 All beams and joists not bearing on supporting members shall be framed with "Simpson" joist hangers or equal. Use Type LUSXX for single 2x's and Type LUSXX-2 for double 2x's.
6.2.4 All nailing shall be in accordance with IBC Table No. 2304.10.1 unless noted otherwise.
6.2.5 Roof and ceiling joists are shown as a general layout only. Consider joist spacing shown as the maximum spacing with incidental framing, bracing and blocking added as needed for standard wood frame construction.
6.3 LAMINATED VENEER LUMBER:
6.3.1 Laminated Veneer Lumber (indicated LVL on plans) to be supplied and manufactured according to the specification of the Truss Joist Corporation.
6.3.2 See Section 1 of these notes for material strength information.
6.4 LAMINATED STRAND LUMBER:
6.4.1 Laminated Strand Lumber (indicated LSL on plans) to be supplied and manufactured according to the specification of the Truss Joist Corporation.
6.4.2 See Section 1 of these notes for material strength information.
6.5 GLUED LAMINATED LUMBER:
6.5.1 Glued laminated members (indicated GL on plans) to be supplied and manufactured according to the specification of the American Institute of Timber Construction.
6.5.2 See Section 1 of these notes for material strength information.
7 MISCELLANEOUS:
7.1 DEFERRED STRUCTURAL SUBMITTALS
7.1.1 The design and documentation of some components defined using performance-based specifications may be deferred until after a building permit is obtained.
7.1.2 Deferred submittals include, but are not limited to, the items listed below.
7.1.3 For the following deferred submittals, the Contractor shall submit shop drawings and calculations signed and stamped by a professional engineer registered in the state where components are installed. These shall be submitted for review prior to fabrication.
Exterior Cold-Formed Framing
Curtain Wall Systems
Guardrails and Handrails
7.1.4 In addition to the deferred submittals listed above, the Contractor shall engage a professional engineer registered in the state where the project is located for the design of any necessary shoring, bracing, underpinning, or any other portion of the Contractor's means & methods which could impact existing structure. Contractor shall submit certified calculations and shop drawings for review upon request.
7.2 CONSTRUCTION JOINTS:
7.2.1 The Contractor shall submit drawings showing the proposed construction and control joints for all areas. This includes walls, structural floor systems, slabs on grade, etc. This drawing shall be reviewed by the Architect /Engineer and returned to the Contractor prior to pouring any concrete. The construction joint drawing shall be furnished to the fabricators before their shop drawings are submitted.
7.2.2 If the construction joints are changed after being reviewed, revised drawings shall be submitted for review.
7.2.3 Construction joints shall be made as detailed on the drawings.
7.2.4 Construction joints and control joints in concrete foundation walls shall be located at a maximum of 40' center spacing.
7.3 ANCHOR RODS:
7.3.1 All anchor rods for mechanical and electrical equipment shall be furnished and located by the respective Subcontractors and set by the General Contractor except where the other Subcontractors furnish their own concrete pads.
7.4 NON LOAD BEARING PARTITION WALLS:
7.4.1 Non load bearing partition walls are generally not shown on the structural drawings. Care shall be taken by the contractor to maintain a deflection space between the top of partition walls and floor or roof structure above.
7.4.2 See Typical Details and deflection requirements of horizontal framing members in Section 1 of these Notes for minimum deflection space between top of non load bearing partition walls and overhead structure.
7.5 VERIFICATIONS:
7.5.1 The General Contractor shall verify all openings sizes, pad sizes, and locations with the respective Subcontractors.
7.6 CORE DRILLING:
7.6.1 All core drilling shall be done by the Mechanical and Electrical Subcontractors for their own work under the supervision of the General Contractor. No reinforcing steel shall be cut. Verify location of reinforcing steel before core drilling. Do not core through beams, joists, or columns. The maximum core hole through slabs shall be 12". If these requirements cannot be met, contact the Engineer.
7.7 NEW WORK IN CONJUNCTION WITH EXISTING CONSTRUCTION:
7.7.1 VERIFICATION: The Contractor shall verify, by field check, all sizes, dimensions, elevations, locations, etc. of elements of the existing construction which are relative to the new construction.
7.7.2 DIMENSIONS: All dimensions involving new work tying into or governed by existing construction shall be field checked by the Contractor and furnished to the Subcontractors prior to fabrication of any work. The verified dimensions shall appear and be noted as such on the first shop drawing submitted.
7.7.3 ASSUMPTIONS: The Engineer has made assumptions concerning the soundness of the existing buildings and these assumptions are that this building was designed and constructed in conformity with good design and construction practices. The Contractor shall take extraordinary precautions concerning preservation of the building during demolition and new construction work. Further, the Contractor shall agree to assume all responsibility for the preservation of this property.
7.7.4 NOTIFICATION: The Contractor shall notify the Architect/Engineer immediately of any discrepancies between construction documents and actual field conditions.
7.8 GENERAL:
7.8.1 These drawings do not include necessary components for construction safety.
7.8.2 The structural design is based only on the building in its completed state. Contractors and their subs shall take whatever precautions are necessary to withstand all horizontal and vertical loadings that may be encountered during the construction prior to completion of the building.
7.8.3 During construction, the Contractor may encounter existing conditions which are not now known or are at variance with project documentation (Discovery). Such conditions may interfere with new construction or required protection and/or support of existing work during construction, or may consist of damage or deterioration to structural materials or components which could jeopardize the integrity of the building(s).



I hereby certify that this drawing was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: [Signature]
Typed or Printed: Ryan S. Bonniwell
Date: 03/17/2025 Registration Number: 53964

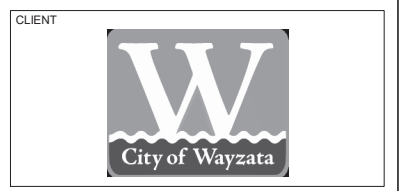
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Table with 3 columns: REVISION, DATE, DESCRIPTION. Row 1: 03.17.2025, CONSTRUCTION DOCUMENTS

CLIENT
340 Park St E
Wayzata, MN 55391
KLAPPRICH WARMING HOUSE

DRAWING TITLE
GENERAL STRUCTURAL NOTES

DRAWING NUMBER
s0.1
PROJECT NUMBER 2024-2094



CLIENT

ERA
STRUCTURAL ENGINEERING

CONSULTANT 1

CONSULTANT 2

I hereby certify that this drawing was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Signature: *R.S. Bonniwell*
Typed or Printed: Ryan S. Bonniwell
Date: 03/17/2025 Registration Number: 53964

KEY PLAN

| REVISION | DATE | DESCRIPTION |
|----------|------------|------------------------|
| | 03.17.2025 | CONSTRUCTION DOCUMENTS |
| | | |
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CLIENT

340 Park St E
Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

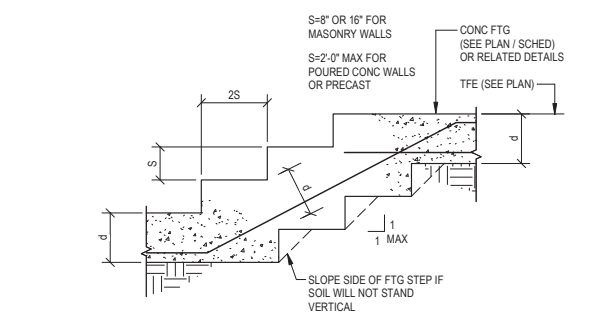
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TYPICAL DETAILS - FOUNDATION

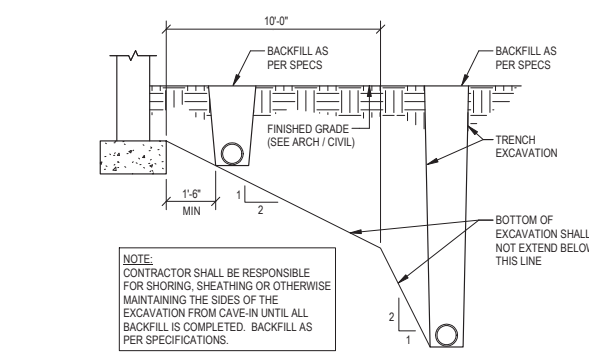
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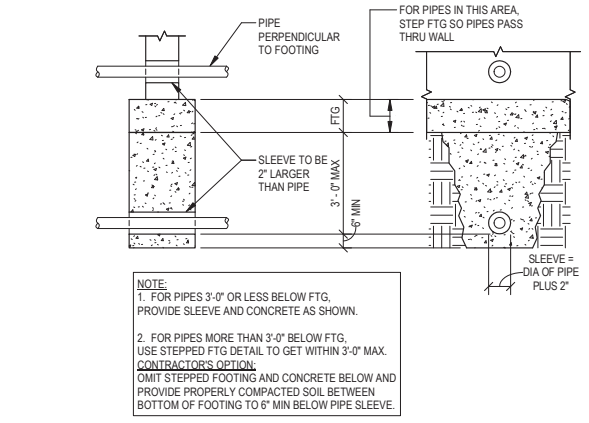
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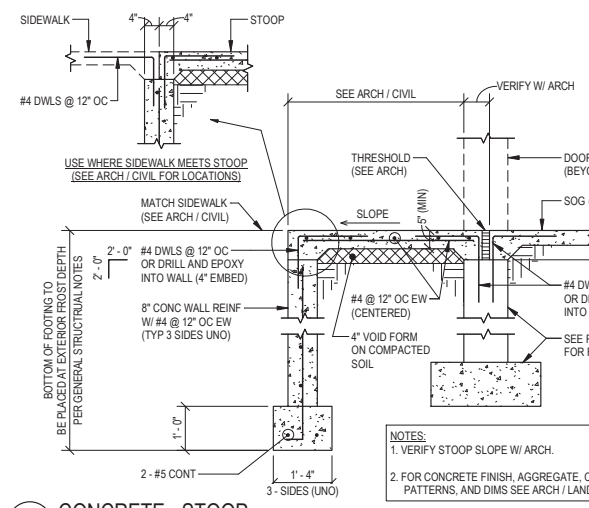
1 STEPPED FOOTING DETAIL
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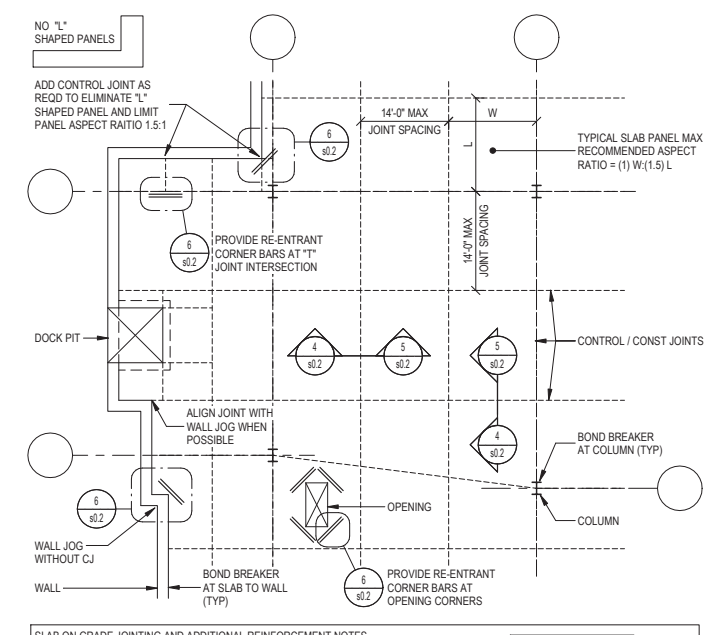
2 UTILITIES PARALLEL TO FOOTINGS DETAIL
#00702 NO SCALE



7 PIPES PERPENDICULAR TO FOOTINGS DETAIL
#00703 NO SCALE



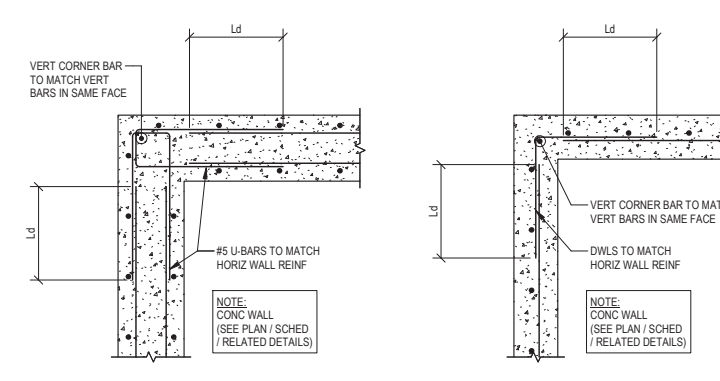
10 CONCRETE - STOOP
#00708 NO SCALE



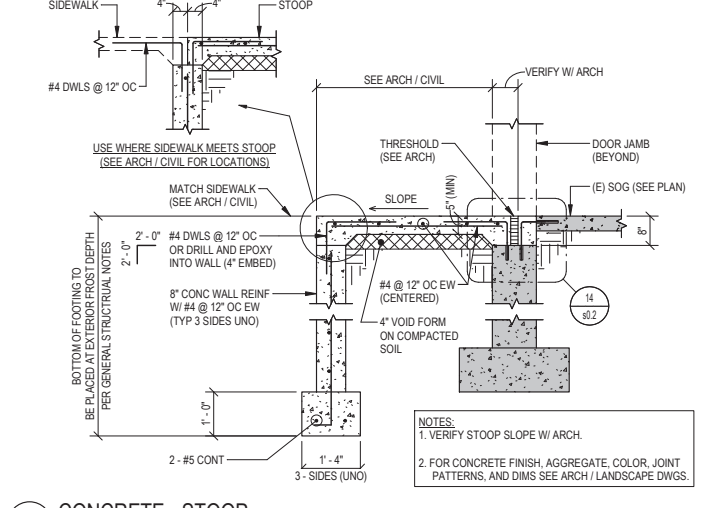
SLAB ON GRADE JOINTING AND ADDITIONAL REINFORCEMENT NOTES

1. MAX CONTROL JOINT SPACING TO BE 14'-0" OC EACH WAY.
2. CONTRACTOR TO SUBMIT SLAB ON GRADE JOINT PLAN THREE WEEKS PRIOR TO SLAB POUR.
3. LIMIT SLAB PANEL ASPECT RATIO TO 1.5:1.
4. MINIMIZE "L" SHAPED PANELS WHEN AT ALL POSSIBLE OR PROVIDE ADDITIONAL JOINTING OR RE-ENTRANT CORNER BARS.
5. WHENEVER POSSIBLE LOCATE JOINTS UNDER WALL AND FIXTURES.
6. SAW CUTTING SHALL BE DONE AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PERMIT CUTTING WITHOUT CHIPPING, SPALLING OR TEARING BUT NOT MORE THAN 12 HOURS AFTER POURING.

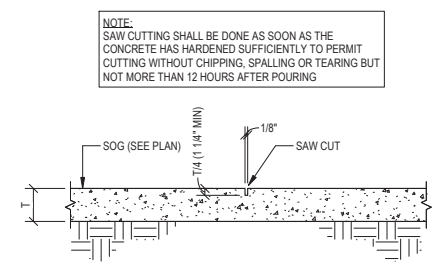
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#01901 NO SCALE



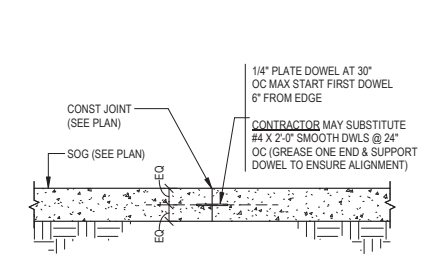
8 CONCRETE - REINFORCEMENT AT WALL INTERSECTIONS
#00704 NO SCALE



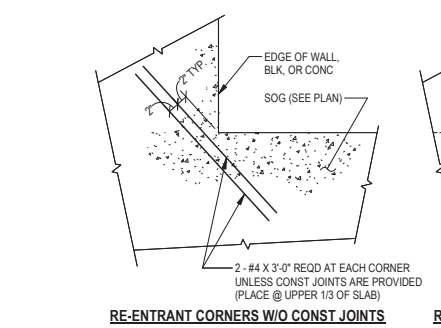
11 CONCRETE - STOOP
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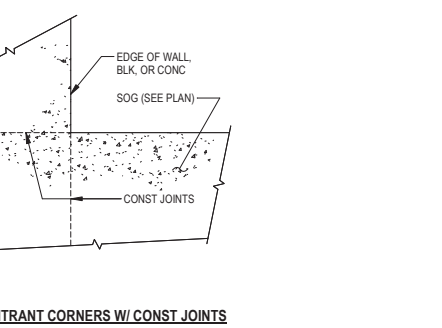
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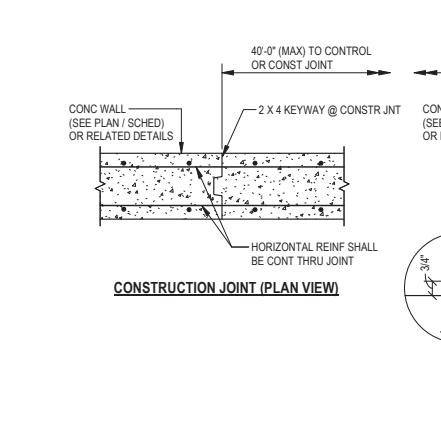
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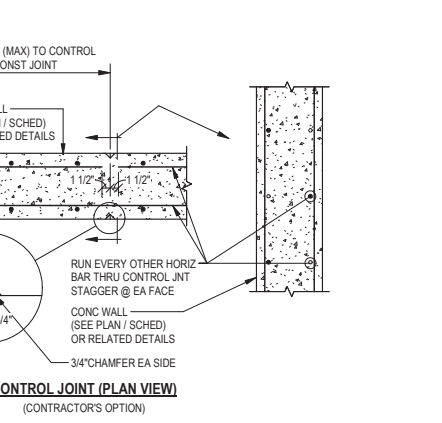
6 SOG - RE-ENTRANT CORNERS
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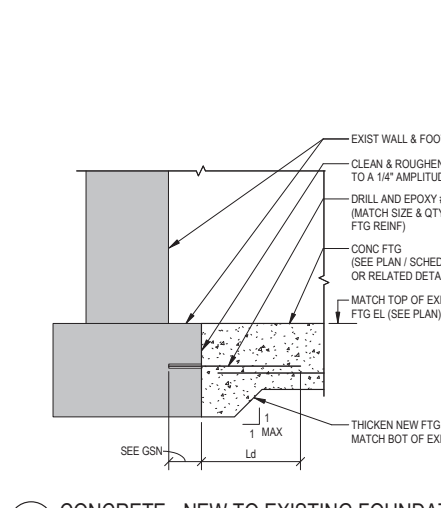
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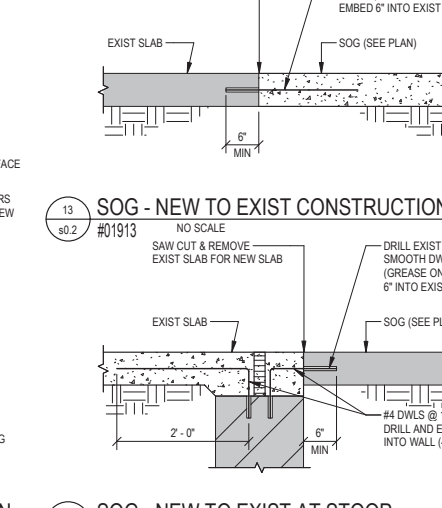
9 CONSTRUCTION JOINT (PLAN VIEW)
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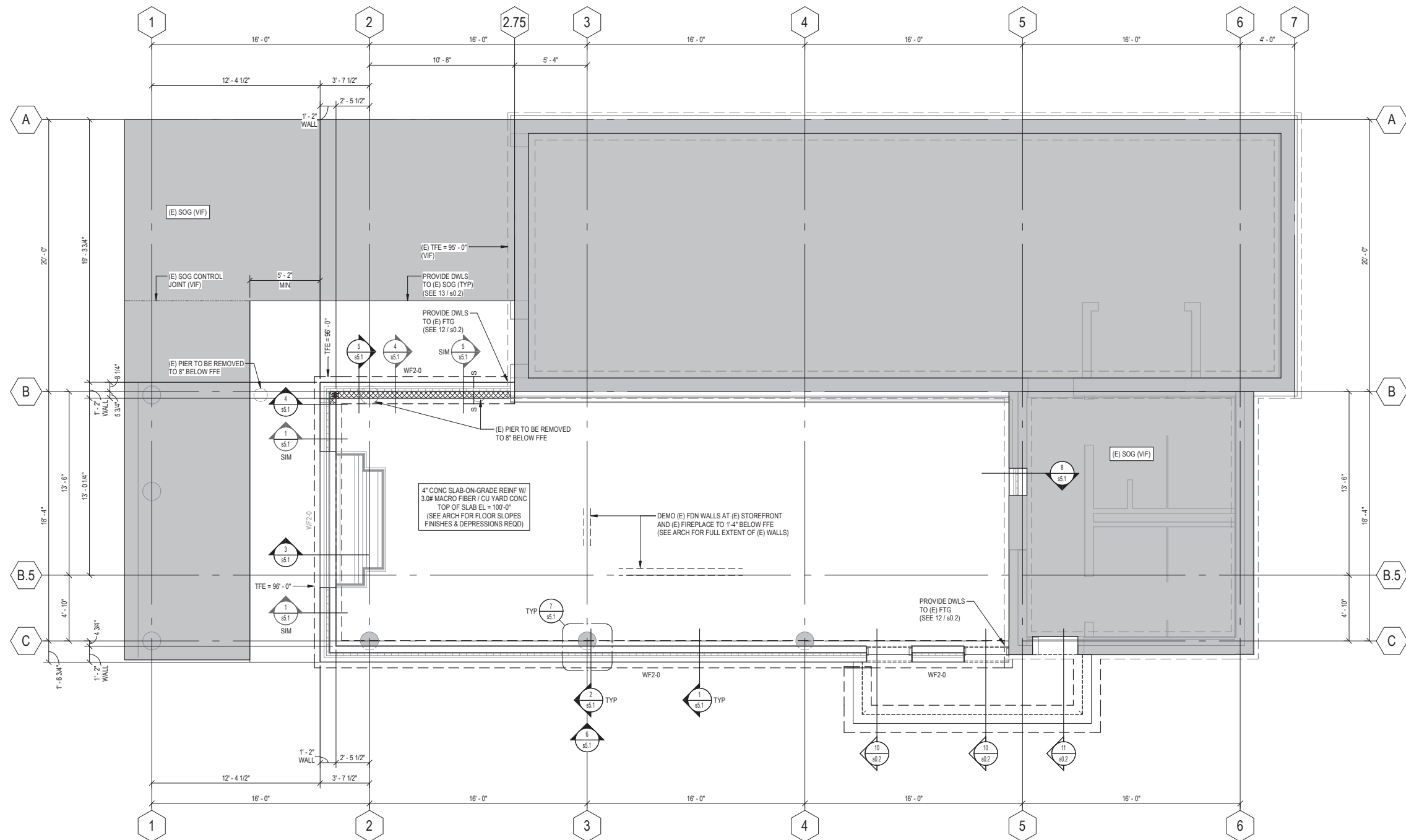
9 CONTROL JOINT (PLAN VIEW)
#00705 NO SCALE



12 CONCRETE - NEW TO EXISTING FOUNDATION
#00711 NO SCALE



13 SOG - NEW TO EXIST AT STOOP
#00711 NO SCALE



1 FIRST FLOOR FOUNDATION PLAN
1/4" = 1'-0"

FOUNDATION PLAN SHEET NOTES

A. General

- See Cover Sheet for structural sheet index defining sheet name, sheet number and issue status.
- See Cover Sheet for Structural Abbreviations, Typical Marks & Symbols and Plan Legends.
- Review General Structural Notes and typical details in conjunction with applicable plans. See sheet index on Cover Sheet.
- Elevation 100'-0" on these drawings match elevation ###.#" on Civil drawings at time of issue. Verify with latest Civil drawings and notify SEOR if different.
- Coordinate stoop sizes and locations with Architectural and Civil. See typical details for stoop construction.
- If present, coordinate the sizes and locations of tunnels, electrical cells, pits, pipes, floor drains, trenches and floor recesses with Architectural, Structural, Mechanical, Civil, and Electrical drawings.
- Frost protection is required for all foundations if winter conditions are present.
- Dimensions shown with +/- indicate dimensions that have been rounded to the nearest 1/16 of an inch.

B. Footings

- "WF#" denotes wall footing mark See schedule for size and reinforcement.
- Top of footing elevation (TFE) is shown on plan. See typical detail sheets for stepped footing detail.
- Locations of footing steps on plan are approximate. Contractor shall verify all step locations with Civil grade elevations to maintain minimum frost depths and all Mechanical, Electrical and Plumbing pipe elevations prior to pouring footings. Coordinate footing step locations with precaster if applicable. See typical detail sheets for pipes perpendicular and parallel to footing.
- All footings shall be centered below walls, columns and piers unless dimensioned otherwise.

C. Slab On Grade

- Top of slab elevation (TOSL =) is shown on plan.
- See Architectural drawings for depressions, slab slopes, finishes and drains.

3. Concrete slab thickness shall be as noted on plan. See Architectural drawings for vapor barrier requirements and geotechnical report for slab sub-base thickness and material specification.

4. Unless noted otherwise, reinforce slab with 3.0 pounds of macro fiber per cubic yard of concrete. Coordinate finishing requirements with owner. Contractor may substitute 6 x 6 - W1.4 x W1.4 WWF chaired in place 1" below top of slab in lieu of macro fiber.

5. Provide control joints (CJ) and construction joints (CONST JT) in slab. See typical foundation details.

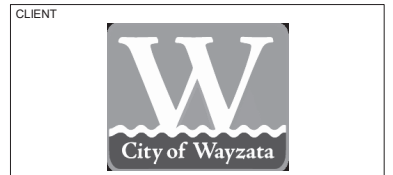
6. Concrete Contractor shall submit location of slab control joints (CJ) and construction joints (CONST JT) for review three weeks minimum prior to slab pour.

D. Concrete Walls

- See wall schedule for reinforcement. Provide additional reinforcement per typical details.
- See typical details for concrete wall construction joint spacing requirements.
- See shear wall elevation sheets and details for reinforcement required.
- Coordinate all exterior wall finish ledge elevations for brick, stone, etc. with architectural drawings.

INFORMATION ON THIS PLAN REGARDING EXISTING STRUCTURE WAS TAKEN FROM EXISTING CONSTRUCTION DOCUMENTS. ACTUAL FIELD CONDITION MAY VARY FROM WHAT IS SHOWN. ALL DIMENSIONS, ELEVATIONS AND CONDITIONS OF EXISTING STRUCTURE TO BE FIELD VERIFIED PRIOR TO FABRICATION.

| WALL FOOTING SCHEDULE | | | | |
|-----------------------|---------|-----------|-----------------|----------|
| MARK | SIZE | | REINFORCEMENT | COMMENTS |
| | WIDTH | THICKNESS | | |
| WF2-0 | 2' - 0" | 1' - 0" | 2 - #4 CONT BOT | - |



I hereby certify that this drawing was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Signature: *R.S. Bonniwell*
Typed or Printed: Ryan S. Bonniwell
Date: 03/17/2025 Registration Number: 53964

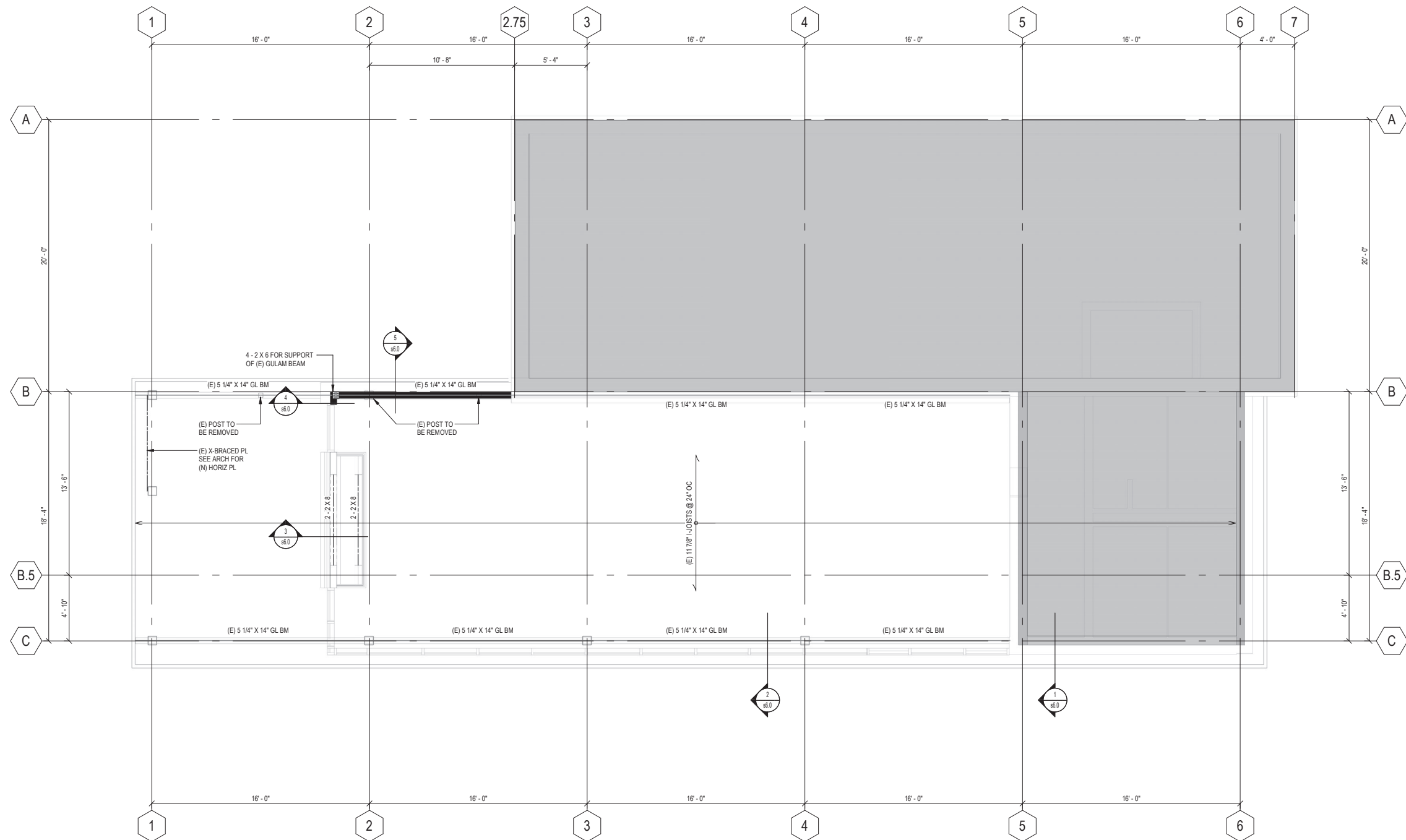
KEY PLAN

| REVISION | DATE | DESCRIPTION |
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| | 03.17.2025 | CONSTRUCTION DOCUMENTS |
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CLIENT
340 Park St. E
Wayzata, MN 55391
KLAPPRICH WARMING HOUSE

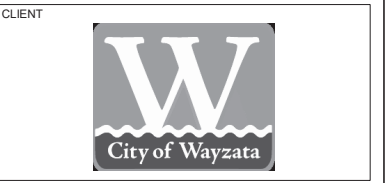
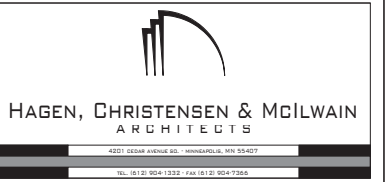
DRAWING TITLE
FIRST FLOOR - FOUNDATION PLAN

DRAWING NUMBER
s2.1
PROJECT NUMBER 2024-2094



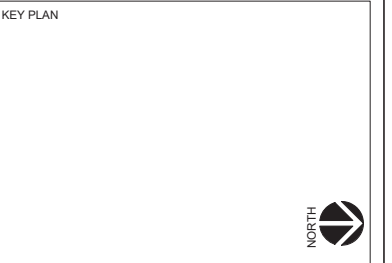
1 ROOF FRAMING PLAN
 s2.2 1/4" = 1'-0"

INFORMATION ON THIS PLAN REGARDING EXISTING STRUCTURE WAS TAKEN FROM EXISTING CONSTRUCTION DOCUMENTS. ACTUAL FIELD CONDITION MAY VARY FROM WHAT IS SHOWN. ALL DIMENSIONS, ELEVATIONS AND CONDITIONS OF EXISTING STRUCTURE TO BE FIELD VERIFIED PRIOR TO FABRICATION.



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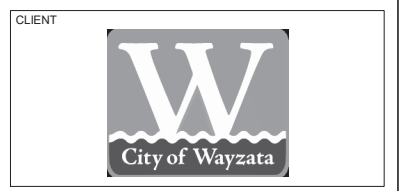


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DRAWING TITLE
ROOF - FRAMING PLAN

DRAWING NUMBER
s2.2
 PROJECT NUMBER 2024-2094



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CONSULTANT 1

ERA
STRUCTURAL ENGINEERING

CONSULTANT 2

wsp

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KLAPPICH WARMING HOUSE

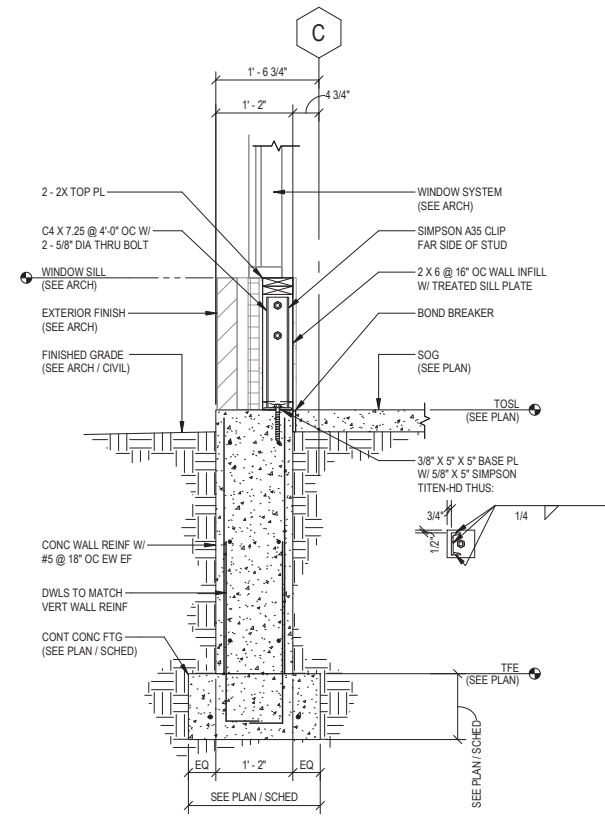
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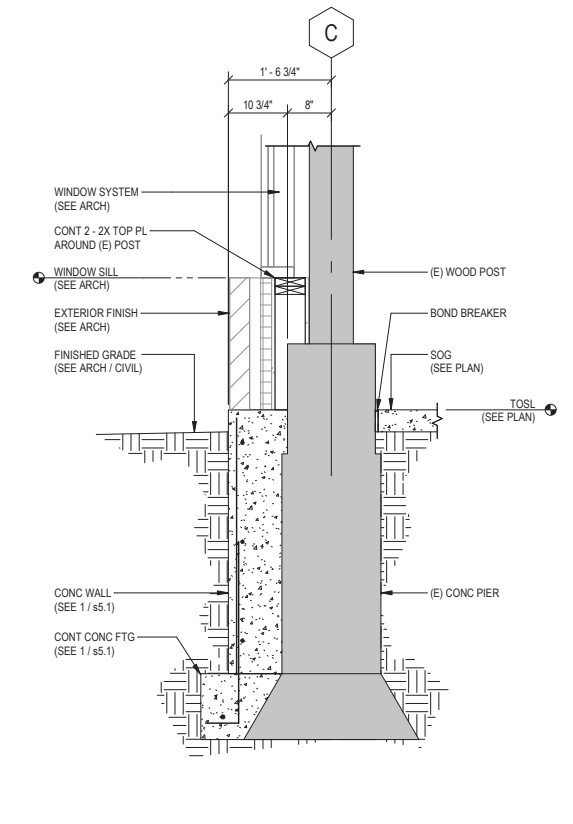
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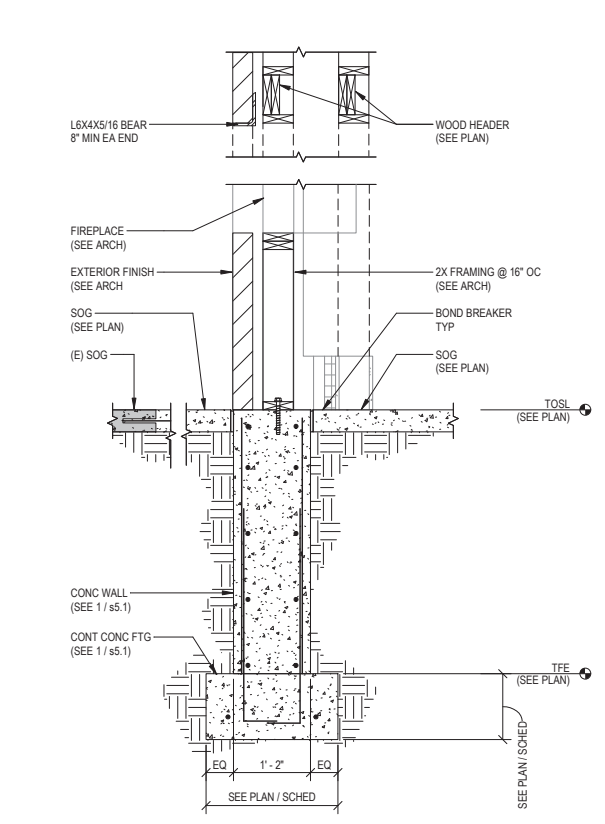
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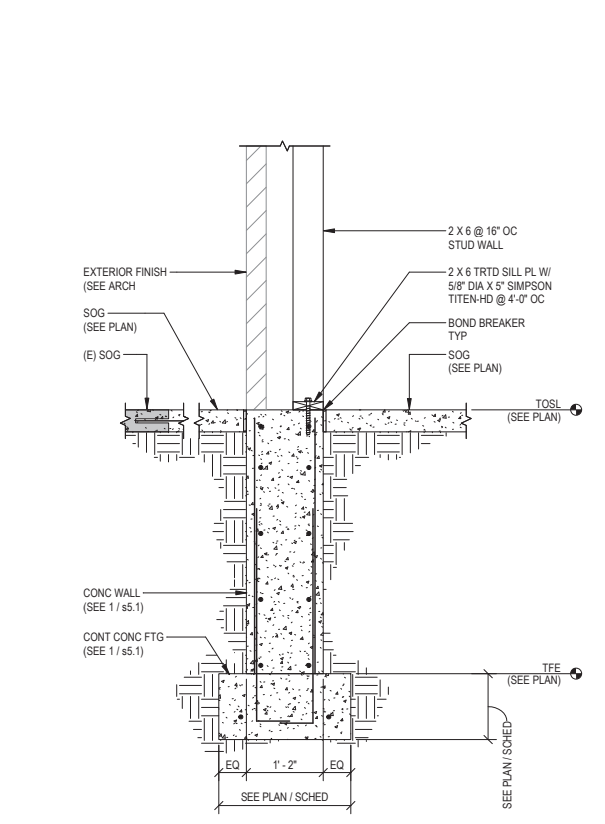
1 FOUNDATION DETAIL
s5.1 3/4" = 1'-0"



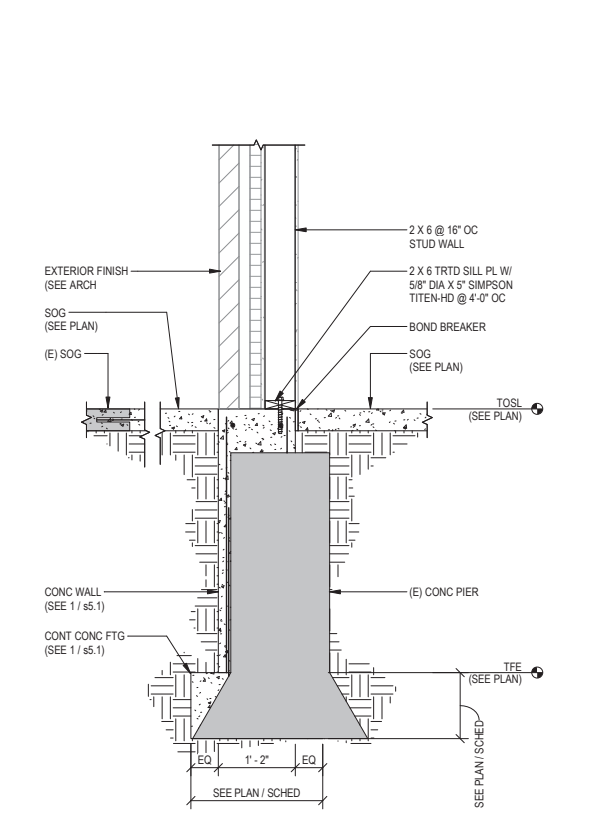
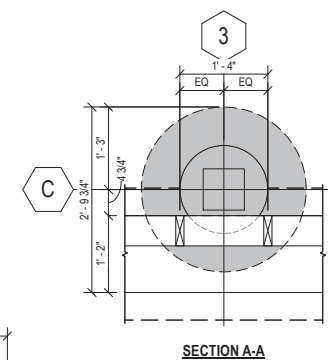
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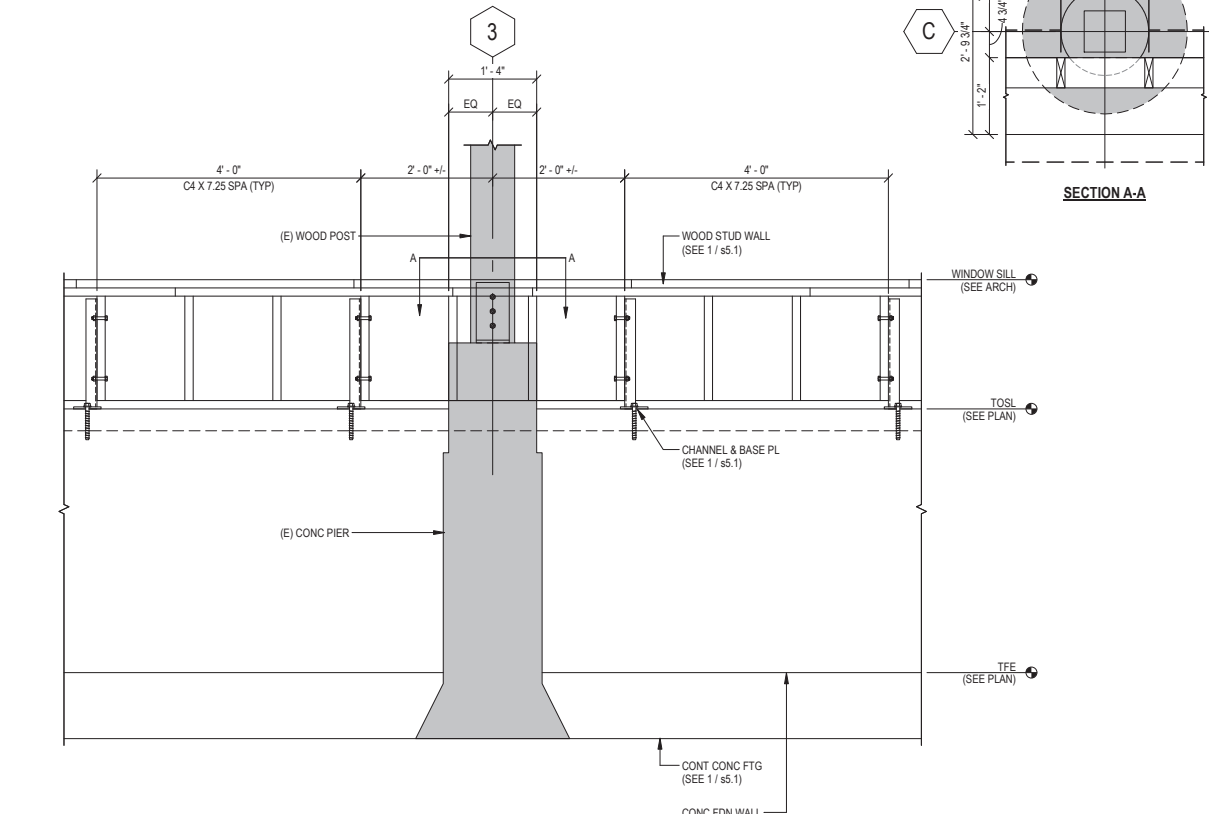
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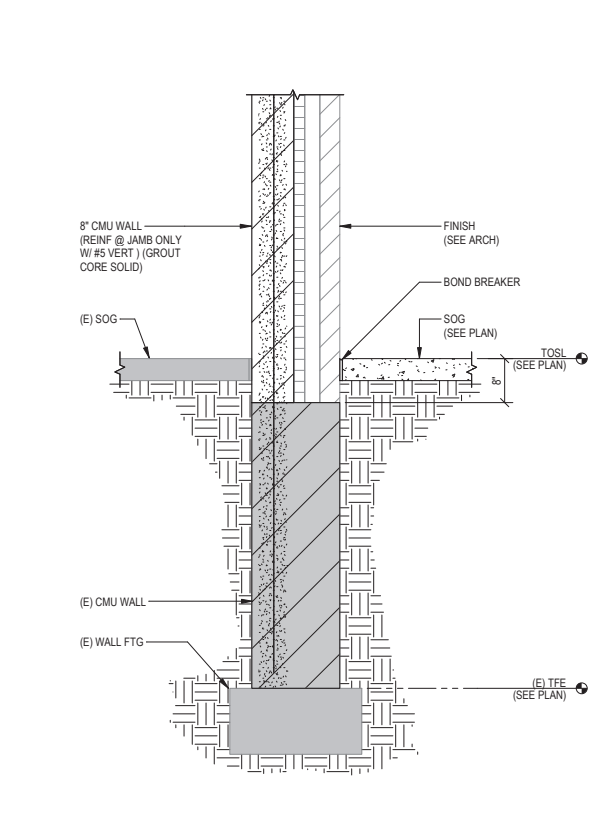
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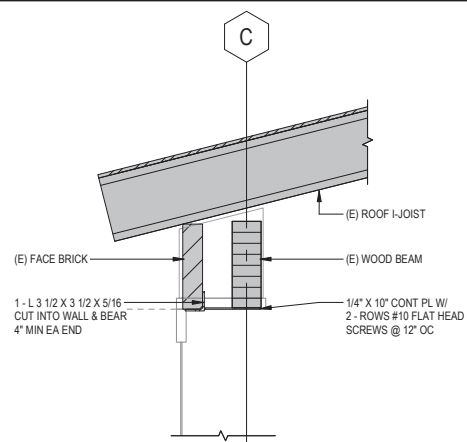
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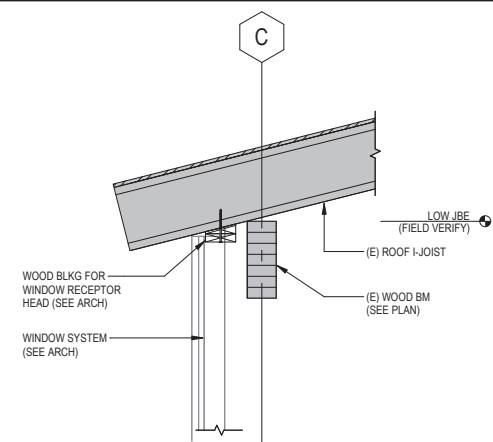
6 KNEE WALL BRACING ELEVATION
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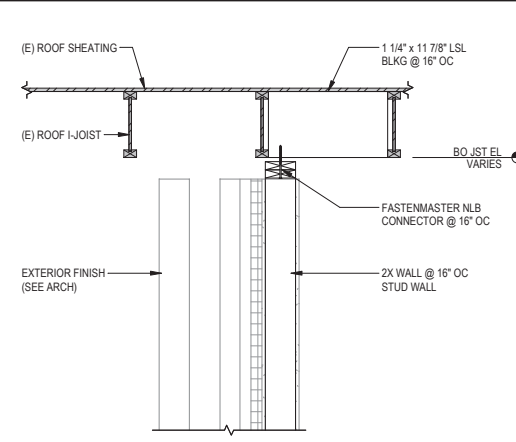
8 FOUNDATION DETAIL
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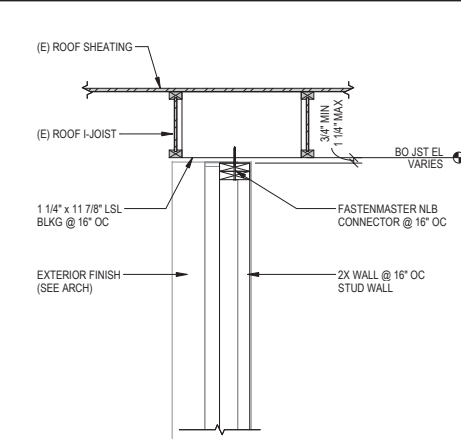
1 FRAMING DETAIL
s6.0 3/4" = 1'-0"



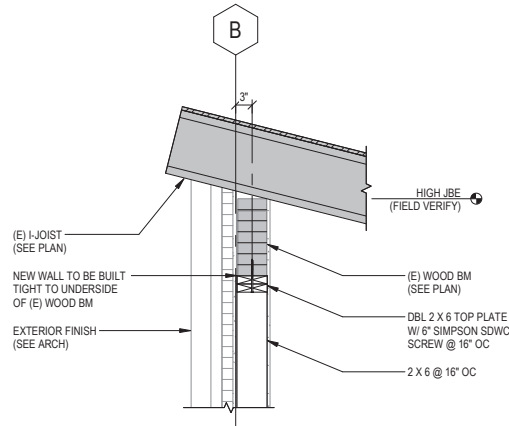
2 FRAMING DETAIL
s6.0 3/4" = 1'-0"



3 FRAMING DETAIL
s6.0 3/4" = 1'-0"



4 FRAMING DETAIL
s6.0 3/4" = 1'-0"



5 FRAMING DETAIL
s6.0 3/4" = 1'-0"

HAGEN, CHRISTENSEN & MCILWAIN
ARCHITECTS
4221 DEER AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 904-1332 FAX: (612) 904-9366

CLIENT
City of Wayzata

CONSULTANT 1
ERA
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CONSULTANT 2
wsp

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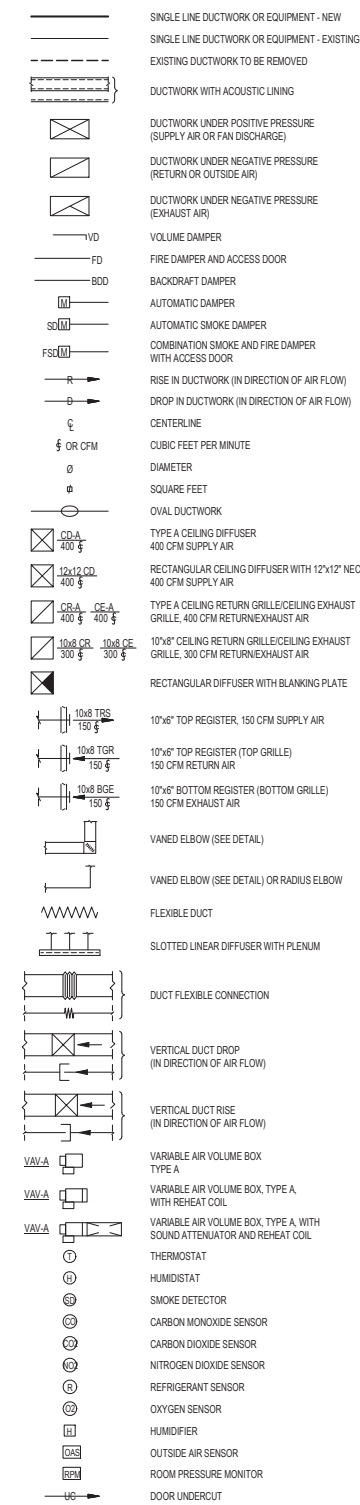
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KLAPPRICH WARMING HOUSE

DRAWING TITLE
FRAMING DETAILS

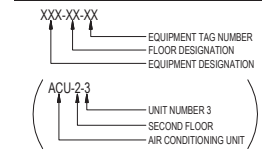
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s6.0
PROJECT NUMBER 2024-2094

MECHANICAL SYMBOL LIST

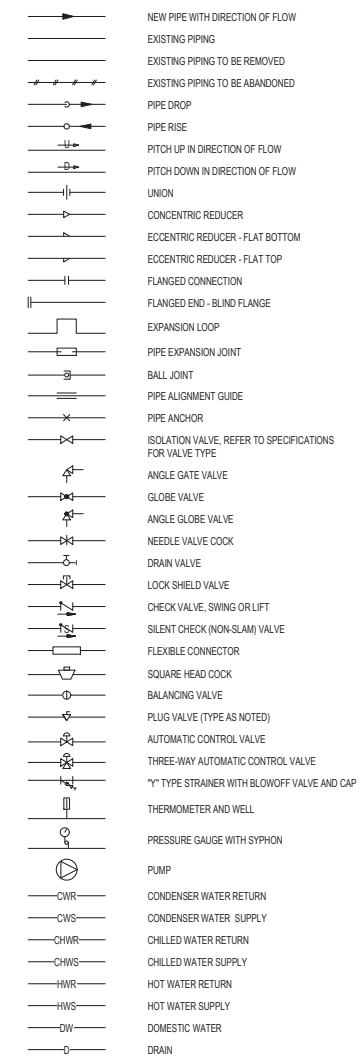
HVAC DUCTWORK



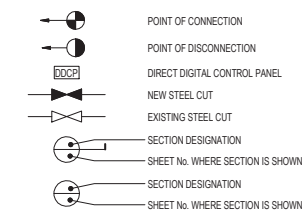
HVAC EQUIPMENT DESIGNATIONS



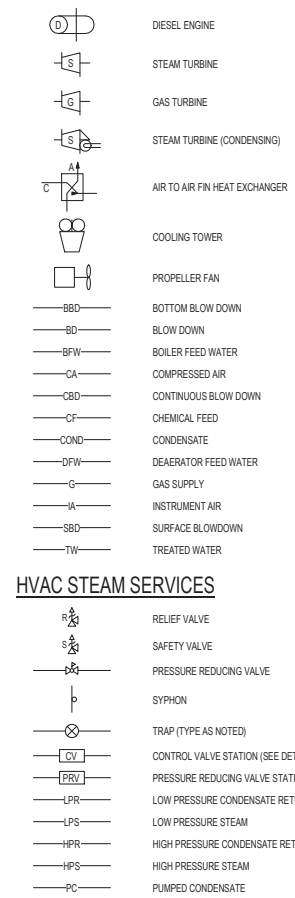
HVAC PIPING



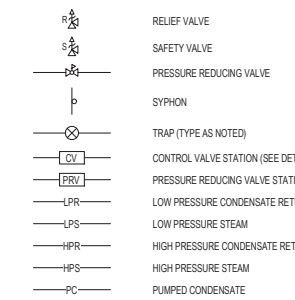
HVAC GENERAL



HVAC CENTRAL PLANT SERVICES



HVAC STEAM SERVICES



MECHANICAL ABBREVIATIONS

| | | | |
|--------|---|---------|--|
| A | AMPERES | L | LENGTH |
| AC | AIR CONDITIONING | LAT | LEAVING AIR TEMPERATURE |
| ACCU | AIR COOLED CONDENSING UNIT | LBS | POUNDS |
| ACS | AUTOMATIC CONTROL SYSTEM | LCP | LOCAL CONTROL PANEL |
| ACU | AIR CONDITIONING UNIT | LRA | LOCKED ROTOR AMPS |
| AD | ACCESS DOOR | LV | LOW VELOCITY |
| AF | AFTER FILTER | LWB | LEAVING WET BULB TEMPERATURE |
| AFDW | AIR FOL DOUBLE WIDTH | LWT | LEAVING WATER TEMPERATURE |
| AFF | ABOVE FINISHED FLOOR | MAV | MANUAL AIR VENT |
| AFMS | AIR FLOW MONITORING STATION | MAX | MAXIMUM |
| AFSW | AIR FOL SINGLE WIDTH | MB | MIXING BOX |
| AHU | AIR HANDLING UNIT | MBH | THOUSAND BTU PER HOUR |
| AL | ALUMINUM | MCC | MOTOR CONTROL CENTER |
| AMCS | AUTOMATED MONITORING AND CONTROL SYSTEM | MER | MECHANICAL EQUIPMENT ROOM |
| AP | ACCESS PANEL | MHP | MOTOR HORSEPOWER |
| BD | BLOW DOWN | MIN | MINIMUM |
| BF | BOOSTER FAN | MM | MILLIMETER |
| BFP | BOILER FEED PUMP | MOT | MOTOR |
| BGE | BOTTOM EXHAUST GRILLE | MOV | MOTOR OPERATED VALVE |
| BGR | BOTTOM RETURN GRILLE | MX | MECHANICAL ROOM EXHAUST |
| BHD | BOTTOM HORIZONTAL DISCHARGE | NC | NORMALLY CLOSED |
| BHP | BRAKE HORSEPOWER | NIC | NOT IN CONTRACT |
| BMS | BUILDING MANAGEMENT SYSTEM | NO | NORMALLY OPEN |
| BT | BOTTOM THRUST | NO | NUMBER |
| BTU | BRITISH THERMAL UNIT | NPSH | NET POSITIVE SUCTION HEAD |
| BTUH | BTU PER HOUR | NTS | NOT TO SCALE |
| CAC | CONTROL AIR COMPRESSOR | OA | OUTSIDE AIR |
| CC | COOLING COIL | OAI | OUTSIDE AIR INTAKE |
| CCP | CENTRAL CONTROL PANEL | OD | OUTSIDE DIAMETER |
| CCW | COUNTER CLOCKWISE | OOD | OPEN END DUCT |
| CD | CLOCKWISE | OV | OUTLET VELOCITY |
| CF | CAP FOR FUTURE CONNECTION | P | PUMP |
| CFM | CUBIC FEET PER MINUTE | PCC | PRE-COOLING COIL |
| CH | CHILLER | PCD | PRESSURE DROP |
| CHWP | CHILLED WATER PUMP | PF | PRE-FILTER |
| CLG | CEILING | PHC | PREHEAT COIL |
| CO | CLEAN-OUT DOOR | PRV | PRESSURE REDUCING VALVE |
| COMP | COMPRESSOR | PSI | POUNDS PER SQUARE INCH |
| COND | CONDENSATE | PSIA | PSI ABSOLUTE |
| CP | CONDENSATE PUMP | PSIG | PSI GAUGE |
| CPA | CONTROL POINT ADJUSTMENT | (RE) | RELOCATED EXISTING |
| CPU | CONDENSATE PUMP UNIT | (RRD) | EXISTING TO BE REMOVED AND RETURN TO OWNER |
| CT | COOLING TOWER | R | RISE |
| CU FT | CUBIC FEET | RA | RETURN AIR |
| CU IN | CUBIC INCHES | RAD | RADIATION |
| CUH | CABINET UNIT HEATER | RCC | RECOILING COIL |
| CV | CONSTANT VOLUME | REFR | REFRIGERANT |
| CW | CLOCKWISE | RF | RETURN FAN |
| CWP | CONDENSER WATER PUMP | RH | RELATIVE HUMIDITY |
| °C | DEGREES CENTIGRADE (CELSIUS) | RHC | REHEAT COIL |
| D | DROP | RHPW | REHEAT WATER PUMP |
| DB | DRY BULB | RLA | RUNNING LOAD AMPS |
| DBD | DOWN BLAST DISCHARGE | RLFA | RELIEF AIR |
| DF | DUCT FURNACE UNIT | RM | ROOM |
| DFWP | DEAERATOR FEED WATER PUMP | ROT | ROTATION |
| DG | DIESEL GENERATOR | RPM | REVOLUTIONS PER MINUTE |
| DHW | DOMESTIC HOT WATER | SA | SUPPLY AIR |
| DMR | DAMPER | SAU | SOUND ATTENUATION UNIT |
| DN | DOWN | SCHWP | SECONDARY CHILLED WATER PUMP |
| DWG | DRAWING | SD | SMOKE DETECTOR |
| DX | DIRECT EXPANSION | SF | SUPPLY FAN |
| dIAM | DIAMETER | SHWP | SECONDARY HOT WATER PUMP |
| (E) | EXISTING TO REMAIN | SLD | STRIPLINE DIFFUSER |
| (ER) | EXISTING TO BE REMOVED | SMK.CTL | SMOKE CONTROL OPERATION |
| (ERR) | EXISTING TO BE REMOVED & RELOCATED | SP | STATIC PRESSURE |
| EA | EACH | SPEC | SPECIFICATION |
| EAT | ENTERING AIR TEMPERATURE | SQ.FT. | SQUARE FEET |
| EDB | ENTERING DRY BULB TEMPERATURE | SS | STAINLESS STEEL |
| EDH | ELECTRIC DUCT HEATER | SK | SMOKE EXHAUST |
| EDR | EQUIVALENT DIRECT RADIATION | T | THROAT |
| EF | EXHAUST FAN | TAD | TOP ANGULAR DISCHARGE |
| EL | ELEVATION | TDH | TOTAL DYNAMIC HEAD |
| ELEC | ELECTRIC | TEMP | TEMPERATURE |
| EQ | EQUAL | TF | TERMINAL FILTER |
| ET | EXPANSION TANK | TG | TOP GRILLE |
| EUH | ELECTRIC UNIT HEATER | TGE | TOP EXHAUST GRILLE |
| EWB | ENTERING WET BULB | TGR | TOP RETURN GRILLE |
| EWT | ENTERING WET TEMPERATURE | THD | TOP HORIZONTAL DISCHARGE |
| EXH | EXHAUST | TR | TOP REGISTER |
| EXIST | EXISTING | TRD | TRANSFER DUCT |
| EXP | EXPANSION | TRF | TRANSFER FAN |
| F | FILTER | TRG | TRANSFER GRILLE |
| FA | FREE AREA (SQ.FT.) | TRS | TOP SUPPLY REGISTER |
| FC | FLEXIBLE CONNECTION | TS | TIP SPEED |
| FF | FINAL FILTER | TT | TOP THRUST |
| FG | FINISHED GRADE | TV | TURNING VANES |
| FIN FL | FINISHED FLOOR | TX | TOILET EXHAUST |
| FLA | FULL LOAD AMPERES | TYP | TYPICAL |
| FOT | FUEL OIL TANK | UBD | UPBLAST DISCHARGE |
| FPI | FINS PER INCH | UH | UNIT HEATER |
| FRM | FEET PER MINUTE | UCN | UNLESS OTHERWISE NOTED |
| FPS | FEET PER SECOND | V | VOLTS |
| FT | FEET | VA | VENTILATION AIR |
| FTR | FINNED TUBE RADIATION | VAC | VACUUM |
| FV | FACE VELOCITY | VF | VENTILATION FAN |
| °F | DEGREES FAHRENHEIT | VFD | VARIABLE FREQUENCY DRIVE |
| G | GAUGE | VIV | VARIABLE INLET VANES |
| GAL | GALLON | VP | VACUUM PUMP |
| GPH | GALLONS PER HOUR | W | WIDTH |
| GPM | GALLONS PER MINUTE | WI | WITH |
| GX | GENERAL EXHAUST | W/O | WITHOUT |
| H | HUMIDIFIER | WB | WET BULB |
| HC | HEATING COIL | WC | WATER COLUMN |
| HD | HEAD | WG | WATER GAUGE |
| HR | HOUR | WMS | WIRE MESH SCREEN |
| HRC | HEAT RECOVERY COIL | WP | WORKING PRESSURE |
| HT | HEIGHT | WSP | WORKING STEAM PRESSURE |
| HTWP | HIGH TEMPERATURE WATER PUMP | | |
| HV | HEATING AND VENTILATING | | |
| HWP | HOT WATER PUMP | | |
| HX | HEAT EXCHANGER | | |
| HZ | FREQUENCY | | |
| IN | INCH OR INCHES | | |
| IPS | IRON PIPE SIZE | | |
| KW | KILOWATT | | |

MECHANICAL DEMOLITION NOTES

- ALL PIPING IN WALLS AND FLOORS NOT TO BE REUSED WILL BE PLUGGED OR CAPPED AND CUTTING AND PATCHING WILL BE PERFORMED TO RESTORE SURFACE TO ORIGINAL CONDITION BY THIS CONTRACTOR.
 - AFTER REMOVING PIPE THROUGH THE FLOOR SLABS, PACK OPENING WITH APPROVED FIRE-RATED PACKING.
 - THE CONTRACTOR SHALL INCLUDE IN THEIR PRICE ALL COSTS ASSOCIATED WITH REMOVALS AND RELOCATIONS OF HVAC WORK AS DESCRIBED ON THE DRAWINGS AND IN THE SPECIFICATIONS WITH ALLOWANCES FOR EXPECTED OR UNFORESEEN DIFFICULTIES WHEN CONCEALED WORK HAS BEEN OPENED. NO CLAIMS FOR ADDITIONAL WORK ASSOCIATED WITH DEMOLITION WILL BE ACCEPTED, EXCEPT IN CERTAIN CASES CONSIDERED JUSTIFIABLE BY THE OWNER/ENGINEER.
 - THE CONTRACTOR SHALL PERFORM DEMOLITION AND REMOVAL WORK WITH MINIMUM INTERFERENCE WITH FUNCTIONING HVAC SYSTEMS. ALL AFFECTED SYSTEMS SHALL BE RECONNECTED AND RESTORED.
 - DEMOLITION AND REMOVAL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER. THE CONTRACTOR SHALL PATCH, REPAIR OR OTHERWISE RESTORE ANY DAMAGED INTERIOR OR EXTERIOR BUILDING SURFACE TO ITS ORIGINAL CONDITION.
 - THE CONTRACTOR SHALL REMOVE ALL DUCT & PIPING SUPPORTS, ETC. FROM PARTITIONS THAT ARE TO BE REMOVED. WHERE THE REMOVAL OF THESE ITEMS DISRUPTS EXISTING PIPING THAT IS TO REMAIN, THE CONTRACTOR SHALL INSTALL AND PROVIDE BYPASS CONNECTIONS NECESSARY.
 - ALL PIPING WHICH BECOMES EXPOSED DURING THE ALTERATION WORK SHALL BE REMOVED AND REROUTED CONCEALED BEHIND FINISHED SURFACES.
 - PORTIONS OF PIPING & DUCTWORK TO BE REMOVED OR ABANDONED AS A RESULT OF DEMOLITION WORK, BUT WHICH ARE REQUIRED TO REMAIN ACTIVE, SHALL BE CUT AT CONVENIENT LOCATIONS, REROUTED AND RECONNECTED.
 - THE CONTRACTOR SHALL NOTIFY THE OWNER AT THE APPROPRIATE TIME OF THE PROJECTED DEMOLITION AND PHASING SCHEDULE SO THAT REMOVAL OR RELOCATION OF AFFECTED UTILITIES MAY BE CARRIED OUT IN COORDINATION WITH THE PROJECT REQUIREMENTS.
 - ALL EXISTING MATERIAL AND EQUIPMENT IN USABLE CONDITION, WHICH IS TO BE REMOVED UNDER THIS CONTRACT, SHALL REMAIN THE PROPERTY OF THE OWNER OR SHALL BE DISPOSED OF BY THE HVAC CONTRACTOR, AS DIRECTED BY THE OWNER.
 - ARRANGE TO WORK CONTINUOUSLY, INCLUDING OVER TIME, IF REQUIRED, TO ASSURE THAT SYSTEMS WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE THE NECESSARY CONNECTIONS TO THE EXISTING SYSTEMS.
 - THE SHUTDOWN OF EXISTING BUILDING HVAC SERVICES SHALL BE COORDINATED WITH THE OWNER. MAKE ARRANGEMENTS AT LEAST 5 BUSINESS DAYS PRIOR TO A SHUTDOWN.
 - CONTRACTOR SHALL COMPLY WITH ALL FEDERAL STATE & LOCAL REQUIREMENTS REGARDING DISPOSAL OF REFRIGERANTS.
- PIPING SYSTEMS:**
- PITCH PIPING 1" IN 20' IN DIRECTION OF FLOW.
 - PROVIDE TRAPS IN CONDENSATE LINES THAT EXTEND OVER 2'.

MECHANICAL GENERAL NOTES

- GENERAL NOTES, SYMBOL LIST AND DETAILS ARE APPLICABLE TO ALL HVAC MECHANICAL DRAWINGS.
- ALL WORK IS NEW UNLESS OTHERWISE NOTED.
- DRAWINGS ARE DIAGRAMMATIC. DETERMINE LOCATION OF SYSTEMS AND COMPONENTS IN FIELD. RELOCATE EXISTING WORK THAT INTERFERES WITH WORK OF THIS CONTRACT.
- COORDINATE THIS WORK WITH THAT OF OTHER TRADES.
- NEITHER ACCURACY NOR COMPLETION OF SERVICES AND UTILITY LOCATIONS SHOWN ON DRAWINGS IS GUARANTEED. DETERMINE EXACT LOCATIONS OF EXISTING SERVICES AND UTILITIES IN FIELD, WHETHER OR NOT SHOWN ON DRAWINGS. EXERCISE CAUTION AND IDENTIFY LOCATIONS OF UNMARKED UTILITY LINES AS NECESSARY TO PERFORM WORK OF THIS SECTION.
- MANUFACTURERS MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.
- PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURERS RECOMMENDATIONS.
- PROVIDE ACCESS PANELS FOR EQUIPMENT FOR INSPECTION AND SERVICE. ACCESS PANEL SHALL BE SIZED TO PERMIT REPLACEMENT OF EQUIPMENT.
- PROVIDE HANGERS, INSERTS, ANCHORS, SUPPLEMENTAL STEEL & SUPPORTS AS REQUIRED TO SUPPORT DUCTWORK, PIPING AND EQUIPMENT FROM STRUCTURE.
- ALL MISCELLANEOUS MOUNTING HARDWARE, ATTACHMENTS, SUPPLEMENTAL STEEL AND MEANS OF SUPPORTING DUCTWORK/PIPPING/EQUIPMENT FROM BUILDING STRUCTURE SHALL BE SIZED FOR ITS INTENDED PURPOSE AND CAPACITY RATING. COORDINATE WITH HARDWARE MANUFACTURER FOR SPECIFIC REQUIREMENTS AND FIELD CONDITIONS AT POINT OF CONNECTION. REVIEW ALL ATTACHMENTS TO STRUCTURE WITH OWNER'S STRUCTURAL ENGINEER.
- SCHEDULE WORK OF THIS SECTION TO AVOID INTERFERING WITH EXISTING OPERATIONS IN THE FACILITY.
- RUN DUCTS AND PIPING CONCEALED, UNLESS OTHERWISE SPECIFIED AND CLEAR OF CEILING INSERTS.
- INSTALL THERMOSTATS AT ADA HEIGHT ABOVE FINISHED FLOOR OR AS DIRECTED OTHERWISE BY ARCHITECT.
- STRUCTURAL WELDING SHALL BE CONTINUOUS 1/4" FILLET UNLESS REQUIRED OTHERWISE.

HAGEN, CHRISTENSEN & MCILWAIN ARCHITECTS
 421 104th Avenue SE - Minnetonka, MN 55347
 Tel: (952) 904-1333 - Fax: (952) 904-7966

CLIENT

CONSULTANT 1

CONSULTANT 2

Professional Engineer
 I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
 Signature: *Nathan J. Reid*
 Typed or Printed Name: *Nathan J. Reid*
 Date: 03/17/25 License Number: 47588

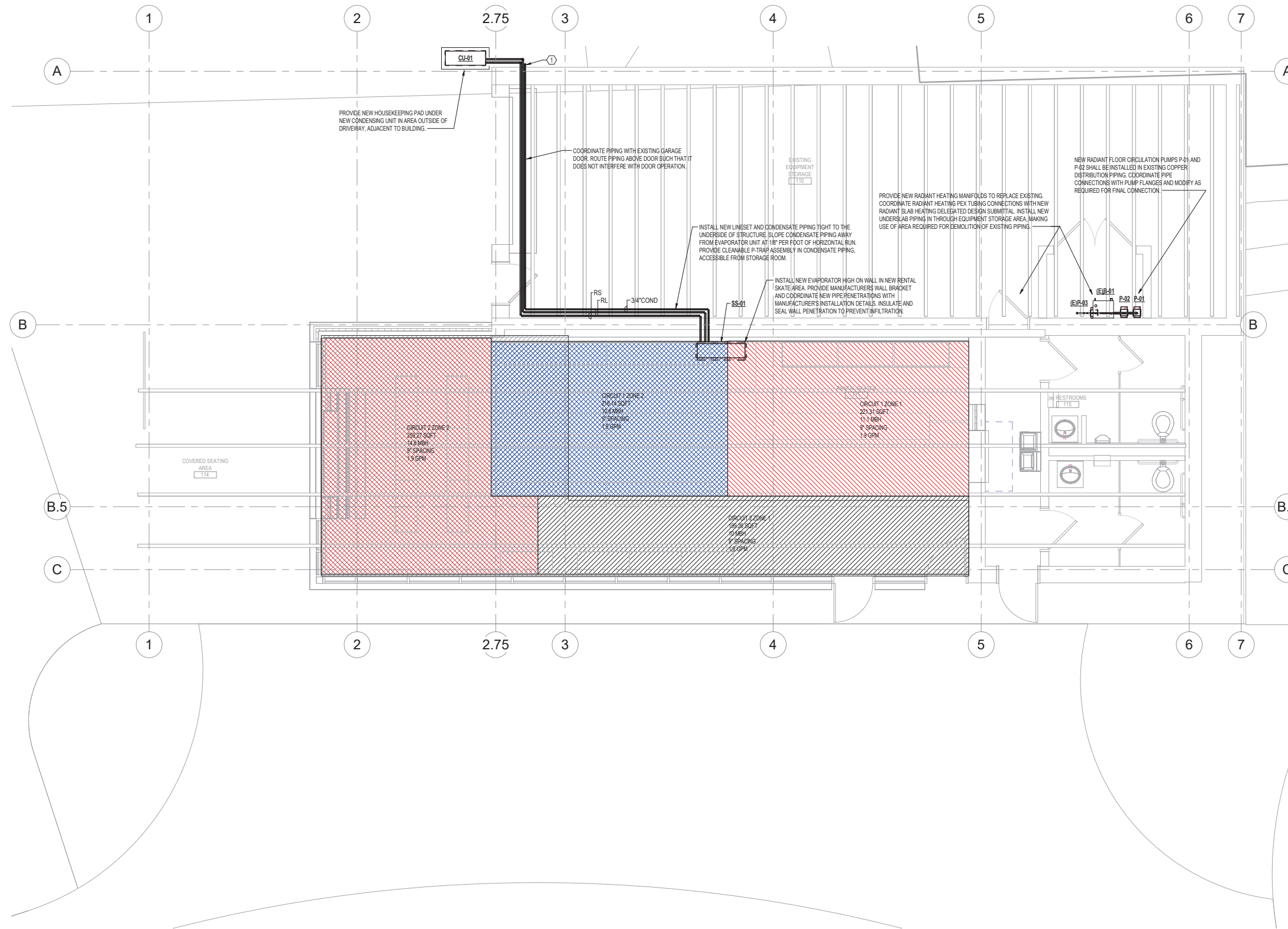
KEY PLAN

| REVISION | DATE | DESCRIPTION |
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| | 3/17/2025 | CONSTRUCTION DOCUMENTS |
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CLIENT
 340 Park St. E
 Wayzata, MN 55391
KLAPPRICH WARMING HOUSE

DRAWING TITLE
MECHANICAL COVER SHEET

DRAWING NUMBER
M0.0
 PROJECT NUMBER 241376



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

DRAWING NOTES:

1. IN-SLAB RADIANT HEATING DELEGATED DESIGN NOTES. THESE DRAWINGS INDICATE DESIGN INTENT. THERE SHALL BE TWO NEW ZONES SERVED BY EACH OF TWO NEW CIRCULATION PUMPS FOR A TOTAL OF FOUR HEATING ZONES. RADIANT HEATING VENDOR SHALL SUBMIT FINAL DELEGATED DESIGN TO INDICATE TUBE SIZE, SPACING AND ROUTING IN NEW FLOOR SLAB.
2. FINAL PUMP CAPACITY SHALL BE INDICATED IN SUBMITTAL AND COORDINATED WITH PUMP SCHEDULE. FINAL PUMP SUBMITTAL SHALL MEET FLOW AND HEAD REQUIREMENTS OF FINAL PIPING LAYOUT.
3. PROVIDE IMBEDDED TEMPERATURE SENSOR FOR RADIANT HEATING SYSTEM IN EACH INDIVIDUAL ZONE. INSTALL PER MANUFACTURER'S GUIDELINES.
4. NEW DX MINI SPLIT HEAT PUMP SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES. FINAL DX LINESIZES TO BE PROVIDED BY MANUFACTURER.


KEY NOTES

- Ⓢ SYMBOL DENOTES KEY NOTE
- 1 TERMINATE CONDENSATE PIPE AT GRADE. PROVIDE SPLASH BLOCK.

HAGEN, CHRISTENSEN & MCLWAIN
ARCHITECTS

421 CEDAR AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 924-1332 - FAX: (612) 924-7554

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CONSULTANT 1




CONSULTANT 2



Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: *Nathan Reid*
Typed or Printed Name: *Nathan Reid*
Date: 03/17/25 License Number: *47355*

KEY PLAN



| REVISION | DATE | DESCRIPTION |
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340 Park St. E
Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

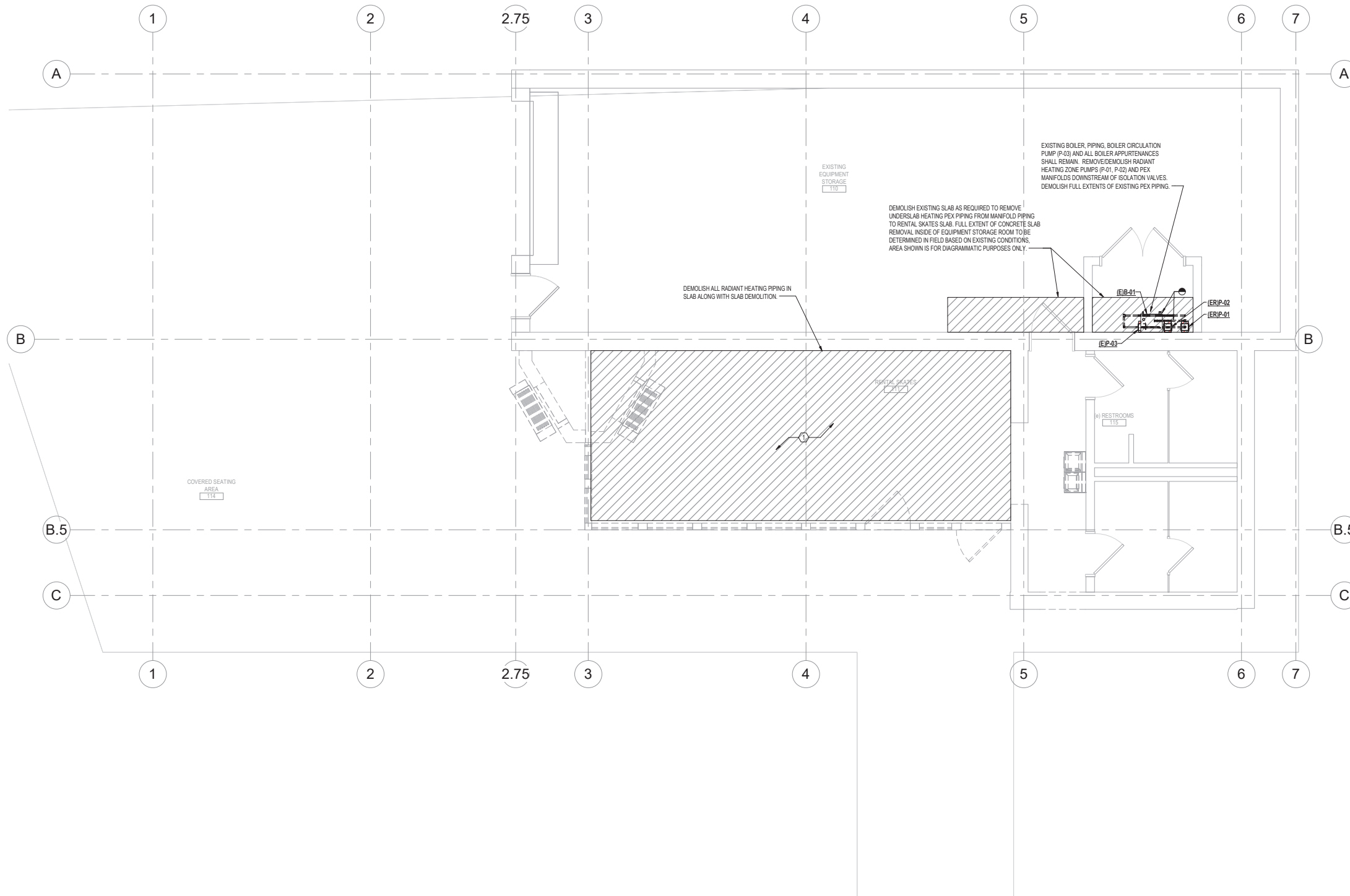
DRAWING TITLE

MECHANICAL FLOOR PLAN

DRAWING NUMBER

M2.1


PROJECT NUMBER 241376



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

KEY NOTES
 (E) SYMBOL DENOTES KEY NOTE
 1 DEMOLISH EXISTING PIPING IN FLOOR.

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 421 10th Avenue SE - Minneapolis, MN 55407
 TEL: (612) 924-1333 - FAX: (612) 924-7354


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 City of Wayzata

CONSULTANT 1

ERA
 STRUCTURAL ENGINEERING

CONSULTANT 2


Professional Engineer
 I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
 Signature: *Nathan Reid*
 Typed or Printed Name: Nathan Reid
 Date: 03/17/25 License Number: 47888

KEY PLAN

 NORTH

| REVISION | DATE | DESCRIPTION |
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| | 3/17/2025 | CONSTRUCTION DOCUMENTS |
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CLIENT
 340 Park St. E
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KLAPPRICH WARMING HOUSE

DRAWING TITLE
MECHANICAL FLOOR PLAN - DEMOLITION

DRAWING NUMBER
M2.1D
 PROJECT NUMBER 241376

BOILER SCHEDULE

NOTES:
 1. BOILER IS EXISTING TO REMAIN, INFORMATION PROVIDED FOR REFERENCE ONLY. ALL ASSOCIATED APPURTENANCES TO REMAIN UNLESS OTHERWISE NOTED.
 2. CONTRACTOR TO INSPECT BOILER TO ENSURE PROPER FUNCTIONALITY. NOTIFY OWNER OF ANY OBSERVED DEFICIENCIES.

| DESIGNATION | SERVICE | LOCATION | MIN BOILER EFFICIENCY | GROSS INPUT (MBTUHR) | NET OUTPUT (MBTUHR) | GAS BURNER DATA | | HOT WATER DATA | | | | | ELECTRICAL DATA | | | | | | |
|-------------|--------------------------|-------------------|-----------------------|----------------------|---------------------|-----------------|-----------------------|-------------------------|----|-----|----------|----------|---------------------|-----------------------------|-----------------|-----|-------|-------|----|
| | | | | | | FUEL TYPE | GAS FIRING RATE (MBH) | GAS PRESSURE (IN. W.G.) | | GPM | EWT (°F) | LWT (°F) | PRESSURE DROP (PSI) | MAX. WORKING PRESSURE (PSI) | BLOWER MOTOR HP | FLA | VOLTS | PHASE | HZ |
| (E)B-01 | RADIANT IN FLOOR HEATING | EQUIPMENT STORAGE | 95% | 79 | 69 | NATURAL GAS | 85 | 4 | 14 | 0 | 120 | 140 | 1.3 | 80 | 0 | 0 | 120 | 1 | 0 |

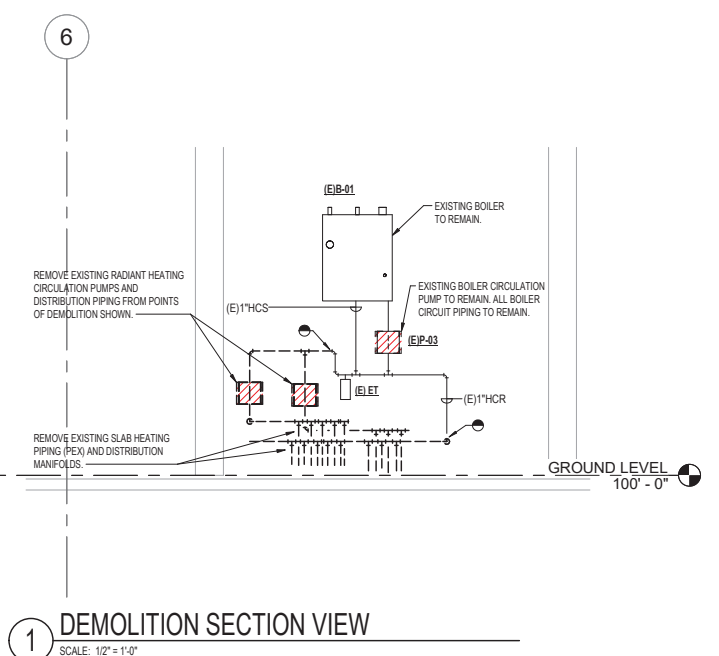
PUMPS

| DESIGNATION | MANUFACTURER MODEL NUMBER | LOCATION/SERVICE | TYPE | GPM | HEAD (FT H2O) | CASING PRESSURE (PSIG) | RPM | MOTOR | | | OPER. WEIGHT (LBS) | NOTES | |
|-------------|---------------------------|-------------------|--------|------|---------------|------------------------|-------|----------|---------------|--------------------|--------------------|-------|---------------|
| | | | | | | | | BRAKE HP | VOLTAGE/PHASE | EMERG. POWER (Y/N) | | | |
| P-01 | TACO 008-F6 | EQUIPMENT STORAGE | INLINE | 2 | 10.7 | 125 | 3,250 | 1/25 | 115/1 | N | N | 8 | NOTES 1, 2, 3 |
| P-02 | TACO 008-F6 | EQUIPMENT STORAGE | INLINE | 2 | 10.7 | 125 | 3,250 | 1/25 | 115/1 | N | N | 8 | NOTES 1, 2, 3 |
| (E)P-03 | GRUNDFOS UPS15-58FC | EQUIPMENT STORAGE | INLINE | 17.2 | 19.36 | 145 | - | - | 115/1 | N | N | 6.75 | NOTES 1, 2, 3 |

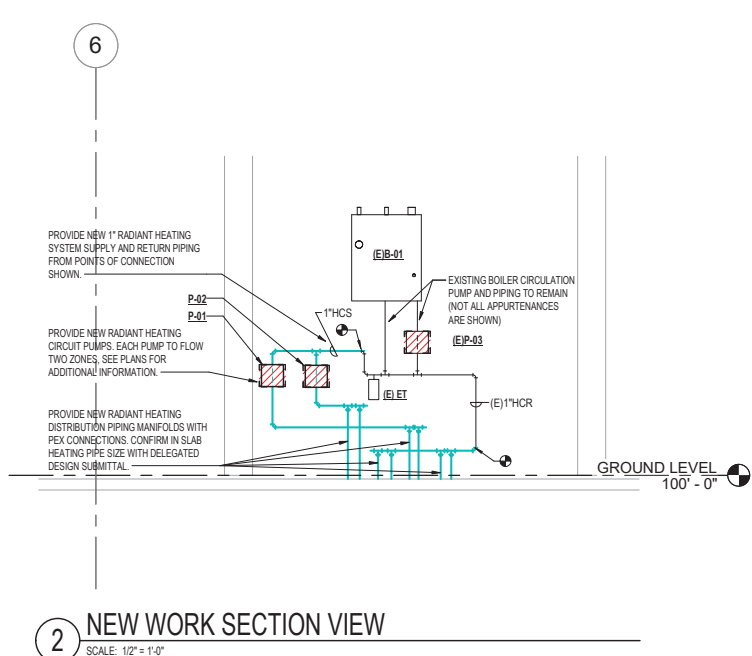
AIR COOLED SPLIT SYSTEM HEAT PUMP

| DESIGNATION | MANUFACTURER MODEL NUMBER | LOCATION / SERVICE | INDOOR UNIT | | | | | | | | | | OUTDOOR CONDENSING UNIT | | | | | | | | | | REFRIGERANT | EER / COP | SEER | EMERG. POWER (Y/N) | NOTES | | | | | | | | | | | |
|-------------|---------------------------|--------------------|-------------|-------------|------|----------|----------------------|-------------------------|-------------|-------------|-----------------|----------|-------------------------|-------------|---------------------|--------------------|------------|---------------|---------------|----------|--------------------|-------|--------------|---------------|------|--------------------|-------|---------|---------------|----------------------------|-----------------------|----------------------------|-----------------------|---------------|----------|----------|--------------------|-----|
| | | | SUPPLY FAN | | | COOLING | | | HEATING | | ELECTRICAL DATA | | OPER. WEIGHT (LBS) | DESIGNATION | MANUF. MODEL NUMBER | LOCATION / SERVICE | COMPRESSOR | | CONDENSER FAN | | COOLING | | | | | | | HEATING | | ELECTRICAL DATA | | | | | | | | |
| SS-01 | LG KNSAP361A | WARMING HOUSE | CFM | ESP (IN WG) | TYPE | MOTOR HP | TOTAL CAPACITY (MBH) | SENSIBLE CAPACITY (MBH) | EAT DB (°F) | LAT DB (°F) | CAPACITY (MBH) | EAT (°F) | | | | | LAT (°F) | VOLTAGE/PHASE | UNIT FLA | MCA/MOCP | OPER. WEIGHT (LBS) | CU-01 | LG KUSAP361A | WARMING HOUSE | TYPE | NO. | CFM | NO. | MOTOR HP (EA) | TOTAL HEAT REJECTION (MBH) | ANBIEST DRY BULB (°F) | TOTAL HEAT REJECTION (MBH) | ANBIEST DRY BULB (°F) | VOLTAGE/PHASE | UNIT FLA | MCA/MOCP | OPER. WEIGHT (LBS) | R32 |

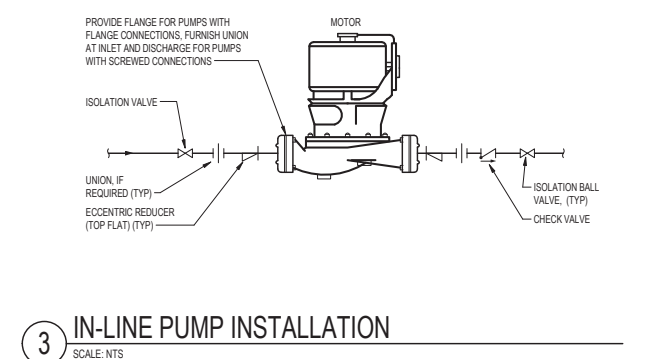
NOTES:
 1. PROVIDE LOW AMBIENT BAFFLE KIT.
 2. PROVIDE SPLASH BLOCK AT UNIT DRAIN.



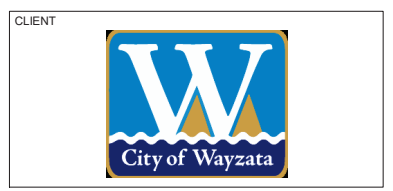
1 DEMOLITION SECTION VIEW
 SCALE: 1/2" = 1'-0"



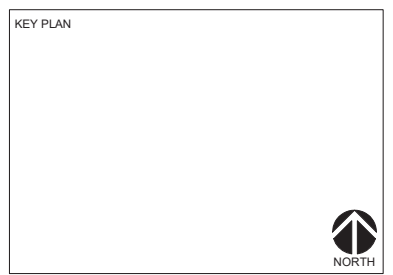
2 NEW WORK SECTION VIEW
 SCALE: 1/2" = 1'-0"



3 IN-LINE PUMP INSTALLATION
 SCALE: NTS



Professional Engineer
 I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
 Signature: *Michael Reid*
 Typed or Printed Name: *Michael Reid*
 Date: 03/17/25 License Number: *47385*



| REVISION | DATE | DESCRIPTION |
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| | 3/17/2025 | CONSTRUCTION DOCUMENTS |

CLIENT
 340 Park St. E
 Wayzata, MN 55391
KLAPPRICH WARMING HOUSE

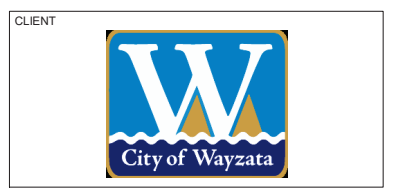
DRAWING TITLE
MECHANICAL DETAILS

DRAWING NUMBER
M5.1
 PROJECT NUMBER 241376

3/18/2025 4:27:05 PM Autodesk Docs://City of Wayzata - Klapprich House-Klapprich Park-MEP24_Central.mt

HVAC SPECIFICATIONS

- 1. GENERAL
A. WORK IN THIS SECTION INCLUDES THE PROVIDING OF LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR A COMPLETE AND SAFE INSTALLATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ALL APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION FOR HEATING, VENTILATING AND AIR CONDITIONING WORK COVERED BY ALL SECTIONS WITHIN THE SPECIFICATIONS (INCLUDING BUT NOT LIMITED TO HVAC SYSTEMS AND EQUIPMENT).
B. AS A CONDITION OF CONTRACTOR'S USE OF THESE SPECIFICATIONS, CONTRACTOR AGREES TO (1) NAME A/K/F AS ADDITIONAL INSURED ON CONTRACTOR'S INSURANCE POLICIES WHEREVER PERMITTED INCLUDING BUT NOT LIMITED TO CONTRACTOR'S GENERAL LIABILITY POLICY, WHICH SHALL BE PRIMARY AND NON-CONTRIBUTORY (2) PROVIDE A/F, UPON REQUEST, WITH A CERTIFICATE OF INSURANCE AND COPIES OF SPECIFIC ENDORSEMENTS TO CONTRACTOR'S INSURANCE POLICIES SHOWING ADDITIONAL INSURED STATUS, AND (3) WAIVE ALL RIGHTS OF RECOVERY AGAINST A/K/F BY WAY OF SUBROGATION, ASSIGNMENT OR OTHERWISE WITH REGARD TO INSURED CLAIMS.
C. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
D. WHERE VARIANCES OCCUR BETWEEN THE DRAWINGS AND SPECIFICATIONS, OR WITH EITHER DOCUMENT ITSELF, THE ITEM OR ARRANGEMENT OF HIGHER QUALITY, OR HIGHER COST SHALL BE INCLUDED IN THE CONTRACT PRICE. THE ARCHITECT/ENGINEER WILL DECIDE ON THE ITEM AND MANNER IN WHICH THE WORK SHALL BE INSTALLED.
E. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED, WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES. ASCERTAIN FROM BUILDING OWNER AT WHAT TIMES OF DAY EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
F. DELIVER EQUIPMENT WITH PROTECTIVE CRATING AND SHRINK-WRAPPED COVER. RECEIVE AND ACCEPT MATERIALS AT THE SITE. PROPERLY HANDLE, HOUSE AND PROTECT THEM FROM DAMAGE AND THE WEATHER UNTIL INSTALLATION. HANDLE ACCORDING TO MANUFACTURER'S WRITTEN RIGGING AND INSTALLATION INSTRUCTIONS FOR UNLOADING, TRANSPORTING, AND SETTING IN FINAL LOCATION. REPLACE EQUIPMENT DAMAGED IN THE COURSE OF HANDLING WITHOUT ADDITIONAL CHARGE.
G. ARRANGE FOR AND PROVIDE STORAGE SPACE OR AREA AT THE JOB SITE FOR ALL MATERIALS AND EQUIPMENT TO BE RECEIVED AND/OR INSTALLED IN THIS PROJECT. STOVE TO PREVENT DAMAGE AND PROTECT FROM WEATHER, DIRT, FUMES, WATER, AND CONSTRUCTION DEBRIS IN A CLEAN, DRY SPACE. PROTECT UNITS FROM PHYSICAL DAMAGE. LEAVE FACTORY SHIPPING COVERS IN PLACE UNTIL INSTALLATION. ALL EXPOSED OPENINGS OF EQUIPMENT, PIPING AND DUCTWORK ARE TO BE COVERED.
H. SHORT CIRCUIT CURRENT RATING. ALL ELECTRIC EQUIPMENT, STARTERS, VFD AND CONTROLLER ASSEMBLIES SHALL BE PROVIDED WITH SHORT CIRCUIT RATING. PROVIDE EQUIPMENT WITH LISTED SHORT CIRCUIT RATING NOT LESS THAN 100,000 AIC UNLESS APPROVED BY THE ENGINEER BASED ON SUBMITTED SHORT CIRCUIT STUDY.
I. DUCTWORK AND PIPING ARE SHOWN DIAGRAMMATICALLY AND DO NOT SHOW ALL OFFSETS, DROPS AND RISERS OF RUNS. THE CONTRACTOR SHALL ALLOW IN HIS PRICE FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES IS REQUIRED.
J. SUPPORT ALL EQUIPMENT, DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. ALL INSERTS, HANGERS, SUPPORTS AND ANCHORAGE TO STRUCTURE SHALL BE SELECTED BY THE MANUFACTURER'S AUTHORIZED REPRESENTATIVE AND APPROVED BY THE PROJECT STRUCTURAL ENGINEER. PROVIDE ALL FILING DOCUMENTS, INSPECTIONS AND SIGNOFF WHERE REQUIRED BY THE LOCAL A/HI.
K. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING STEEL, USE BEAM CLAMPS IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENINGS TO BUILDING STRUCTURE AND/OR FRAMING FOR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL SUPPLEMENTAL FRAMING, RESTORE ALL FIREPROOFING DISTURBED OR DAMAGED DURING CONSTRUCTION.
L. INSTALL WORK SO AS TO BE READY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
M. THIS CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL A PLAN INDICATING THE SIZE (MINIMUM 18 INCH X 18 INCH) AND LOCATION OF ALL ACCESS DOORS REQUIRED FOR OPERATION, MAINTENANCE AND REPLACEMENT OF ALL CONCEALED EQUIPMENT, DEVICES, VALVES, DAMPERS AND CONTROLS. CONTRACTOR SHALL ARRANGE FOR FURNISHING AND INSTALLATION OF ALL ACCESS DOORS IN FINISHED CONSTRUCTION AND INCLUDE COSTS IN THE BID.
N. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING, EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
O. SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH FIRE RATED PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH UL LISTED FIRESTOP SYSTEM INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
P. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
Q. ALL PRESENT MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT AND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE. ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.
R. MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
S. THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
T. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK ON OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFOR SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
U. UNLESS OTHERWISE SPECIFICALLY SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.
V. REMOVABLE ACCESS TIE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILING, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL EQUIPMENT AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TIE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
W. ALL EQUIPMENT SHALL BE APPROVED FOR USE IN THE LOCAL JURISDICTION AND/OR SHALL BE LISTED AND LABELED. THIS INFORMATION MUST BE INCLUDED IN THE SUBMITTAL PACKAGE.
X. ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
Y. SUBMISSION OF A PROPOSAL SHALL BE CONSIDERED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE EXISTING BUILDING, EQUIPMENT, ETC., WHICH AFFECT THIS WORK, AND THE ACCESS TO SUCH SPACES, HAS BEEN MADE AND THAT THE CONTRACTOR IS FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK. LATER CLAIMS SHALL NOT BE MADE FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN DURING SUCH AN EXAMINATION.
Z. INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
AA. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.
BB. GUARANTEE:
1. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. FINAL ACCEPTANCE SHALL BE DEFINED AS THE TIME AT WHICH THE MECHANICAL WORK IS TAKEN OVER AND ACCEPTED BY THE OWNER, AND IS UNDER CARE, CUSTODY, AND CONTROL OF THE OWNER. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS SUPPLYING THE EQUIPMENT FOR THE PROPER STARTUP AND OPERATION OF ALL SYSTEMS INSTALLED. INSTRUCT THE OWNERS PERSONNEL IN THE PROPER OPERATION AND SERVICING OF THE SYSTEM.



Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: [Handwritten Signature]
Typed or Printed Name: [Printed Name]
Date: 03/17/25 License Number: 477852

- KEY PLAN
1. THIS CONTRACTOR SHALL INSTALL THE SMOKE DETECTOR SAMPLING TUBES IN THE DUCT AS COORDINATED IN THE FIELD.
2. THIS CONTRACTOR SHALL ASSIST THE ELECTRICAL CONTRACTOR IN TESTING THE DUCT-MOUNTED SMOKE DETECTION SYSTEM.
3. ALL ELECTRICAL CONTROL WIRING SHALL COMPLY WITH LOCAL ELECTRICAL CODE. ALL AUTHORITIES HAVING JURISDICTION AND THE PROJECT ELECTRICAL SPECIFICATIONS.
4. MECHANICAL CONTRACTOR TO OBTAIN QUANTITY OF CONTROLLERS REQUIRED AND COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL OPERATING REQUIREMENTS, INTERLOCKS AND CONNECTIONS FOR STARTERS.
5. THE MECHANICAL CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL POINT TO POINT, COMPLETELY COORDINATED WIRING DIAGRAMS AND INDICATE ALL SOURCE POWER REQUIREMENTS AND ALL FIELD WIRING TO BE PERFORMED BY THE ELECTRICAL CONTRACTOR.

Table with 3 columns: REVISION, DATE, DESCRIPTION. Row 1: 3/17/2025, CONSTRUCTION DOCUMENTS

CLIENT
340 Park St E
Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

MECHANICAL SPECIFICATIONS

M9.1 PROJECT NUMBER 241376

F. VARIABLE FREQUENCY DRIVES (VFD)


- DESCRIPTION: NEMA CS 2, 18PT, PFM, VFC, LISTED AND LABELED AS A COMPLETE UNIT AND ARRANGED TO PROVIDE VARIABLE SPEED OF AN NEMA MG 1, DESIGN B, 3-PHASE INDUCTION MOTOR BY ADJUSTING OUTPUT VOLTAGE AND FREQUENCY.
- COMPLIANCE TO IEEE 519
 - HARMONIC ANALYSIS FOR PARTICULAR JOBSITE INCLUDING TOTAL HARMONIC VOLTAGE DISTORTION AND TOTAL HARMONIC CURRENT DISTORTION (THD), THE VFD MANUFACTURER SHALL PROVIDE CALCULATIONS, SPECIFIC TO THIS INSTALLATION, SHOWING TOTAL HARMONICS VOLTAGE DISTORTION IS LESS THAN 5%, INPUT LINE FILTERS SHALL BE SIZED AND PROVIDED AS REQUIRED BY THE VFD MANUFACTURER TO ENSURE COMPLIANCE WITH IEEE STANDARD 519. ALL VFD'S SHALL INCLUDE A MINIMUM OF 5% IMPEDANCE REACTORS, NO EXCEPTIONS.
 - NO VFD SHALL BE REVIEWED UNLESS ALL REQUIRED CALCULATIONS ARE SUBMITTED AND REVIEWED AS PART OF THE SHOP DRAWING SUBMISSION.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR GATHERING ALL INFORMATION REQUIRED BY THE VFD MANUFACTURER TO PERFORM THE CALCULATIONS, INCLUDING MODEL AND SIZE OF ALL EXISTING VFD'S, AND TRANSFORMER SIZE AND IMPEDANCE SERVING THE VFD'S.
 - VFD SHALL BE MANUFACTURED BY ABB MODEL ACH580 ECLIPSE BYPASS
 - PROVIDE UNIT SUITABLE FOR OPERATION OF PREMIUM EFFICIENCY MOTOR AS DEFINED BY NEMA MG 1 SUITABLE FOR INVERTER USE INSULATION RATED 900V
 - DESIGN AND RATING: MATCH LOAD TYPE SUCH AS FANS, BLOWERS, AND PUMPS, AND TYPE OF CONNECTION USED BETWEEN MOTOR AND LOAD SUCH AS DIRECT OR THROUGH A POWER TRANSMISSION CONNECTION.
 - FOR 25 HP TO 200 HP USE ABB MODEL ACH580 ULH, ULTRA LOW HARMONIC VFD'S.
 - CONFIRM VFD RATED AMPERAGE WITH MOTOR AMPERAGE TO CONFIRM COMPATIBILITY.
 - DELIVER VFD IN SHIPPING SPLITS OF LENGTHS THAT CAN BE MOVED PAST OBSTRUCTIONS IN DELIVERY PATH AS INDICATED
 - SETUP DRIVE SET POINTS TO LOCK OUT OPERATION AT FREQUENCIES THAT MAY PROVIDE MECHANICAL RESONANCE UP TO 3 INDEPENDENT BANDS OF INDEPENDENT RANGE.
 - PROVIDE VARIABLE FREQUENCY DRIVES FOR CONTROL OF FANS AND PUMPS AS SHOWN ON PLANS
 - THE VFD'S SHALL BE PROVIDED WITH THE FOLLOWING OPTIONS
 - INPUT LINE CONDITIONING: INTEGRAL MINIMUM INPUT 5% IMPEDANCE LINE REACTORS PREWIRED AND INSTALLED WITHIN VFD ENCLOSURE. MANUFACTURER TO LIST VALUE TO BE PROVIDED IN PROJECT SUBMITTAL.
 - UL NEMA 1 ENCLOSURE OR PROVIDE ENCLOSURE FOR VFD'S SUITABLE FOR OPERATING ENVIRONMENT.
 - MANUAL/AUTOMATIC SELECTABLE BYPASS CONTACTORS
 - DRIVE INPUT SERVICE SWITCH AND FAST ACTING SEMI-CONDUCTOR FUSES SPECIFIC TO DRIVE.
 - CIRCUIT BREAKER DISCONNECT WITH DOOR INTERLOCKED SWITCH.
 - UL RATED AND LABELED 100K AIC RATED DRIVE AND BYPASS ASSEMBLY.
 - DRIVE SERVICE SWITCH
 - CLASS 10/20/30 ADJUSTABLE OVERLOAD RELAY.
 - PROVIDE BMS BACKET GATEWAY INTERFACE WHICH SHALL ALLOW ALL PARAMETER SETTINGS OF VFD TO BE PROGRAMMED VIA BMS CONTROL. PROVIDE CAPABILITY FOR VFD TO RETAIN THESE SETTINGS WITHIN THE NONVOLATILE MEMORY. THE VFD AND BYPASS MUST COMMUNICATE OVER THE BMS BACKET GATEWAY FOR SEAMLESS COMMUNICATIONS IN THE EVENT OF VFD FAILURE OR LOSS OF BMS COMMUNICATION. BYPASS SELECTION AND BYPASS MONITORING OF UP TO 45 POINTS SHALL BE AVAILABLE OVER THE BACKET COMMUNICATION NETWORK. BACKET SERIAL COMMUNICATION BYPASS CAPABILITIES SHALL INCLUDE, BUT NOT BE LIMITED TO: BYPASS RUN/STOP CONTROL, THE ABILITY TO FORCE THE UNIT TO BYPASS, AND THE ABILITY TO LOCK AND UNLOCK THE KEYPAD. THE BYPASS SHALL HAVE THE CAPABILITY OF ALLOWING THE DDC TO MONITOR FEEDBACK SUCH AS, BYPASS CURRENT (IN AMPS), BYPASS KILOWATT HOURS (RESETTABLE), BYPASS OPERATING HOURS (RESETTABLE), AND BYPASS LOGIC BOARD TEMPERATURE. THE DDC SHALL ALSO BE CAPABLE OF MONITORING THE BYPASS RELAYS OUTPUT STATUS, AND ALL DIGITAL INPUT STATUS. ALL BYPASS DIAGNOSTIC WARNING AND FAULT INFORMATION SHALL BE TRANSMITTED OVER THE SERIAL COMMUNICATIONS BUS. REMOTE BYPASS FAULT RESET SHALL BE POSSIBLE.
 - THE BYPASS CONTROL SHALL MONITOR THE STATUS OF THE VFD AND BYPASS CONTACTORS AND INDICATE WHEN THERE IS A WELDED CONTACTOR CONTACT OR OPEN CONTACTOR COIL. THIS FAILED CONTACTOR OPERATION SHALL BE INDICATED ON THE BYPASS LCD DISPLAY AS WELL AS OVER THE SERIAL COMMUNICATIONS PROTOCOL.
 - PROVIDE THREE ADJUSTABLE SET POINTS TO LOCK OUT OPERATION AT FREQUENCIES THAT MAY PROVIDE MECHANICAL RESONANCE.
 - PROVIDE A SEPARATE TERMINAL STRIP FOR CONNECTION OF FREEZE, FIRE, SMOKE AND ALL DAMPERS CONTACTS AND EXTERNAL START COMMAND. ALL EXTERNAL SAFETY INTERLOCKS SHALL REMAIN FULLY FUNCTIONAL, WHETHER THE SYSTEM IS IN HAND, AUTO, OR BYPASS MODES. THE REMOTE START/STOP CONTACT SHALL OPERATE IN AUTO AND BYPASS MODES THE TERMINAL STRIP SHALL ALLOW FOR INDEPENDENT CONNECTION OF UP TO FOUR (4) UNIQUE SAFETY INPUTS.
 - EMIRFI FILTERS: ALL VFD'S SHALL INCLUDE EMIRFI FILTERS. THE VFD SHALL COMPLY WITH STANDARD EN 61800-3 FOR THE FIRST ENVIRONMENT, RESTRICTED LEVEL WITH UP TO 100 FEET OF MOTOR CABLES. NO EXCEPTIONS. CERTIFIED TEST LAB TEST REPORTS SHALL BE PROVIDED WITH THE SUBMITTALS.
 - THE MANUFACTURER SHALL PROVIDE
 - FACTORY STARTUP SERVICE, INCLUDING COMPONENT TESTING, FIELD CHECK OF CONTROL CONNECTIONS, DOCUMENTATION STATING THAT ALL WORK AND DRIVE FUNCTIONS ARE OPERATING PROPERLY
 - PROGRAMMING OF ALL DRIVE PARAMETERS SPECIFIC TO THIS PROJECT
 - TWO YEAR ON SITE WARRANTY FOR PARTS AND LABOR AFTER STARTUP.
- MOTOR CONTROLLERS
 - SUPPLIED BY HVAC CONTRACTOR AND INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
 - ENCLOSURES:
 - PROVIDE ENCLOSURES FOR STARTERS AND VFD'S SUITABLE FOR OPERATING ENVIRONMENT. ENCLOSURES SHALL BE NEMA 1 VENTILATED SHEETMETAL FOR INDOOR APPLICATION, NEMA 3R WITH ADDITIONAL GASKETING WEATHER-PROOF RAINTIGHT ENCLOSURE FOR EXPOSED OUTDOOR SERVICE OR INDOOR SERVICE EXPOSED TO MOISTURE. PROVIDE DISCONNECT SWITCH ON ENCLOSURE AS REQUIRED FOR SERVICE.
 - WITH SOLID-STATE (ELECTRONIC) OVERLOAD PROTECTION. COORDINATE ALL MOTOR CONTROLLER TYPES AND SIZES WITH MOTOR TYPES AND SIZES.
 - 1/3 HP AND SMALLER: PROVIDE MANUAL STARTER EXCEPT USE MAGNETIC TYPE WHERE AUTOMATICALLY CONTROLLED.
 - MANUAL TYPE 2-POLE TOGGLE SWITCH WITH OVERLOAD PROTECTION AND PILOT LIGHT.
 - 1/2 HP AND LARGER: PROVIDE MAGNETIC STARTER
 - COMBINATION UNFUSED DISCONNECT SWITCH AND MAGNETIC STARTER EXCEPT AS NOTED.
 - SOLID-STATE (ELECTRONIC) OVERLOAD PROTECTION IN EACH PHASE LEG WITH RESET IN ENCLOSURE.
 - HQA SELECTOR SWITCH FOR AUTOMATICALLY OPERATED MOTORS. SAFETY CONTROLS COMMON TO BOTH CONTROLS.
 - RED, GREEN AND AMBER PILOT LIGHTS.
 - SWITCHES: HORSE-POWER-RATED, EXTERNAL PADLOCKING TYPE.
 - HOLDING COILS: 10 WATT, 120' VOLT.
 - CONTACTS: MAIN LINE AND MINIMUM (2) - NORMALLY OPEN, (2) - NORMALLY CLOSED 10 AMP AUXILIARIES, IN ADDITION TO CONTACTS.
 - REQUIRED FOR CONTROLS SPECIFIED.
 - CONTROL TRANSFORMER: FOR MOTORS OVER 120 VOLTS, TO STEP DOWN CONTROL VOLTAGE TO 120 VOLTS, OF THE REQUIRED CAPACITY WITH FUSE AND GROUND CONNECTION ON VOLTAGE SIDE.
 - FUSES: SIMILAR TO BUSSMAN.

- RELAYS: TO SUPPLEMENT AUXILIARY CONTACTS IN CONTROLLER. MINIMUM 10 WATT COIL AND TWO 10 AMP CONTACTS.
- TERMINALS: SUITABLE FOR CONDUCTORS NOTED AND AS APPROVED.
- DISCONNECT SWITCHES ARE PROVIDED BY THE ELECTRICAL CONTRACTOR IF NOT INTEGRAL WITH EQUIPMENT.
- ACCEPTABLE MANUFACTURERS:
 - EATON/CUTLER HAMMER.
 - SQUARE D.
 - ALLEN BRADLEY.
 - ABB.
- EQUIPMENT, DUCT, AND PIPING TAGS AND LABELS
 - METAL LABELS FOR EQUIPMENT:
 - INSTALL LABELS ON EACH MAJOR ITEM OF MECHANICAL EQUIPMENT.
 - MATERIAL AND THICKNESS: BRASS, 0.032-INCH MINIMUM THICKNESS, AND HAVING PERDRILLED OR STAMPED HOLES FOR ATTACHMENT HARDWARE.
 - MINIMUM LABEL SIZE: LENGTH AND WIDTH VARY FOR REQUIRED LABEL CONTENT, BUT NOT LESS THAN 2-1/2 BY 3/4 INCH.
 - MINIMUM LETTER SIZE: 1/4 INCH FOR NAME OF UNITS IF VIEWING DISTANCE IS LESS THAN 24 INCHES (600 MM), 1/2 INCH FOR VIEWING DISTANCES UP TO 72 INCHES, AND PROPORTIONATELY LARGER LETTERING FOR GREATER VIEWING DISTANCES. INCLUDE SECONDARY LETTERING TWO-THIRDS TO THREE-FOURTHS THE SIZE OF PRINCIPAL LETTERING.
 - FASTENERS: STAINLESS-STEEL RIVETS OR SELF-TAPPING SCREWS.
 - ADHESIVE: CONTACT-TYPE PERMANENT ADHESIVE, COMPATIBLE WITH LABEL AND WITH SUBSTRATE.
 - LABEL CONTENT: INCLUDE EQUIPMENT'S DRAWING DESIGNATION OR UNIQUE EQUIPMENT NUMBER, DRAWING NUMBERS WHERE EQUIPMENT IS INDICATED (PLANS, DETAILS, AND SCHEDULES), PLUS THE SPECIFICATION SECTION NUMBER AND TITLE WHERE EQUIPMENT IS SPECIFIED.
 - EQUIPMENT LABEL SCHEDULE: FOR EACH ITEM OF EQUIPMENT TO BE LABELED, ON 8-1/2 BY 11-INCH BOND PAPER, TABULATE EQUIPMENT IDENTIFICATION NUMBER AND IDENTIFY DRAWING NUMBERS WHERE EQUIPMENT IS INDICATED (PLANS, DETAILS, AND SCHEDULES), PLUS THE SPECIFICATION SECTION NUMBER AND TITLE WHERE EQUIPMENT IS SPECIFIED. EQUIPMENT SCHEDULE SHALL BE INCLUDED IN OPERATION AND MAINTENANCE DATA.
- EQUIPMENT
 - PROVIDE ALL EQUIPMENT AND ACCESSORIES OF THE SIZES AND CAPACITIES AS SCHEDULED AND AS INDICATED ON THE DRAWINGS.
 - INSTALL EQUIPMENT IN ACCORDANCE WITH APPROVED SHOP DRAWINGS, MANUFACTURERS INSTRUCTIONS AND ALL CODES AND REGULATIONS WHICH APPLY.
 - SHORT CIRCUIT CURRENT RATING: ALL ELECTRIC EQUIPMENT, STARTERS, VFD AND CONTROLLER ASSEMBLIES SHALL BE PROVIDED WITH SHORT CIRCUIT RATING. PROVIDE CONTROLLERS WITH LISTED SHORT CIRCUIT RATING NOT LESS THAN 100,000 AIC UNLESS APPROVED BY THE ENGINEER BASED ON SUBMITTED SHORT CIRCUIT STUDY.
 - PROVIDE EQUIPMENT SUPPORTS AND/OR MOUNTINGS AS INDICATED ON THE DRAWING, IN VIBRATION SPECIFICATION AND AS FOLLOWS:
 - FLOOR MOUNTED EQUIPMENT - PROVIDE DIMENSIONS FOR A 4 INCH CONCRETE HOUSINGKEEPER PAD WITH ALL REQUIRED WATERPROOFING TO THE CONSTRUCTION MANAGER.
 - EQUIPMENT ON FLOOR STANDS - PROVIDE FLOOR STAND OF STRUCTURAL STEEL OR STEEL PIPES AND FITTINGS ATTACHED TO FLOOR.
 - ROOF MOUNTED EQUIPMENT - PROVIDE PREFABRICATED ISOLATED ROOF CURB WITH INTEGRAL VIBRATION ISOLATORS.
 - CEILING MOUNTED EQUIPMENT - PROVIDE SUPPORTS WITH APPROVED SUITABLE ANCHORS SUSPENDED DIRECTLY FROM BUILDING STEEL STRUCTURE.
 - PROVIDE SUPPLEMENTAL STEEL AS REQUIRED TO ADEQUATELY SUPPORT THE EQUIPMENT LOAD.
 - EQUIPMENT SHALL BE INSTALLED WITH VIBRATION ISOLATION, REFER TO VIBRATION ISOLATION SECTION.
- FANS
 - GENERAL (APPLIES TO ALL FAN TYPES EXCEPT AS NOTED):
 - PROVIDE CENTRIFUGAL TYPE, NON-OVERLOADING DESIGN EXCEPT AS NOTED WITH MINIMUM CAPACITIES AS NOTED AND WITH CERTIFIED RATINGS BY AMCA. WHEEL SHALL BE FACTORY BALANCED STATICALLY AND DYNAMICALLY. BRAKE HORSEPOWER RATINGS SHALL NOT BE MORE THAN 5 PERCENT ABOVE WHAT IS NOTED ON DRAWINGS. DRIVES SHALL BE MATCHED. MULTIPLE V-BELT DRIVE UNLESS OTHERWISE NOTED WITH MINIMUM CAPACITY OF 1.4 TIMES RATED MOTOR HP. PULLEYS SHALL BE CAST IRON.
 - MOTOR PULLEY SHALL BE VARIABLE PITCH DIAMETER EXCEPT FANS WITH VARIABLE FREQUENCY DRIVES. SUPPLY AND INSTALL ONE FIXED PITCH PULLEY CHARGE AS REQUIRED PER FAN TO BALANCE SYSTEMS. COMPANION SHEAVES SHALL MAINTAIN BELTS PARALLEL. BELT GUARDS SHALL BE IN COMPLIANCE WITH OSHA REGULATIONS AND WITH TACHOMETER OPENING FOR FAN SPEED MEASUREMENTS. MANUFACTURER SHALL PROVIDE REPLACEMENT FIXED PITCH SHEAVES WHERE NEEDED TO BALANCE SYSTEM.
 - PROVIDE REMOVABLE FLANGED SCREENS AT INLETS OR OUTLETS WHERE NO CONNECTING DUCTWORK IS INDICATED.
 - BEARINGS BALL ROLLER OR TAPER. PROVIDE PRESSURE TYPE LUBRICATING FITTINGS WITH PRESSURE RELIEF FITTINGS EXTENDED TO ACCESSIBLE LOCATIONS. MINIMUM L-10 LIFE RATING, 50,000 HOURS PER AFPM, STANDARD B-10 OR 250,000 HOURS AVERAGE (B-S3) LIFE AT MAXIMUM CATALOG RATING.
- AUTOMATIC CONTROLS: GENERAL REQUIREMENTS
 - WORK INCLUDED
 - FURNISH A COMPLETE DISTRIBUTED DIRECT DIGITAL CONTROL SYSTEM IN ACCORDANCE WITH THIS SPECIFICATION SECTION. THIS INCLUDES ALL SUPERVISORY CONTROLLERS, LOGIC CONTROLLERS, AND ALL INPUT/OUTPUT DEVICES. ITEMS OF WORK INCLUDED ARE AS FOLLOWS:
 - PROVIDE A SUBMITTAL THAT MEETS THE REQUIREMENTS BELOW FOR APPROVAL.
 - PROVIDE POWER FOR PANELS AND CONTROL DEVICES FROM A SOURCE DESIGNATED BY THE ELECTRICAL CONTRACTOR. ALL 120 VOLT POWER CIRCUITS TO THE DDC PANEL(S) SHALL BE PROVIDED BY THIS CONTRACTOR (UNLESS SPECIFICALLY SHOWN ON THE ELECTRICAL DRAWINGS).
 - PROVIDE MISCELLANEOUS CONTROL WIRING FOR HVAC AND RELATED SYSTEMS REGARDLESS OF VOLTAGE.
 - COORDINATE INSTALLATION SCHEDULE WITH THE MECHANICAL CONTRACTOR AND GENERAL CONTRACTOR.
 - FURNISH, MOUNT, AND WIRE ALL ASSOCIATED PANELS AND DEVICES FOR THE SYSTEM TO BE COMPLETELY OPERATIONAL REGARDLESS OF FUNCTION OR VOLTAGE, UNLESS OTHERWISE STATED.
 - PROVIDE ENGINEERING AND TECHNICIAN LABOR TO PROGRAM AND COMMISSION SOFTWARE FOR EACH SYSTEM AND OPERATOR INTERFACE. SUBMIT COMMISSIONING REPORTS FOR APPROVAL.
 - ALL PRIMARY AND SECONDARY DDC CONTROLLERS SHALL COMMUNICATE USING THE PROTOCOLS AND NETWORK STANDARDS AS DEFINED BY THE LATEST VERSION OF THE ANSI/SASHA STANDARD 155-BACKET. USE OF A PROPRIETARY PROTOCOL ON ANY PART OF THE NETWORK IS PROHIBITED.

- THE BMS SERVER LICENSING OPTIONS SHALL ALLOW A MINIMUM OF FIVE (5) LOCAL WORKSTATION CONNECTIONS/ACCESS CONCURRENTLY.
- THE WEB SERVER LICENSING OPTIONS SHALL ALLOW CONCURRENT ACCESS BY A MINIMUM OF FIVE (5) REMOVE BROWSER CONNECTIONS. THESE LICENSES SHALL BE IN ADDITION TO THE FIVE (5) LICENSES ASSIGNED FOR LOCAL CONNECTIONS.
- DEFINITIONS:
 - "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
 - "INSTALL": TO ERRECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
 - "FURNISH OR 'SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
 - "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
 - "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN PURED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
 - "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
 - "SIMILAR OR 'EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.
- PEX TUBING - GENERAL
 - SUMMARY
 - HYDRONIC RADIANT HEATING SYSTEMS USING PEX TUBING IN SLAB.
 - THE WORK DESCRIBED IN THIS SECTION INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:
 - COMPLETE HYDRONIC RADIANT HEATING SYSTEM INCLUDING TUBING, MANIFOLDS, FITTINGS, TUBING, INSTALLATION SYSTEMS, FASTENERS AND CONTROLS.
 - COORDINATION WITH THE SELECTION AND INSTALLATION OF CIRCULATION PUMPS AND DISTRIBUTION PIPING.
 - COORDINATION WITH SYSTEM CONTROLS AND AUTOMATION.
 - SYSTEM COMMISSIONING AND STARTUP SERVICE.
 - REFERENCES
 - ABBREVIATIONS AND ACRONYMS
 - PEX - CROSSLINKED POLYETHYLENE
 - PEX-C - PEX TUBING USING THE POST EXTRUSION ELECTRON BEAM METHOD FOR CROSSLINKING
 - EVORH - ETHYL VINYL ALCOHOL (OXYGEN BARRIER COMPOUND)
 - SDR 9 - STANDARD DIMENSION RATIO 9 - THE SDR IS THE RATIO OF PIPE DIAMETER TO WALL THICKNESS. SDR 9 - OUTSIDE DIAMETER OF PIPE IS 9x THE WALL THICKNESS OF PIPE.
 - REFERENCE STANDARDS
 - ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS
 - ASTM F876 STANDARD SPECIFICATION FOR CROSSLINKED POLYETHYLENE (PEX) TUBING
 - ASTM F877 STANDARD SPECIFICATION FOR CROSSLINKED POLYETHYLENE (PEX) HOT/AND COLD-WATER DISTRIBUTION SYSTEMS
 - ASTM 1807-11AE1 STANDARD SPECIFICATION FOR METAL INSERT FITTINGS UTILIZING A COPPER CRIMP RING FOR SDR9 CROSSLINKED POLYETHYLENE (PEX) TUBING AND SDR9 POLYETHYLENE OF RAISED TEMPERATURE (PE-RT) TUBING
 - ASTM F2098-08 STANDARD SPECIFICATION FOR STAINLESS STEEL CLAMPS FOR SECURING SDR9 CROSSLINKED POLYETHYLENE (PEX) TUBING TO METAL INSERT AND PLASTIC INSERT FITTINGS
 - PPI - PLASTIC PIPE INSTITUTE
 - PPI TR-3 POLICIES AND PROCEDURES FOR DEVELOPING HYDROSTATIC DESIGN (SDS) AND MINIMUM REQUIRED STRENGTH (MRS) RATINGS FOR THERMOPLASTIC PIPING MATERIALS OR PIPE
 - PPI TR-4 RECOMMENDED HYDROSTATIC STRENGTHS AND DESIGN STRESSES FOR THERMOPLASTIC PIPING AND FITTING COMPOUNDS
 - NSF/ANSI - NATIONAL SANITATION FOUNDATION/ AMERICAN NATIONAL STANDARDS INSTITUTE
 - NSF/ANSI 14 PLASTICS PIPING SYSTEM COMPONENTS AND RELATED MATERIALS
 - PRODUCT DATA
 - SUBMIT MANUFACTURER'S PRODUCT SUBMITTAL FORMS, BROCHURES, TECHNICAL DATA SHEETS, CATALOG PAGES AND INSTALLATION MANUALS FOR EACH PRODUCT LISTED IN THIS SECTION.
 - SUBMIT DATA IN SUFFICIENT DETAIL TO INDICATE COMPLIANCE WITH THE CONTRACT DOCUMENTS.
 - SHOP DRAWINGS
 - SUBMIT DETAILED DESIGN REPORT INCLUDING ROOM BY ROOM HEAT LOAD DATA, DESIGN TEMPERATURE, MAXIMUM SUPPLY TEMPERATURE, TOTAL FLOW RATE, MAXIMUM HEAD LOSS, ZONE PLAN, MANIFOLD SUMMARY INCLUDING ZONE NAME, ZONE AREA, INDOOR AIR TEMPERATURE REQUIREMENT, INSTALLATION TYPE, TUBING SIZE AND SPACING, LOOP LENGTHS, MANIFOLD AND LOOP FLOW RATES, HEAD LOSSES AND SUPPLY TEMPERATURES, BALANCE VALVE SETTINGS.
 - SUBMIT INSTALLATION DRAWINGS INDICATING TUBING LAYOUT, MANIFOLD LOCATIONS, DISTRIBUTION PIPING AND ZONING REQUIREMENTS.
 - SUBMIT DRAWINGS SHOWING DETAILS OF MANIFOLD INSTALLATION. IF MANIFOLDS ARE INSTALLED ON A WALL, THEN THE DETAILS SHOULD INCLUDE ALL FASTENING DETAILS. IF THE MANIFOLDS ARE INSTALLED IN WALL CAVITIES, THEN PROVIDE DETAILS ON ALL FASTENERS AND ACCESS. IF MANIFOLDS ARE TO BE PLACED IN MANIFOLD CABINETS, THEN PROVIDE DETAILS OF FASTENING CABINETS TO WALLS, FLOORS OR WALL CAVITIES.
 - SUBMIT DETAILED PIPING SCHEMATIC INCLUDING HEAT SOURCE, PIPING, VALVES, PUMPS, MIXING DEVICES, OXYGEN REMOVAL DEVICES, EXPANSION TANKS, GAUGES, CIRCUIT SETTERS, ETC. INDICATE TYPE AND SIZE WHERE NECESSARY.
 - PROVIDE SECTIONAL DRAWINGS INDICATING TUBING AND ACCESSORY INSTALLATION METHOD(S), I.E. IN-SLAB.
 - CERTIFICATES
 - SUBMIT CONTRACTOR(S) CERTIFICATION STATEMENT(S) THAT THE HYDRONIC RADIANT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH THIS SPECIFICATION.

- CLOSEOUT
 - MAINTENANCE CONTRACTS
 - SUBMIT MAINTENANCE CONTRACT FOR SYSTEM OR ANY PART IN THE SYSTEM, AS REQUIRED.
 - OPERATION AND MAINTENANCE DATA
 - PROVIDE OPERATIONAL AND MAINTENANCE DATA, AS REQUIRED.
 - FINAL AS-BUILT TUBING LAYOUT DRAWING.
 - WARRANTY DOCUMENTATION
 - SUBMIT FINAL EXECUTED WARRANTY DOCUMENT FOR SYSTEM
- QUALITY ASSURANCE
 - QUALIFICATIONS
 - MANUFACTURER
 - MANUFACTURER SHALL HAVE A MINIMUM OF TEN YEARS EXPERIENCE IN SIMILAR SYSTEMS.
 - MANUFACTURER SHALL PROVIDE PRODUCTS OF CONSISTENT QUALITY IN APPEARANCE AND PHYSICAL PROPERTIES.
 - INSTALLERS
 - INSTALLERS SHALL HAVE DEMONSTRATED EXPERIENCE ON PROJECTS OF SIMILAR SIZE AND COMPLEXITY AND/OR DOCUMENTATION PROVING SUCCESSFUL COMPLETION OF SYSTEM TRAINING HOSTED/APPROVED BY THE SYSTEM MANUFACTURER.
 - DELIVERY, STORAGE AND HANDLING
 - DELIVERY
 - DELIVER MATERIALS IN ORIGINAL, UNOPENED, UNDAMAGED CONTAINERS OR PACKAGING WITH MANUFACTURER IDENTIFICATION LABELS INTACT.
 - STORAGE
 - STORE MATERIALS IN DRY, ENCLOSED, WELL-VENTILATED AREA PROTECTED FROM EXPOSURE TO HARMFUL ENVIRONMENTAL CONDITIONS.
 - PEX TUBING AND MANIFOLD OPENINGS SHALL BE COVERED OR CAPPED TO PREVENT CONTAMINANTS FROM ENTERING.
 - DO NOT EXPOSE PEX TUBING TO DIRECT SUNLIGHT FOR MORE THAN 30 DAYS. IF CONSTRUCTION DELAYS ARE ENCOUNTERED, COVER THE TUBING TO PREVENT EXPOSURE TO DIRECT SUNLIGHT.
 - HANDLING
 - PEX TUBING SHALL BE KEPT AWAY FROM SHARP OBJECTS AND NOT BE HANDLED IN A WAY AS TO CAUSE DAMAGE AND/OR PUNCTURE.
 - PROTECT MATERIALS FROM DAMAGE BY OTHER TRADES.
 - MANUFACTURER'S WARRANTY
 - PROVIDE MANUFACTURER'S STANDARD WARRANTY DOCUMENT.
 - PEX TUBING SHALL BE UNDER WARRANTY FOR A PERIOD OF TWENTY FIVE (25) YEARS, NON-PRORATED, AGAINST FAILURE DUE TO DEFECT IN MATERIAL OR WORKMANSHIP BEGINNING WITH SUCCESSFUL PRESSURIZED WATER TESTS IMMEDIATELY FOLLOWING SYSTEM INSTALLATION.
 - MANIFOLDS AND FITTINGS SHALL BE UNDER WARRANTY FOR A PERIOD OF TWO (2) YEARS, NON-PRORATED, AGAINST FAILURE DUE TO DEFECT IN MATERIAL OR WORKMANSHIP BEGINNING WITH SUCCESSFUL PRESSURIZED WATER TESTS IMMEDIATELY FOLLOWING SYSTEM INSTALLATION.
 - ELECTRICAL AND CONTROL PARTS SHALL BE UNDER WARRANTY FOR A PERIOD OF TWO (2) YEARS, NON-PRORATED, AGAINST FAILURE DUE TO DEFECT IN MATERIAL OR WORKMANSHIP BEGINNING WITH SUCCESSFUL PRESSURIZED WATER TESTS IMMEDIATELY FOLLOWING SYSTEM INSTALLATION.
 - MANUFACTURER'S WARRANTY IS IN ADDITION TO, AND NOT A LIMITATION OF, OTHER RIGHTS THE OWNER MAY HAVE UNDER CONTRACT DOCUMENTS.
- PEX TUBING - PRODUCTS
 - TUBING
 - ALL TUBING SHALL BE 5-LAYER PEX-C.
 - LAYERS SHALL CONSIST OF THE FOLLOWING:
 - INNER PEX-C LAYER
 - ADHESIVE LAYER
 - EVCH LAYER
 - ADHESIVE LAYER
 - OUTER PEX-C LAYER
 - TUBING SHALL CONFORM TO ASTM F876, ASTM F877 AND CSA B137.5.
 - PIPE SHALL BE RATED FOR CONTINUOUS OPERATION OF 100 PSI GAUGE PRESSURE AT 180°F TEMPERATURE (80 KPA AT 82°C) AND 80 PSI GAUGE PRESSURE AT 200°F (550 KPA AT 93°C).
 - EVCH LAYER SHALL BE CAPABLE OF LIMITING OXYGEN DIFFUSION THROUGH THE PIPE TO LESS THAN 0.32 MG(M2/D) @ 104°F (40°C) WATER TEMPERATURE, IN ACCORDANCE WITH DIN 4762.
 - THE MINIMUM BEND RADIUS FOR COLD BENDING OF THE TUBING SHALL BE NO LESS THAN SIX (6) TIMES THE OUTSIDE DIAMETER, BEING WITH A SMALLER RADIUS SHALL REQUIRE THE USE OF MANUFACTURER SUPPLIED METAL BEND SUPPORTS.
 - MANIFOLDS
 - BRASS MANIFOLD SETS
 - BRASS MANIFOLD SETS SHALL BE MANUFACTURED IN THE USA.
 - A MANIFOLD SET SHALL CONSIST OF ONE 1" SUPPLY AND ONE 1" RETURN MANIFOLD PREASSEMBLED ONTO A MOUNTING BRACKET.
 - MANIFOLDS SHALL BE MANUFACTURED FROM EXTRUDED BRASS STOCK WITH THREADED CONNECTIONS.
 - MANIFOLD SETS SHALL CONTAIN VISUAL FLOW GAUGE WITH BUILT IN FLOW ADJUSTMENT AND STOP VALVES, INTEGRAL VALVE ASSEMBLES FOR LOOP ISOLATION AND FOR MOUNTING THERMOSTAT CONTROLLED VALVE ACTUATORS, MANUAL AIR VENTIFILL VALVE AND ISOLATION VALVES ON SUPPLY AND RETURN.


- MANIFOLD SETS SHALL HAVE THE FOLLOWING RATINGS:
 - MAXIMUM FLOW RATE - 10GPM (37.8LPM)
 - MAXIMUM OPERATING TEMPERATURE - 180°F (82°C) CONTINUOUS
 - MAXIMUM OPERATING PRESSURE - 150 PSI (10.3 BAR) CONTINUOUS
- MANIFOLD FITTINGS SHALL BE R20 (NOMINAL 3/4") THREADED BRASS COMPRESSION FITTINGS.
- MANIFOLD SETS SHALL ACCOMMODATE 3/8", 1/2", 5/8" & 3/4" FIVE LAYER PEX-C TUBING.
- NICKEL PLATED BRASS MANIFOLD SETS
 - MANIFOLD SET SHALL CONSIST OF ONE 1" SUPPLY AND ONE 1" RETURN MANIFOLD OR ONE 1 1/4" SUPPLY AND ONE 1 1/4" RETURN MANIFOLD PREASSEMBLED ONTO A MOUNTING BRACKET.
 - MANIFOLDS SHALL BE MANUFACTURED FROM EXTRUDED BRASS STOCK WITH THREADED CONNECTIONS.
 - MANIFOLD SETS SHALL CONTAIN VISUAL FLOW GAUGE WITH BUILT IN FLOW ADJUSTMENT AND STOP VALVES ON EACH LOOP OUTLET, INTEGRAL VALVE ASSEMBLES FOR LOOP ISOLATION AND FOR MOUNTING THERMOSTAT CONTROLLED VALVE ACTUATORS. EACH SUPPLY AND RETURN MANIFOLD SHALL INCLUDE A MANUAL AIR VENTIFILL VALVE, TEMPERATURE GAUGE, AND ISOLATION BALL VALVE.
 - MANIFOLD SETS SHALL HAVE THE FOLLOWING RATINGS:
 - MAXIMUM FLOW RATE 1" - 12 GPM (45.4 LPM) 1 1/4" - 18 GPM (68.1 LPM)
 - MAXIMUM OPERATING TEMPERATURE - 230°F (110°C) CONTINUOUS
 - MAXIMUM OPERATING PRESSURE - 140 PSI (10 BAR) CONTINUOUS
- FITTINGS
 - FOR SYSTEM COMPATIBILITY, USE FITTINGS OFFERED BY PEX-C MANUFACTURER.
 - FITTINGS SHALL BE THIRD PARTY CERTIFIED TO APPLICABLE STANDARDS ASTM F877 AND CSA B137.5.
 - DISTRIBUTION PIPING (SUPPLY AND RETURN TO MANIFOLDS)
 - DISTRIBUTION PIPING SHALL BE PROPERLY SIZED FOR THE GIVEN VOLUME AND VELOCITY REQUIRED BY SYSTEM DESIGN.
 - WHEN USING 5-LAYER PEX-C TUBING, DO NOT EXCEED 200°F (93°C) AT 80 PSIG (550KPA)
 - FITTINGS SHALL BE COMPATIBLE WITH PIPING MATERIAL AND TRANSITION TO SYSTEM MANIFOLDS.
- CONTROLS
 - INDIVIDUAL LOOP ACTUATORS SHALL BE LOW VOLTAGE THERMO ELECTRIC DESIGN FOR ACTUATION OF VALVES ON BRASS MANIFOLD WITH VISUAL INDICATION OF POSITION AND BUILT IN END SWITCH AND SUPPLIED BY THE MANUFACTURER AS PART OF A PROVEN CATALOGUED SYSTEM.
 - INDIVIDUAL LOOP ACTUATORS SHALL BE ELECTRICALLY ACTIVATED BY THE ROOM THERMOSTATS VIA CONNECTION TO A MIL-T-130Z RELAY MODULE WITH THE CAPABILITY TO ATTACH AN END SWITCH MODULE FOR ACTIVATION OF PUMP OR HEAT SOURCE CONTROL AND SUPPLIED BY THE MANUFACTURER AS PART OF A PROVEN CATALOGUED SYSTEM.
- ACCESSORIES
 - USE ACCESSORIES WITH THE INSTALLATION OF THE HYDRONIC RADIANT HEATING SYSTEM AS RECOMMENDED BY OR AVAILABLE FROM THE MANUFACTURER.
- PEX TUBING - EXECUTION
 - EXAMINATION
 - VERIFICATION OF CONDITIONS
 - VERIFY THAT SITE CONDITIONS ARE ACCEPTABLE FOR INSTALLATION OF THE HYDRONIC RADIANT HEATING SYSTEM.
 - VERIFY THAT WORK FROM OTHER TRADES WILL NOT INTERFERE WITH INSTALLATION.
 - ALL INSTALLATION AREAS SHALL BE CLEANED AND FREE FROM ALL CONSTRUCTION DEBRIS.
 - DO NOT PROCEED WITH INSTALLATION OF THE HYDRONIC RADIANT HEATING SYSTEM UNTIL UNACCEPTABLE CONDITIONS ARE CORRECTED.
 - INSTALLATION
 - GENERAL
 - INSTALL SYSTEM ACCORDING TO DESIGN PARAMETERS AND FINAL SHOP DRAWINGS. ALL INSTALLATION NOTES SHOWN ON THE DRAWINGS SHALL BE FOLLOWED.
 - DETERMINE MANIFOLD LOCATIONS BEFORE INSTALLING TUBING.
 - MOUNT MANIFOLDS IN PREVIOUSLY PREPARED LOCATIONS AND/OR IN PREVIOUSLY INSTALLED CABINETS. MANIFOLD SHOULD BE INSTALLED AS LEVEL AND PLUMB AS POSSIBLE.
 - AT CONNECTIONS AND FITTINGS, USE A PLASTIC TUBING CUTTER TO ENSURE SQUARE AND CLEAN CUTS.
 - TUBING SHALL BE DISPENSED USING A SUITABLE UNWINDING DEVICE. REMOVE TWISTS PRIOR TO SECURING TUBING. FASTEN TUBING AT NO MORE THAN 3 FEET INTERVALS, BEING CAREFUL NOT TO TWIST THE TUBING. IN THIN CONCRETE OR GYPSUM SLABS, SECURE TUBING EVERY 2 FEET. USE ONLY FASTENERS SUPPLIED OR APPROVED BY THE PEX TUBING MANUFACTURER.
 - AT TIME OF INSTALLATION OF EACH LOOP OF TUBING, CONNECT THE TUBING TO THE CORRECT MANIFOLD OUTLET AND RECORD ZONE AREA SERVED AND TUBING LENGTH FOR BALANCING. IF MANIFOLD IS NOT INSTALLED, CAP THE TUBING ENDS AND LABEL THE TUBING'S LOOP NUMBER LONG WITH S FOR SUPPLY AND R FOR RETURN AND LOOP LENGTH.
 - MANUFACTURER OF FINISHED FLOORING SHALL BE CONSULTED TO CONFIRM MAXIMUM SURFACE TEMPERATURE, MAXIMUM INCREASE OF TEMPERATURE RATE DURING START UP PERIOD, CURE RATES AND ANY ADDITIONAL INFORMATION IMPORTANT TO MAINTAINING FLOORING WARRANTY.
 - THE FOLLOWING PRECAUTIONS SHALL BE TAKEN IN AREAS INTENDED FOR CARPET:
 - NOTIFY CARPET INSTALLER THAT RADIANT HEATING TUBING HAS BEEN INSTALLED.
 - KEEP TUBING SIX (6) INCHES FROM ALL WALL BASEPLATES.
 - INSTALL METAL GUARDS WHERE TUBING WILL PASS THROUGH WALL BASEPLATES AND WHERE CARPET TACK STRIPS WILL BE INSTALLED.
 - THE FOLLOWING PRECAUTIONS SHALL BE TAKEN IN AREAS INTENDED FOR HARDWOOD FLOORING:
 - NOTIFY HARDWOOD INSTALLERS THAT RADIANT HEATING TUBING HAS BEEN INSTALLED.
 - ENSURE THAT NAILING AREAS FOR HARDWOOD FLOORING, IF NAILING IS REQUIRED, ARE CLEARLY MARKED AND KNOWN FOR HARDWOOD INSTALLERS.
 - IF THE RADIANT HEATING SYSTEM SUBSTRATE MATERIAL (THERMAL MASS) REQUIRES CURING AND/OR HAS OTHER LIMITATIONS WHICH CAN BE INFLUENCED BY THE RADIANT HEATING SYSTEM WHILE IN OPERATION, THEN THE RADIANT HEATING SYSTEM SHALL NOT BE PUT INTO OPERATION UNTIL SUCH TIME THAT THE SUBSTRATE MATERIAL HAS FULLY CURED OR SET ACCORDING TO THE MATERIAL REQUIREMENTS OF THE SUBSTRATE MANUFACTURER.
 - SLAB ON GRADE
 - VERIFY SUB-GRADE IS COMPACTED, FLAT AND SMOOTH TO PREVENT DAMAGE TO PIPE OR INSULATION.
 - APPROVED VAPOR BARRIER AND THERMAL INSULATION, ACCORDING TO DESIGN, SHALL BE INSTALLED.
 - REINFORCING WIRE MESH, IF REQUIRED BY STRUCTURAL DESIGN, MUST BE FLAT AND LEVEL.
 - ATTACH TUBING TO REINFORCING WIRE MESH, REBAR OR FOAM INSULATION USING APPROVED FASTENER ACCORDING TO DESIGN.
 - TUBING SHALL BE SPACED ACCORDING TO DESIGN.



HAGEN, CHRISTENSEN & MCILWAIN
ARCHITECTS


4201 15th Avenue SE - Minneapolis, MN 55407
Tel: (612) 954-1350 - Fax: (612) 954-7364

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City of Wayzata

CONSULTANT 1




ERA
STRUCTURAL ENGINEERING

CONSULTANT 2



Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Robert J. Decker
Typed or Printed Name: Robert J. Decker
Date: 03/17/2025 License Number: 477582

KEY PLAN



NORTH

| REVISION | DATE | DESCRIPTION |
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| | 3/17/2025 | CONSTRUCTION DOCUMENTS |
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CLIENT

340 Park St. E
Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

DRAWING TITLE

MECHANICAL SPECIFICATIONS

DRAWING NUMBER

M9.2

PROJECT NUMBER 241376

- 6. INSTALL TUBING AT A CONSISTENT DEPTH BELOW THE SURFACE ELEVATION AS DETERMINED BY THE PROJECT ENGINEER. ENSURE SUFFICIENT CLEARANCE TO AVOID CONTROL JOINT CUTS.
- 7. IN AREAS WHERE TUBING MUST CROSS METAL EXPANSION JOINTS IN THE CONCRETE, ENSURE THE TUBING PASSES BELOW THE JOINTS. DEPENDING ON THE MANUFACTURERS AND STRUCTURAL ENGINEERS RECOMMENDATION, FIBROUS EXPANSION JOINTS MAY TOLERATE PENETRATION.
- 8. TUBING SHALL BE SLEEVED WITH FULLY ENCLOSED POLYETHYLENE CONDUIT AT PENETRATION POINT OF CONCRETE.

3.03 FIELD QUALITY CONTROL

A. AIR LEAK TESTING

- 1. COMPLETED SYSTEM SHALL BE LEAK TESTED BY APPLYING AIR PRESSURE TO A MINIMUM OF 60 PSIG. (DO NOT EXCEED 150PSIG)
- 2. USE LIQUID LEAK DETECTOR OR SOAP SOLUTION TO CHECK FOR LEAKAGE AT MANIFOLD CONNECTIONS.

B. SYSTEM FILLING AND PURGING

- 1. SYSTEM SHALL BE FILLED WITH REQUIRED FLUID, AS DETERMINED BY DESIGN, AND PURGED OF AIR.

C. LIQUID LEAK TESTING

- 1. PERFORM A PRELIMINARY LEAK TEST BY PRESSURIZING THE SYSTEM TO THE GREATER OF 1.5 TIMES THE MAXIMUM OPERATING PRESSURE OR 100PSIG FOR 30 MINUTES.
 - A. AS TUBING EXPANDS, RESTORE PRESSURE, FIRST AT 10 MINUTES INTO THE TEST AND AGAIN AT 20 MINUTES.
 - B. AT THE END OF THE 30-MINUTE PRELIMINARY TEST, PRESSURE SHALL NOT FALL BY MORE THEM 8 PSIG FROM THE MAXIMUM, AND THERE SHALL BE NO LEAKAGE.
- 2. AFTER SUCCESSFULLY PERFORMING THE PRELIMINARY LEAK TEST, PERFORM THE MAIN LEAK TEST IMMEDIATELY.
 - A. THE TEST PRESSURE SHALL BE RESTORED AND CONTINUED AS THE MAIN TEST FOR 2 HOURS.
 - B. THE SYSTEM PRESSURE SHALL NOT FALL MORE THAN 3 PSIG AFTER 2 HOURS.
 - C. NO LEAKAGE SHALL BE DETECTED.
- 3. TEST PRESSURE SHALL BE MAINTAINED AND MONITORED DURING INSTALLATION OF THERMAL MASS (SLAB).
 - A. IF A LEAK IS DETECTED DURING INSTALLATION OF THERMAL MASS, LEAK SHALL BE FOUND IMMEDIATELY AND THE AREA CLEARED FOR REPAIR USING MANUFACTURER'S APPROVED REPAIR COUPLING AND HEAT SHRINK MATERIAL.
 - B. RETEST BEFORE COVERING REPAIR.
- 4. IF LIQUID LEAK TEST IS PERFORMED WITH WATER, PRECAUTIONS MUST BE TAKEN TO PREVENT FREEZING UNTIL PROJECT IS COMPLETE.
- 5. IF LIQUID LEAK TEST IS PERFORMED WITH WATER AND OPERATING FLUID IS A GLYCOL AND WATER SOLUTION, SYSTEM MUST BE PURGED WITH AIR BEFORE FILLING WITH SOLUTION.

D. COMPLETE AND FURNISH LEAK TEST REPORTS TO OWNER OR GENERAL CONTRACTOR, AS REQUIRED.

3.04 SYSTEM ADJUSTING

A. LOOP FLOW BALANCING

- 1. EQUALIZE THE FLOW IN EACH LOOP OF A MANIFOLD. PERFORM THIS FUNCTION FOR EACH INDIVIDUAL MANIFOLD.

B. MANIFOLD FLOW ADJUSTING

- 1. ADJUST FLOW TO EACH INDIVIDUAL MANIFOLD WITH THE USE OF A FLOW CONTROL OR CIRCUIT SETTER DEVICE. FLOWS DETERMINED BY DESIGN REQUIREMENTS.

C. FLOOR SURFACE TEMPERATURES

- 1. ONCE SYSTEM IS OPERATING AT FULL TEMPERATURE, VERIFY FLOOR SURFACE TEMPERATURES ARE WITHIN DESIGN AND FLOORING MANUFACTURER LIMITS.

3.05 CLEANING

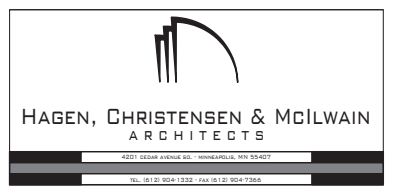
- A. REMOVE TEMPORARY COVERINGS AND PROTECTION OF ADJACENT WORK AREAS.
- B. REPAIR OR REPLACE DAMAGED INSTALLED PRODUCTS.
- C. CLEAN INSTALLED PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS PRIOR TO OWNER'S ACCEPTANCE.
- D. REMOVE CONSTRUCTION DEBRIS FROM PROJECT SITE AND LEGALLY DISPOSE OF DEBRIS.

3.06 DEMONSTRATION

- A. DEMONSTRATE OPERATION OF SYSTEM TO OWNER OR OWNER'S PERSONNEL.
- B. INSTRUCT OWNER OR OWNER'S PERSONNEL IN TYPE, CONCENTRATION AND MAINTENANCE OF THE WATER AND GLYCOL SOLUTION, IF PRESENT.
- C. PROVIDE OWNER OR OWNER'S PERSONNEL WITH MANUFACTURER'S INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR INSTALLED COMPONENTS WITHIN THE SYSTEM.

3.07 PROTECTION

- A. PROTECT INSTALLED WORK FROM DAMAGE BY SUBSEQUENT CONSTRUCTION ACTIVITY ON THE SITE.
- B. PROVIDE OWNER WITH PHOTOS AND DRAWINGS OF COMPLETED WORK.



HAGEN, CHRISTENSEN & MCGILWAIN
ARCHITECTS

4221 CEDAR AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 954-1333 - FAX: (612) 954-7366

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City of Wayzata

CONSULTANT 1



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CONSULTANT 2




WSP

Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

Signature: *Deborah Under*
Typed or Printed Name: Deborah Under
Date: 03/17/25 License Number: 47852

KEY PLAN



NORTH

| REVISION | DATE | DESCRIPTION |
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KLAPPRICH WARMING HOUSE

DRAWING TITLE

MECHANICAL SPECIFICATIONS

DRAWING NUMBER

M9.3

PROJECT NUMBER 241376

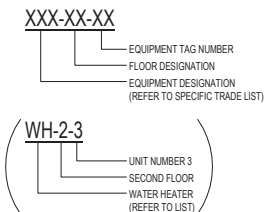
PLUMBING SYMBOL LIST

| | |
|--|---|
| | DISCONNECT FROM EXISTING |
| | CONNECT TO EXISTING |
| | EXISTING PIPING |
| | EXISTING PIPING TO BE REMOVED |
| | PIPING TO BE ABANDONED |
| | SOIL, WASTE OR SANITARY PIPING |
| | VENT PIPING (SANITARY) |
| | PIPING BELOW SLAB |
| | COLD WATER PIPING (DOMESTIC) |
| | HOT WATER PIPING (DOMESTIC) |
| | HOT WATER RECIRCULATION PIPING (DOMESTIC) |
| | PIPING w/ FREEZE PROTECTION OR TEMPERATURE MAINTENANCE CABLE & INSULATION |
| | ARROW INDICATES DIRECTION OF FLOW |
| | PIPING 'XX' = SYSTEM TYPE (REFER TO ABBREVIATIONS) |
| | SHOCKWATER HAMMER ARRESTOR |
| | FLEXIBLE CONNECTION |
| | EXPANSION LOOP |
| | HOSE BIBB |
| | WALL HYDRANT |
| | FRESH AIR INLET |
| | CLEAN OUT/PLUGGED OUTLET |
| | CAPPED OUTLET |
| | HOUSE TRAP |
| | CLEAN-OUT DECK PLATE |
| | P-TRAP |
| | VACUUM BREAKER |
| | BOTTOM PIPE CONNECTION |
| | TOP PIPE CONNECTION |
| | SIDE CONNECTION |
| | PIPE DOWN/DROP |
| | PIPE RISE/UP |
| | PIPE SLOPE |
| | VALVE IN VERTICAL |
| | UNION |
| | REDUCER |
| | WATER PROOF SLEEVE |
| | SLEEVE |
| | PRESSURE GAUGE w/ GAUGE COCK |
| | TEMPERATURE GAUGE |
| | FLOOR DRAIN |
| | ROOF DRAIN |
| | PUMP |
| | METER |
| | VENT THRU ROOF |
| | TAMPER SWITCH |
| | TEMPERATURE AND PRESSURE RELIEF VALVE |
| | PLUG VALVE |
| | MIXING VALVE |
| | RELIEF VALVE |
| | ISOLATION VALVE |
| | OUTSIDE SCREW & YOKE (OS & Y) VALVE |
| | CHECK VALVE |
| | PRESSURE REDUCING VALVE (PRV) |
| | SOLENOID VALVE |
| | FLOAT VALVE |
| | Y STRAINER w/ BLOW-OFF VALVE |
| | BALANCING VALVE |
| | BACKFLOW PREVENTER ASSEMBLY |
| | REDUCED PRESSURE ZONE BACKFLOW PREVENTER ASSEMBLY |
| | REDUCED PRESSURE DETECTOR ASSEMBLY |
| | DOUBLE CHECK VALVE ASSEMBLY |
| | DOUBLE CHECK DETECTOR ASSEMBLY |
| | RISER DESIGNATION: X = RISER SERVICE; # = RISER NUMBER |

PLUMBING ABBREVIATIONS

| | | | |
|-------|---|--------|--|
| AD | AREA DRAIN | NC | NORMALLY CLOSED |
| AF | ABOVE FINISHED FLOOR | NIC | NOT IN CONTRACT |
| ARCH | ARCHITECT | NO | NORMALLY OPEN |
| | | NPCW | NON-POTABLE COLD WATER |
| | | NPHW | NON-POTABLE HOT WATER |
| | | NTS | NOT TO SCALE |
| BLDG | BUILDING | OD | OUTSIDE DIAMETER |
| BMS | BUILDING MANAGEMENT SYSTEM | OF | OVERFLOW |
| BOP | BOTTOM OF PIPE | OFD | OVERFLOW DRAIN |
| BP | BOOSTER PUMP | | |
| BTU | BRITISH THERMAL UNITS | PC | PLUMBING CONTRACTOR |
| BVA | BALANCING VALVE ASSEMBLY | PD | PUMP DISCHARGE |
| BW | BLACK WATER | PG | PRESSURE GAUGE |
| | | PLBG | PLUMBING |
| CA | COMPRESSED AIR | PO | PLUGGED OUTLET |
| CFH | CUBIC FEET PER HOUR | PRV | PRESSURE REDUCING VALVE |
| CFM | CUBIC FEET PER MINUTE | PS | PRESSURE SWITCH |
| CLG | CEILING | PSI | POUNDS PER SQUARE INCH (GAUGE) |
| CM | COFFEE MAKER | | |
| CO | CLEANOUT | (RE) | RELOCATED EXISTING |
| COOP | CLEANOUT DECK PLATE | (RRD) | EXISTING TO BE REMOVED AND RETURNED TO OWNER |
| CONN | CONNECT | RCP | REFLECTED CEILING PLAN |
| CONS | CONSTRUCTION | RCV | RISER CONTROL VALVE |
| CONT | CONTINUATION | RD | ROOF DRAIN |
| COWP | CLEAN OUT WALL PLATE | REG | REGULATOR |
| CP | CIRCULATION PUMP | RH | ROOF HYDRANT |
| CVO | CAPPED AND VALVED OUTLET | RV | RELIEF VENT |
| CW | COLD WATER (DOMESTIC) | | |
| | | S, SAN | SANITARY |
| D | DRYER | SA | SHOCK ABSORBER |
| DEMO | DEMOLITION | SD | SUMP PUMP DISCHARGE |
| DF | DRINKING FOUNTAIN | SOP | STORM DETENTION PUMP |
| DN | DIA | SOT | STORM DETENTION TANK |
| DN | DOWN (PENETRATES FLOOR SLAB) | SH | SHOWER |
| DP | DROP | SK | SINK |
| DR | DRAIN | SP | SUMP PUMP |
| DST | DOMESTIC WATER SUCTION TANK | SQ FT | SQUARE FOOT |
| DW | DISHWASHER | SS | SERVICE SINK |
| DWG | DRAWING | ST | STORM |
| DWH | DOMESTIC WATER HEATER | SW | SITE WATER |
| (E) | EXISTING | TBD | TO BE DETERMINED |
| (ER) | EXISTING TO BE REMOVED | TEMP | TEMPERATURE |
| (ERR) | EXISTING TO BE REMOVED & RELOCATED | TMV | THERMOSTATIC MIXING VALVE |
| EJ | EJECTOR | TP | TRAP PRIMER |
| EL | ELEVATION | TS | TAMPER SWITCH |
| ELEC | ELECTRICAL | TW | TEMPERED WATER |
| ELEV | ELEVATOR | TYP | TYPICAL |
| EMSH | EMERGENCY SHOWER | UDG | UNDERGROUND |
| EP | EJECTOR PUMP | UON | UNLESS OTHERWISE NOTED |
| EQUIP | EQUIPMENT | UP | UP (PENETRATES FLOOR SLAB) |
| ESP | ELEVATOR SUMP PUMP | UR | URINAL |
| ET | EXPANSION TANK | V | VENT |
| EW | EYE WASH | VAC | VACUUM |
| EWC | ELECTRICAL WATER COOLER | VB | VACUUM BREAKER |
| EWH | ELECTRICAL WATER HEATER | VF | VERIFY IN FIELD |
| | | VTR | VENT THROUGH ROOF |
| FAI | FRESH AIR INLET | W | WASTE |
| FD | FLOOR DRAIN | WC | WATER CLOSET |
| FL | FLOOR | WCO | WALL CLEANOUT |
| FLH | FLOOR HYDRANT | WD | WATER DISPENSER |
| FP | FIRE PROTECTION | WH | WALL HYDRANT |
| FS | FLOOR SINK | WHA | WATER HAMMER ARRESTOR |
| FT | FEET | WM | WASHING MACHINE |
| FU | FIXTURE UNIT | WP | WORKING PRESSURE |
| | | WPS | WATERPROOF SLEEVE |
| G | GAS | | |
| GAL | GALLONS | | |
| GBP | GAS BOOSTER PUMP | | |
| GC | GENERAL CONTRACTOR | | |
| GI | GREASE INTERCEPTOR | | |
| GPF | GALLONS PER FLUSH | | |
| GPH | GALLONS PER HOUR | | |
| GPM | GALLONS PER MINUTE | | |
| GRW | GREASE WASTE | | |
| GW | GREY WATER | | |
| HB | HOSE BIBB | | |
| HD | HEAD | | |
| HP | HORSE POWER | | |
| HPG | HIGH PRESSURE GAS | | |
| HR | HOUR | | |
| HT | HOUSE TANK | | |
| HVAC | HEATING, VENTILATION, AIR CONDITIONING | | |
| HW | HOT WATER (DOMESTIC) | | |
| HWR | HOT WATER RECIRCULATION (DOMESTIC) | | |
| HWRP | HOT WATER RECIRCULATION PUMP (DOMESTIC) | | |
| ILF | INLINE FILTER | | |
| IM | ICE MACHINE | | |
| IN | INCH | | |
| IN WC | INCHES WATER COLUMN | | |
| INDW | INDUSTRIAL WASTE | | |
| IW | INDIRECT WASTE | | |
| JS | JANITOR'S SINK | | |
| KW | KILOWATT | | |
| LAV | LAVATORY | | |
| LBS | POUNDS | | |
| LD | LINEAR DRAIN | | |
| LS | LOCK SHIELD | | |
| M | METER | | |
| MAX | MAXIMUM | | |
| MB | MOP BASINSINK | | |
| MECH | MECHANICAL | | |
| MCV | METER INLET CONTROL VALVE | | |
| MIN | MINIMUM | | |
| MOCV | METER OUTLET CONTROL VALVE | | |

PLUMBING EQUIPMENT DESIGNATIONS



PLUMBING DEMOLITION NOTES

- THE CONTRACTOR SHALL INCLUDE IN THEIR PRICE ALL COSTS ASSOCIATED WITH REMOVALS AND RELOCATIONS OF EXISTING SYSTEMS AS DESCRIBED ON THE DRAWINGS AND IN THE SPECIFICATIONS WITH ALLOWANCES FOR EXPECTED OR UNFORESEEN DIFFICULTIES WHEN CONCEALED WORK HAS BEEN OPENED. NO CLAIMS FOR ADDITIONAL WORK ASSOCIATED WITH DEMOLITION WILL BE ACCEPTED, EXCEPT IN CERTAIN CASES CONSIDERED JUSTIFIABLE BY THE OWNER.
- CONTRACTOR SHALL CAREFULLY EXAMINE EXISTING CONDITIONS BEFORE STARTING ANY WORK.
- CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER BEFORE REMOVING OR RELOCATING ANY EXISTING PIPING NOT INDICATED ON DRAWINGS.
- THE CONTRACTOR SHALL REMOVE AND/OR RELOCATE ALL EXISTING PIPING/SYSTEMS WHICH INTERFERE WITH THE NEW ARCHITECTURAL LAYOUTS. ALL ABANDONED PIPING/SYSTEMS WHICH ARE NO LONGER REQUIRED TO FUNCTION SHALL BE REMOVED BACK TO ACTIVE LINES/MARKERS/RSISERS AS REQUIRED.
- THE CONTRACTOR SHALL PERFORM DEMOLITION AND REMOVAL WORK WITH MINIMUM INTERFERENCE WITH EXISTING FUNCTIONING SYSTEMS. ALL AFFECTED SYSTEMS SHALL BE RECONNECTED AND RESTORED AS REQUIRED.
- MAKE ANY NECESSARY TEMPORARY CONNECTIONS BETWEEN EXISTING AND NEW WORK TO MAINTAIN CONTINUOUS SERVICE OF ALL EXISTING SYSTEMS. MINIMIZE SHUTDOWNS. OBTAIN WRITTEN APPROVAL FROM OWNER FOR SHUTDOWNS. LOCAL SHUT-DOWNS REQUIRE A REQUEST TO THE OWNER A MINIMUM OF TWO (2) BUSINESS DAYS PRIOR TO WORK. SHUTDOWNS OF EXISTING BUILDING SERVICES, BEYOND AREA OF WORK, REQUIRE A REQUEST TO THE OWNER A MINIMUM OF FIVE (5) BUSINESS DAYS PRIOR TO WORK. SHUTDOWNS SHALL ALSO BE DONE DURING NON-OCCUPIED HOURS, UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL NOTIFY THE OWNER AT THE APPROPRIATE TIME OF THE PROJECTED DEMOLITION AND PHASING SCHEDULE SO THAT REMOVAL OR RELOCATION OF AFFECTED UTILITIES MAY BE CARRIED OUT IN COORDINATION WITH THE PROJECT REQUIREMENTS.
- ARRANGE TO WORK CONTINUOUSLY, INCLUDING OVER TIME, IF REQUIRED, TO ASSURE THAT SYSTEMS WILL BE SHUT DOWN ONLY DURING THE TIME ACTUALLY REQUIRED TO MAKE THE NECESSARY CONNECTIONS TO THE EXISTING SYSTEMS.
- DEMOLITION AND REMOVAL WORK SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER. THE CONTRACTOR SHALL PATCH, REPAIR OR OTHERWISE RESTORE ANY DAMAGED INTERIOR OR EXTERIOR BUILDING SURFACE TO ITS ORIGINAL CONDITION.
- ALL PIPING WHICH BECOMES EXPOSED DURING THE ALTERATION WORK SHALL BE REMOVED AND REROUTED CONCEALED BEHIND FINISHED SURFACES.
- ALL EXISTING MATERIAL AND EQUIPMENT IN USABLE CONDITION, WHICH IS TO BE REMOVED UNDER THIS CONTRACT, SHALL REMAIN THE PROPERTY OF THE OWNER OR SHALL BE DISPOSED OF BY THE CONTRACTOR, AS DIRECTED BY THE OWNER.

PLUMBING GENERAL NOTES

- GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL PLUMBING DRAWINGS.
- ALL WORK IS NEW UNLESS OTHERWISE NOTED.
- DRAWINGS ARE DIAGRAMMATIC. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
- NEITHER ACCURACY NOR COMPLETION OF UTILITY LOCATIONS SHOWN ON DRAWINGS IS GUARANTEED. DETERMINE EXACT LOCATIONS OF EXISTING UTILITIES IN FIELD, WHETHER OR NOT SHOWN ON DRAWINGS. EXERCISE CAUTION AND IDENTIFY LOCATIONS OF UNMARKED UTILITY LINES AS NECESSARY TO PERFORM WORK OF THIS SECTION.
- ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE CURRENT PLUMBING CODE AND ALL APPLICABLE LOCAL CODES AND AGENCIES HAVING JURISDICTION.
- IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE THE PLUMBING SCOPE OF WORK WITH THAT OF ALL OTHER TRADES, INCLUDING (BUT NOT LIMITED TO), ELECTRICAL, HVAC/MECHANICAL, FIRE PROTECTION/SPRINKLER, STRUCTURAL AND ARCHITECTURAL.
- ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND THE OWNER'S REPRESENTATIVE, AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
- NO WORK SHALL BE INSTALLED IN VIOLATION OF ANY GOVERNING CODES. ANY WORK SHOWN ON THE DRAWINGS WHICH IS IN VIOLATION OF SUCH CODES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND THE OWNER'S REPRESENTATIVE AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
- ALL EXPOSED PIPING PENETRATING CEILING AND WALLS SHALL BE INSTALLED WITH CHROME PLATED (STAINLESS WHERE NOTED) ESCUTCHEONS AT THE PENETRATIONS IN FINISHED SPACES. ALL PIPING PENETRATING EXTERIOR WALLS AND ROOFS SHALL BE FLASHED IN AN APPROVED MANNER AND SHALL BE SEALED WEATHER TIGHT. PIPING PENETRATING RATED PARTITIONS SHALL BE PROTECTED AS REQUIRED BY LOCAL CODE AUTHORITY.
- MANUFACTURER'S MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.
- PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURERS' RECOMMENDATIONS.
- PROVIDE ACCESS PANELS FOR EQUIPMENT THAT REQUIRES PERIODIC SERVICE.
- CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE ELECTRICAL DRAWINGS AND SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOWN HEREIN.
- PROVIDE SHUTOFF VALVES ON ALL BRANCH PIPING AND SUPPLY STOPS ON ALL SUPPLIES TO INDIVIDUAL FIXTURES AND EQUIPMENT. PROVIDE SHUTOFF VALVES ON PIPING IN CORRIDORS AND WHERE INDICATED ON DRAWINGS. ALL VALVES SHALL BE ACCESSIBLE.
- ALL SLEEVES THROUGH CONCRETE FLOORS AND ALL CORE DRILLING OF CONCRETE FLOORS AND WALLS SHALL BE BY THIS CONTRACTOR.
- CONCRETE PADS AND PLATFORMS FOR WORK OF THIS SECTION WILL BE PROVIDED BY GENERAL CONTRACTOR. PROVIDE INFORMATION AND HARDWARE AS NECESSARY TO COORDINATE WORK.
- SCHEDULE WORK OF THIS SECTION TO AVOID INTERFERENCES WITH FIRE-PROOFING WORK.
- COORDINATE ROOF PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS.
- RUN PIPING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS.
- PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
- ALL MISCELLANEOUS MOUNTING HARDWARE, ATTACHMENTS, SUPPLEMENTAL STEEL AND MEANS OF SUPPORTING PIPING/EQUIPMENT FROM BUILDING STRUCTURE SHALL BE SIZED FOR ITS INTENDED PURPOSE AND CAPACITY RATING. COORDINATE WITH HARDWARE MANUFACTURER FOR SPECIFIC REQUIREMENTS AND FIELD CONDITIONS AT POINT OF CONNECTION. REVIEW ALL ATTACHMENTS TO STRUCTURE WITH OWNER'S STRUCTURAL ENGINEER.
- VERIFY EXACT SIZES, LOCATIONS, INVERTS AND ELEVATIONS PRIOR TO THE INSTALLATION OF ANY PIPING. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF ALL FIXTURES AND EQUIPMENT.
- PIPING SHALL NOT RUN OVER ELECTRICAL PANELS OR ENTER/PASS THROUGH ELECTRICAL ROOMS OR CLOSETS. COORDINATE WITH WORK OF OTHER TRADES AS REQUIRED.
- PROVIDE EXPANSION JOINT FITTING AT ALL PIPING THAT CROSSES AN EXPANSION JOINT.
- ALL NATURAL GAS PIPING TO COMPLY WITH LOCAL AND STATE CODES.
- NATURAL GAS PIPING AND SAFETY DEVICES SHALL CONFORM TO THE REQUIREMENTS OF THE MINNESOTA FUEL GAS CODE AND SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF ALL LOCAL AGENCIES AND UTILITIES.
- NATURAL GAS PIPING SHALL BE TESTED ACCORDING TO THE MINNESOTA FUEL GAS CODE AND NATIONAL CODE PROVISIONS OF THE LOCAL PLUMBING INSPECTOR. IF THE GAS INSPECTION OR TEST RESULTS IN ANY DEFECTS, SUCH DEFECTIVE WORK AND MATERIAL SHALL BE REPLACED AND THE INSPECTION/TESTING SHALL BE REDONE.
- PLUMBING SUBCONTRACTOR IS RESPONSIBLE FOR EXTENDING ALL REGULATOR VENTS TO ATMOSPHERE, INCLUDING NATURAL GAS REGULATORS, EQUIPMENT GAS TRAINS, ETC.
- VERIFY EXISTING DOMESTIC WATER SUPPLY PRESSURE TO THE PROJECT AREA AND PROVIDE PRESSURE REDUCING VALVES WITH STRAINERS IF THE WATER PRESSURE EXCEEDS 75 PSI.

HAGEN, CHRISTENSEN & MCILWAIN
ARCHITECTS

421 10th Avenue SE • Hennepin County, MN 55407
Tel: (612) 954-1333 • Fax: (612) 954-7354

CLIENT

City of Wayzata

CONSULTANT 1

ERA
STRUCTURAL ENGINEERING

CONSULTANT 2

WSP

Professional Engineer

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

Signature: *Deborah J. Reich*
 Typed or Printed Name: *Deborah J. Reich*
 Date: 03/17/25 License Number: 47858

KEY PLAN

NORTH

| REVISION | DATE | DESCRIPTION |
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| | 3/17/2025 | CONSTRUCTION DOCUMENTS |
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340 Park St. E
Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

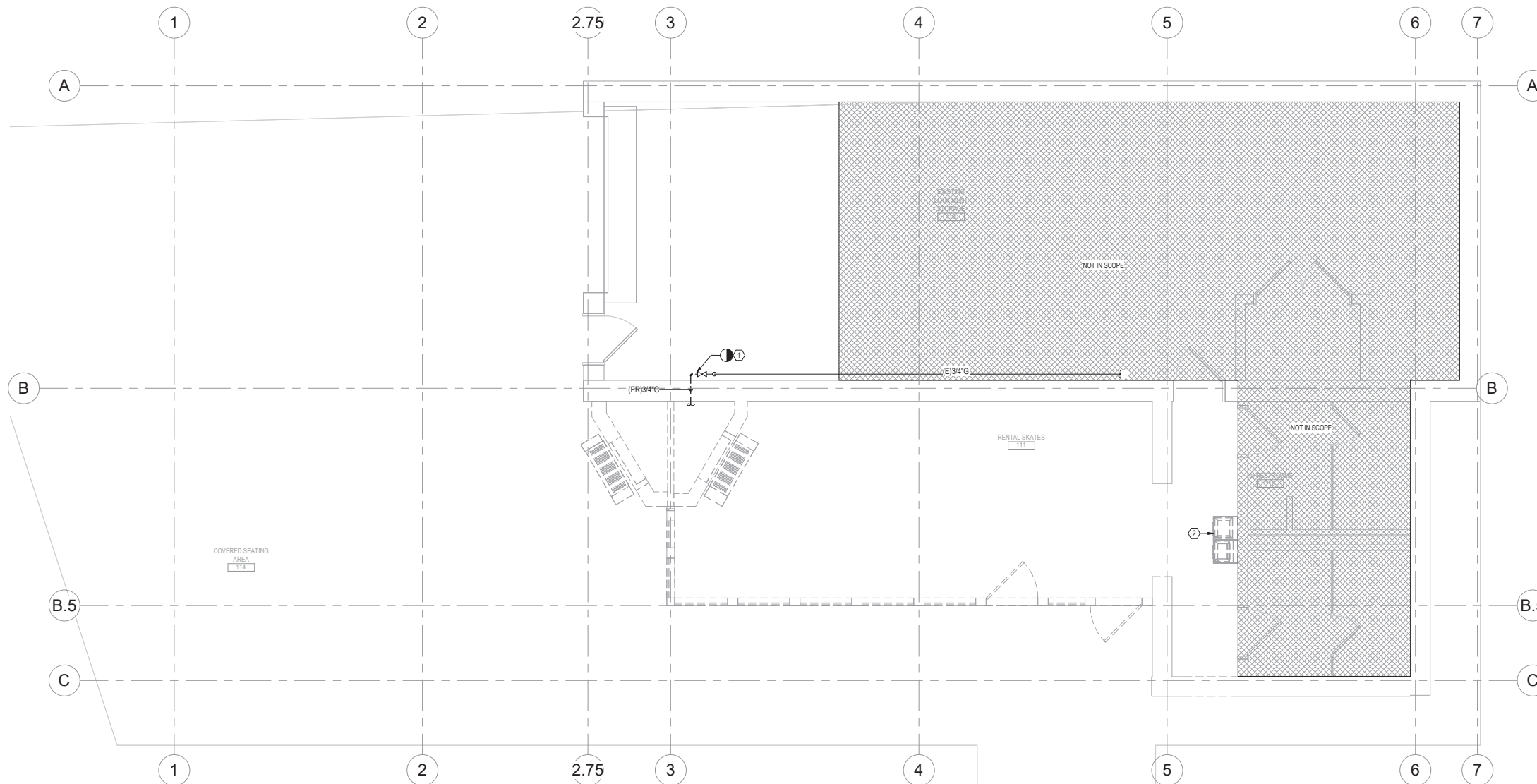
DRAWING TITLE

PLUMBING COVER SHEET

DRAWING NUMBER

P0.0

PROJECT NUMBER 241376



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

KEY NOTES
Ⓜ SYMBOL DENOTES KEY NOTE

- 1 REMOVE EXISTING FIREPLACE AND GAS PIPING BACK TO EXISTING PRESSURE REGULATOR AND SHUTOFF VALVE. EXISTING PRESSURE REGULATOR AND SHUTOFF VALVE TO REMAIN.
- 2 REMOVE EXISTING ELECTRIC WATER COOLER. EXISTING ROUGH-IN TO REMAIN.

HAGEN, CHRISTENSEN & MCLWAIN ARCHITECTS
4211 GRAND AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 954-1333 - FAX: (612) 954-7554

CLIENT

CONSULTANT 1

CONSULTANT 2

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
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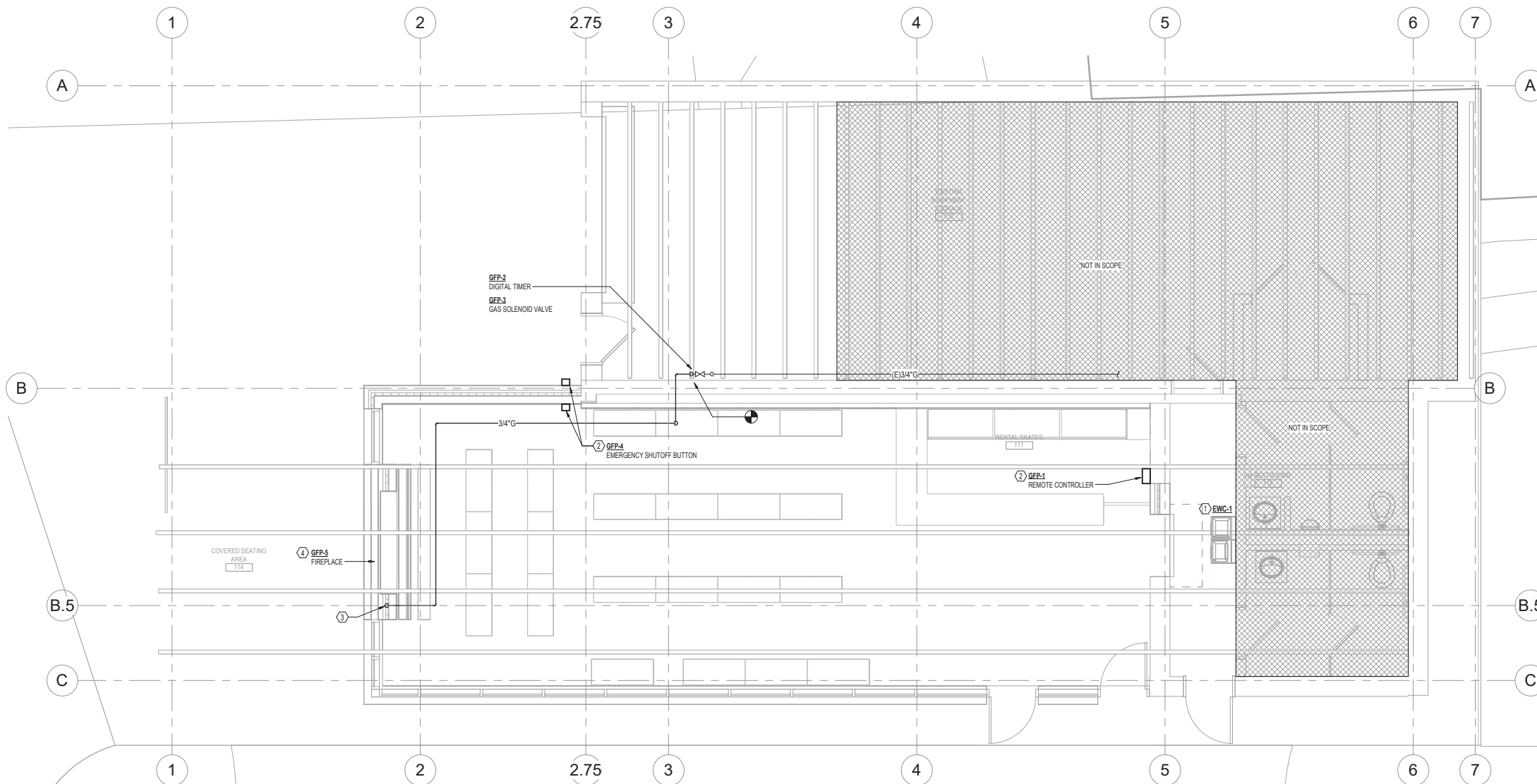
DRAWING TITLE

PLUMBING FLOOR PLAN - DEMOLITION

DRAWING NUMBER

P2.1D

PROJECT NUMBER 241376



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

KEY NOTES

- (E) SYMBOL DENOTES KEY NOTE
- 1 INSTALL NEW ELECTRIC WATER COOLER AND TIE INTO EXISTING ROUGH-IN. COORDINATE WITH ELECTRICAL.
- 2 COORDINATE FINAL LOCATION WITH ARCHITECT AND OWNER.
- 3 PROVIDE GAS STOP VALVE SIMILAR TO DANTE VALVE. COVER PLATE TO BE FLUSH WITH WALL. FINISH TO BE DETERMINED BY ARCHITECT. PROVIDE APPROPRIATE LENGTH KEY.
- 4 COORDINATE INTAKE AIR AND FLUE GAS DUCT WITH MECHANICAL CONTRACTOR.

HAGEN, CHRISTENSEN & MCLWAIN ARCHITECTS
4211 GRAND AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 954-1333 - FAX: (612) 954-7554

CLIENT
City of Wayzata

CONSULTANT 1
ERA STRUCTURAL ENGINEERING

CONSULTANT 2
WSP

Professional Engineer
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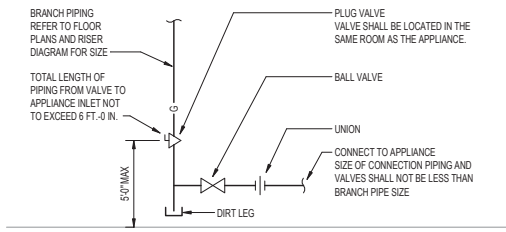
KEY PLAN

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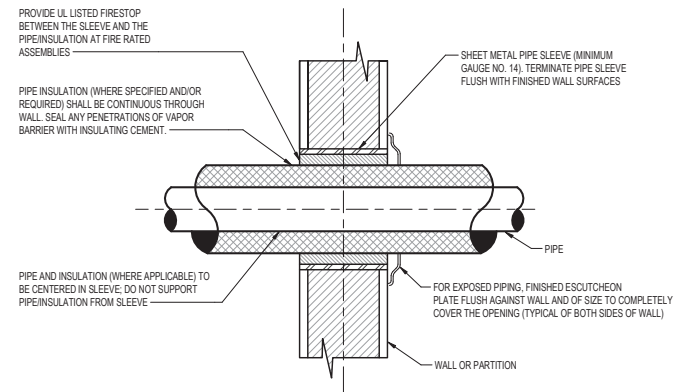
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PLUMBING FLOOR PLAN

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PROJECT NUMBER 241376



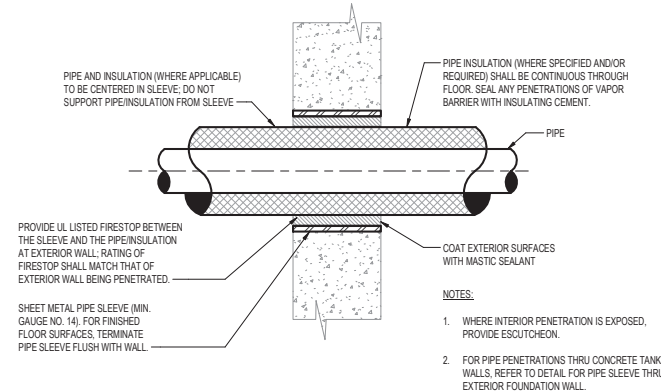
GAS SEDIMENT TRAP DETAIL

SCALE: NONE



PIPE PENETRATION THRU INTERIOR WALL

SCALE: NONE



PIPE SLEEVE THRU EXTERIOR WALL

SCALE: NONE

HAGEN, CHRISTENSEN & MCLWAIN
ARCHITECTS
421 104th Avenue SE - Minnetonka, MN 55347
TEL: (952) 934-1333 - FAX: (952) 934-7334

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DRAWING TITLE

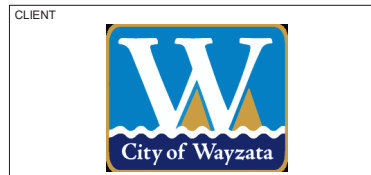
PLUMBING DETAILS

DRAWING NUMBER

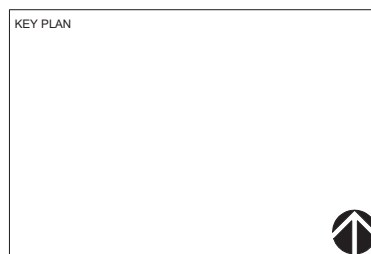
P5.1

PROJECT NUMBER 241376

- 1) THE ASSEMBLY WILL INCORPORATE AN ACETAL BONNET WITH SILICONE RUBBER O-RING SEAL AND SILICONE RUBBER SEAT DISC. THE VALVE SHALL HAVE REPLACEABLE SEATS. CHECK ASSEMBLY SHALL BE GUIDED OVER ITS FULL STROKE BY V NOTCHED GUIDES. THE LEAD FREE ANTI-SIPHONE PRESSURE VACUUM BREAKERS SHALL COMPLY WITH STATE CODES AND STANDARDS, WHERE APPLICABLE, REQUIRING REDUCED LEAD CONTENT. THE ASSEMBLY SHALL MEET THE REQUIREMENTS OF ANSI/ASSE STANDARD 1020, SIMILAR TO WATTS MODEL #LF800M4QT FOR SIZES 1/2" TO 3".
- C. FOR BEVERAGE DISPENSERS, COFFEE MACHINES AND ICE MACHINES, CHECK VALVES SHALL BE CONFORM TO ASSE 1022, SIMILAR TO WATTS SD-3 OR APPROVED EQUAL.
- 11. INSULATION:
 - A. REFER TO INSULATION SCHEDULE FOR SPECIFICATIONS.
 - B. ALL INSULATION (INCLUDING FACING AND ADHESIVE) SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURES LISTED IN ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING A FLAME SPREAD OF 25 AND A SMOKE DEVELOPED OF 50.
 - C. ON VALVES AND FITTINGS PROVIDE PRE-MOLDED FIBERGLASS FITTINGS, VAPOR SEAL INSULATION ON "CW".
 - D. FOR INSULATION THICKNESS, REFER TO INSULATION SCHEDULE.
 - E. ALL INSTALLATION AND VAPOR BARRIERS SHALL BE SEAL AND CONTINUOUS THROUGH HANGERS, SLEEVES, FITTINGS, VALVES, ETC.
- 12. PLUMBING FIXTURES:
 - A. ALL FIXTURES SHALL BE AS INDICATED ON THE PLUMBING FIXTURE SCHEDULE.
 - B. PROVIDE ALL FIXTURES WITH STOP VALVES, FIXTURE TRAPS AND ALL ASSOCIATED TRIM AS REQUIRED.
 - C. ALL FIXTURES EQUIPPED WITH FLUSH VALVES AND SELF CLOSING FAUCETS SHALL BE PROVIDED WITH SHOCK ABSORBERS.
 - D. WHERE THERE ARE DISCREPANCIES IN PLUMBING FIXTURES BETWEEN THE ARCHITECTURAL DRAWINGS AND THE PLUMBING DRAWINGS, THE PLUMBING CONTRACTOR SHALL OBTAIN THE APPROVAL OF THE ARCHITECT FOR VERIFYING THE DISCREPANCY.
- 15. DI-ELECTRIC FITTINGS:
 - A. WHERE CONNECTION IS MADE BETWEEN STEEL FERROUS AND NON-FERROUS PIPING/EQUIPMENT, PROVIDE UNION, NIPPLE OR FLANGE CONNECTION WITH A GASKET OR LINING OF INERT AND DI-ELECTRIC MATERIAL, TEF-ON, OR APPROVED EQUAL. FITTINGS SHALL BE AS MANUFACTURED BY EPICO OR APPROVED EQUAL AND SHALL BE IN ACCORDANCE WITH ANSI-B 16.8 AND BE RATED AT 250 PSI. NIPPLES SHALL BE MANUFACTURED BY PERFECTION CORP.
- 16. WATER HAMMER ARRESTOR:
 - A. PROVIDE DEVICES ON ALL HOT AND COLD WATER FIXTURE BRANCHES WITH QUICK ACTING VALVES/DEVICES. WATER HAMMER ARRESTORS SHALL BE MANUFACTURED BY ZURN OR APPROVED EQUAL.
- 17. PIPING SUPPORTS:
 - A. SUPPORT ALL PIPING FROM BUILDING STRUCTURE BY PROVIDING INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN STONE CONCRETE ONLY), AND ACCEPTABLE BRACKETS. SUBMIT ALL METHODS FOR REVIEW PRIOR TO INSTALLATION.
 - B. PROVIDE TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS FOR GROUPED LINES AND SERVICES.
 - C. SUSPENDED HORIZONTAL PIPING
 - 1) SUPPORT ALL PIPING INDEPENDENTLY FROM STRUCTURE USING HEAVY IRON-HINGED TYPE HANGERS, SIMILAR TO ANVIL CLEVIS NO. 260.
 - 2) PROVIDE ELECTROPLATED SOLID-BAND HANGERS SIMILAR TO AUTO-GRIP, FOR 2" AND SMALLER PIPE.
 - 3) PROVIDE WALL BRACKETS FOR WALL-SUPPORTED PIPING, AND PROVIDE PIPE SADDLES FOR FLOOR-MOUNTED PIPING.
 - 4) PROVIDE SUPPORTS WITH COPPER LINING FOR UNINSULATED COPPER PIPING.
 - 5) SUSPEND PIPING BY RODS WITH DOUBLE NUTS.
 - 6) PROVIDE ADDITIONAL STEEL FRAMING AS REQUIRED AND ACCEPTED WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING HANGER RODS IN REQUIRED LOCATIONS. SUBMIT FOR REVIEW.
 - 7) SUPPORT BRANCH FIXTURE WATER PIPING IN CHASES WITH COPPER-PLATED METAL BRACKETS, SECURED TO STUDS, SIMILAR TO HOLDRITE NOS. 102-18, 107-18, 102-26, OR 101-26.
 - 8) POLYVINYL CHLORIDE PIPE: C&P #200V CLEVIS HANGER, PIPE SHALL BE SUPPORTED BY A CONTINUOUS CARBON STEEL V CHANNEL SIMILAR TO C&P #200V.
 - D. PROVIDE INCOMPRESSIBLE INSULATING BLOCK IN INSULATION AT HANGERS WITH 180-DEGREE ARC GALVANIZED METAL COVERING SHIELD.
 - E. MAXIMUM HANGER SPACING AS INDICATED
 - 1) COPPER TUBING 1-1/2" AND SMALLER SHALL BE EVERY 6 FEET.
 - 2) COPPER TUBING 2" AND LARGER SHALL BE EVERY 10 FEET.
 - 3) CAST IRON: EVERY 5 FEET AND AT EVERY FITTING OR JOINT.
 - 4) ALL NO-HUB PIPING SHALL HAVE A MINIMUM OF TWO HANGERS PER LENGTH OF PIPE. PIPE HANGERS SHALL BE INSTALLED ON EACH SIDE OF THE JOINT WITHIN 18".
 - 5) POLYVINYL CHLORIDE PIPE: NOT MORE THAN 4 FEET APART.
 - F. VERTICAL PIPING
 - 1) PROVIDE EXTENSION PIPE CLAMPS BOLTED TO BARE PIPE ON EACH SIDE AND BEARING EQUALLY ON STRUCTURE OR WELDED TO BEAM.
 - 2) PROVIDE SPACING AS INDICATED
 - A) COPPER TUBING SHALL BE EVERY FLOOR LEVEL AT THE BASE, MAXIMUM 10 FEET ON CENTER.
 - B) CAST IRON PIPING SHALL BE EVERY FLOOR LEVEL AT THE BASE, MAXIMUM 15 FEET ON CENTER.
 - G. SLEEVES
 - 1) PROVIDE 18 GAUGE GALVANIZED METAL SLEEVES FOR ALL PIPES PASSING THROUGH WALLS ON FLOORS. PROVIDE SLEEVES WITH A NOMINAL DIAMETER OF AT LEAST TWO INCHES GREATER THAN THE NOMINAL OF THE PIPE, INCLUDING INSULATION WHICH MUST BE CONTINUOUS THROUGH THE SLEEVE. PACK THE SPACE BETWEEN THE PIPE AND SLEEVE WITH AN APPROVED FIRESTOP MATERIAL.
 - 2) WHERE SLEEVES PASS THROUGH RATED CONSTRUCTION, FIT ESCUTCHEONS ON BOTH SIDES OF THE CONSTRUCTION.
 - 3) SLEEVES THROUGH FLOORS SHALL EXTEND UP MINIMUM OF TWO INCHES IN MECHANICAL ROOMS AND ONE INCH IN ALL OTHER AREAS.
- 18. PIPE IDENTIFICATION
 - A. GENERAL REQUIREMENTS FOR MANUFACTURED PIPE LABELS: PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION, IN ACCORDANCE WITH ASME/ANSI A13.1.
 - B. PRETENSIONED PIPE LABELS: PRECOILED, SEMIRIGID PLASTIC FORMED TO COVER FULL CIRCUMFERENCE OF PIPE AND TO ATTACH TO PIPE WITHOUT FASTENERS OR ADHESIVE.
 - C. SELF-ADHESIVE PIPE LABELS: PRINTED PLASTIC WITH CONTACT-TYPE, PERMANENT-ADHESIVE BACKING.
 - D. PIPE LABEL CONTENTS: INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS, PIPE SIZE, AND AN ARROW INDICATING FLOW DIRECTION.
 - E. FLOW DIRECTION ARROWS: INTEGRAL WITH PIPING SYSTEM SERVICE LETTERING TO ACCOMMODATE BOTH DIRECTIONS, OR AS SEPARATE UNIT ON EACH PIPE LABEL TO INDICATE FLOW DIRECTION.
 - F. LETTERING SIZE: AT LEAST 1-1/2" HIGH
 - G. EXTERNAL NATURAL GAS PIPING SHALL BE PAINTED YELLOW AND MARKED "NATURAL GAS" IN BLACK LETTERS, NOT EXCEEDING 5 FOOT INTERVALS.
- 19. TESTS
 - A. DRAINAGE, WASTE AND VENT PIPING
 - 1) TESTING SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 712.0 OF THE 2020 MINNESOTA PLUMBING CODE.
 - B. DOMESTIC WATER PIPING
 - 1) TESTING SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 609.4 OF THE 2020 MINNESOTA PLUMBING CODE.
 - D. NATURAL GAS PIPING
 - 1) TESTING SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 406.4.1 AND 406.4.2 OF THE 2020 MINNESOTA FUEL GAS CODE.
- 20. CLEANING
 - A. CLEAN AND DISINFECT POTABLE DOMESTIC WATER PIPING AS FOLLOWS:
 - 1) PURGE NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED BEFORE USING.
 - 2) USE PURGING AND DISINFECTING PROCEDURES DESCRIBED BELOW:
 - A) FLUSH PIPING SYSTEM WITH CLEAN, POTABLE WATER UNTIL DIRTY WATER DOES NOT APPEAR AT OUTLETS.
 - B) FILL AND ISOLATE SYSTEM ACCORDING TO THE FOLLOWING:
 - (1) FILL SYSTEM OR PART THEREOF WITH WATER/CHLORINE SOLUTION WITH AT LEAST 50 PPM (50 MG/L) OF CHLORINE. ISOLATE WITH VALVES AND ALLOW TO STAND FOR 24 HOURS.
 - C) FLUSH SYSTEM WITH CLEAN, POTABLE WATER UNTIL NO CHLORINE IS IN WATER COMING FROM SYSTEM AFTER THE STANDING TIME.
 - D) SUBMIT WATER SAMPLES IN STERILE BOTTLES TO AUTHORITIES HAVING JURISDICTION. REPEAT PROCEDURES IF BIOLOGICAL EXAMINATION SHOWS CONTAMINATION.



Professional Engineer
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 340 Park St. E
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KLAPPRICH WARMING HOUSE

DRAWING TITLE
PLUMBING SPECIFICATIONS

DRAWING NUMBER
P9.2
 PROJECT NUMBER 241376

ELECTRICAL SYMBOLS LIST

LIGHTING SYMBOLS

| | |
|--|---|
| | Zx4/2x2 RECESSED CEILING MOUNTED FIXTURE "X" = FIXTURE TYPE "y" = CONTROLLED BY SWITCH "y" NS = NOT SWITCHED NL = NIGHT LIGHT |
| | SIMILAR TO ABOVE WITH EMERGENCY BACKUP "X" = FIXTURE TYPE "y" = CONTROLLED BY SWITCH "y" EM = EMERGENCY BACKUP |
| | RECESSED LIGHT FIXTURE ON EMERGENCY LIFE SAFETY CIRCUIT "X" = FIXTURE TYPE "y" = CONTROLLED BY SWITCH "y" |
| | WALL MOUNTED LIGHT FIXTURE "X" = FIXTURE TYPE "y" = CONTROLLED BY SWITCH "y" NS = NOT SWITCHED NL = NIGHT LIGHT |
| | STRIP FIXTURE - TYPE AS NOTED "X" = FIXTURE TYPE "y" = CONTROLLED BY SWITCH "y" EM = EMERGENCY BACKUP |
| | RECESSED CEILING MOUNTED FIXTURE "X" = FIXTURE TYPE "y" = CONTROLLED BY SWITCH "y" EM = EMERGENCY BACKUP |
| | WALL MOUNTED LIGHT FIXTURE "X" = FIXTURE TYPE "y" = CONTROLLED BY SWITCH "y" EM = EMERGENCY BACKUP |
| | ACCENT LIGHT OR WALL WASHER "X" = FIXTURE TYPE "y" = CONTROLLED BY SWITCH "y" EM = EMERGENCY BACKUP |
| | CEILING MOUNTED EXIT LIGHT, TYPE "X" - DIRECTIONAL ARROWS WHERE INDICATED - SHADED AREAS INDICATE ILLUMINATED FACEFACES |
| | WALL MOUNTED EXIT LIGHT, TYPE "X" - DIRECTIONAL ARROWS WHERE INDICATED - SHADED AREAS INDICATE ILLUMINATED FACEFACES |
| | EMERGENCY BATTERY LIGHT UNIT "X" = FIXTURE TYPE |
| | REMOTE LIGHT HEADS FOR EMERGENCY BATTERY LIGHT UNIT TYPE AS NOTED |

SINGLE LINE DIAGRAM SYMBOLS

| | |
|--|--|
| | POWER TRANSFORMER VOLTAGES, WINDINGS AND SIZE AS INDICATED |
| | DIGITAL MULTIMETER |
| | HOMERUN - NUMERICAL WHERE USED INDICATES CIRCUIT NUMBER FOR REFERENCE ONLY. 2#12-1#12@3-4"FC FOR ONE CKT. HOMERUN, U.O.N. 4#12-1#12@3-4"FC FOR TWO CKT. HOMERUN, U.O.N. 6#12-1#12@3-4"FC FOR THREE CKT. HOMERUN, U.O.N. |
| | HOMERUN - NUMERICAL WHERE USED INDICATES CIRCUIT NUMBER FOR REFERENCE ONLY |
| | DIMMER ZONE HOMERUN |
| | MOTOR CONTROLLER |
| | COMBINATION MOTOR CONTROLLER AND DISCONNECT SWITCH SWITCH AMPS# OF POLES, VOLTAGE RATINGS AS REQUIRED |
| | UNFUSED DISCONNECT SWITCH SWITCH AMPS# OF POLES, VOLTAGE RATINGS AS REQUIRED |
| | FUSED DISCONNECT SWITCH SWITCH AMPS# FUSE AMPS# OF POLES, VOLTAGE RATINGS AS REQUIRED |
| | ENCLOSED CIRCUIT BREAKER TRIP AMPS# OF POLES, VOLTAGE RATING AS REQUIRED NA = NON-AUTOMATIC |
| | SURFACE MOUNTED PANEL BOARD |
| | FLUSH MOUNTED PANEL BOARD |
| | CEILING MOUNTED JUNCTION BOX WITH FINAL EQUIPMENT CONNECTION |
| | FLUSH WALL MOUNTED JUNCTION BOX WITH FINAL EQUIPMENT CONNECTION |
| | FLUSH FLOOR MOUNTED JUNCTION BOX |
| | PULLBOX |
| | EXISTING CONDUIT/EQUIPMENT TO BE REMOVED |
| | EXISTING CONDUIT/EQUIPMENT TO REMAIN |
| | NEW CONDUIT/EQUIPMENT |
| | NEW EXPOSED CONDUIT |
| | NEW UNDERGROUND IN SLAB CONDUIT |
| | NEW EMERGENCY CONDUIT |
| | CONDUIT TURNING UP |
| | CONDUIT TURNING DOWN |
| | SECTION A-A |
| | FEEDER DESIGNATION H = 480V L = 208V A = SWITCHBOARD "A" 1 = FEEDER NUMBER ONE |

POWER SYMBOLS

| | |
|--|--|
| | SINGLE POLE SWITCH a = CONTROLLING OUTLET "y" 2 = DOUBLE POLE 3 = THREE-WAY 4 = FOUR-WAY D = DOOR K = KEY OPERATED MO = MOMENTARY CONTACT T = TIME SWITCH P = PILOT LIGHT |
| | DISCONNECT SWITCH - TOGGLE TYPE WITH THERMAL OVERLOAD - 277V HP RATED |
| | DISCONNECT SWITCH - TOGGLE TYPE MOTOR RATED, 20A, 1P, U.O.N. |
| | WALL DIMMER - TYPE "X" NUMBER INDICATES WATTAGE RATING |
| | OCCUPANCY SENSOR, CEILING MOUNTED |
| | OCCUPANCY SENSOR, WALL MOUNTED |
| | PHOTO CONTROL SWITCH |
| | TRANSFORMER |
| | 20A, 125V DUPLEX RECEPTACLE - FLUSH WALL MOUNTED CONTROLLED FROM WALL SWITCH "y" |
| | 20A, 125V DUPLEX RECEPTACLE - FLUSH WALL MOUNTED WITH TWO (2) INTEGRALLY POWERED USB PORTS |
| | 20A, 125V QUADRUPLEX RECEPTACLE - FLUSH WALL MOUNTED |
| | 20A, 125V EMERGENCY QUADRUPLEX RECEPTACLE - FLUSH WALL MOUNTED |
| | 20A, 125V ISOLATED GROUND, DUPLEX RECEPTACLE, FLUSH FLOOR MOUNTED. |
| | 20A, 125V DUPLEX RECEPTACLE - FLUSH WALL MOUNTED, GF TYPE. |
| | 20A, 125V EMERGENCY DUPLEX RECEPTACLE - FLUSH WALL MOUNTED |
| | 20A, 125V EMERGENCY DUPLEX RECEPTACLE - FLUSH WALL MOUNTED WITH TWO (2) INTEGRALLY POWERED USB PORTS |
| | SINGLE RECEPTACLE - FLUSH WALL MOUNTED FM = FLOOR MACHINE WC = WATER COOLER XR = X-RAY |
| | 20A, 125V DUPLEX RECEPTACLE SURFACE MOUNTED |
| | 20A, 125V SURGE SUPPRESSION DUPLEX RECEPTACLE - FLUSH WALL MOUNTED |
| | PLUG-IN SURFACE METAL RACEWAY - LETTER INDICATES TYPE - WITH SPECIAL PURPOSE RECEPTACLES WHERE INDICATED |
| | HOMERUN - NUMERICAL WHERE USED INDICATES CIRCUIT NUMBER FOR REFERENCE ONLY. 2#12-1#12@3-4"FC FOR ONE CKT. HOMERUN, U.O.N. 4#12-1#12@3-4"FC FOR TWO CKT. HOMERUN, U.O.N. 6#12-1#12@3-4"FC FOR THREE CKT. HOMERUN, U.O.N. |
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| | FLUSH FLOOR MOUNTED JUNCTION BOX |
| | PULLBOX |
| | EXISTING CONDUIT/EQUIPMENT TO BE REMOVED |
| | EXISTING CONDUIT/EQUIPMENT TO REMAIN |
| | NEW CONDUIT/EQUIPMENT |
| | NEW EXPOSED CONDUIT |
| | NEW UNDERGROUND IN SLAB CONDUIT |
| | NEW EMERGENCY CONDUIT |
| | CONDUIT TURNING UP |
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VOICE/DATA/P.A. SYMBOLS

| | |
|--|---|
| | DATA OUTLET LOCATION WITH 3/4" CONDUIT TERMINATED IN A 90 DEG. BEND 6" INTO NEAREST ACCESSIBLE CEILING ## = NUMBER OF JACKS |
| | VOICE OUTLET LOCATION WITH 3/4" CONDUIT TERMINATED IN A 90 DEG. BEND 6" INTO NEAREST ACCESSIBLE CEILING P = PUBLIC F = FAX W = WALL MOUNTED 48" AFF # = NUMBER OF JACKS |
| | TELEVISION OUTLET LOCATION WITH 3/4" CONDUIT TERMINATED IN A 90 DEG. BEND 6" INTO NEAREST ACCESSIBLE CEILING |

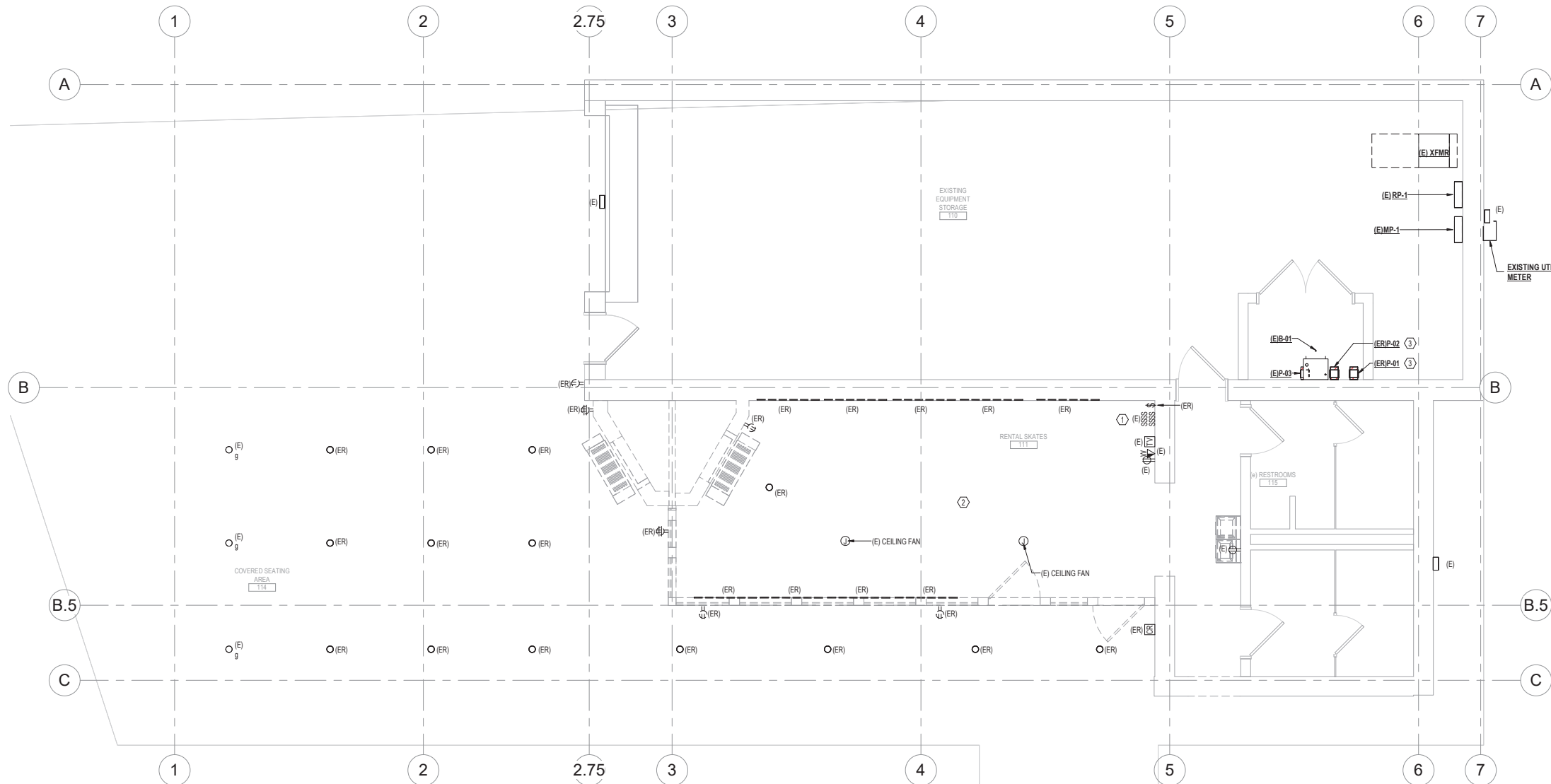
FIRE ALARM SYMBOL LIST

SIGNAL INITIATING DEVICES & ACTIVATION SWITCHES

| | |
|--|--|
| | MANUAL STATION (FULL STATION) XX = FIRE ALARM BOX TYPE A = AEROSOL CA = CLEAN AGENT CO2 = CARBON DIOXIDE DK = DRILL KEY DL = DELUGE FIRE SPRINKLER F = FIRE ALARM FO = FOAM HL = HALON MB = FIRE ALARM MASTER BOX PRE = PREACTION WC = WET CHEMICAL WM = WATER MIST |
| | GAS DETECTOR / SENSOR XX = TYPE CO = CARBON MONOXIDE |
| | EPO, GAS EMERGENCY SHUTDOWN |
| | DECIBEL |
| | DEGREE |
| | DRINKING FOUNTAIN |
| | DIAMETER |
| | DISCONNECT |
| | DIVISION |
| | DOWN |
| | DISTRIBUTION PANEL BOARD |
| | DUST TIGHT |
| | DRAWING |
| | DEGREE CELSIUS |
| | DEGREE FAHRENHEIT |
| | EXISTING TO REMAIN |
| | EXISTING TO BE REMOVED |
| | EXISTING TO BE REMOVED AND RELOCATED |
| | EMPTY CONDUIT |
| | EACH |
| | ELECTRICAL CONTRACTOR |
| | ELEVATION |
| | ELECTRICAL |
| | ELEVATOR |
| | EMERGENCY |
| | EQUIPMENT |
| | ELECTRIC REHEAT COIL |
| | ELECTRIC WATER COOLER |
| | EXISTING EXTERIOR |
| | FIRE ALARM |
| | FIRE ALARM CONTROL PANEL |
| | FIRE ALARM ANNUNCIATOR PANEL |
| | FURNISHED BY OTHER DIVISION OF WORK |
| | FAN COIL UNIT |
| | FEEDER |
| | FUSED DISCONNECT SWITCH |
| | FIXTURE |
| | FLOOR |
| | FULL LOAD AMPERES |
| | FLEXIBLE |
| | FLUORESCENT |
| | FLOOR MACHINE |
| | FREEZER |
| | FAN SHUTDOWN PANEL |
| | FEET OR FOOT |
| | FEED THRU LUGS |
| | GROUND |
| | GENERATOR |
| | GROUND FAULT INTERRUPTER |
| | HUNG CEILING |
| | HAND HOLE |
| | HIGH INTENSITY DISCHARGE |
| | HALF NEUTRAL |
| | HORSE POWER |
| | HIGH VOLTAGE |
| | HERTZ |
| | INTERRUPTING CAPACITY |
| | INSIDE DIAMETER |
| | ISOLATED GROUND |
| | INCANDESCENT |
| | INSTRUMENT |
| | ISOLATED POWER CENTER |
| | ISOLATED POWER CENTER X-RAY |
| | JUNCTION BOX |
| | THOUSAND CIRCULAR MILS |
| | KILOVOLT |
| | KILOVOLT AMPERE |
| | KILOWATT |
| | KILOWATT HOUR |
| | LOCAL CONTROL PANEL |
| | LINE ISOLATION MONITOR |
| | LIGHTING |
| | MECHANICAL ALARM PANEL |
| | MAXIMUM |
| | MINIMUM CIRCUIT AMPERES |
| | MAIN CIRCUIT BREAKER |
| | MOTOR CONTROL CENTER |
| | MAIN DISTRIBUTION PANEL |
| | MECHANICAL |
| | MECHANICAL EQUIPMENT ROOM |
| | MAIN FUSED SWITCH |
| | MANHOLE |
| | MICROPHONE |
| | MINIMUM |
| | MAIN LUG ONLY |
| | MAXIMUM OVERCURRENT PROTECTION |
| | MOUNTED |
| | MOUNTING |
| | MANUAL TRANSFER SWITCH |
| | MAIN UNFUSED SWITCH |
| | NEUTRAL |
| | NORMALLY CLOSED |
| | NOT IN CONTRACT |
| | NORMALLY OPEN |
| | NETWORK PROTECTOR |
| | NOT TO SCALE |
| | ON CENTER |
| | Oil CIRCUIT BREAKER |
| | OUTSIDE DIAMETER |
| | POLE |
| | PUBLIC ADDRESS |
| | PLUMBING ALARM PANEL |
| | PULL BOX |
| | PUSH BUTTON SWITCH |
| | PIPE HEATING CABLE |
| | PANEL |
| | PRINTER |
| | PRESSURE SWITCH |
| | POTENTIAL TRANSFORMER |
| | POWER |
| | PHASE |
| | RELOCATED EXISTING |
| | EXISTING TO BE REMOVED AND RETURN TO OWNER |
| | REMOTE CONTROL SWITCH |
| | REMOTE DATA COLLECTION PANEL |
| | RECEPTACLE |
| | REFRIGERATOR |
| | REQUIRED |
| | RAISED FLOOR |
| | ROOM GROUND POINT |
| | ROOM |
| | RACEWAY ONLY |
| | REFERENCE GROUND POINT |
| | SPRINKLER ALARM PANEL |
| | SUBSTATION |
| | SCHEDULE |
| | SMOKE DETECTOR |
| | SMOKE DETECTION PANEL |
| | SINGLE ENDED SUBSTATION |
| | SECTION |
| | SIGNAL |
| | SOLID NEUTRAL |
| | SINGLE POLE |
| | SURGE PROTECTIVE DEVICE |
| | SPECIFICATION |
| | SPRINKLER |
| | SPEAKER |
| | SOLENOID VALVE |
| | SWITCH |
| | SWITCHBOARD |
| | SWITCHGEAR |
| | SYMMETRICAL |
| | SYSTEMS |
| | TROUBLE BELL |
| | TO BE DETERMINED |
| | TELEPHONE |
| | TEMPERATURE |
| | THERMOSTAT |
| | TERMINAL BOARD |
| | TAMPER PROOF |
| | TRANSFORMER |
| | TAMPER SWITCH |
| | TELEVISION |
| | TYPICAL |
| | UNDERFLOOR DUCT |
| | UNIT HEATER |
| | UNFUSED |
| | UNLESS OTHERWISE NOTED |
| | VOLT OR VOLTAGE |
| | VOLT AMPERE |
| | VARIABLE FREQUENCY DRIVE |
| | VOLTMETER |
| | VAPORPROOF |
| | WATT |
| | WATERFLOW SWITCH |
| | WATT HOUR METER |
| | WEATHERPROOF |
| | WATERTIGHT |
| | EXPLOSION PROOF |

ELECTRICAL ABBREVIATIONS

| | | | |
|-------|--|------------|--|
| + | SPECIAL MOUNTING HEIGHT, COORDINATE LOCATION WITH ARCHITECTURAL ELEVATIONS | KWH | KILOWATT HOUR |
| 1P | SINGLE POLE | LCP | LOCAL CONTROL PANEL |
| 2P | TWO POLE | LIM | LINE ISOLATION MONITOR |
| 3P | THREE POLE | LTG | LIGHTING |
| A | AMPERE | MAP | MECHANICAL ALARM PANEL |
| AC | ABOVE COUNTER | MAX | MAXIMUM |
| ACB | AIR CIRCUIT BREAKER | MCA | MINIMUM CIRCUIT AMPERES |
| AFF | ABOVE FINISHED FLOOR | MCB | MAIN CIRCUIT BREAKER |
| AIC | AMPERE INTERRUPTING CAPACITY | MCC | MOTOR CONTROL CENTER |
| AL | ALUMINUM | MDP | MAIN DISTRIBUTION PANEL |
| ALM | ALARM | MECH | MECHANICAL |
| AMB | AMBIENT | MER | MECHANICAL EQUIPMENT ROOM |
| ADST | AJUSTAT | MFS | MAIN FUSED SWITCH |
| ARF | ABOVE RAISED FLOOR | MH | MANHOLE |
| ASYM | ASYMMETRICAL | MIC | MICROPHONE |
| ATS | AUTOMATIC TRANSFER SWITCH | MIN | MINIMUM |
| AUTO | AUTOMATIC | MLO | MAIN LUG ONLY |
| AV | AUDIO VISUAL | MLOP/MOCP | MAXIMUM OVERCURRENT PROTECTION |
| AWG | AMERICAN WIRE GAUGE | MTO | MOUNTED |
| BG | BREAK GLASS SWITCH | MTG | MOUNTING |
| BL | BASIC IMPULSE LEVEL | MTS | MANUAL TRANSFER SWITCH |
| BLDG | BUILDING | MUPS | MAIN UNFUSED SWITCH |
| C | CONDUIT | N | NEUTRAL |
| CAB | CABINET | NC | NORMALLY CLOSED |
| CAT | CATALOG | NIC | NOT IN CONTRACT |
| CB | CIRCUIT BREAKER | NO | NORMALLY OPEN |
| CCTV | CLOSED CIRCUIT TELEVISION | NP | NETWORK PROTECTOR |
| CKT | CIRCUIT | NTS | NOT TO SCALE |
| CL | CENTER LINE | OC | ON CENTER |
| CLG | CEILING | OCB | Oil CIRCUIT BREAKER |
| CLOS | CLOSET | OD | OUTSIDE DIAMETER |
| CO | CONDUIT ONLY | P | POLE |
| COMM | COMMUNICATION | PA | PUBLIC ADDRESS |
| CONN | CONNECTED | PAP | PLUMBING ALARM PANEL |
| CONT | CONTINUATION | PB | PULL BOX |
| CT | CURRENT TRANSFORMER | PBS | PUSH BUTTON SWITCH |
| CTL | CONTROL | PHC | PIPE HEATING CABLE |
| CU | COPPER | PNL | PANEL |
| CUH | CABINET UNIT HEATER | PR | PRINTER |
| DB | DECIBEL | PS | PRESSURE SWITCH |
| DE | DOUBLE ENDED SUBSTATION | PT | POTENTIAL TRANSFORMER |
| DEG | DEGREE | PWR | POWER |
| DF | DRINKING FOUNTAIN | PHASE | PHASE |
| DN | DOWN | (RE) | RELOCATED EXISTING |
| DP | DISTRIBUTION PANEL BOARD | (RO) | EXISTING TO BE REMOVED AND RETURN TO OWNER |
| DT | DUST TIGHT | RCS | REMOTE CONTROL SWITCH |
| DWG | DRAWING | RDCP | REMOTE DATA COLLECTION PANEL |
| °C | DEGREE CELSIUS | RECEPT.REC | RECEPTACLE |
| °F | DEGREE FAHRENHEIT | REF | REFRIGERATOR |
| (E) | EXISTING TO REMAIN | REQ | REQUIRED |
| (ER) | EXISTING TO BE REMOVED | RFL | RAISED FLOOR |
| (ERR) | EXISTING TO BE REMOVED AND RELOCATED | RG | ROOM GROUND POINT |
| E.C. | EMPTY CONDUIT | RM | ROOM |
| EA | EACH | RO | RACEWAY ONLY |
| EC | ELECTRICAL CONTRACTOR | RP | REFERENCE GROUND POINT |
| EL | ELEVATION | SAP | SPRINKLER ALARM PANEL |
| ELEC | ELECTRICAL | SBST | SUBSTATION |
| ELEV | ELEVATOR | SCHD.SCH | SCHEDULE |
| EMER | EMERGENCY | SD | SMOKE DETECTOR |
| EMR | EMERGENCY | SDP | SMOKE DETECTION PANEL |
| EQUIP | EQUIPMENT | SE | SINGLE ENDED SUBSTATION |



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

DRAWING NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL REVIEW, IN ITS ENTIRETY, ALL OTHER DISCIPLINES INCLUDING, BUT NOT LIMITED TO, ARCHITECTURAL, MECHANICAL, PLUMBING, AND FIRE PROTECTION FOR ASSOCIATED DEMOLITION WORK. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR DEMOLITION OF ALL CORRESPONDING ELECTRICAL COMPONENTS, SUPPORT, AND CONNECTIONS TO EQUIPMENT BEING REMOVED.
2. THE EXISTING INFORMATION PROVIDED ON THESE PLANS IS BASED ON FIELD OBSERVATIONS. THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO WORK AND REMOVE SOME PORTIONS OF POWER AND LIGHTING SYSTEMS NOT EXPLICITLY SHOWN ON THIS DRAWING, BUT DISCOVERED DURING THE FIELD VERIFICATION PROCESS. THE CONTRACTOR SHALL WORK WITH THE ARCHITECT, ENGINEER, AND OWNER TO DETERMINE WHICH PORTIONS OF EXISTING SYSTEMS MUST REMAIN ACTIVE AND WHICH PORTIONS MUST BE DEMOLISHED.
3. PANELBOARDS LOCATED OUTSIDE THE CONTRACT LIMIT LINE MAY BE INVOLVED IN THE ALTERATION WORK. COORDINATE THIS WORK WITH THE OWNER IN THE FIELD PRIOR TO DEMOLITION.
4. DISPOSE OF ALL FLUORESCENT LAMPS AND OTHER MERCURY-CONTAINING ITEMS IN A PROPER HAZARDOUS WASTE RECYCLING FACILITY OR PROGRAM.
5. CONTRACTOR SHALL PROTECT ALL WALLS, CEILINGS, FLOOR, LIGHTS AND OTHER FINISHED SURFACES THAT ARE EXISTING TO REMAIN. IF DAMAGED, CONTRACTOR SHALL REPAIR TO MATCH EXISTING CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.

KEY NOTES

(E) SYMBOL DENOTES KEY NOTE

1. PRESERVE EXISTING SWITCH BANK IN PLACE.
2. PRESERVE EXISTING SITE LIGHTING CONDUIT ROUTED BELOW SLAB.
3. DISCONNECT EXISTING BOILER PUMP. SAFE-OFF CIRCUIT AND PRESERVE IN PLACE FOR CONNECTION TO NEW PUMP.

HAGEN, CHRISTENSEN & MCLWAIN
ARCHITECTS
4221 Grand Avenue SE - Minneapolis, MN 55407
Tel: (612) 954-1333 - Fax: (612) 954-7354

CLIENT
City of Wayzata

CONSULTANT 1
ERA
STRUCTURAL ENGINEERING

CONSULTANT 2
WSP

Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: *Deborah J. Jank*
Typed or Printed Name: **Deborah Jank**
Date: 03/17/25 License Number: 47858

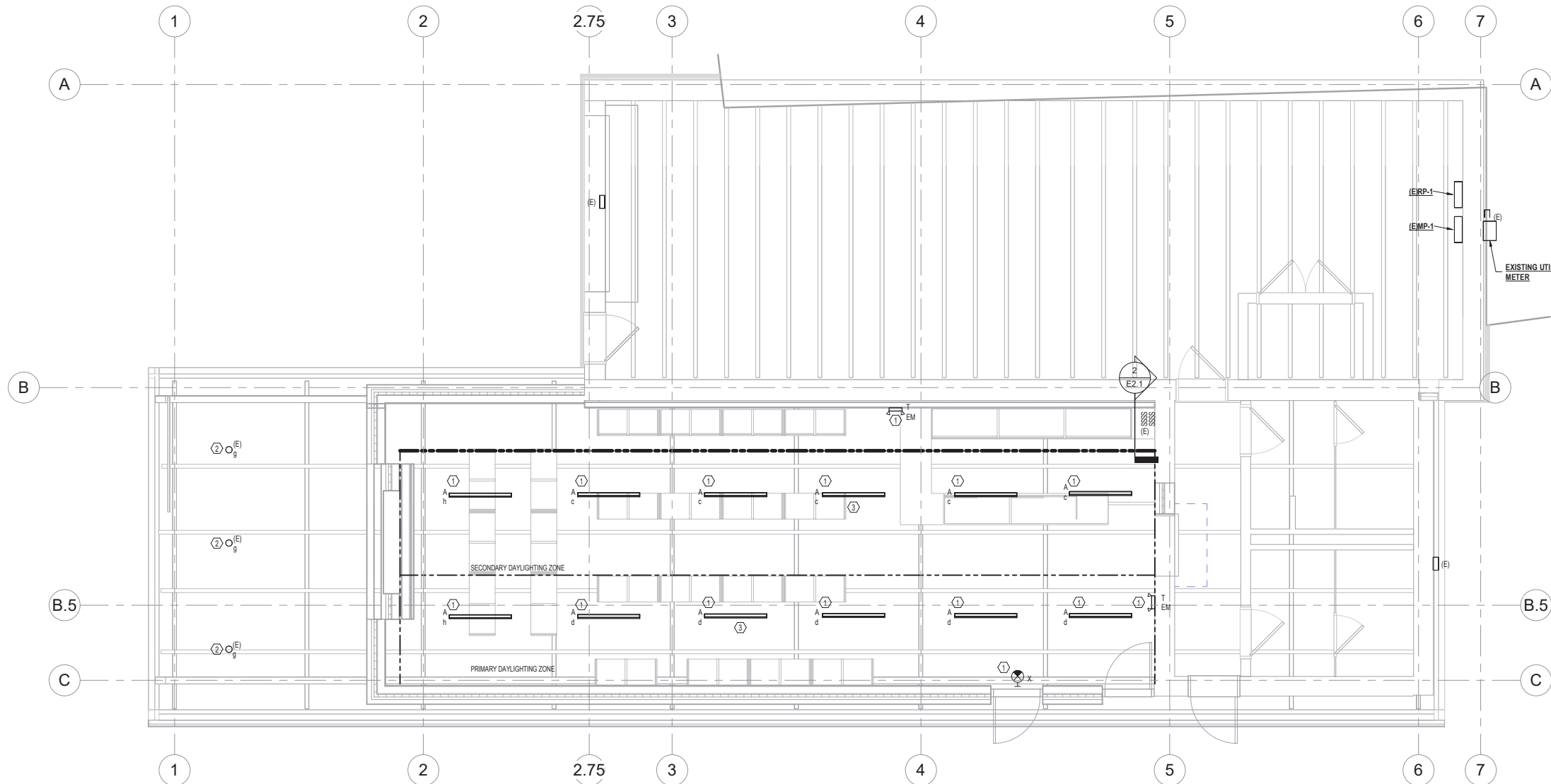
KEY PLAN

| REVISION | DATE | DESCRIPTION |
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| | 3/17/2025 | CONSTRUCTION DOCUMENTS |
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CLIENT
340 Park St. E
Wayzata, MN 55391
KLAPPRICH WARMING HOUSE

DRAWING TITLE
ELECTRICAL FLOOR PLAN - DEMOLITION

DRAWING NUMBER
E2.1D
PROJECT NUMBER 241376



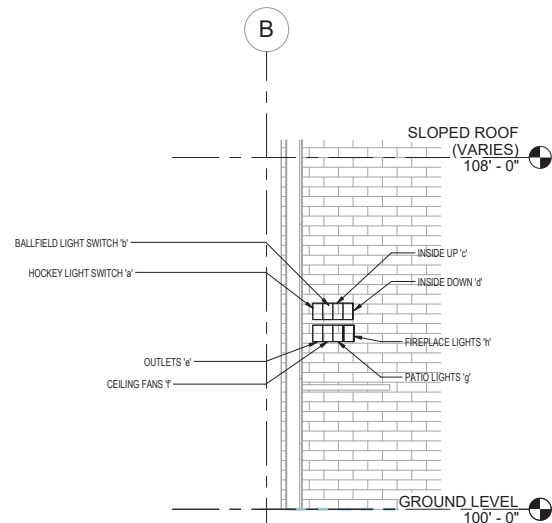
1 FLOOR PLAN
SCALE: 1/4" = 1'-0"

DRAWING NOTES:

- REFER TO GENERAL ELECTRICAL NOTES ON E01.
- REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS FOR ALL FIXTURES AND DEVICES. COORDINATE LOCATIONS OF DEVICES WITH CASEWORK, FURNITURE, AND EQUIPMENT ELEVATIONS. NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO INSTALLATION.
- COORDINATE THE LIGHTING INSTALLATION WITH WORK OF OTHER TRADES TO INSURE CLEARANCES FOR LIGHTING FIXTURES ARE MAINTAINED. NOTIFY ARCHITECT OF ANY CONFLICTS WITH LIGHT FIXTURE LOCATIONS AND WORK OF OTHER DISCIPLINES PRIOR TO FRAMING FOR ANY LIGHTS. ANY DISCREPANCIES BETWEEN THE LIGHTING LAYOUT AND ACTUAL FIELD CONDITIONS ARE TO BE CLARIFIED WITH THE ARCHITECT PRIOR TO FRAMING.
- LOCATION OF ALL REMOTE DRIVERS SHALL BE DETERMINED IN THE FIELD UNLESS OTHERWISE NOTED. LOCATE REMOTE DRIVERS IN ACCESSIBLE LOCATIONS WITHIN DISTANCES FROM FIXTURES ALLOWABLE BY THE MANUFACTURER.
- EXIT SIGNS SHALL NOT BE CONNECTED TO ANY CONTROLS AND SHALL REMAIN ON AT ALL TIMES.
- COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF EXIT SIGNS WITH ARCHITECT.
- COORDINATE WITH ARCHITECT FOR EXTENT OF CEILING WORK TO MOUNT NEW LIGHT FIXTURES. NEW ELECTRICAL CIRCUITING SHALL BE SURFACE MOUNTED IN WIREWAY FINISHED TO MATCH CEILING.

KEY NOTES:

- Ⓜ SYMBOL DENOTES KEY NOTE
- EXTEND EXISTING LIGHTING CIRCUIT IN SPACE TO NEW LIGHT FIXTURES. CONNECT TO EXISTING LIGHTING CONTROL SWITCHES. SEE SECTION VIEW FOR ADDITIONAL DETAIL ON SWITCHING.
- PRESERVE EXISTING CIRCUITING AND CONTROLS. EXTEND CONDUCTORS AS NECESSARY TO MAINTAIN CONTINUITY. SEE DETAIL ON THIS SHEET FOR EXISTING SWITCH LOCATION.
- CENTER LIGHT FIXTURES IN CENTER OF CEILING BATTENS. COORDINATE FINAL LOCATIONS IN FIELD WITH ARCHITECT. (TYPICAL)



2 EXISTING SWITCH BANK SECTION
SCALE: 1/2" = 1'-0"

LIGHTING FIXTURE SCHEDULE

| TYPE | DESCRIPTION | LAMP TYPE | CONTROLS TYPE | WATTAGE | VOLTAGE | MANUFACTURER | MODEL | COMMENTS |
|------|---|-----------------------------|---------------|---------|---------|--|--------------------|--|
| A | SURFACE MOUNTED LINEAR FIXTURE, DIRECT DISTRIBUTION WITH FLUSH LENS AND WHITE FINISH, 0-10V 1% DIMMING. | LED, 80CRI, 4000K, 518LM/FT | DIMMING | 4 W | 120 V | FINELITE | HPX PRODUCT FAMILY | INCLUDE DAYLIGHT (OBD) SENSOR IN FIXTURE |
| T | WALL MOUNTED EMERGENCY EGRESS FIXTURE, WHITE THERMOPLASTIC HOUSING | LED | | 7 W | EA | LITHONIA LIGHTING | ELMAL | EMERGENCY BACKUP BATTERY INCLUDED |
| X | UNIVERSAL MOUNT EDGE LIT EXIT SIGN, SINGLE-SIDED CLEAR PANELS, GREEN 6" LETTERING, SATIN ALUMINUM FINISH. | LED | | 3 W | EA | SURE-LITES - COOPER LIGHTING SOLUTIONS | SCX SERIES | EMERGENCY BACKUP BATTERY INCLUDED |

HAGEN, CHRISTENSEN & MCLWAIN ARCHITECTS
4221 GRAND AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 954-1333 - FAX: (612) 954-7354

CLIENT
City of Wayzata

CONSULTANT 1
ERA STRUCTURAL ENGINEERING

CONSULTANT 2
WSP

Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: *Deborah J. Jank*
Typed or Printed Name: **Deborah Jank**
Date: 03/17/25 License Number: 47858

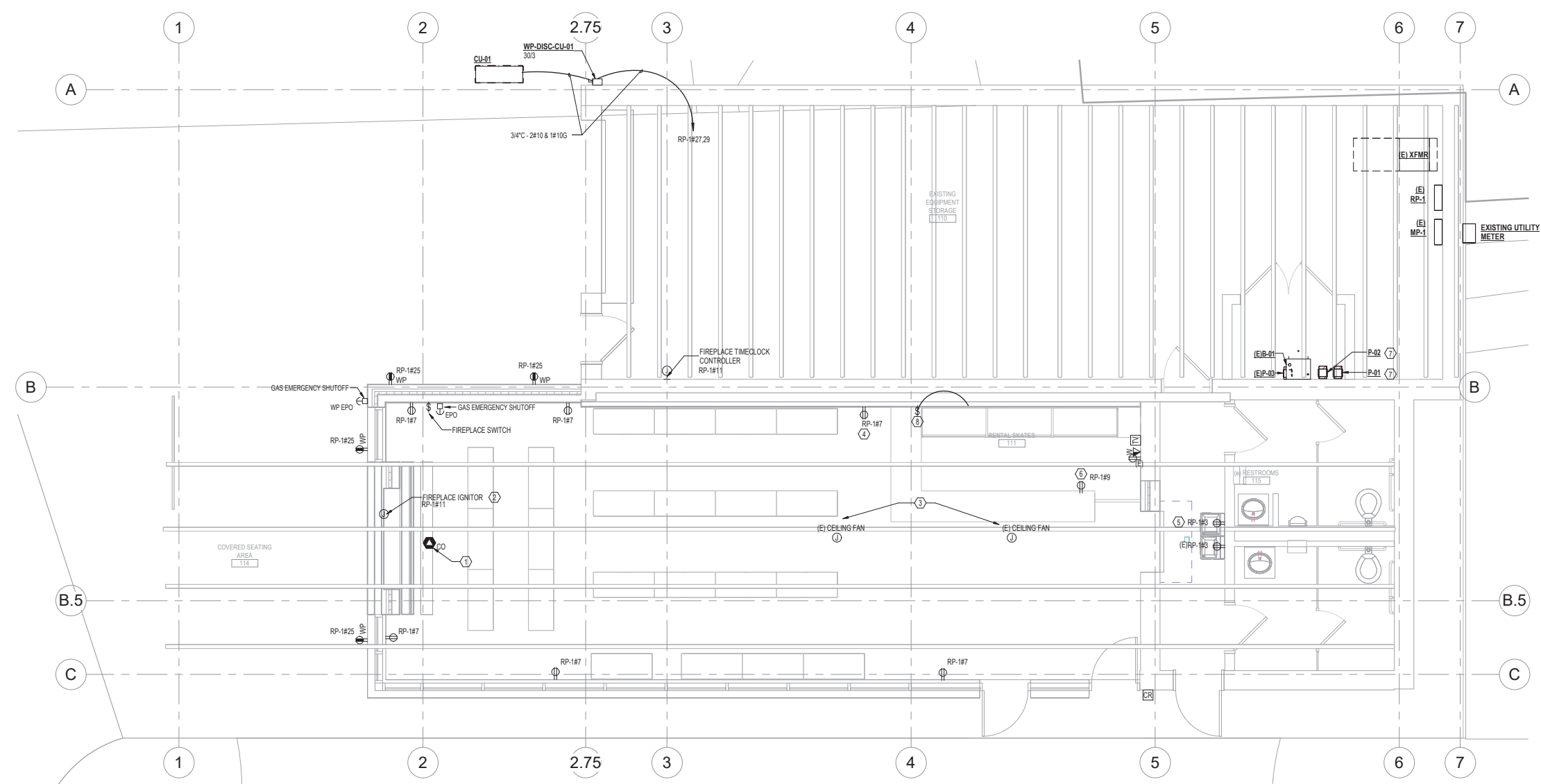
KEY PLAN
NORTH

| REVISION | DATE | DESCRIPTION |
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340 Park St. E
Wayzata, MN 55391
KLAPPRICH WARMING HOUSE

DRAWING TITLE
ELECTRICAL FLOOR PLAN - LIGHTING

DRAWING NUMBER
E2.1
PROJECT NUMBER 241376



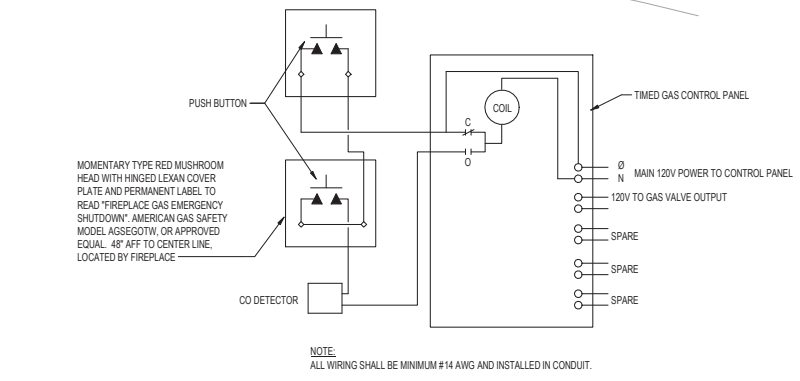
1 FLOOR PLAN
SCALE: 1/4" = 1'-0"

DRAWING NOTES:

- REFER TO GENERAL ELECTRICAL NOTES ON E0.0.
- REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS FOR ALL DEVICES. COORDINATE LOCATIONS OF DEVICES WITH CASEWORK, FURNITURE, AND EQUIPMENT ELEVATIONS. NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO INSTALLATION.
- MINIMUM CONDUCTOR SIZE FOR EACH LIGHTING AND APPLIANCE BRANCH CIRCUIT SHALL BE #12 AWG, #125 IN 3/4" CONDUIT. REFER TO LOW VOLTAGE CABLE SPECIFICATION SECTION FOR ADDITIONAL FEEDER AND CONDUIT SIZES FOR DIFFERENT FEEDER LENGTHS.
- RECEPTACLES SHALL BE FLUSH WITH FINAL WALL FINISH UNLESS OTHERWISE NOTED.
- DEVICE BACK BOXES SHALL NOT BE INSTALLED BACK-TO-BACK. PROVIDE 6 INCH MINIMUM SEPARATION BETWEEN BACK BOXES.
- PROVIDE FIRE STOPPING OF ALL PENETRATIONS WITHIN FIRE-RATED PARTITIONS. PROVIDE FIRE-RATED PUTTY PAD IN FIRE-RATED WALL FOR JUNCTION BOXES AND BACK BOXES WHERE THE DEGREE OF SEPARATION FROM ONE DEVICE TO THE NEXT IS LESS THAN 24 INCHES.
- NOT ALL JUNCTION BOXES AND PULL BOXES ARE SHOWN ON THIS DRAWING. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE REQUIRED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC).
- EXTEND EXISTING BRANCH CIRCUITS TO ALL NEW DEVICE LOCATIONS. BRANCH CIRCUITS SHALL BE SIZED ACCORDING TO THE CIRCUIT BREAKER RATING, UNLESS OTHERWISE INDICATED ON THE ELECTRICAL EQUIPMENT SCHEDULE.
- ALL RECEPTACLES IN PUBLIC SPACES SHALL BE TAMPER RESISTANT.

KEY NOTES

- THE CARBON MONOXIDE DETECTOR TO FIREPLACE GAS CONTROLLER FOR AUTOMATIC SHUTOFF OF GAS UPON CO DETECTION.
- CONNECT FIREPLACE IGNITOR TO TIMECLOCK CONTROLLER. SEE CONTROL SCHEMATIC FOR ADDITIONAL INFORMATION.
- COORDINATE CEILING FAN RELOCATION WITH MECHANICAL.
- CONNECT NEW RECEPTACLE CIRCUITING TO EXISTING CIRCUIT ROUTED THROUGH EXISTING WALL SWITCH. SEE E2.1 FOR SWITCH DETAIL.
- PROVIDE NEW RECEPTACLE AND CONNECT TO ADJACENT EXISTING RECEPTACLE.
- MOUNT RECEPTACLE IN NEW CASEWORK. COORDINATE FINAL LOCATION AND MOUNTING HEIGHT WITH ARCHITECT.
- EXTEND EXISTING PUMP BRANCH CIRCUIT CONDUCTORS TO NEW PUMP LOCATION.
- PROVIDE LOCKABLE DISCONNECT SNAP SWITCH HIGH ON WALL ADJACENT TO INDOOR UNIT. PROVIDE POWER AND COMMUNICATION WIRING BETWEEN INDOOR UNIT AND OUTDOOR UNIT PER MANUFACTURER'S INSTRUCTION.



2 EMERGENCY POWER OFF (EPO) WIRING DIAGRAM
SCALE: NONE

HAGEN, CHRISTENSEN & MCLWAIN
ARCHITECTS
4221 CEDAR AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 954-1333 - FAX: (612) 954-7354

CLIENT

CONSULTANT 1

CONSULTANT 2

Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: *Deborah J. Janda*
Typed or Printed Name: *Deborah Janda*
Date: 03/17/25 License Number: 47858

KEY PLAN

| REVISION | DATE | DESCRIPTION |
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| | 3/17/2025 | CONSTRUCTION DOCUMENTS |
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Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

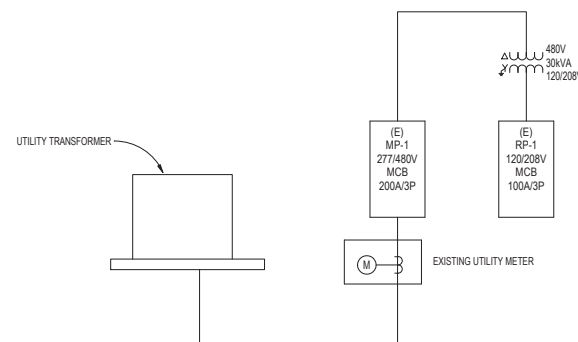
DRAWING TITLE

ELECTRICAL FLOOR PLAN - POWER AND SYSTEMS

DRAWING NUMBER

E3.1

PROJECT NUMBER 241376



1 EXISTING ONE-LINE
SCALE: NONE

PANEL: RP-1

LOCATION: EXISTING EQUIPMENT... VOLTS (V): 120/208 Wye A.I.C. RATING: MAINS TYPE: MCB NEUTRAL: 100%
 FED FROM: (E) XFMR PHASES: 3 MAINS RATING: 100 A BUSSING (CU/AL): CU
 FEEDER SIZE: WIRES: 4 MOUNTING: SURFACE MCB RATING / POLES: 100A / 3P FEED (TOP/ BOTTOM):
 ENCLOSURE: NEMA 1

| CKT | CIRCUIT DESCRIPTION | TRIP | POLES | A | B | C | POLES | TRIP | CIRCUIT DESCRIPTION | CKT |
|-----|-----------------------------------|------|-------|-------------|---------|-----------|---------|------|------------------------------|-----|
| 1 | BATH LIGHTS | 20 | 1 | 240 | 667 | | 1 | 20 | EXHAUST FAN | 2 |
| 3 | RECEPT DRINKING FOUNTAIN (3) | 20 | 1 | | | 360 1000 | 1 | 20 | GARAGE EXHAUST | 4 |
| 5 | FUTURE BATH OUTLETS | 20 | 1 | | | 0 720 | 1 | 20 | EAST GARAGE OUTLETS | 6 |
| 7 | RECEPT INDOOR (1) | 20 | 1 | 1080 | 180 | | 1 | 15 | OUTLET RELAY CONTROL | 8 |
| 9 | RECEPT RENTAL DESK (1) | 20 | 1 | | 180 180 | | 1 | 20 | FRONT ENTRY PHOTO CONTROLLER | 10 |
| 11 | POWER FIREPLACE CNTL. IGNITOR (1) | 20 | 1 | | | 680 180 | 1 | 20 | HPS WALL LIGHTS | 12 |
| 13 | WEST GARAGE OUTLETS | 20 | 1 | 720 | 720 | | 1 | 20 | FURNACE ROOM LIGHT/OUTLET | 14 |
| 15 | LIFT STATION | 30 | 2 | | 2080 0 | | 1 | 15 | FURNACE | 16 |
| 17 | | | | | | 2080 180 | 1 | 20 | HOSE ROLL | 18 |
| 19 | NE WALL OUTSIDE OUTLET | 20 | 1 | 180 180 | | | 1 | 20 | ALARM/COMM OUTLET | 20 |
| 21 | NE WALL INSIDE | 20 | 1 | | 720 180 | | 1 | 20 | RECEPTACLE UNDER DESK | 22 |
| 23 | SE WALL INSIDE/OUTSIDE OUTLET | 20 | 1 | | | 360 360 | 1 | 20 | ROOF ROPE LIGHTING OUTLET | 24 |
| 25 | RECEPT OUTDOOR ADD N WALL (1) | 20 | 1 | 720 0 | | | 2 | 50 | OUTDOOR TEMP OUTLET | 26 |
| 27 | | | | | 2392 0 | | | | | 28 |
| 29 | POWER CU-1 (2) | 30 | 2 | | | 2392 1000 | 1 | 20 | MUSCO LIGHTING CONTROL | 30 |
| | | | | TOTAL LOAD: | 4687 VA | 7092 VA | 7952 VA | | | |
| | | | | TOTAL AMPS: | 39 A | 62 A | 69 A | | | |

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS |
|---------------------|----------------|---------------|------------------|----------------------------------|
| POWER | 5464 VA | 100.00% | 5464 VA | |
| RECEPTACLE | 2520 VA | 100.00% | 2520 VA | TOTAL CONNECTED LOAD: 19731 VA |
| Spare | 11747 VA | 100.00% | 11747 VA | TOTAL ESTIMATED DEMAND: 19731 VA |
| | | | | TOTAL CONNECTED: 55 A |
| | | | | TOTAL ESTIMATED DEMAND: 55 A |

NOTES:
 EXISTING PANEL IS MANUFACTURED BY SIEMENS. NEW/MODIFIED LOADS ARE INDICATED IN BOLD.
 (1) CONNECT NEW LOADS TO EXISTING CIRCUIT SPARED DURING DEMOLITION.
 (2) REMOVE EXISTING BREAKERS SPARED DURING DEMOLITION AND REPLACE WITH NEW.
 (3) REPLACE EXISTING BREAKER WITH GFCI BREAKER.

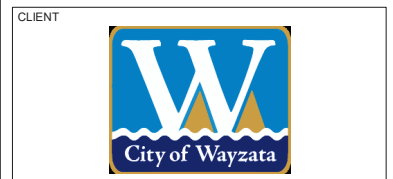
PANEL: MP-1

LOCATION: EXISTING EQUIPMENT... VOLTS (V): 480/277 Wye A.I.C. RATING: MAINS TYPE: MCB NEUTRAL: 100%
 FED FROM: PHASES: 3 MAINS RATING: 200 A BUSSING (CU/AL): CU
 FEEDER SIZE: WIRES: 4 MOUNTING: SURFACE MCB RATING / POLES: 200A / 3P FEED (TOP/ BOTTOM):
 ENCLOSURE: NEMA 1

| CKT | CIRCUIT DESCRIPTION | TRIP | POLES | A | B | C | POLES | TRIP | CIRCUIT DESCRIPTION | CKT |
|-----|---------------------|------|-------|-------------|-----------|-----------|----------|------|----------------------|-----|
| 1 | GARAGE LIGHTS | 20 | 1 | 1200 | 4587 | | | | | 2 |
| 3 | POLE #1 | 20 | 1 | | 2500 7092 | | 3 | 50 | 208/120V TRANSFORMER | 4 |
| 5 | POLE #2 | 20 | 1 | | | 2500 7952 | | | | 6 |
| 7 | POLE #8 | 40 | 1 | 8000 1000 | | | 1 | 20 | CONTROL CIRCUIT | 8 |
| 9 | POLE #8 | 20 | 1 | | 2500 2500 | | 1 | 20 | POLE #7 | 10 |
| 11 | POLE #3 | 30 | 1 | | | 5000 2500 | 1 | 20 | POLE #7 | 12 |
| 13 | | | | 0 5000 | | | 1 | 30 | POLE #4 & 6 | 14 |
| 15 | SPARE | 20 | 3 | | 0 5000 | | 1 | 30 | POLE #4 | 16 |
| 17 | | | | | | 0 0 | 1 | 40 | SPARE | 18 |
| 19 | SPACE | -- | 1 | -- | -- | | 1 | -- | SPACE | 20 |
| 21 | SPACE | -- | 1 | -- | -- | | 1 | -- | SPACE | 22 |
| 23 | SPACE | -- | 1 | -- | -- | | 1 | -- | SPACE | 24 |
| 25 | SPACE | -- | 1 | -- | -- | | 1 | -- | SPACE | 26 |
| 27 | SPACE | -- | 1 | -- | -- | | 1 | -- | SPACE | 28 |
| 29 | SPACE | -- | 1 | -- | -- | | 1 | -- | SPACE | 30 |
| | | | | TOTAL LOAD: | 19887 VA | 19592 VA | 17952 VA | | | |
| | | | | TOTAL AMPS: | 73 A | 72 A | 65 A | | | |

| LOAD CLASSIFICATION | CONNECTED LOAD | DEMAND FACTOR | ESTIMATED DEMAND | PANEL TOTALS |
|---------------------|----------------|---------------|------------------|----------------------------------|
| POWER | 5464 VA | 100.00% | 5464 VA | |
| RECEPTACLE | 2520 VA | 100.00% | 2520 VA | TOTAL CONNECTED LOAD: 57431 VA |
| Spare | 49447 VA | 100.00% | 49447 VA | TOTAL ESTIMATED DEMAND: 57431 VA |
| | | | | TOTAL CONNECTED: 69 A |
| | | | | TOTAL ESTIMATED DEMAND: 69 A |

NOTES:
 EXISTING PANEL IS MANUFACTURED BY SIEMENS. NEW/MODIFIED LOADS ARE INDICATED IN BOLD.



Professional Engineer
 I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
 Signature: *Deborah Reich*
 Typed or Printed Name: Deborah Reich
 Date: 03/17/25 License Number: 47858



| REVISION | DATE | DESCRIPTION |
|----------|-----------|------------------------|
| | 3/17/2025 | CONSTRUCTION DOCUMENTS |

340 Park St. E
 Wayzata, MN 55391
KLAPPRIK WARMING HOUSE

DRAWING TITLE
ELECTRICAL SINGLE LINE DIAGRAM AND SCHEDULES

DRAWING NUMBER
E4.1
 PROJECT NUMBER 241376

ELECTRICAL SPECIFICATIONS

1. GENERAL:
A. AS A CONDITION OF CONTRACTOR'S USE OF THESE SPECIFICATIONS, CONTRACTOR AGREES TO (1) NAME A&K AS ADDITIONAL INSURED ON CONTRACTOR'S INSURANCE POLICIES...
B. ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS...
C. WHERE VARIANCES OCCUR BETWEEN THE DRAWINGS AND SPECIFICATIONS, OR WITHIN EITHER DOCUMENT ITSELF, THE ITEM OR ARRANGEMENT OF HIGHER QUALITY, OR HIGHER COST SHALL BE INCLUDED IN THE CONTRACT PRICE...
D. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED, WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH AVAILABLE RESTRICTIVE SPACES...
E. DELIVER EQUIPMENT WITH PROTECTIVE CRATING AND SHRINK-WRAPPED COVER...
F. ARRANGE FOR AND PROVIDE STORAGE SPACE OR AREA AT THE JOB SITE FOR ALL MATERIALS AND EQUIPMENT TO BE RECEIVED AND/OR INSTALLED IN THIS PROJECT...
G. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK...
H. FOR LOCATIONS, SIZES AND QUANTITIES OF EQUIPMENT, REFER TO FLOOR PLANS, DETAILS, SCHEDULES AND DIAGRAMS...
I. SUPPORT ALL EQUIPMENT AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER...
J. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED...
K. INSTALL WORK TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR...
L. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK...
M. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE...
N. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING ELECTRICAL EQUIPMENT, DEVICES, CIRCUITS AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK...
O. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PATIEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK...
P. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL...
Q. PROVIDE ALL NECESSARY FLASHING AND COUNTERFLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING...
R. ALL EXISTING MATERIALS, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR...
S. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS...
T. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS AND PARTITIONS...
U. ALL MATERIAL, EQUIPMENT AND DEVICES SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS...
V. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT A CAREFUL EXAMINATION OF THE PORTIONS OF THE BUILDING, EQUIPMENT, ETC. WHICH AFFECT OR ARE AFFECTED BY THIS WORK...

W. INSURANCE SHALL BE IN ACCORDANCE WITH BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
X. ALL WORK SHALL BE DONE WHEN AND AS DIRECTED BY THE CLIENT OR THE CLIENT'S APPOINTED REPRESENTATIVE...
Y. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS...
2. SCOPE OF WORK:
A. SCOPE OF WORK SHALL CONSIST OF PROVIDING LABOR, MATERIALS, EQUIPMENT, SERVICES AND FEES NECESSARY FOR COMPLETE AND SAFE INSTALLATION...
B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS ARE MADE PART OF THIS CONTRACT...
C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED...
D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL AUTHORITIES HAVING JURISDICTION...
E. INSPECTIONS / TESTING: INDEPENDENT TESTING AND INSPECTIONS WHERE IDENTIFIED HEREIN SHALL BE PROVIDED BY THE OWNER...
F. COMMISSIONING, COMMISSIONING FOR ENERGY CODE COMPLIANCE WILL BE PROVIDED BY THE OWNER...
3. SHOP DRAWINGS:
A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS...
B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:
1) PROJECT NAME AND LOCATION
2) NAME OF ARCHITECT AND ENGINEER
3) ITEM IDENTIFICATION
4) APPROVAL STAMP OF PRIME CONTRACTOR
C. SUBMISSIONS:
1) ALL SUBMITTALS SHALL BE IN ELECTRONIC FORMAT...
D. SUBMIT SHOP DRAWINGS AND WIRING DIAGRAMS FOR THE FOLLOWING (AS APPLICABLE):
1) OCCUPANCY AND VACANCY SENSORS, DAYLIGHT SENSORS, ETC.
2) DISCONNECT SWITCHES
3) FUSES
4) CIRCUIT BREAKERS
5) RACEWAYS
6) WIRE AND CABLE
7) WALL SWITCHES
8) RECEPTACLES
9) LIGHTING FIXTURES AND EXIT SIGNS
10) FIRE ALARM SYSTEM DEVICES
11) TEST PROCEDURES AND REPORTS
4. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS:
A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS...
B. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER...
C. AS-BUILT DRAWINGS SHALL BE PROVIDED IN ELECTRONIC FORMAT...
5. INSPECTIONS / TESTING:
A. INDEPENDENT 3RD PARTY TESTING AND/OR INSPECTIONS AS WELL AS SYSTEMS START-UP, SHALL BE PROVIDED BY THIS CONTRACTOR...
6. GENERAL PROVISIONS FOR ELECTRICAL WORK:
A. SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES...
B. DEFINITIONS:
1) "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION...
2) "INSTALL": TO ERRECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES...
3) "FURNISH": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES...
4) "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.

5) "WIRING": RACEWAY, FITTINGS, WIRE, WIRING CONNECTIONS, BOXES AND RELATED ITEMS.
6) "CONCEALED": NOT IN VIEW, EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR HUNG CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES.
7) "EXPOSED": IN VIEW, NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.
8) "SIMILAR" OR "EQUAL": EQUAL IN QUALITY, MATERIALS, WEIGHT, SIZE, PERFORMANCE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT...
C. GENERAL:
1) THE DRAWINGS SHOW THE APPROXIMATE LOCATION OF ALL APPARATUS...
2) THE ELECTRICAL INSTALLER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PROBLEMS AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED...
3) THE INSTALLER/CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH ALL TRADES AS IT AFFECTS EXECUTION OF WORK...
4) WIRE ALL FIXTURES, DEVICES, OUTLETS, ETC., TO RESPECTIVE PANELS AND CONTROLS AS SHOWN ON PLANS IN SYMBOL FORM.
5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP AND REMOVAL FROM THE SITE OF RESULTING DEBRIS.
6) PROVIDE SEPARATE SYSTEMS AND ENCLOSURES FOR 120/208V AND 277/480 VOLT POWER, AND CONTROL WIRING...
7) LOCATIONS INDICATED FOR LOCAL SWITCHES & OTHER LIGHTING CONTROLS ARE SUBJECT TO RELOCATION AS REQUIRED BY ARCHITECT AND/OR OWNER...
8) MOUNTING HEIGHTS OF OUTLETS FROM FINISHED FLOOR SHALL CONFORM TO ADA, CODE AND AUTHORITIES HAVING JURISDICTION...
9) INSTALL WALL MOUNTED ELECTRICAL WIRING DEVICE OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING...
10) PULL, JUNCTION AND CABLE SUPPORT BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES...
D. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS...
E. QUALITY ASSURANCE:
1) QUALITY AND CAUSE OF MATERIALS, NEW, BEST OF THEIR RESPECTIVE KINDS, FREE FROM DEFECTS AND LISTED BY UNDERWRITERS LABORATORIES, INC. OR OTHER NATIONALLY RECOGNIZED TESTING LABORATORIES (NRTL) AND BEARING THEIR LABEL...
2) ELECTRICAL CHARACTERISTICS:
a) SERVICE AND DISTRIBUTION: VOLTAGE RATINGS AS INDICATED ON THE DRAWINGS...
3) MOUNTING HEIGHTS OF WALL MOUNTED DEVICES AND OUTLETS: CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND CONFIRMING ALL FINAL MOUNTING HEIGHTS...
a) UNLESS OTHERWISE NOTED, FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:
- WALL RECEPTACLES: 1 FT-6 IN.
- WALL SWITCHES: 3 FT-10 IN.
- EPO PUSHBUTTON: 3 FT-10 IN.
b) EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS...
C. DISCONNECT SWITCHES SHALL BE HEAVY DUTY AND HORSEPOWER RATED FOR MOTOR LOADS...
D. FUSES:
1) CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES...
2) MOTOR CIRCUITS - ALL INDIVIDUAL MOTOR CIRCUITS WITH FULL LOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES...
3) ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.
4) PROVIDE 1 SPARE MATCHING FUSE FOR EACH SET OF 3 AND A MINIMUM OF 3 SPARE PER SIZE AND TYPE.
E. CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL-MAGNETIC, QUICK-MAKE, QUICK-BREAK, BOLT-ON TYPE...
G. MATERIALS:
1) NAMEPLATES: PROVIDE BLACK LAMINOC SHEET WITH 3/4 IN. WHITE LETTERING...
2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH PULL, JUNCTION AND CABLE SUPPORT BOX...
3) SUPPORTS:
a) GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.
b) WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING, SUBMIT FOR REVIEW.

H. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE...
I. BRUSH CLEAN, REMOVE DEBRIS AND REPAIR ALL WORK PRIOR TO CONCEALING AND INSTALLATION ACCEPTANCE.
J. FINAL LOCATIONS AND MOUNTING ARRANGEMENTS OF ALL ELECTRICAL DEVICES, LIGHTING FIXTURES, EXIT SIGNS AND PANELBOARDS NOT BEING INSTALLED ELECTRICAL AND MECHANICAL SPACES SHALL BE COORDINATED WITH THE ARCHITECT.
K. PROVIDE ACCESS DOORS WHEN CONCEALED ELECTRICAL EQUIPMENT, DEVICES OR BOXES REQUIRE ACCESS...
7. DEMOLITION:
A. "SELECTIVE DEMOLITION": IS HEREBY DEFINED TO INCLUDE BUT IS NOT NECESSARILY LIMITED TO THE REMOVAL OF THE FOLLOWING EXISTING MATERIALS, ITEMS AND EQUIPMENT.
1) REFER TO ARCHITECTURAL AND ELECTRICAL DEMOLITION PLANS AND RELATED NOTES FOR EXTENT OF DEMOLITION AND WORK PHASING REQUIREMENTS.
2) REFER TO EXISTING DRAWINGS AND SITE CONDITIONS FOR ALL REMOVAL OF WORK NECESSARY FOR COMPLETION OF NEW WORK AS SHOWN...
3) ITEMS OF SALVAGE SHALL BE CAREFULLY REMOVED WITHOUT DAMAGE...
4) ALL DEMOLISHED AND/OR REMOVED MATERIALS NOT REQUIRED BY OWNER TO BE RETAINED OR TURNED OVER TO THE OWNER SHALL BE REMOVED FROM THE PREMISES AND SHALL BE PROPERLY DISPOSED OF IN A LEGAL MANNER...
5) CARE MUST BE TAKEN NOT TO DISTURB EXISTING WIRING...
6) ALL RACEWAYS TO BE ABANDONED SHALL BE REWORKED AS DEFINED WITHIN THE DEMOLITION NOTES...
7) ALL REQUIRED WORK FOR TIE-IN TO THE EXISTING EQUIPMENT SHALL BE ACCOMPLISHED AFTER HOURS...
8. CUTTING AND PATCHING:
A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING OF THE EXISTING AND NEW CONSTRUCTION WORK...
B. CORE BORING OF CONCRETE FLOORS AND/OR WALLS IF REQUIRED, SHALL BE PROVIDED BY THE ELECTRICAL INSTALLER/CONTRACTOR.
9. COORDINATION:
A. THE CONTRACTOR SHALL VERIFY FINAL LOCATIONS OF ALL NEW ELECTRICAL DEVICES, EQUIPMENT, RACEWAYS, ETC. WITH OTHER TRADES AND ARCHITECT...
10. EQUIPMENT PROVIDED BY OTHERS:
A. THE CONTRACTOR SHALL FURNISH AND INSTALL CIRCUITS FOR ALL EQUIPMENT FURNISHED BY OTHERS AS SHOWN ON DRAWINGS...
11. LOW-VOLTAGE DISTRIBUTION EQUIPMENT:
A. PROVIDE ALL REQUIRED POWER DISTRIBUTION SYSTEM EQUIPMENT INCLUDING BUT NOT LIMITED TO SWITCHES, FUSES, CIRCUIT BREAKERS, ETC.
B. UNLESS OTHERWISE NOTED, ALL EQUIPMENT SHALL BE NEW AND CONFORM TO NEMA, ANSI AND IEEE STANDARDS...
C. DISCONNECT SWITCHES SHALL BE USED OR NON-FUSED AS NOTED...
D. FUSES:
1) CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES...
2) MOTOR CIRCUITS - ALL INDIVIDUAL MOTOR CIRCUITS WITH FULL LOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES...
3) ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.
4) PROVIDE 1 SPARE MATCHING FUSE FOR EACH SET OF 3 AND A MINIMUM OF 3 SPARE PER SIZE AND TYPE.
E. CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL-MAGNETIC, QUICK-MAKE, QUICK-BREAK, BOLT-ON TYPE...
1) 120 VOLTS, 100 AMP FRAME, 10,000 AMPS MINIMUM.
2) 240 VOLTS, 100 AMP FRAME, 2 OR 3 POLES, 18,000 AMPS MINIMUM.

3) 240 VOLTS, 225-AMP FRAME, 22,000 AMPS MINIMUM.
4) 277 VOLTS, 100-AMP FRAME, 14,000 AMPS MINIMUM.
5) 480 VOLTS, 100 AMP FRAME, 2 OR 3 POLE, 20,000 AMPS MINIMUM.
6) 480 VOLTS, 225-AMP FRAME, 25,000 AMPS MINIMUM.
7) OVER 225 AMP FRAME: 65,000 AMPS MINIMUM.
8) CIRCUIT BREAKERS TO BE INSTALLED IN EXISTING PANELBOARDS SHALL BE OF THE SAME MANUFACTURER, TYPE AND AIC RATING AS PRESENTLY IN USE.
9) PANEL SCHEDULES FOR EXISTING PANELS IDENTIFIED ON PLANS INDICATE FINAL CIRCUIT BREAKER ARRANGEMENT ASSOCIATED WITH PROJECT...
F. CONTRACTORS FOR BRANCH CIRCUIT CONTROL, IF SPECIFIED, SHALL BE SIMILAR TO ASCO MODEL NO. 918 WITH TWO WIRE CONTROL...
G. PROVIDE MULTI-CABLE LUGS WHERE REQUIRED...
H. MOUNTING HEIGHT SHALL BE A MAXIMUM OF 6 FT-7 IN. FROM FLOOR OR WORKING PLATFORM TO SWITCH OR CIRCUIT BREAKER CENTER...
J. TESTS: OPEN AND CLOSE LOAD BREAK SWITCHING DEVICES UNDER LOAD.
RACEWAYS:
A. PROVIDE RACEWAYS COMPLETE WITH BOXES, FITTINGS AND ACCESSORIES...
B. MATERIALS:
1) RACEWAYS:
a) RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED, THREADED.
b) ELECTRICAL METALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED, THREADED.
c) FLEXIBLE METAL CONDUIT: CONTINUOUS SINGLE STRIP, GALVANIZED.
d) WIREWAYS: WIRE SHALL BE AS NOTED, MINIMUM NO. 16 GAUGE STEEL WITH GROUND CONTINUITY...
e) SURFACE METAL RACEWAY: SIZE AS NOTED, BASE 0.04 IN., COVER 0.5 IN., NOMINAL 0.75 IN. WIDE...
f) RIGID ALUMINUM CONDUIT: FULL-WEIGHT PIPE, THREADED.
g) LIQUDTIGHT FLEXIBLE METAL CONDUIT: SUNLIGHT RESISTANT OUTER JACKET WITH A FLEXIBLE METAL CORE.
2) FITTINGS AND ACCESSORIES:
a) RIGID STEEL, NON-SPLIT, THREADED, STEEL OR MALLEABLE IRON, ZINC DIE CAST NOT PERMITTED.
b) ELECTRICAL METALLIC TUBING: COMPRESSION TYPE OR DOUBLE SETSCREWS, GALVANIZED RIGID STEEL ELBOWS, 2 IN. OR LARGER.
c) FLEXIBLE METAL CONDUIT: ANGLE WEDGE TYPE WITH INSULATED THROAT.
d) BUSHINGS: METALLIC INSULATED TYPE.
e) FOR RIGID ALUMINUM CONDUIT, PROVIDE NON-SPLIT, THREADED COPPER FREE ALUMINUM ALLOY OR HOT DIPPED GALVANIZED.
f) LIQUDTIGHT FLEXIBLE METAL CONDUIT: LIQUID-TIGHT WITH SEALING RING AND INSULATED THROAT.
3) BOXES:
a) OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION, DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL...
b) JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS...
c) PROVIDE RACEWAY SUPPORT UTILIZING CEILING TRAPEZE, STRAPHANGERS, OR WALL BRACKETS...
d) UNLESS OTHERWISE NOTED, ALL EQUIPMENT SHALL BE NEW AND CONFORM TO NEMA, ANSI AND IEEE STANDARDS...
e) DISCONNECT SWITCHES SHALL BE HEAVY DUTY AND HORSEPOWER RATED FOR MOTOR LOADS...
f) CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES...
g) MOTOR CIRCUITS - ALL INDIVIDUAL MOTOR CIRCUITS WITH FULL LOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES...
h) ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER...
i) PROVIDE 1 SPARE MATCHING FUSE FOR EACH SET OF 3 AND A MINIMUM OF 3 SPARE PER SIZE AND TYPE...
j) CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL-MAGNETIC, QUICK-MAKE, QUICK-BREAK, BOLT-ON TYPE...
k) FLEXIBLE STEEL CONDUIT SHALL BE PERMITTED FOR FEEDERS AND BRANCH CIRCUITS...
l) EMIT SHALL BE PERMITTED FOR INTERIOR FEEDERS AND BRANCH CIRCUITS...
m) FLEXIBLE STEEL CONDUIT SHALL BE UTILIZED FOR SHORT CONNECTIONS...
DRAWING TITLE: ELECTRICAL SPECIFICATIONS

HAGEN, CHRISTENSEN & MCILWAIN ARCHITECTS
1601 SEASIDE AVENUE SE - MINNEAPOLIS, MN 55407
TEL: (612) 934-1332 - FAX: (612) 934-7364

CLIENT: City of Wayzata
CONSULTANT 1: ERA STRUCTURAL ENGINEERING

CONSULTANT 2: WSP
Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

KEY PLAN: NORTH

Table with 3 columns: REVISION, DATE, DESCRIPTION. Row 1: 3/17/2025, CONSTRUCTION DOCUMENTS.

CLIENT: 340 Park St. E, Wayzata, MN 55391
DRAWING TITLE: ELECTRICAL SPECIFICATIONS
DRAWING NUMBER: E9.1
PROJECT NUMBER: 241376

CUT CONDUIT ENDS SQUARE. REAM SMOOTH. PAINT MALE THREADS OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY CLIPPING.

EXPANSION FITTINGS SHALL BE INSTALLED AT RIGHT ANGLES WITH CLIP JOINT CENTERED IN EXPANSION JOINT. PROVIDE A LENGTH OF RUN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. PRESET FITTINGS SHALL ALLOW FOR TEMPERATURE VARIATION. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS. FOR RACEWAY NOT IN SLAB, PROVIDE FLEXIBLE CONDUIT WITH EXTERNAL BONDING JUMPER STRIP. IN SLAB, PROVIDE O-Z/GEDNEY TYPE "AX" OR APPLETON TYPE "XJ" OR "XJF" WITH GROUND CONTINUITY.

C. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FLURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIERS BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.

D. JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES. CONCEAL JUNCTION AND PULL BOXES IN FINISHED SPACES. WHERE NECESSARY, REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. PROVIDE ACCESS DOORS AS REQUIRED FOR ACCESSIBILITY. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF BRUTE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES. COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING. ADD BOX VOLUME WHERE REQUIRED.

E. FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE PARTITIONS.

F. PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS. ANY FEEDERS FOUND TO EXCEED THIS TOLERANCE SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.

13. WIRE AND CABLE:

A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG AND/OR KCMIL EXCEPT AS NOTED.

B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. CIRCUITRY GROUND RULES ARE AS FOLLOWS:

- UNLESS OTHERWISE INDICATED, EACH LIGHTING AND APPLIANCE BRANCH CIRCUIT SHALL BE PROVIDED AS FOLLOWS:
 - 20 A, 120 V CIRCUIT
 - #12 AWG — UP TO 60 FEET
 - #10 AWG — FROM 60 FEET TO 95 FEET
 - #8 AWG — FROM 95 FEET TO 150 FEET
 - #6 AWG — FROM 150 FEET TO 235 FEET
 - 20 A, 277V CIRCUIT
 - #12 AWG — UP TO 135 FEET
 - #10 AWG — FROM 135 FEET TO 225 FEET
 - #8 AWG — FROM 225 FEET TO 345 FEET
- THE ABOVE MAXIMUM BRANCH CIRCUIT LENGTHS ARE REQUIRED FOR NOT EXCEEDING 3% VOLTAGE DROP VALUES WHEN VOLTAGE DROPS IN FEEDERS SERVING BRANCH CIRCUITS DO NOT EXCEED 2%. THESE LENGTHS SHALL BE DECREASED AS REQUIRED WHEN ACTUAL BRANCH CIRCUITS VOLTAGE DROP VALUES SHALL BE LESS THAN 3% AS REQUIRED BY CODES FOR TOTAL MAXIMUM VOLTAGE DROP VALUE OF 5% IN FEEDERS PLUS BRANCH CIRCUITS.
- THE ABOVE BRANCH CIRCUIT EQUIPMENT GROUNDING CONDUCTOR (IF PROVIDED) SIZE SHALL BE EQUAL TO PHASE CONDUCTOR.
- CONDUIT MINIMUM SIZE SHALL BE 3/4".
- EACH CIRCUIT SHALL BE PROVIDED WITH A SEPARATE NEUTRAL CONDUCTOR WHEN NEUTRAL CONDUCTORS ARE REQUIRED.
- WHEN NUMBER OF CURRENT-CARRYING CONDUCTORS IN A RACEWAY EXCEED THREE (3), CONDUCTOR SIZES SHALL BE ADJUSTED AS REQUIRED BY CODE.

C. CONTROL AND ALARM CIRCUIT CONDUCTORS, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH, PROVIDE NO. 12 MINIMUM.

D. OTHER VOLTAGES AND PHASES: ADJUST CONDUCTOR SIZING AS REQUIRED FOR NOT EXCEEDING CODE MAXIMUM ALLOWED VOLTAGE DROP VALUES. INCREASE GROUNDING ELECTRODE CONDUCTOR SIZES PROPORTIONALLY TO PHASE CONDUCTORS INCREASE. INCREASE RACEWAY SIZES FOR LARGER CONDUCTORS AS REQUIRED.

E. UNLESS OTHERWISE NOTED, INSULATION SHALL BE RUBBER AND THERMOPLASTIC, 90 DEG C MEETING ASTM AND IECA STANDARDS. TYPE THHN/THWN SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. PROVIDE CROSS-LINKED POLYETHYLENE THERMOSET INSULATION (TYPE XHHW) FOR MOTOR BRANCH CIRCUITS DOWNSTREAM OF VFDs AND IN EXTERIOR LOCATIONS INCLUDING UNDERGROUND CABLES.

F. METAL-CLAD CABLE (TYPE MC) WITH INSULATED GROUND WIRE MAY BE UTILIZED FOR BRANCH CIRCUITS WHEN PERMITTED BY THE OWNER, BUILDING RULES, AUTHORITIES HAVING JURISDICTION AND CODE. WHEN CONCEALED IN DRY HOLLOW LOCATIONS, HUNG CEILINGS, AND BLOCK WALLS UNLESS OTHERWISE NOTED, PROVIDE WIRES IN RACEWAY FOR CIRCUIT HOMERUN FROM THE FIRST JUNCTION BOX IN THE NEAREST CONCEALED LOCATION TO PANELBOARD. TYPE MC CABLE SHALL NOT BE INSTALLED IN EXPOSED CEILINGS WITHOUT WRITTEN APPROVAL BY ARCHITECT AND ENGINEER. WHEN USED IN LIEU OF WIRING IN CONDUIT, STATE IN PROPOSAL THAT PRICE IS BASED UPON THE USE OF MC CABLE. MC CABLE SHALL INCLUDE COPPER CONDUCTORS AND STEEL OR LIGHTWEIGHT STEEL JACKET. BX CABLE (TYPE AC) SHALL NOT BE UTILIZED. ALL BRANCH CIRCUIT HOMERUNS AND WIRING WITHIN ELECTRICAL CLOSETS SHALL BE RUN IN CONDUIT.

G. COLOR CODING SHALL BE AS FOLLOWS:

- 120/208 VOLT SYSTEM
 - BLACK FOR A PHASE
 - RED FOR B PHASE
 - BLUE FOR C PHASE
- 277/480 VOLT SYSTEM
 - BROWN FOR A PHASE
 - ORANGE FOR B PHASE
 - YELLOW FOR C PHASE
- NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION TO OVERLAP CONDUCTORS WITH 6 IN. OF COLOR TAPING IN ACCESSIBLE LOCATIONS.

H. PROVIDE FLAMEPROOF LINEN OR FIBER TAGS IN ACCESSIBLE LOCATIONS. FOR FEEDERS INDICATE FEEDER NUMBER, SIZE, PHASE AND POINTS OF ORIGIN AND TERMINATIONS. FOR CONTROL AND ALARM WIRING, INDICATE TYPE (CONTROL OR ALARM), SIZE OF WIRE, AND POINTS OF ORIGIN AND TERMINATIONS. SIMILAR TO STRANCO PRODUCTS, INC.

I. TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS. COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON SPRING-LOADED CONNECTORS AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE USING MANUFACTURER'S RECOMMENDED TOOLING. CABLE LUGS AND CONNECTORS SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE. WITH MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS. USE ANTI-SIZE COMPOUND.

J. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. EACH CIRCUIT REQUIRING NEUTRAL SHALL BE PROVIDED WITH A SEPARATE NEUTRAL CONDUCTOR. NEUTRAL CONDUCTOR SHALL BE COUNTED AS A CURRENT-CARRYING CONDUCTOR. DERATE CONDUCTOR CURRENT CARRYING CAPACITY AND MAINTAIN CODE REQUIREMENTS FOR CONDUIT FILL FOR CIRCUITS WITH MORE THAN 3 CURRENT-CARRYING CONDUCTORS. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF NORMAL AND EMERGENCY SYSTEMS, 120/208 AND 277/480 VOLT SYSTEMS.

K. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.

L. PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS AND MOTOR BRANCH CIRCUITS OVER 25 HP. PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMIT WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE TESTING BELOW MANUFACTURER'S STANDARDS.

14. GROUNDING

A. A SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR COMMONLY DESCRIBED AS A "GREEN WIRE" SHALL BE PROVIDED FOR ALL BRANCH CIRCUITS PROTECTED BY OVERCURRENT DEVICES. A GREEN WIRE GROUND SHALL ALSO BE PROVIDED FOR FLEXIBLE CONDUIT AND MOTOR CIRCUITS. METALLIC RACEWAY CONTINUITY SHALL BE MAINTAINED WITH A BARE NO. 6 WIRE. EACH GROUNDING CONDUCTOR SHALL SERVE A MAXIMUM OF THREE CIRCUITS/POLES.

B. RUN INSULATED GROUNDING CONDUCTORS IN RIGID METALLIC CONDUIT WITH CONDUCTOR CONNECTED TO CONDUIT, THROUGH GROUND FITTING AT EACH END.

C. GROUND NONCURRENT CARRYING METAL PARTS OF DISTRIBUTION PANELS, SWITCHBOARDS, TRANSFORMER ENCLOSURES, RACEWAYS, BUSWAY ENCLOSURES, CONTROLLER ENCLOSURES, MOTOR FRAMES AND OTHER ELECTRICAL EQUIPMENT.

D. ALL COMPONENTS FOR GROUNDING SYSTEMS SHALL BE UL 467 LISTED.

E. MISCELLANEOUS:

- GROUND THE FOLLOWING:
 - LINE AND LOAD SIDE OF A VFD'S.

15. POWER WIRING

A. PROVIDE ALL POWER WIRING IN RACEWAYS TO ALL MOTORS AND EQUIPMENT FURNISHED UNDER ALL CONTRACTS ON THE PROJECT. INCLUDE EXTENSIONS FROM CONTROLLERS TO MOTORS AND MOTOR CONNECTIONS. MOUNT AND WIRE ALL CONTRACTORS AND POWER DEVICES FURNISHED UNDER ALL CONTRACTS.

B. PROVIDE ONE (1) DEDICATED 120V 20A CIRCUIT FOR EACH HVAC CONTROL PANEL. COORDINATE QUANTITIES AND LOCATIONS WITH HVAC/BMS CONTRACTOR.

16. CONTROL WIRING

A. PROVIDE ALL CONTROL WIRING IN CONDUIT FOR MOTORS AND EQUIPMENT FURNISHED UNDER ALL CONTRACTS AND AS SPECIFICALLY SHOWN ON THE CONTRACT DRAWINGS AND SPECIFICATIONS. INCLUDE MOUNTING AND WIRING OF ALL CONTROL DEVICES FURNISHED WITH EQUIPMENT.

17. WIRING DEVICES:

A. PROVIDE COMPLETE MATERIAL AND ACCESSORIES AS NOTED BY LEVITON, HUBBELL, OR EQUAL. ALL DEVICE TYPES, FINISH AND COLOR ARE SUBJECT TO APPROVAL BY ARCHITECT.

B. INSERTION RECEPTACLES SHALL BE COMMERCIAL SPECIFICATION GRADE HEAVY DUTY TAMPER RESISTANT DUPLEX CONVENIENCE 125 VOLT, 2 POLE, 3 WIRE, 20 AMP WITH U GROUND SLOT GROUNDED, EXCEPT AS NOTED. DEVICE SHALL BE SIMILAR TO HUBBELL #HLS302 OR EQUAL BY LEVITON, ARROW HART OR PASS A SEMOUR LEGRAND OR GE. FACE COLOR SHALL BE SELECTED BY OWNER OR ARCHITECT. INSERTION RECEPTACLES SHALL MEET LATEST NEMA STANDARDS, PUBLICATION WD-6, FEDERAL SPECIFICATION W-C-596 AND BE UL LISTED TO UL498.

SIMILAR TO:

- IN FINISHED AREAS: ARCHITECTURAL TYPE DECORATOR SERIES FOR ALL TYPES NOTED BELOW. FOR COMMERCIAL SPECIFICATION GRADE RECEPTACLES: LEVITON DECORA PLUS #16351-W (SINGLE) 163-W (DUPLICATE).
- COMBINATION DUPLEX TAMPER-RESISTANT RECEPTACLE AND USB CHARGER: LEVITON T5832 20A, 120V DUPLEX RECEPTACLE WITH DUAL 3.6A, 5.0VDC TYPE A USB CHARGERS
- ALL OTHER AREAS: EXTRA HEAVY DUTY INDUSTRIAL SPECIFICATION GRADE: LEVITON #MMS82-W OR DECORA PLUS M1636-W.
- SINGLE RECEPTACLES: HEAVY DUTY INDUSTRIAL SPECIFICATION GRADE LEVITON # 5361 OR DECORA # 16351.
- SPECIAL USE: NON-INTERCHANGEABLE TYPES AND RATINGS MATCHING EQUIPMENT PUG.
- GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE WITH SELF-PROTECTION AND LED INDICATOR LIGHT. SIMILAR TO HUBBELL #GFS302 OR EQUAL BY LEVITON, ARROW HART OR PASS A SEMOUR LEGRAND.
 - GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES IN DAMP LOCATIONS SHALL BE WEATHER RESISTANT.
 - GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES IN WET LOCATIONS SHALL BE WEATHER RESISTANT WITH METALLIC WHILE-IN-USE COVER.

C. MOMENTARY CONTACT SWITCHES: FOR REMOTE CONTROL SWITCHES, SIMILAR TO LEVITON # 1257.

D. DEVICE PLATES: COORDINATE WITH ARCHITECT FOR FINAL TYPE, COLOR, MATERIAL AND FINISH. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.

- BRUSHED 302 STAINLESS STEEL WITH ENGRAVED CIRCUIT IDENTIFICATION PLATE.
- IF PERMITTED BY ARCHITECT AND BUILDING STANDARD, REINFORCED THERMOPLASTIC BY SAME MANUFACTURER OF DEVICES.

E. COLORS: AS SPECIFIED AND COORDINATED WITH ARCHITECT.

F. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL); COORDINATE WITH ARCHITECT.

18. LIGHTING FIXTURES:

A. REFER TO LIGHTING FIXTURE SCHEDULE SHOWN ON DRAWINGS FOR COMPREHENSIVE LIGHTING INFORMATION.

B. PROVIDE LIGHTING FIXTURES, LEDSLAMPS AND COMPONENTS AS PER LIGHTING FIXTURE SCHEDULE AND SPECIFICATIONS. FIXTURES SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY LAMPING, SOCKETS, DRIVERS/BALLASTS, SUPPORTING HARDWARE, PLASTER RINGS, BACKBOXES, CONDUIT CONNECTION POINTS, ETC. AS REQUIRED FOR A COMPLETE ASSEMBLY. LISTED CATALOG NUMBERS DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES AND SHALL BE INCLUDED AS APPLICABLE TO MEET THE DESIGN INTENT AND PROJECT CONDITIONS RELEVANT TO PROPER INSTALLATION AND OPERATION. CONTRACTOR SHALL COORDINATE WITH LIGHTING VENDOR AND ARCHITECT THE MEANS AND METHODS OF INSTALLATION ARRANGEMENTS.

C. FIXTURES SHALL BE COMPLETE AND CONSTRUCTED TO COMPLY WITH APPLICABLE CODES, REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION AND BUILDING STANDARDS. FIXTURES SHALL BE UL LISTED AND INDICATION OF SAME INCLUDED ON ALL FIXTURES. OTHER NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) LISTED CERTIFICATION COMPANIES SUCH AS INTERTEK TESTING SERVICES (ETL) MAY BE CONDITIONALLY ACCEPTED.

D. ALL FIXTURES SHALL BE INDEPENDENTLY MOUNTED FROM BLACK IRON OR BUILDING STRUCTURE AS REQUIRED AND NOT FROM CEILING GRID. ELECTRICAL INSTALLER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION OF CEILING CONSTRUCTION TYPES WITH LIGHTING FIXTURES. FIXTURES SHALL BE PROVIDED FOR OPERATION WITH PROPER VOLTAGE CHARACTERISTICS. REFER TO PLANS FOR INFORMATION.

E. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS, QUANTITIES AND INSTALLATION ARRANGEMENT REQUIREMENTS OF LIGHTING FIXTURES.

F. LED FIXTURES SHALL HAVE REMOVABLE BOARDS & ACCESSIBLE DRIVERS FOR END OF LIFE REPLACEMENT OF SOURCE.

G. LED DRIVERS SHALL BE 0-10V 1% DIMMING TYPE, UNLESS OTHERWISE INDICATED ON ARCHITECTURAL/LIGHTING DESIGN DOCUMENTS.

H. LED COLOR TEMPERATURE SHALL BE 3500 KELVIN AND SHALL MATCH ALL OTHER SOURCES, UNLESS OTHERWISE INDICATED IN LIGHTING FIXTURE SCHEDULE.

I. ALL LED FIXTURES SHALL HAVE MINIMUM 5 YEAR WARRANTIES ON LED BOARDS AND DRIVERS.

J. EMERGENCY DRIVER BATTERY SHALL BE UL LISTED AND APPROVED FOR USE IN APPLICABLE JURISDICTION. OPERATING LED BOARDS WITH MINIMUM 5 YEAR WARRANTIES. BATTERY SHALL BE BODINE OR IQTA WITH HIGHEST LEVEL OF OUTPUT WATS AVAILABLE TO MATCH FIXTURE SPECIFIED UNLESS OTHERWISE NOTED. CONTRACTOR SHALL PROVIDE COLD TEMPDAMP LOCATION/SLIM PROFILE EMERGENCY DRIVER BATTERY AS NECESSARY FOR A COMPLETE FUNCTIONAL SYSTEM AS PER DESIGN INTENT. WHERE EMERGENCY DRIVER BATTERY IS NOT AVAILABLE OR PRACTICABLE FOR A PARTICULAR FIXTURE TYPE, CONTRACTOR SHALL PROVIDE SUITABLE INVERTERS(S), EQUAL TO PHILLIPS BODINE ELL-S SERIES, IN LIEU OF INDIVIDUAL EMERGENCY UNITS. INVERTER(S) SHALL BE CHOSEN TO MINIMUM PHYSICAL SIZE NEEDED FOR EMERGENCY LIGHTING POWER INDICATED. COORDINATE MOUNTING LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION. ALL EMERGENCY DRIVER/BALLASTS SHALL INCLUDE A NON-SWITCHED CIRCUIT IN ADDITION TO THE CONTROLLED CIRCUIT FOR VOLTAGE MONITORING.

ALL LIGHTING LAYOUTS, SPECIFICATIONS AND LIGHTING CONTROL PROVISIONS SHALL COMPLY WITH APPLICABLE VERSION OF ENERGY CONSERVATION CONSTRUCTION CODE.

19. FIRE ALARM SYSTEM

A. FIRE ALARM EQUIPMENT, DEVICES AND COMPONENTS, WIRING AND CONNECTIONS, ETC., SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF APPLICABLE CODES, INDUSTRY STANDARDS, AUTHORITIES HAVING JURISDICTION AND OWNER. STROBE POWER SUPPLIES SHALL BE FURNISHED AND INSTALLED AS REQUIRED. SYSTEM PROGRAMMING (AND RE-PROGRAMMING OF EXISTING SYSTEM WHERE REQUIRED TO ACCOMMODATE DEMOLITION AND NEW DEVICES) SHALL BE INCLUDED. ALL LABOR AND MATERIALS FOR SYSTEM PRE-TEST AND TEST WITH BUILDING VENDOR AND FIRE DEPARTMENT SHALL BE INCLUDED.

B. PROVIDE CONTROL MODULE(S) AS NECESSARY TO INTERFACE CARBON MONOXIDE SENSOR WITH FIREPLACE CONTROLLER.

20. ELECTRICAL TESTING (CONTRACTOR TO FOLLOW APPLICABLE NETA STANDARDS).

A. PROVIDE ALL NECESSARY METERS, INSTRUMENTS, TEMPORARY WIRING AND LABOR TO TEST AND ADJUST ALL EQUIPMENT AND WIRING INSTALLED AND/OR CONNECTED UNDER THIS CONTRACT, INCLUDING ELECTRICAL EQUIPMENT FURNISHED BY OTHERS, TO DETERMINE PROPER POLARITY, PHASING, FREEDOM FROM GROUND FAULTS AND SHORTS AND PROPER OPERATION OF EQUIPMENT. ALL MEASURING INSTRUMENTS MUST BE PROPERLY CALIBRATED.

B. WHENEVER THE AUTHORITIES HAVING JURISDICTION REQUIRE THAT ANY WORK BE TESTED OR APPROVED, CONTRACTOR SHALL PROVIDE PROPER FACILITIES FOR ACCESS FOR INSPECTION.

C. CHECK ALL LIGHTING FIXTURES, RECEPTACLES, ELECTRICAL EQUIPMENT AND DEVICES FOR PROPER OPERATION.

D. MOTORS:

- MAKE THE FOLLOWING TESTS ON THE MOTORS BEFORE STARTING UP:
 - CHECK MOTOR NAMEPLATE FOR HORSEPOWER, SPEED AND PHASE AND VOLTAGE.
- MAKE THE FOLLOWING TESTS ON ALL MOTORS DURING OR IMMEDIATELY AFTER START UP:
 - CHECK SHAFT ROTATION: CHECK BEARING TEMPERATURE: CHECK MOTOR FOR SMOOTH OPERATION.
 - TAKE A CURRENT READING OF FULL LOAD USING A CLAMP ON AMMETER. IF AMMETER READINGS IS OVER THE RATED FULL LOAD CURRENT, DETERMINE THE REASON FOR THE DISCREPANCY AND TAKE THE NECESSARY CORRECTIVE ACTION.
 - FOLLOWING ESTABLISHED PROCEDURES, EQUIPMENT SHALL BE ENERGIZED AFTER CERTIFICATIONS BY THE CONTRACTOR THAT THE INSTALLATIONS SATISFACTORY. ALL MOTORS AND EQUIPMENT SHALL BE TESTED FOR PROPER OPERATION.
 - OVERLOAD ELEMENTS IN MOTOR STARTERS SHALL BE ADJUSTED AND CHECKED FOR SUITABILITY TO THE MOTOR CHARACTERISTICS. CONTRACTOR SHALL REPLACE ANY OVERLOADING ELEMENT THAT IS INADEQUATE. THE CAUSE OF ANY MOTOR OPERATING ABOVE FULL LOAD RATING SHOULD BE INVESTIGATED AND THE CAUSE SHALL BE REMOVED INSTEAD OF INCREASING THE OVERLOAD RELAY TRIP RATING. THESE OPERATIONAL TESTS SHALL DETERMINE THAT THE INSTALLATION IS CORRECT.

E. AFTER ALL ADJUSTMENTS ARE COMPLETE, TAKE CURRENT READINGS AT FULL LOAD USING A CLAMP ON AMMETER AND SUBMIT TO ENGINEERING FOR REVIEW AND APPROVAL.

F. CHECK ALL CONDUCTORS FOR PROPER INSULATION RESISTANCE USING A MEGOHMMETER TEST SET IN ACCORDANCE WITH MANUFACTURERS STANDARD INSTRUCTIONS AND THE INTERNATIONAL ELECTRICAL TESTING ASSOCIATION (NETA). TEST INSULATION RESISTANCE OF ALL NEW AND AFFECTED EXISTING FEEDERS PRIOR TO ENERGIZING AND REPLACE ANY CONDUCTORS FOUND TO BE BELOW MANUFACTURERS ACCEPTABLE VALUES.

21. FIRE STOPPING

A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.

B. PROVIDE ALL REQUIRED FIRE STOPPING. WORK INCLUDES FIRE STOPPING PENETRATIONS OF FIRE-RESISTANCE RATED FLOORS, WALLS AND PARTITIONS IN NEW CONSTRUCTION AS WELL AS PRE-EXISTING PENETRATIONS IN RENOVATION AREAS OF EXISTING CONSTRUCTION.

C. PRODUCT DATA, SUBMIT MANUFACTURERS PRODUCT DATA FOR EACH FIRE-STOPPING PRODUCT REQUIRED, INCLUDING INSTRUCTIONS FOR SUBSTRATE PREPARATION AND FIRE-STOPPING INSTALLATION.

D. FIRE RESISTANT JOINT SEALERS: PROVIDE MANUFACTURERS STANDARD FIRE-STOPPING SEALANT WITH ACCESSORY MATERIALS, HAVING FIRE RESISTANCE RATINGS INDICATED AS ESTABLISHED BY TESTING IDENTICAL ASSEMBLIES PER ASTM E814 BY UNDERWRITERS LABORATORY, INC. OR OTHER TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

E. MATERIALS - PROVIDE THE FOLLOWING:

- ONE-PART FIRE-STOPPING SEALANT: ONE PART LATEX BASED INTUMESCENT SEALANT FORMULATED FOR USE IN A THROUGH-PENETRATION FIRE STOP SYSTEM FOR SEALING OPENINGS AROUND CABLES, CONDUIT, PIPES AND SIMILAR PENETRATIONS THROUGH WALLS AND FLOORS. ACCEPTABLE PRODUCTS/MANUFACTURERS INCLUDE THE FOLLOWING:
 - SPECIFIED TECHNOLOGIES INC. SPEC SEAL LC150
 - HLTI FS-ONE MAX

22. DEMONSTRATION OF COMPLETE ELECTRICAL SYSTEMS

A. SUBMIT WRITTEN CERTIFICATION THAT ELECTRICAL SYSTEMS ARE COMPLETE AND OPERATIONAL. SUBMIT CERTIFICATION WITH CONTRACTOR'S REQUEST FOR FINAL REVIEW.

- AT THE TIME OF FINAL REVIEW OF ELECTRICAL WORK, DEMONSTRATE THE OPERATION OF ELECTRICAL SYSTEMS. FURNISH LABOR, APPARATUS AND EQUIPMENT FOR SYSTEMS DEMONSTRATION. THE VARIOUS TEST SHALL BE WITNESSED AND APPROVED BY THE OWNER AND/OR THE OWNERS REPRESENTATIVE.

B. THE CONTRACTOR SHALL FURNISH ALL TEST EQUIPMENT, MATERIALS, LABOR AND TEMPORARY POWER HOOK-UPS TO PERFORM START-UP AND ALL TESTS AS REQUIRED. ALL TEST PROCEDURES SHALL CONFORM TO THIS SPECIFICATION AND APPLICABLE STANDARDS INCLUDING BUT NOT LIMITED TO: ANSI, IEEE, NEMA, OSHA AND NETA.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTS AND TEST RECORDS. TESTING SHALL BE PERFORMED BY AND UNDER THE IMMEDIATE SUPERVISION OF THE CONTRACTOR. TEST RECORDS SHALL BE KEPT FOR EACH PIECE OF EQUIPMENT. COPIES SHALL BE FURNISHED TO THE ENGINEER FOR REVIEW AND/OR APPROVAL.

D. A VISUAL INSPECTION OF ALL ELECTRICAL EQUIPMENT, TO CHECK FOR THE FOREIGN MATERIAL, TIGHTNESS OF WIRING AND CONNECTION, PROPER GROUNDING, MATCHING NAMEPLATE CHARTS WITH SPECIFICATION, ETC., SHALL BE MADE PRIOR TO ACTUAL TESTING.

E. A COMPLETE OPERATIONAL TEST SHALL BE MADE ON THE REVISED LIFE SAFETY FIRE ALARM SYSTEM. THE CONTRACTOR SHALL CONSULT WITH THE EQUIPMENT VENDORS AND THEN SUBMIT FOR APPROVAL A STEP-BY-STEP PROCEDURE DESCRIBING THE METHOD OF MAKING THE TESTS. THE EQUIPMENT TO BE UTILIZED AND THE FEATURE TO BE CHECKED BY THE TEST. ALL INTERLOCKS AND PROTECTIVE FEATURES SHALL BE CHECKED OUT.

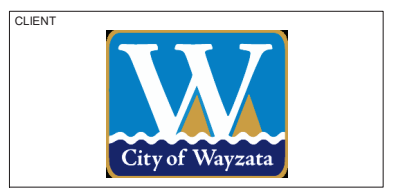
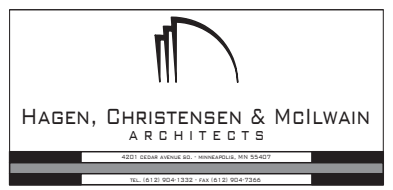
23. SPECIAL TESTING SERVICES

A. IN THE INSTANCE OF COMPLEX OR SPECIALIZED ELECTRICAL SYSTEMS SUCH AS LIGHTING CONTROL SYSTEMS, FIRE ALARM SYSTEM OR SIMILAR, THE INSTALLATION, FINAL CONNECTIONS AND TESTING OF SUCH SYSTEMS SHALL BE MADE UNDER THE DIRECT SUPERVISION OF FACTORY AUTHORIZED FIELD TECHNICIAN/ENGINEER WHO SHALL BE IN THE EMPLOY OF THE RESPECTIVE EQUIPMENT MANUFACTURER.

B. ANY AND ALL EXPENSES INCURRED BY THESE EQUIPMENT MANUFACTURERS' REPRESENTATIVES RELATED TO THIS PROJECT, SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL INSTALLER/CONTRACTOR.

24. DESIGN MODIFICATIONS

A. THE DRAWINGS SHOW ELECTRICAL SYSTEMS THAT SUPPLY, CONTROL, AND/OR MONITOR SYSTEMS SPECIFIED ELSEWHERE. THE ELECTRICAL SYSTEM SHOWN HAS BEEN BASED ON SPECIFIC MANUFACTURERS DATA OR INFORMATION CONVEYED TO THE ELECTRICAL DESIGNER. WHERE ANY AGREEMENT OR CHANGE IS MADE TO SUPPLY EQUIPMENT OF LARGER CAPACITY OR DIFFERENT ELECTRICAL CHARACTERISTICS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE ELECTRICAL DESIGN MODIFICATIONS TO AFFECT SUCH CHANGES WITHIN THE INTENT OF THESE SPECIFICATIONS AND TO INFORM THE ENGINEER. IN WRITING, OF SUCH CHANGE. FOR EXAMPLE, IF HVAC COMPRESSORS AND/OR MOTORS ARE ALLOWED TO BE CHANGED TO 230 VOLTS RATHER THAN THE ORIGINALLY SPECIFIED 208 VOLTS, BOOSTING OR BUCKING TRANSFORMERS SHALL BE FURNISHED, INSTALLED, AND WIRED TO ACCOMMODATE THE CHANGE AT NO ADDITIONAL COST.



Professional Engineer
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.
Signature: *Deborah J. Jorde*
Typed or Printed Name: Deborah J. Jorde
Date: 03/17/25 License Number: 47858

KEY PLAN

| REVISION | DATE | DESCRIPTION |
|----------|-----------|------------------------|
| | 3/17/2025 | CONSTRUCTION DOCUMENTS |
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CLIENT

340 Park St E
Wayzata, MN 55391

KLAPPRICH WARMING HOUSE

DRAWING TITLE

ELECTRICAL SPECIFICATIONS

DRAWING NUMBER

E9.2

PROJECT NUMBER 241376