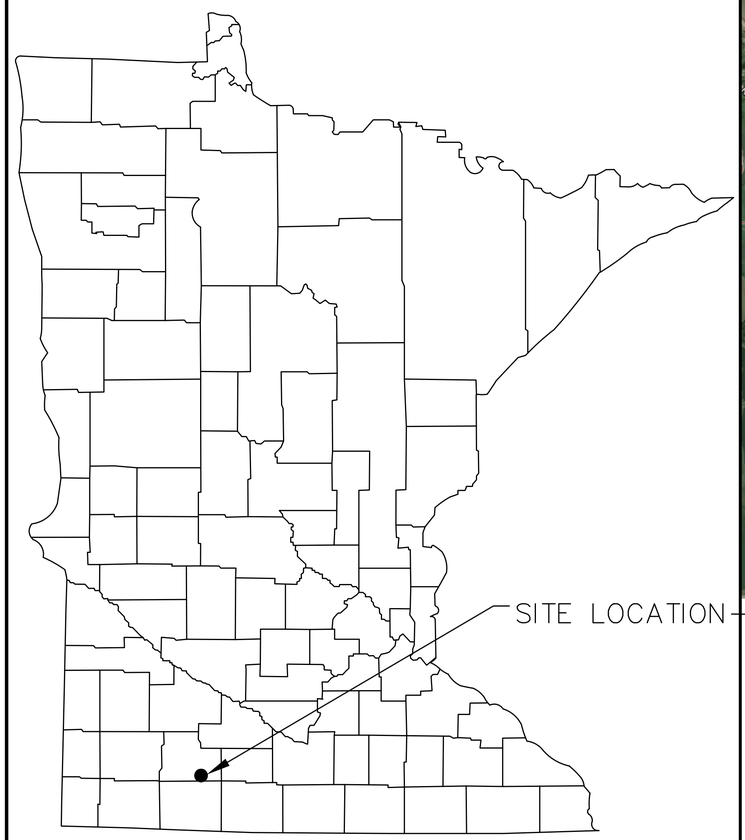
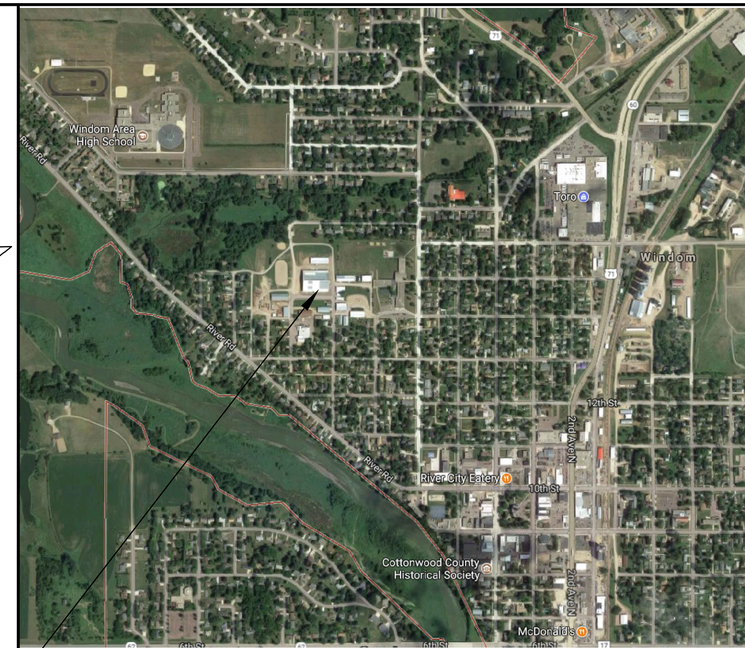
# WINDOM ICE ARENA
# ICE SYSTEM REPLACEMENT

## WINDOM, MINNESOTA




ADDRESS OF FACILITY
WINDOM ARENA
1480 8TH AVE
WINDOM, MN 56101

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**REFRIGERATION**

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## ALTERNATE BID ITEMS

1. FURNISH AND INSTALL A SCHEDULE 10 304L STAINLESS STEEL COIL IN PLACE OF SCHEDULE 40 STEEL COIL. COIL SHALL HAVE THE SAME SIZE AND CONFIGURATION OF THE COIL SHOWN IN THE PROJECT DOCUMENTS. (ADD)
2. REPLACE 8" AND 2 ½"" STEEL GLYCOL PIPING ON REFRIGERATION PACKAGE AND IN BUILDING WITH SCH. 80 PVC. (DEDUCT)
3. DELETE NEW CONCRETE RADIUS WORK ON STUDIO RINK. (DEDUCT)
4. DELETE BACK-UP RINK PUMP (P-2) (DEDUCT)
5. REDUCE SIZE OF NEW SWITCHBOARD FROM 1,000 AMPS TO 800 AMPS. (DEDUCT)


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Consultants:

Project:
**WINDOM ICE ARENA ICE SYSTEM REPLACEMENT**

Location:
**1480 8TH AVE, WINDOM, MN 56101**

Certification:
NOT FOR CONSTRUCTION FOR REVIEW ONLY

| | |
|---|---|
| Drawn By | AMT |
| Checked By | SAW |
| Project No. | 900-17-287 |
| Date | 12/15/2017 |

Scale:

Revisions:

| No. | Date | Description |
|---|---|---|
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**CONSTRUCTION DOCUMENTS**

Sheet Title:
**TITLE SHEET**

Sheet No.:
**G001**

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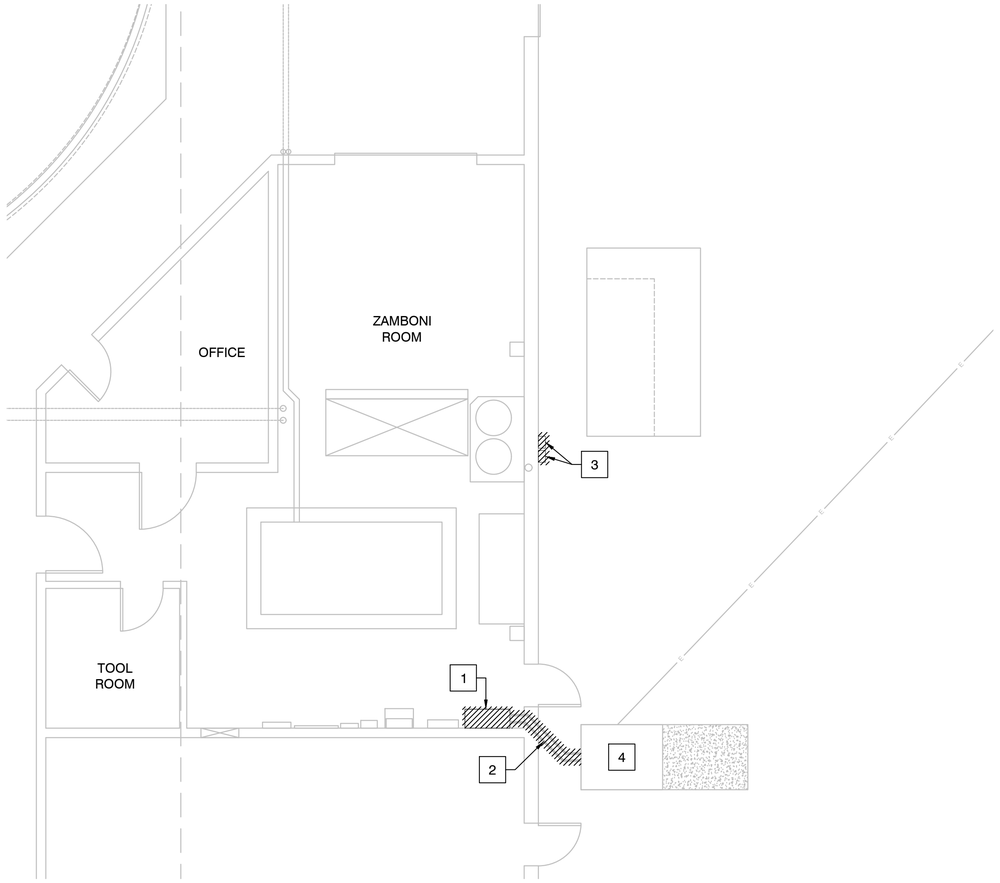
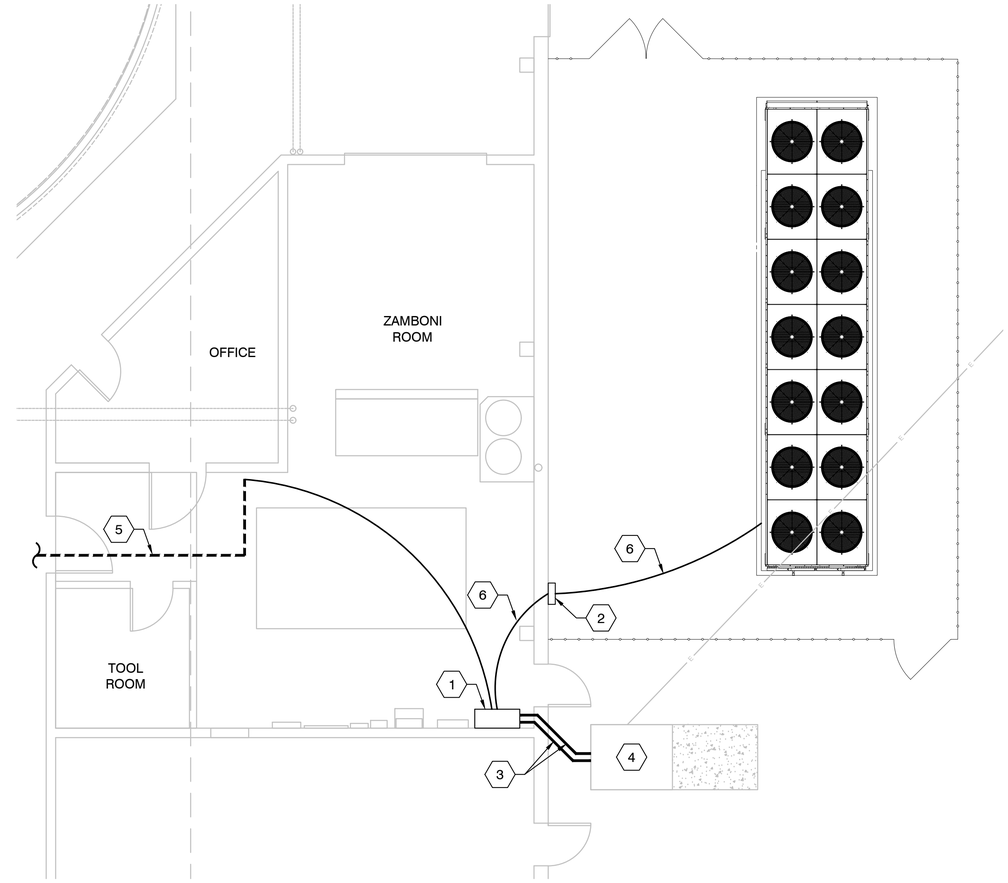


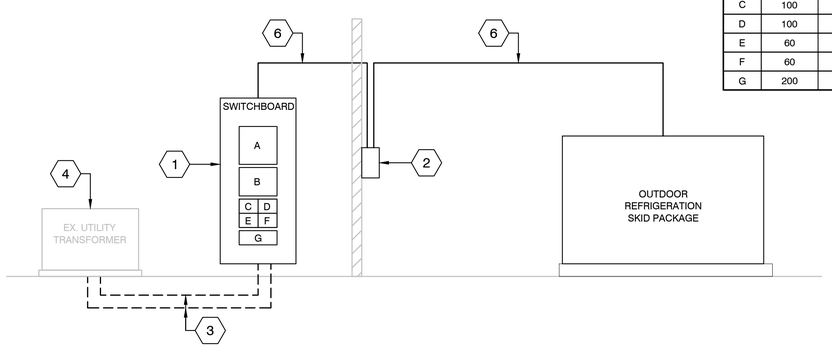

1 ELECTRICAL DEMOLITION PLAN
SCALE: 3/16" = 1'-0"




2 ELECTRICAL NEW WORK PLAN
SCALE: 3/16" = 1'-0"

## SWITCHBOARD INFO

| MARK | AMPS | DESCRIPTION |
|---|---|---|
| A | 1000 | MAIN DISCONNECT |
| B | 600 | FOR NEW REFRIGERATION SYSTEM |
| C | 100 | FOR EX. RC BALL COURT/ARCHERY |
| D | 100 | FOR EX. 277 VOLT LIGHTING PANEL |
| E | 60 | FOR EX. EXHAUST FAN |
| F | 60 | FOR EX. LIGHTS |
| G | 200 | SPARE |




3 ELECTRICAL RISER DIAGRAM - NEW 1000A SERVICE
SCALE: NTS

## X DEMO KEY NOTES:

1. REMOVE AND DISPOSE OF EXISTING MAIN SERVICE PANEL AND ASSOCIATED WIRING AND CONDUITS.
2. REMOVE AND DISPOSE OF EXISTING 600 AMP SERVICE FEEDER. CONDUITS TO REMAIN.
3. REMOVE AND DISPOSE OF EXISTING DISCONNECTS.
4. EXISTING TRANSFORMER TO REMAIN.

## X NEW WORK KEY NOTES:

1. FURNISH AND INSTALL NEW 480V/3P/4W SWITCH BOARD AND RELATED ELECTRICAL DEVICES. SEE DETAIL 3/E100 FOR SERVICE RISER DIAGRAM.
2. FURNISH AND INSTALL 600 AMP DISCONNECT ON EXTERIOR OF BUILDING.
3. FURNISH AND INSTALL NEW 1000A COPPER FEEDER TO NEW SWITCHBOARD ROUTED IN EX. (2) TWO 3" CONDUITS. FURNISH AND INSTALL NEW COPPER GROUND WIRE AND GROUND ROD.
4. EXISTING ELECTRICAL TRANSFORMER.
5. FURNISH AND INSTALL NEW ELECTRICAL FEED TO SCORERS BOX. ROUTE NEW 2" SCH. 80 PVC CONDUIT IN REFRIGERATION PIPE TRENCH AND EXISTING HEADER TRENCH TO/FROM SCORERS BOX.
6. FURNISH AND INSTALL 600 AMP COPPER FEEDER BETWEEN NEW SWITCHBOARD, DISCONNECT AND REFRIGERATION SKID PACKAGE.

## GENERAL NOTES:

1. EXISTING CONDITIONS WERE DETERMINED FROM SITE OBSERVATIONS AND VERY LIMITED EXISTING PLANS INFORMATION. AS-BUILT INFORMATION WAS NOT AVAILABLE.
2. COORDINATE ALL INSTALLATION REQUIREMENTS WITH THE UTILITY COMPANY.
3. ALL SITE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY SPECIFICATIONS.
4. ELECTRICAL CONTRACTOR TO PROVIDE SERVICE CONDUITS, TRENCHING, CT SECTION, METER SOCKET(S), SWITCHBOARD AND GROUNDING PROVISIONS PER NEC.
5. ELECTRICAL CONTRACTOR SHALL CONNECT NEW SWITCHBOARD AND BREAKERS TO ALL EXISTING ELECTRICAL PANELS, SWITCHES, ETC.
6. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO BIDDING AND START OF CONSTRUCTION. NOTIFY THE ENGINEER IF THERE ARE DISCREPANCIES BETWEEN THE DRAWINGS AND THE FIELD CONDITIONS.
7. DO NOT SCALE DRAWINGS.
8. WORK SHOWN HATCHED ////, SHALL BE REMOVED.
9. INSTALL ALL PROTECTION SYSTEMS AS REQUIRED PRIOR TO STARTING DEMOLITION WORK.
10. CONTRACTOR TO COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES.
11. CUT, PATCH AND PAINT EXISTING WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF NEW WORK OR REMOVAL OF EXISTING WORK.
12. IDENTIFY ALL RESTRICTIONS PRIOR TO CUTTING THROUGH EXISTING WALLS, FOUNDATION WALLS, OR PRECAST PANELS.
13. CLEAN ALL FLOOR AND WALL SURFACES AFTER DEMOLITION.
14. PATCH AND PAINT ALL HOLES LEFT BY DEMOLITION.
15. REMOVE ALL EXISTING ELECTRICAL COMPONENTS, CONDUITS, WIRING, ETC. ASSOCIATED WITH REMOVED EQUIPMENT.
16. RELOCATE ALL ELECTRICAL COMPONENTS, CONDUITS, WIRING, ETC. THAT CONFLICT WITH NEW CONSTRUCTION.
17. PROTECT ALL ELECTRICAL ASSOCIATED WITH EQUIPMENT TO REMAIN.
18. SEE DEMOLITION REQUIREMENTS FOR OTHER MECHANICAL, ELECTRICAL, AND BUILDING SYSTEMS SHOWN ELSEWHERE.
19. ALL ITEMS IDENTIFIED TO BE REMOVED SHALL BE DISPOSED OF OFF SITE BY CONTRACTOR.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**CONSTRUCTION DOCUMENTS**

Sheet Title:

**ELECTRICAL MODIFICATION PLAN**

Sheet No.:

**E100**

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# LEGEND

| | EXISTING | PROPOSED |
|---|---|---|
| CENTER LINE | | |
| SPOT ELEVATIONS | 910.3 | 910.3 |
| FLOW ARROW | | |
| BURIED / COVERED | | |
| FENCE | x | x |
| RISER | | |
| EXISTING MATERIALS TO BE REMOVED | | |
| SECTION | | ICE 105 |
| OIL COOLER LINE | OCL | OCL |
| OIL RETURN LINE | ORL | ORL |
| HIGH PRESSURE LIQUID REFRIGERANT | HPLR | HPLR |
| LOW PRESSURE LIQUID REFRIGERANT | LPLR | LPLR |
| HIGH PRESSURE GAS/VAPOR REFRIGERANT | HPVR | HPVR |
| LOW PRESSURE GAS/VAPOR REFRIGERANT | LPVR | LPVR |
| EQUALIZATION LINE | EL | EL |
| VENT LINE | ATV | ATV |
| BRINE SUPPLY | BS | BS |
| BRINE RETURN | BR | BR |
| GLYCOL SUPPLY | GS | GS |
| GLYCOL RETURN | GR | GR |
| PROPOLYNE GLYCOL SUPPLY | PS | PS |
| PROPOLYNE GLYCOL RETURN | PR | PR |
| CONDENSER WATER SUPPLY | CS | CS |
| CONDENSER WATER RETURN | CR | CR |
| COLD WATER SUPPLY | CWS | CWS |
| COLD WATER RETURN | CWR | CWR |
| HOT/COLD WATER SUPPLY | HCS | HCS |
| HOT/COLD WATER RETURN | HCR | HCR |
| FILL LINE | FILL | FILL |
| DRAIN | D | D |
| GAS | SS | SS |
| SANITARY SEWER BELOW FLOOR | G | G |
| KEYNOTE | | 1 |
| CONTINUATION - SAME SHEET | | 1 |
| CONTINUATION - SEPARATE SHEET | | 1 |

# EQUIPMENT TAGS

P–2

| | | | |
|---|---|---|---|
| B | BOILER | P | PUMP |
| C | COMPRESSOR | PU | PUMPER DRUM |
| CP | CHEMICAL FEED PUMP | SP | SUMP PUMP |
| CU | CONDENSING UNIT | T | TANK |
| EH | ELECTRIC UNIT HEATER | V | VESSEL |
| EF | EXHAUST FAN | WH | WATER HEATER |
| H | HEAT EXCHANGER | WS | WATER SOFTNER |
| L | LOUVER | | |

# SYMBOLS

AIR LINE
AIR SEPARATOR (INLINE)
AIR VENT, MANUAL
AUTOMATIC VENT
BALL VALVE
BUCKET TRAP
BUTTERFLY VALVE
CHECK VALVE
CHECK , SPRING VALVE
CONT. NOTE (SAME SHEET)
CONT. NOTE (SEPERATE SHEET)
CONTROL SYSTEM NOTE
EQUIPMENT TAG
BACK PRESSURE REGULATING VALVE
EXPANSION VALVE, HAND
EXPANSION VALVE, AUTOMATIC
EXPANSION VALVE, THERMOSTATIC
FILTER AND DRIER
FLANGE
FLEXIBLE CONNECTOR
FLOAT SWITCH
FLOAT SWITCH (PILOT TYPE)
FLOAT VALVE, HIGH SIDE
FLOAT VALVE, LOW SIDE
FLOW ARROW
FLOW CONTROL VALVE
FLOW SWITCH
GAS DETECTOR
GATE VALVE
GLOBE VALVE W/ SEAL CAP
GLOBE VALVE W/ SEAL CAP, ANGLE
LEVEL EYE
LIQUID DRAINER
LONG RADIUS ELBOW
NEEDLE VALVE
OIL SEPARATOR
PITCH OF PIPE, RISE (R) DROP (D)
PRESSURE GAGE AND COCK
PRESSURE REGULATING VALVE
PRESSURE SWITCH
REDUCER
RELIEF VALVE
REVISION NOTE
RUPTURE DISK
SHORT RADIUS ELBOW
SIGHT GLASS (IN-LINE)
SIGHT GLASS (EXTERNAL)
SOLENOID VALVE
STRAINER (BRINE/GLYCOL)
STRAINER (REFRIGERANT)
SUCTION DIFFUSER
THREE-WAY VALVE
THERMAL BULB
THERMOMETER
THERMOMETER WELL, ONLY
THERMOSTAT, ELECTRIC
THERMOSTAT, SELF-CONTAINED
THERMOSTAT, REMOTE BULB
TRIPLE DUTY VALVE
UNION
VIBRATION ABSORBER
WATER METER

# ABBREVIATIONS

| | | | |
|---|---|---|---|
| ALT | ALTERNATE | INV | INVERT |
| AMP | AMPERE | KW | KILOWATT |
| APPROX | APPROXIMATE | KWH | KILOWATT HOUR |
| ARCH | ARCHITECT / ARCHITECTURAL | LBS | POUNDS |
| BHP | BREAK HORSEPOWER | LF | LINEAR FEET |
| BLDG | BUILDING | MAX | MAXIMUM |
| BTU | BRITISH THERMAL UNIT | MBH | THOUSAND BTU'S/HOUR |
| C | CELSIUS | MCC | MOTOR CONTROL CENTER |
| CFM | CUBIC FEET PER MINUTE | MIL | MIL |
| CO | CLEANOUT | MIN | MINIMUM |
| CONN | CONNECTION | MECH | MECHANICAL |
| CW | COLD WATER | NA | NOT APPLICABLE |
| DEMO | DEMOLITION | NC | NORMALLY CLOSED |
| DIA | DIAMETER | NO | NORMALLY OPEN |
| DWG | DRAWING | NTS | NOT TO SCALE |
| DX | DIRECT EXPANSION | OC | ON CENTER |
| EA | EACH | OD | OUTSIDE DIAMETER |
| ELEC | ELECTRIC | PH | PHASE (ELECTRIC) |
| ELEV | ELEVATION | POLY | POLYETHYLENE PIPE |
| EQUIP | EQUIPMENT | PSI | POUNDS PER SQUARE INCH |
| EX | EXISTING | PVC | POLYVINYL PIPE |
| EXH | EXHAUST EXPANSION | REBAR | REINFORCEMENT |
| F | FAHRENHEIT | REQ'D | REQUIRED |
| FD | FLOOR DRAIN | RH | RELATIVE HUMIDITY |
| FFE | FINISHED FLOOR ELEVATION | RM | ROOM |
| FT | FOOT OR FEET | RPM | REVOLUTIONS PER MINUTE |
| GAL | GALLONS | SF | SQUARE FEET |
| GPM | GALLONS PER MINUTE | SPEC | SPECIFICATION |
| HDR | HEADER | SS | STAINLESS STEEL |
| HDPE | HIGH DENSITY POLYETHYLENE | STD | STANDARD |
| HT | HEIGHT | TEMO | TEMPERATURE |
| HR | HOURS | TP | TEMPERATURE |
| HP | HORSEPOWER | TYP | TYPICAL |
| HVAC | HEATING, VENTING, AIR CONDITIONING | V | VOLTS |
| HX | HEAT EXCHANGER | VFD | VARIABLE FREQUENCY DRIVE |
| HZ | HERTZ | W/ | WITH |
| ID | INSIDE DIAMETER | W/O | WITHOUT |

**NOTE: NOT ALL SYMBOLS, ABBREVIATIONS OR LINETYPES SHOWN ON THIS SHEET ARE USED IN THIS SET OF DRAWINGS.**


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**CONSTRUCTION DOCUMENTS**

Sheet Title:

**ICE RINK LEGEND, SYBMOLS & ABBREVIATIONS**

Sheet No.:

**R001**

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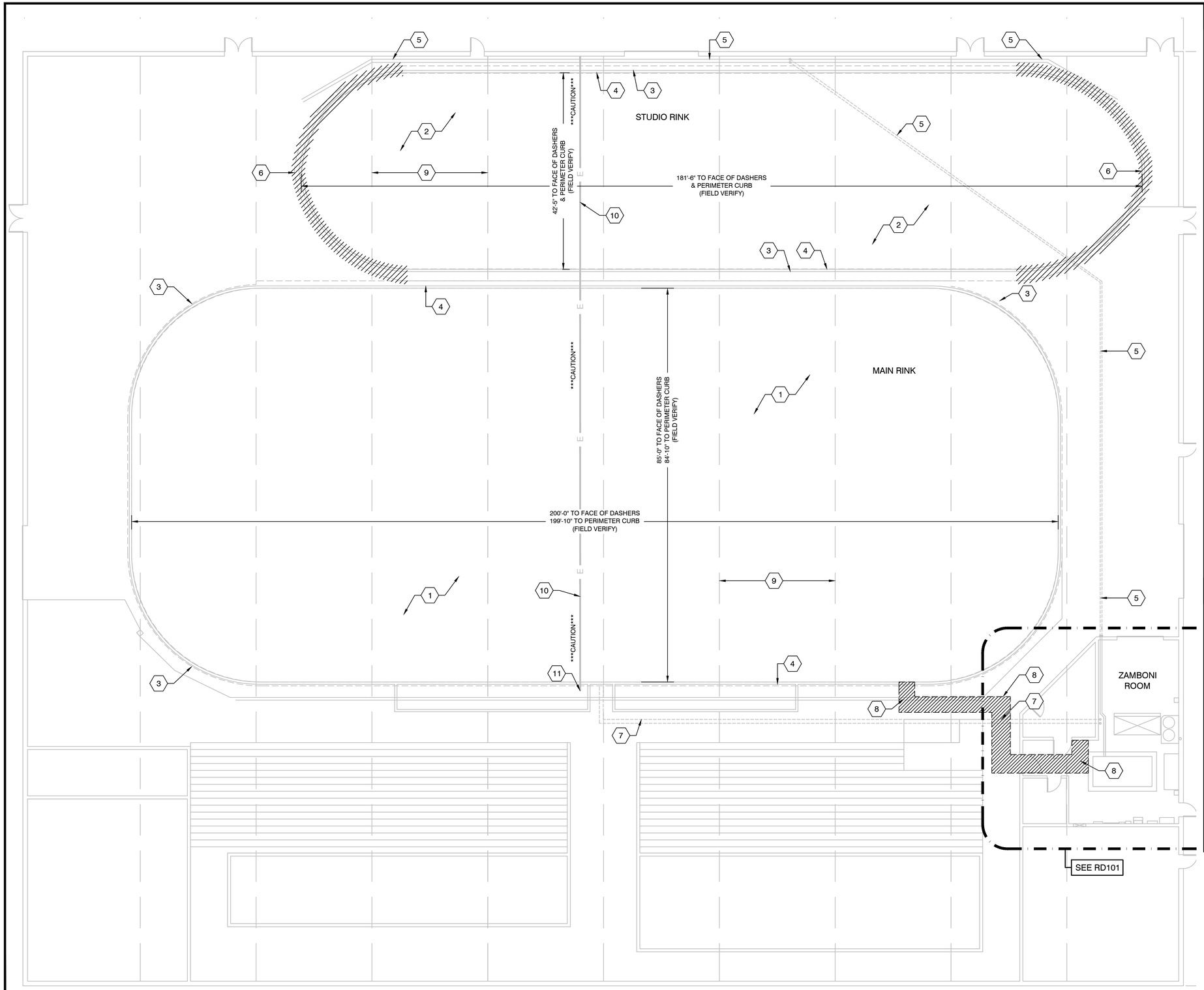


1 ICE RINK DEMOLITION PLAN
SCALE: 3/32" = 1'-0"

## GENERAL NOTES:

1. EXISTING CONDITIONS WERE DETERMINED FROM SITE OBSERVATIONS AND VERY LIMITED EXISTING PLANS INFORMATION. AS-BUILT INFORMATION WAS NOT AVAILABLE.
2. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO BIDDING AND START OF CONSTRUCTION. NOTIFY THE ENGINEER IF THERE ARE DISCREPANCIES BETWEEN THE DRAWINGS AND THE FIELD CONDITIONS.
3. DO NOT SCALE DRAWINGS.
4. VERIFY LOCATION OF BURIED UTILITIES PRIOR TO DEMOLITION. VERIFY SIZE, LOCATION AND INVERT ELEVATION OF NEW AND EXISTING UTILITIES PRIOR TO BEGINNING WORK.
5. WORK SHOWN HATCHED //// SHALL BE REMOVED.
6. INSTALL ALL PROTECTION SYSTEMS AS REQUIRED PRIOR TO STARTING DEMOLITION WORK.
7. REMOVE AND DISPOSE OF ALL PIPING, VALVES, HANGERS, CONTROLS, ELECTRICAL AND OTHER MATERIALS ASSOCIATED WITH EQUIPMENT THAT IS SPECIFIED TO BE REMOVED UNLESS OTHERWISE NOTED.
8. OWNER TO DRAIN, SALVAGE, AND STORE EX. GLYCOL FROM BOTH MAT SYSTEMS AND RELATED HEADERS. CONTRACTOR TO DRAIN ALL OTHER SYSTEMS PRIOR TO DEMOLITION.
9. CONTRACTOR TO COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES.
10. CUT, PATCH AND PAINT EXISTING WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF NEW WORK OR REMOVAL OF EXISTING WORK.
11. IDENTIFY ALL RESTRICTIONS PRIOR TO CUTTING THROUGH EXISTING WALLS, FOUNDATION WALLS, OR PRECAST PANELS.
12. REMOVE FIXTURES AND EQUIPMENT AS INDICATED. CAP PIPING SUCH THAT NEW CONSTRUCTION AND FINISHES CAN BE COMPLETED AS INDICATED AND REQUIRED.
13. ANY DAMAGE TO THE PERIMETER CONCRETE CAUSED BY DEMOLITION SHALL BE REPAIRED BY THE CONTRACTOR.
14. CLEAN ALL FLOOR AND WALL SURFACES AFTER DEMOLITION.
15. PATCH AND PAINT ALL HOLES LEFT BY DEMOLITION.
16. REMOVE ALL EXISTING ELECTRICAL COMPONENTS, CONDUITS, WIRING, ETC. ASSOCIATED WITH REMOVED EQUIPMENT.
17. RELOCATE ALL ELECTRICAL COMPONENTS, CONDUITS, WIRING, ETC. THAT CONFLICT WITH NEW CONSTRUCTION.
18. PROTECT ALL ELECTRICAL ASSOCIATED WITH EQUIPMENT TO REMAIN.
19. SEE DEMOLITION REQUIREMENTS FOR OTHER MECHANICAL, ELECTRICAL, AND BUILDING SYSTEMS SHOWN ELSEWHERE.
20. ALL ITEMS IDENTIFIED TO BE REMOVED SHALL BE DISPOSED OF OFF SITE BY CONTRACTOR.

## (X) KEY NOTES:

1. EXISTING MAIN RINK ICE MAT SYSTEM AND HEADER PIPING TO BE SALVAGED, STORED AND MODIFIED FOR USE ON STUDIO RINK BY OWNER.
2. EXISTING STUDIO RINK ICE MAT SYSTEM TO BE DRAINED, REMOVED AND DISPOSED OF BY OWNER.
3. EXISTING CONCRETE CURB AROUND RINK TO REMAIN UNLESS NOTED OTHERWISE.
4. REMOVAL,STORAGE, MODIFICATION AND REINSTALLATION OF EXISTING DASHER BOARD SYSTEM BY OWNER.
5. EXISTING UNDERGROUND TRANSMISSION MAINS AND HEADER SYSTEM TO/FROM STUDIO RINK TO REMAIN.
6. REMOVE AND DISPOSE OF EXISTING CONCRETE CURB FOR MODIFICATION OF END RADII.
7. REMOVE AND DISPOSE OF EXISTING BELOW GRADE RINK PIPING LOCATED IN AREAS THAT CONFLICT WITH NEW WORK. ABANDON PIPE IN-PLACE WITH FLOWABLE GROUT IN ALL OTHER LOCATIONS.
8. REMOVE AND DISPOSE OF EXISTING PERIMETER CONCRETE SLAB FOR INSTALLATION OF NEW TRANSMISSION MAINS. REMOVE, SALVAGE, AND RE-INSTALL EXISTING SKATE TILE FLOORING IN AFFECTED AREAS.
9. EXISTING STRUCTURAL STEEL STRAND TIES. DO NOT DISTURB.
10. EXISTING ELECTRICAL CONDUITS UNDER RINK FLOOR. DO NOT DISTURB.
11. EXISTING ELECTRICAL & A/V EQUIPMENT AND WIRING. OWNER TO REMOVE AND REINSTALL.

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0 5' 10' 20'
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**CONSTRUCTION DOCUMENTS**

Sheet Title:

**ICE RINK FLOOR DEMOLITION PLAN**

Sheet No.:

**RD100**

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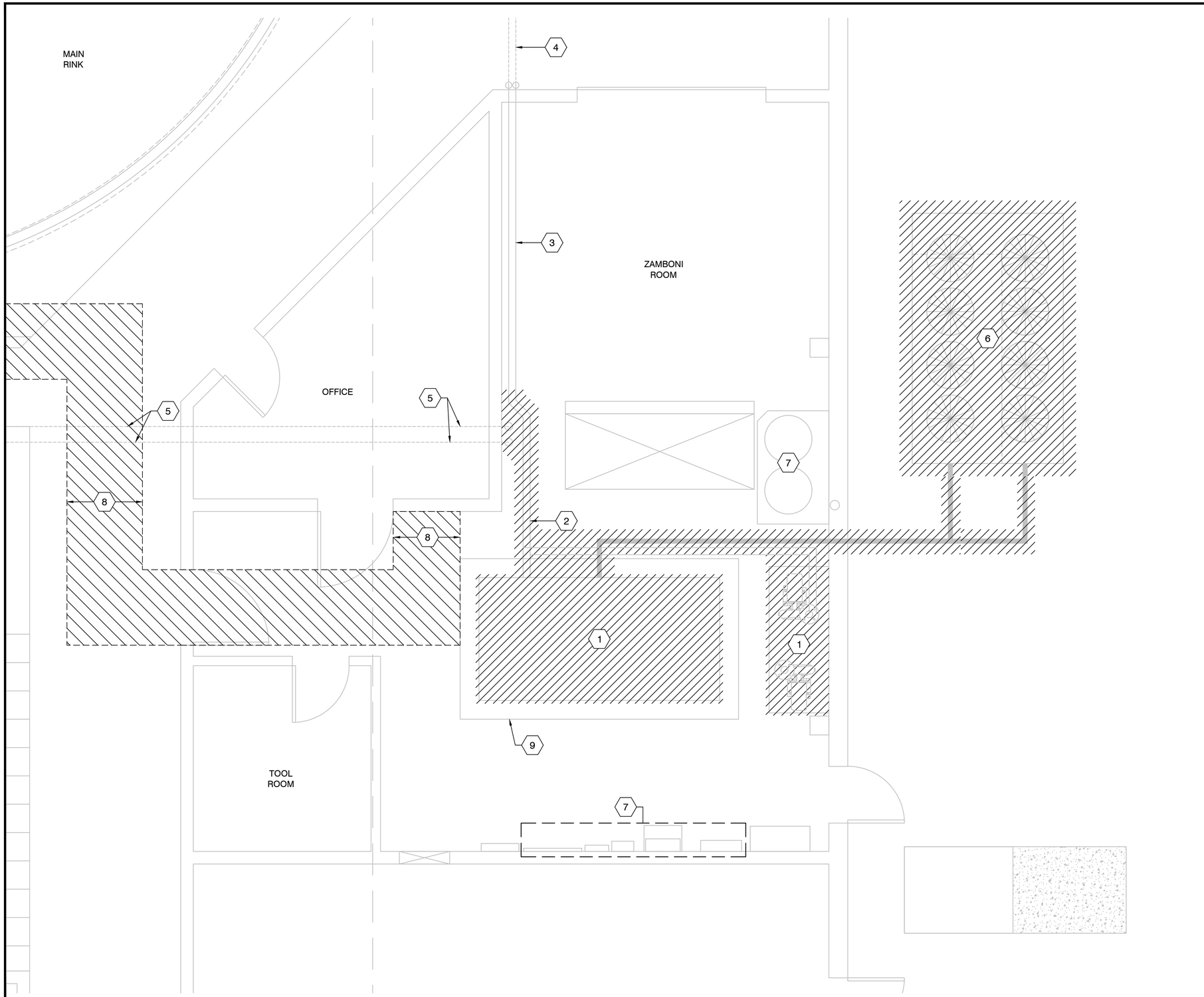


1 REFRIGERATION SYSTEM DEMOLITION PLAN
SCALE: 3/8" = 1'-0"

## GENERAL NOTES:

1. EXISTING CONDITIONS WERE DETERMINED FROM EXISTING PLANS AND SITE OBSERVATION. AS-BUILT INFORMATION WAS NOT AVAILABLE.
2. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO BIDDING AND START OF CONSTRUCTION. NOTIFY THE ENGINEER IF THERE ARE DISCREPANCIES BETWEEN THE DRAWINGS AND THE FIELD CONDITIONS.
3. DO NOT SCALE DRAWINGS.
4. VERIFY LOCATION OF BURIED UTILITIES PRIOR TO DEMOLITION. VERIFY SIZE, LOCATION AND INVERT ELEVATION OF NEW AND EXISTING UTILITIES PRIOR TO BEGINNING WORK.
5. WORK SHOWN HATCHED ////, SHALL BE REMOVED.
6. REMOVE AND DISPOSE OF ALL PIPING, VALVES, HANGERS, CONTROLS, ELECTRICAL AND OTHER MATERIALS ASSOCIATED WITH EQUIPMENT THAT IS SPECIFIED TO BE REMOVED UNLESS OTHERWISE NOTED.
7. OWNER TO DRAIN, SALVAGE, AND STORE EX. GLYCOL FROM BOTH MAT SYSTEMS AND RELATED HEADERS. CONTRACTOR TO DRAIN ALL OTHER SYSTEMS PRIOR TO DEMOLITION.
8. CONTRACTOR TO COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES.
9. CUT, PATCH AND PAINT EXISTING WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF NEW WORK OR REMOVAL OF EXISTING WORK.
10. IDENTIFY ALL RESTRICTIONS PRIOR TO CUTTING THROUGH EX. WALLS, FOUNDATION WALLS, OR PRECAST PANELS.
11. REMOVE FIXTURES AND EQUIPMENT AS INDICATED. CAP PIPING SUCH THAT NEW CONSTRUCTION AND FINISHES CAN BE COMPLETED AS INDICATED AND REQUIRED.
12. ANY DAMAGE TO THE PERIMETER CONCRETE CAUSED BY DEMOLITION SHALL BE REPAIRED BY THE CONTRACTOR.
13. CLEAN ALL FLOOR AND WALL SURFACES AFTER DEMOLITION.
14. PATCH AND PAINT ALL HOLES LEFT BY DEMOLITION.
15. REMOVE ALL EXISTING ELECTRICAL COMPONENTS, CONDUITS, WIRING, ETC. ASSOCIATED WITH REMOVED EQUIPMENT.
16. RELOCATE ALL ELECTRICAL COMPONENTS, CONDUITS, WIRING, ETC. THAT CONFLICT WITH NEW CONSTRUCTION.
17. PROTECT ALL ELECTRICAL ASSOCIATED WITH EQUIPMENT TO REMAIN.
18. SEE DEMOLITION REQUIREMENTS FOR OTHER MECHANICAL, ELECTRICAL, AND BUILDING SYSTEMS SHOWN ELSEWHERE.
19. ALL ITEMS IDENTIFIED TO BE REMOVED SHALL BE DISPOSED BY CONTRACTOR.

## X KEY NOTES:

1. REMOVE AND DISPOSE OF EXISTING R-22 REFRIGERATION SYSTEM INCLUDING BUT NOT LIMITED TO: COMPRESSORS, PUMPS, ELECTRICAL PANELS, OVERHEAD EXPANSION TANKS, PIPING, VESSELS, STEEL FRAME, ETC.
2. REMOVE AND DISPOSE OF EXISTING ABOVE GROUND TRANSMISSION MAINS.
3. EXISTING ABOVE GROUND TRANSMISSION MAINS TO REMAIN.
4. EXISTING BELOW GROUND TRANSMISSION MAINS TO STUDIO RINK TO REMAIN.
5. REMOVE AND DISPOSE OF EXISTING BELOW GRADE RINK TRANSMISSION PIPING TO MAIN RINK IN LOCATIONS THAT CONFLICT WITH NEW CONSTRUCTION. ABANDON PIPING IN PLACE IN ALL OTHER LOCATIONS AND FILL WITH FLOWABLE GROUT AND CAP.
6. REMOVE AND DISPOSE OF EXISTING AIR COOLED CONDENSER AND APPURTENANCES INCLUDING BUT NOT LIMITED TO: UNIT, REFRIGERATION PIPING, ELECTRICAL, STEEL STRUCTURE, ETC. CONCRETE PAD TO REMAIN.
7. EXISTING MEP EQUIPMENT AND PIPING. DO NOT DISTURB.
8. REMOVE AND DISPOSE OF EXISTING PERIMETER CONCRETE SLAB FOR INSTALLATION OF NEW TRANSMISSION MAINS. REMOVE, SALVAGE AND RE-INSTALL EXISTING SKATE TILE FLOORING IN AFFECTED AREAS.
9. EXISTING RAISED CONCRETE HOUSEKEEPING PAD TO REMAIN.

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Consultants:

Project:
**WINDOM ICE ARENA ICE SYSTEM REPLACEMENT**

Location:
**1480 8TH AVE, WINDOM, MN 56101**

Certification:

NOT FOR CONSTRUCTION FOR REVIEW ONLY

| | |
|---|---|
| Drawn By | AMT |
| Checked By | SAW |
| Project No. | 900-17-287 |
| Date | 12/15/2017 |

Scale:
0 1' 2' 4' 6'
SCALE: 3/8" = 1'-0"

Revisions:

| No. | Date | Description |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**CONSTRUCTION DOCUMENTS**

Sheet Title:
**REFRIGERATION SYSTEM DEMOLITION PLAN**

Sheet No.:
**RD101**

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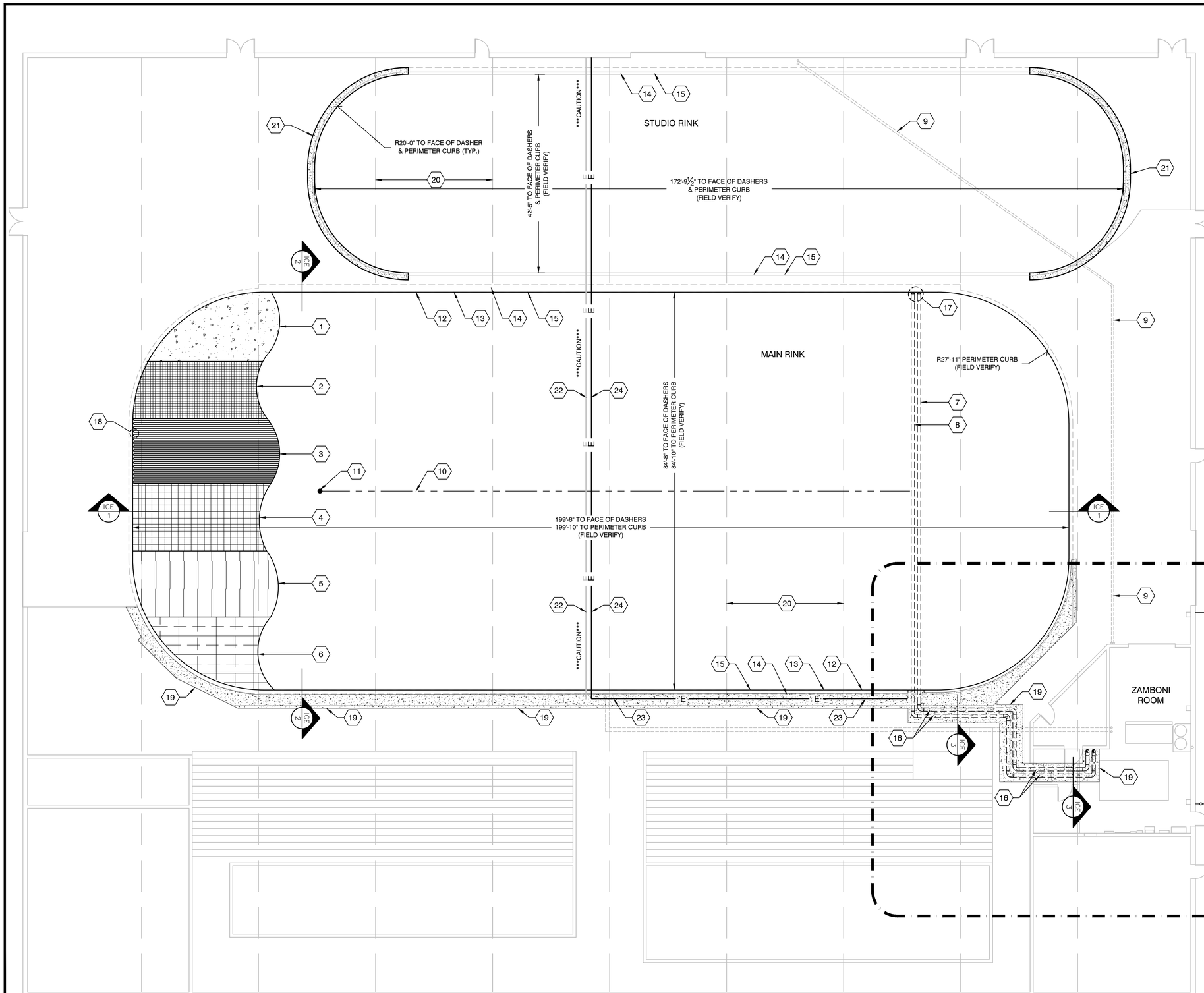


1 ICE RINK FLOOR PLAN
SCALE: 3/32" = 1'-0"

## GENERAL NOTES:

1. FIELD VERIFY ALL DIMENSIONS.
2. PIPING SHOWN IN SCHEMATIC FORM.

## X KEY NOTES:

1. CONCRETE: 6" THICK.
2. WIRE MESH: 6" X 6" X W2.9 X W2.9. 6" MINIMUM OVERLAP BETWEEN SHEETS. TIE TO REBAR EVERY 24". TERMINATE 2" FROM RINK EDGE.
3. RINK PIPING: 1" POLYETHYLENE PIPE @ 4" O.C. FUSION WELDED CONNECTIONS.
4. REINFORCEMENT: #4 BARS @ 16" O.C. PARALLEL WITH RINK PIPING AND 14" O.C. PERPENDICULAR WITH RINK PIPING. MINIMUM LAP OF 25".
5. PIPE AND REBAR SUPPORT CHAIRS @ 3'-0" O.C. THE ENTIRE LENGTH OF THE RINK. SUPPORT CHAIR SECTIONS SHALL OVERLAP A MINIMUM OF TWO RINK PIPES. SEE DETAIL ICE-74.
6. FLOOR INSULATION: TWO (2) LAYERS OF 1 1/2" THICK, 4'-0" X 8'-0" SHEETS - STAGGER JOINTS. FINISHED INSULATION THICKNESS SHALL BE 3". COVER INSULATION WITH VAPOR BARRIER AND TAPE ALL HOLES AND JOINTS
7. 8" POLYETHYLENE SUPPLY HEADER.
8. 8" POLYETHYLENE RETURN HEADER.
9. EXISTING UNDERGROUND TRANSMISSION MAINS TO/FROM STUDIO RINK. DO NOT DISTURB.
10. 3/4" SCH. 80 PVC CONDUIT & CABLES TO/FROM REFRIGERATION PACKAGE.
11. ICE AND SUB-FLOOR TEMPERATURE SENSOR, BOX AND CONDUIT. SEE DETAIL ICE-83.
12. EXPANSION JOINT AROUND ENTIRE PERIMETER OF RINK FLOOR. SEE DETAIL ICE-81.
13. 1" POLYETHYLENE PIPE AROUND ENTIRE PERIMETER OF RINK FLOOR.
14. EXISTING CONCRETE CURB AROUND ENTIRE RINK TO REMAIN UNLESS NOTED OTHERWISE.
15. EXISTING DASHER BOARD SYSTEM. RE-INSTALLATION AND MODIFICATIONS BY OWNER.
16. 8" BURIED INSULATED POLYETHYLENE TRANSMISSION MAINS TO/FROM ZAMBONI ROOM. SEE SECTIONS AND SCHEMATICS FOR ACTUAL PIPE SIZE AND CONFIGURATION.
17. SEE DETAIL ICE-40.
18. SEE DETAIL ICE-76 AND ICE-162 @ RADIUS.
19. CONCRETE INFILL. SEE DETAIL ICE-32 AND ICE-2.
20. EXISTING STRUCTURAL STEEL STRAND TIES. DO NOT DISTURB.
21. NEW REINFORCED CONCRETE CURB RADII ON STUDIO RINK. MATCH ADJACENT CURB WIDTH AND THICKNESS. SEE DETAIL ICE-33.
22. EXISTING ELECTRICAL CONDUIT UNDER RINK FLOOR. DO NOT DISTURB.
23. SEE SHEET E100 FOR INSTALLATION OF NEW ELECTRICAL FEED AND CONDUITS FROM ZAMBONI ROOM TO SCORERS BOX.
24. FURNISH AND INSTALL (1) 2" SCH. 80 PVC CONDUIT ADJACENT TO EXISTING CONDUIT ACROSS RINK FLOOR FOR FUTURE USE. COORDINATE WITH OWNER.


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Consultants:

Project:

**WINDOM ICE ARENA ICE SYSTEM REPLACEMENT**

Location:

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Certification:

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| Checked By | SAW |
| Project No. | 900-17-287 |
| Date | 12/15/2017 |

Scale:

0 5' 10' 20'
SCALE: 3/32" = 1'-0"

Revisions:

| No. | Date | Description |
|---|---|---|
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**CONSTRUCTION DOCUMENTS**

Sheet Title:

**ICE RINK FLOOR PLAN**

Sheet No.:

**R100**

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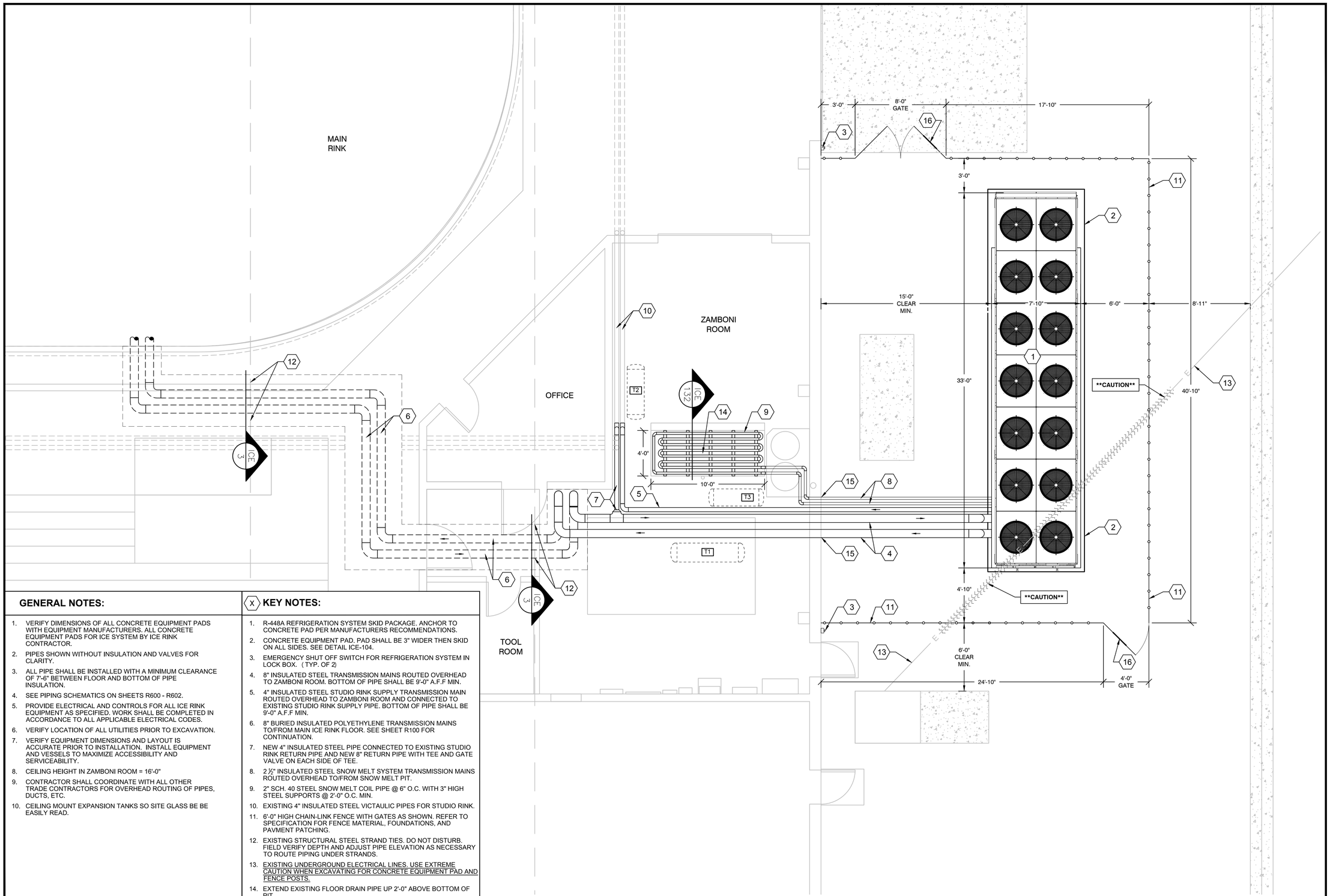


## GENERAL NOTES:

1. VERIFY DIMENSIONS OF ALL CONCRETE EQUIPMENT PADS WITH EQUIPMENT MANUFACTURERS. ALL CONCRETE EQUIPMENT PADS FOR ICE SYSTEM BY ICE RINK CONTRACTOR.
2. PIPES SHOWN WITHOUT INSULATION AND VALVES FOR CLARITY.
3. ALL PIPE SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 7'-6" BETWEEN FLOOR AND BOTTOM OF PIPE INSULATION.
4. SEE PIPING SCHEMATICS ON SHEETS R600 - R602.
5. PROVIDE ELECTRICAL AND CONTROLS FOR ALL ICE RINK EQUIPMENT AS SPECIFIED. WORK SHALL BE COMPLETED IN ACCORDANCE TO ALL APPLICABLE ELECTRICAL CODES.
6. VERIFY LOCATION OF ALL UTILITIES PRIOR TO EXCAVATION.
7. VERIFY EQUIPMENT DIMENSIONS AND LAYOUT IS ACCURATE PRIOR TO INSTALLATION. INSTALL EQUIPMENT AND VESSELS TO MAXIMIZE ACCESSIBILITY AND SERVICEABILITY.
8. CEILING HEIGHT IN ZAMBONI ROOM = 16'-0"
9. CONTRACTOR SHALL COORDINATE WITH ALL OTHER TRADE CONTRACTORS FOR OVERHEAD ROUTING OF PIPES, DUCTS, ETC.
10. CEILING MOUNT EXPANSION TANKS SO SITE GLASS BE BE EASILY READ.

## (X) KEY NOTES:

1. R-448A REFRIGERATION SYSTEM SKID PACKAGE. ANCHOR TO CONCRETE PAD PER MANUFACTURERS RECOMMENDATIONS.
2. CONCRETE EQUIPMENT PAD. PAD SHALL BE 3" WIDER THEN SKID ON ALL SIDES. SEE DETAIL ICE-104.
3. EMERGENCY SHUT OFF SWITCH FOR REFRIGERATION SYSTEM IN LOCK BOX. ( TYP. OF 2)
4. 8" INSULATED STEEL TRANSMISSION MAINS ROUTED OVERHEAD TO ZAMBONI ROOM. BOTTOM OF PIPE SHALL BE 9'-0" A.F.F MIN.
5. 4" INSULATED STEEL STUDIO RINK SUPPLY TRANSMISSION MAIN ROUTED OVERHEAD TO ZAMBONI ROOM AND CONNECTED TO EXISTING STUDIO RINK SUPPLY PIPE. BOTTOM OF PIPE SHALL BE 9'-0" A.F.F MIN.
6. 8" BURIED INSULATED POLYETHYLENE TRANSMISSION MAINS TO/FROM MAIN ICE RINK FLOOR. SEE SHEET R100 FOR CONTINUATION.
7. NEW 4" INSULATED STEEL PIPE CONNECTED TO EXISTING STUDIO RINK RETURN PIPE AND NEW 8" RETURN PIPE WITH TEE AND GATE VALVE ON EACH SIDE OF TEE.
8. 2 ½" INSULATED STEEL SNOW MELT SYSTEM TRANSMISSION MAINS ROUTED OVERHEAD TO/FROM SNOW MELT PIT.
9. 2" SCH. 40 STEEL SNOW MELT COIL PIPE @ 6" O.C. WITH 3" HIGH STEEL SUPPORTS @ 2'-0" O.C. MIN.
10. EXISTING 4" INSULATED STEEL VICTAULIC PIPES FOR STUDIO RINK.
11. 6'-0" HIGH CHAIN-LINK FENCE WITH GATES AS SHOWN. REFER TO SPECIFICATION FOR FENCE MATERIAL, FOUNDATIONS, AND PAVMENT PATCHING.
12. EXISTING STRUCTURAL STEEL STRAND TIES. DO NOT DISTURB. FIELD VERIFY DEPTH AND ADJUST PIPE ELEVATION AS NECESSARY TO ROUTE PIPING UNDER STRANDS.
13. EXISTING UNDERGROUND ELECTRICAL LINES. USE EXTREME CAUTION WHEN EXCAVATING FOR CONCRETE EQUIPMENT PAD AND FENCE POSTS.
14. EXTEND EXISTING FLOOR DRAIN PIPE UP 2'-0" ABOVE BOTTOM OF PIT.
15. SEAL ALL PIPE PENETRATIONS IN WALL WITH LIKE MATERIALS. (TYP.)
16. GATE SIGN. (TYP. OF 2) SEE DETAIL ICE-125.

1 REFRIGERATION SYSTEM AREA PLAN
SCALE: 1/4" = 1'-0"

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Scale:

Revisions:

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**CONSTRUCTION DOCUMENTS**

Sheet Title:
**REFRIGERATION SYSTEM AREA PLAN**

Sheet No.:
**R101**

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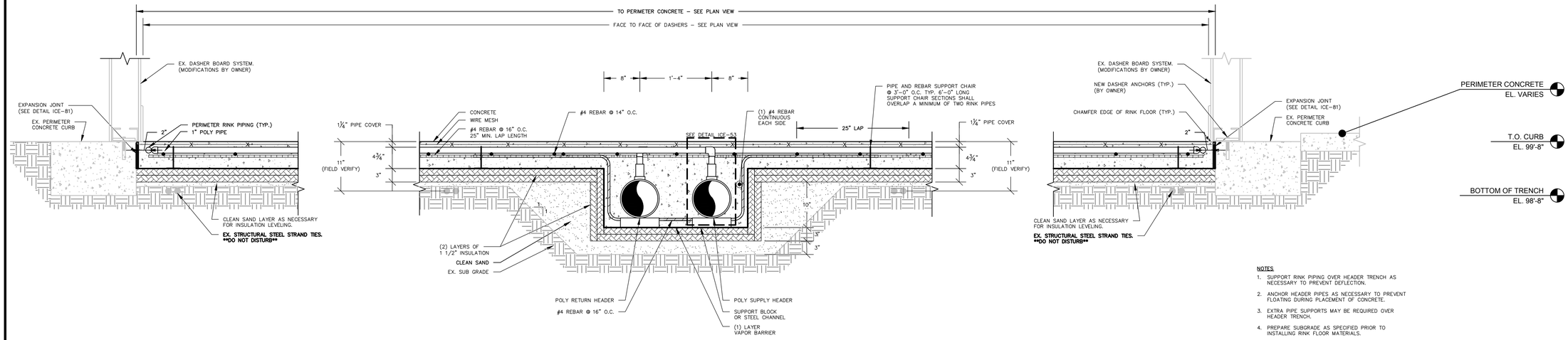
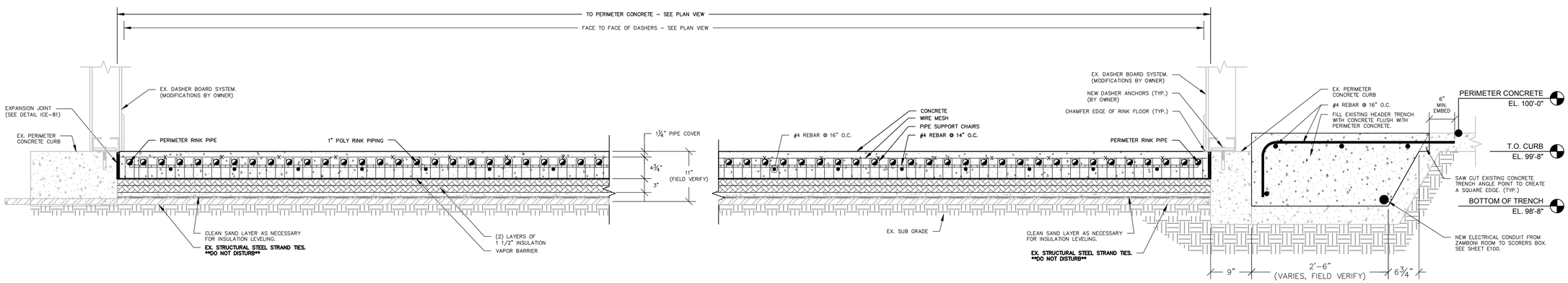



ICE 1 NEW RINK FLOOR SECTION
SCALE: N.T.S.

NOTES

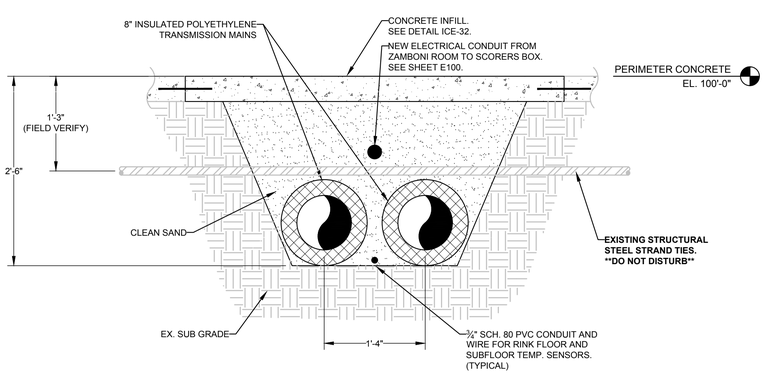
1. SUPPORT RINK PIPING OVER HEADER TRENCH AS NECESSARY TO PREVENT DEFLECTION.
2. ANCHOR HEADER PIPES AS NECESSARY TO PREVENT FLOATING DURING PLACEMENT OF CONCRETE.
3. EXTRA PIPE SUPPORTS MAY BE REQUIRED OVER HEADER TRENCH.
4. PREPARE SUBGRADE AS SPECIFIED PRIOR TO INSTALLING RINK FLOOR MATERIALS.




ICE 2 NEW RINK FLOOR SECTION
SCALE: N.T.S.

NOTES

1. SUPPORT RINK PIPING OVER HEADER TRENCH AS NECESSARY TO PREVENT DEFLECTION.
2. ANCHOR HEADER PIPES AS NECESSARY TO PREVENT FLOATING DURING PLACEMENT OF CONCRETE.
3. EXTRA PIPE SUPPORTS MAY BE REQUIRED OVER HEADER TRENCH.
4. PREPARE SUBGRADE AS SPECIFIED PRIOR TO INSTALLING RINK FLOOR MATERIALS.




ICE 3 PIPE TRENCH SECTION
SCALE: N.T.S.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| Date | 12/15/2017 |

Scale:

Revisions:

| No. | Date | Description |
|---|---|---|
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**CONSTRUCTION DOCUMENTS**

Sheet Title:

**ICE RINK SECTIONS AND DETAILS**

Sheet No.:

**R500**

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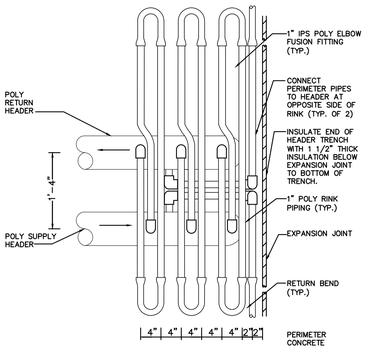
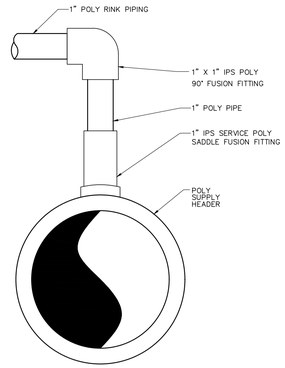
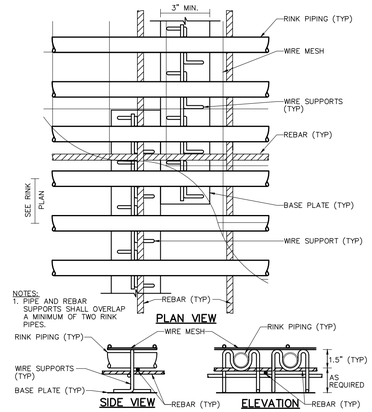


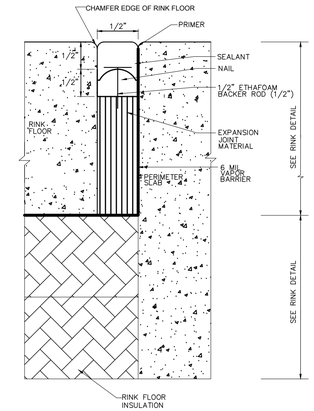

ICE 40 HEADER PIPE DETAIL
SCALE: N.T.S.



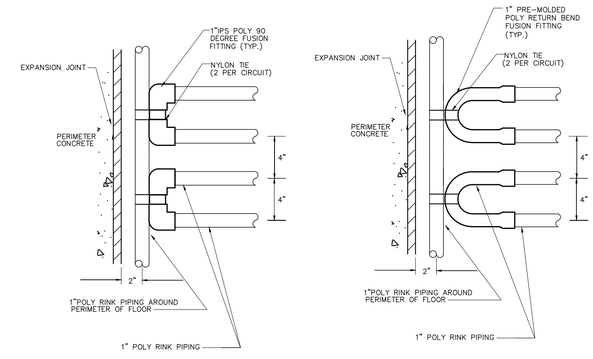

ICE 53 HEADER PIPE CONNECTION DETAIL
SCALE: N.T.S.



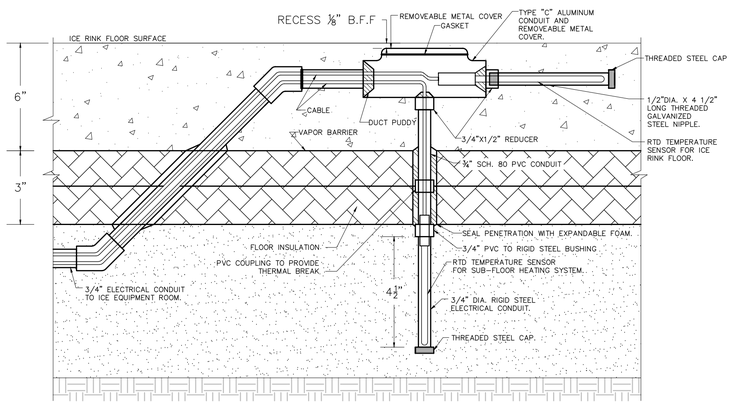

ICE 74 RINK PIPE AND REBAR SUPPORTS
SCALE: N.T.S.




ICE 81 EXPANSION JOINT DETAIL
SCALE: N.T.S.




ICE 76 RINK PIPE DETAIL
SCALE: N.T.S.




ICE 83 TEMPERATURE SENSOR DETAIL
SCALE: N.T.S.

SYSTEM INFORMATION

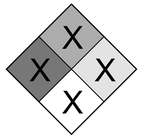
CONTRACTOR NAME
ADDRESS
CITY, STATE

PHONE NUMBER STATE LICENSE & NUMBER

| | |
|---|---|
| HIGH SIDE TEST | XXX PSI |
| LOW SIDE TEST | XXX PSI |
| SYSTEM CHARGE | XXX LBS |
| REFRIGERANT | XXXX |
| REFRIGERANT OIL | XXXX |

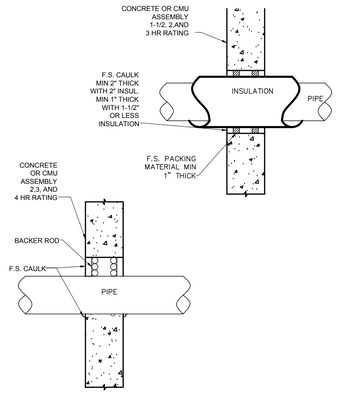
FACILITY NAME

10" 6"




DIAMOND HAZARD:
PER NFPA 704

ICE 125 GATE SIGNAGE DETAIL
SCALE: N.T.S.




ICE 115 PIPE PENETRATIONS AT FLOOR OR WALL
SCALE: N.T.S.

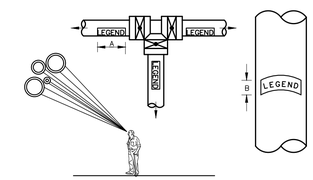


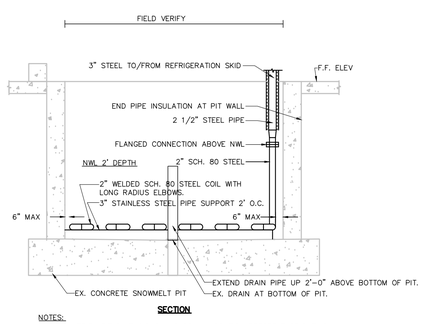

Table 1
Examples of Legends

| |
|---|
| GLYCOL SUPPLY |
| BRINE RETURN |
| H.P. REF. RETURN |

Table 2
Size of Legend Letters

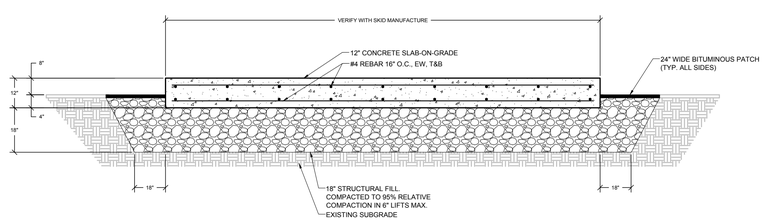
| Outside Diameter of Pipe or Covering, (in.) | Length of Color Field A, (in.) | Size of Letters B, (in.) |
|---|---|---|
| 3/4 to 1-1/4 | 8 | 1/2 |
| 1-1/2 to 2 | 8 | 3/4 |
| 2-1/2 to 6 | 12 | 1-1/4 |
| 8 to 10 | 24 | 2-1/2 |
| over 10 | 32 | 3-1/2 |

ICE 117 PIPE MARKINGS DETAIL
SCALE: N.T.S.

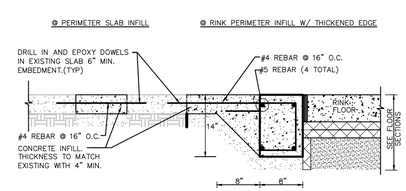



NOTES:
1. FIELD VERIFY PIT DIMENSIONS AND DRAIN LOCATION BEFORE FABRICATING.
2. SEE PAINTING REQUIREMENTS FOR PIPE AND COIL IN SPECIFICATIONS.
3. SEE SHEET R101 FOR ACTUAL COIL CONFIGURATION.

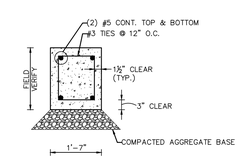
ICE 132 TYPICAL SNOW MELT PIT SECTION
SCALE: N.T.S.




ICE 104 CONCRETE EQUIPMENT PAD DETAIL
SCALE: N.T.S.




ICE 32 TYPICAL CONCRETE INFILL DETAIL
SCALE: N.T.S.




ICE 33 CONCRETE CURB DETAIL
SCALE: N.T.S.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**CONSTRUCTION DOCUMENTS**

Sheet Title:
**ICE RINK SECTIONS AND DETAILS**

Sheet No.:
**R501**

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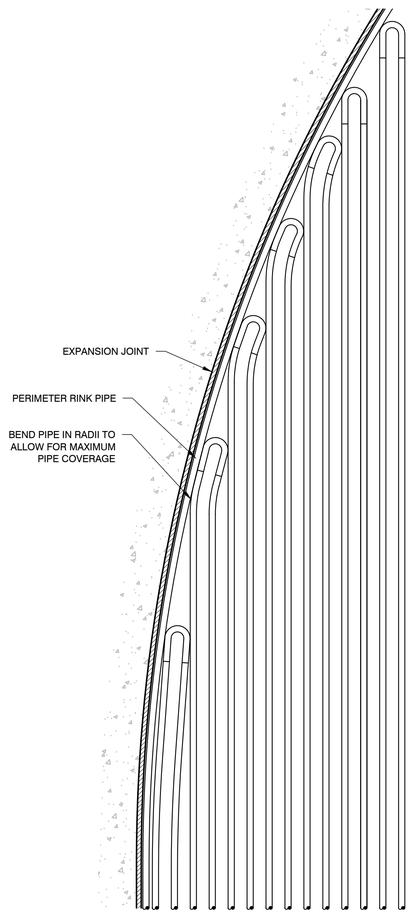
| EXPOSED ITEM | TYPE | THICKNESS | JACKET TYPE | JACKET COLOR |
|---|---|---|---|---|
| PIPE UP TO 1 1/4" DIA. | 3 | 1 1/2" | 2 | WHITE |
| PIPE 1 1/2" TO 4" DIA. COLD, GLYCOL AND REF. | 5 | 2" | 2 | WHITE |
| PIPE 1 1/2" TO 4" DIA. WARM GLYCOL | 5 | 2" | 2 | RED |
| PIPE 5" TO 8" DIA. COLD GLYCOL | 5 | 2 1/2" | 2 | WHITE |
| VALVES (WHERE PIPE IS INSULATED) | 3/5 | SAME AS PIPE | 2 | WHITE |
| RINK PUMPS | 3 | 2" | NONE | – |
| CHILLER AND SURGE DRUM | 3 | 2" | 2 | – |
| HEAT EXCHANGERS | 3 | 2" | 2 | – |
| WATER PIPING | 3 | 1" | NONE | – |
| | | | | |
| BURIED ITEM | | | | |
| SNOW MELT PIT SYSTEM PIPING | 5 | 2" | 3 | WHITE |
| GLYCOL PIPING TO/FROM RINK FLOOR | 5A/5B | 2 1/2" | SEE SPEC | SEE SPEC |

REMARKS:
CHECK SPECIFICATIONS FOR REQUIRED COATING ON BURIED STEEL, NON–INSULATED PIPE.

ICE 163 INSULATION SCHEDULE
SCALE: N.T.S.




ICE 162 TYPICAL RINK PIPING DETAIL @ RADIUS
SCALE: N.T.S.

## EQUIPMENT SCHEDULE: R-448A PACKAGED SYSTEM

### PUMP SCHEDULE

| NO. | DESCRIPTION | MANUF. | MODEL | FLUID | GPM | TDH (FT) | MOTOR | RPM | V/P/HZ | MIN. EFF. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P–1 | RINK PUMP | TACO | * | 40% E.G. | 800 | 65 | 25 HP | 1750 | 460/3/60 | 82% | PUMP SIZES ARE ESTIMATES ONLY. ENGINEER SHALL VERIFY PUMP SIZE DURING SHOP DRAWING REVIEW. CONTRACTOR TO PROVIDE PUMPS RECOMMENDED BY ENGINEER. |
| P–2 | RINK PUMP | TACO | * | 40% E.G. | 800 | 65 | 25 HP | 1750 | 460/3/60 | 82% | |
| P–3 | RINK PUMP | TACO | * | 40% E.G. | 300 | 50 | 15 HP | 1750 | 460/3/60 | 73% | PROVIDE VFD FOR PUMPS P–1 THRU P–3 |
| P–4 | SNOW MELT PUMP | TACO | * | 40% E.G. | 80 | 80 | 5 HP | 1750 | 460/3/60 | 68% | * PER MANUFACTURER |

### CHILLER SCHEDULE – PLATE AND FRAME DX

| NO. | CAP (TN) | NO. CIRCUITS | DIMENSIONS | | COLD | | | | | | HOT | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | WIDTH | LENGTH | REF. | TEMP IN | TEMP OUT | LBS/HR | GASKET | PLATE | FLUID | GPM | TEMP IN | TEMP OUT | FPS | PSI | |
| V–1 | 60 | 1 | – | – | R–448A | 5.0 F | 102 F | – | WELDED | BRAZED | 40% E.G. | 1200 | 16.7 F | 14 F | .96 | 10.5 | GEA MODEL – |
| V–2 | 60 | 1 | – | – | R–448A | 5.0 F | 102 F | – | WELDED | BRAZED | 40% E.G. | 1200 | 16.7 F | 14 F | .96 | 10.5 | GEA MODEL – |

NOTE:
1. CONTRACTOR MAY USE ONE (1) SHELL AND TUBE OR PLATE AND FRAME HEAT EXCHANGER OR TWO (2) SHELL AND TUBE OR PLATE AND FRAME HEAT EXCHANGERS, OPERATING AT THE SAME CONDITIONS. SEE SPECIFICATIONS FOR REQUIREMENTS. ENGINEER WILL VERIFY RINK PUMP SIZE (P–1, P–2) AND CONTRACTOR SHALL SUPPLY PUMPS RECOMMENDED BY ENGINEER, CONTRACTOR IS RESPONSIBLE FOR ALL RELATED CHANGES IN MATERIALS, EQUIPMENT, LABOR, AND ALL OTHER RELATED ITEMS AT NO ADDITIONAL COST.

### COMPRESSORS

| NO. | TYPE | MANUF. | MODEL | REF. | NO. CYL. | CAPACITY TONS | SUCTION TEMP | COND TEMP | MOTOR BHP | MOTOR RPM | V/P/HZ | CONTROLS | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C–1 | RECIP | BITZER | GFE–44–2NU–OD | R448A | 6 | 21.8 | 5 F | 110 F | 44 | 1175 | 460/3/60 | SEE SPEC | PROVIDE SOFT START FOR EACH COMPRESSOR. |
| C–2 | RECIP | BITZER | GFE–44–2NU–OD | R448A | 6 | 21.8 | 5 F | 110 F | 44 | 1175 | 460/3/60 | SEE SPEC | TOTAL POWER REQUIRED FOR PACKAGE IS 474 MCA, 500 MOPD 480/3/60 |
| C–3 | RECIP | BITZER | GFE–44–2NU–OD | R448A | 6 | 21.8 | 5 F | 110 F | 44 | 1175 | 460/3/60 | SEE SPEC | |
| C–4 | RECIP | BITZER | GFE–44–2NU–OD | R448A | 6 | 21.8 | 5 F | 110 F | 44 | 1175 | 460/3/60 | SEE SPEC | |
| C–5 | RECIP | BITZER | GFE–44–2NU–OD | R448A | 6 | 21.8 | 5 F | 110 F | 44 | 1175 | 460/3/60 | SEE SPEC | CONTROL POWER 12 MCA, 15 MOPD 120/1/60 |
| C–6 | RECIP | BITZER | GFE–44–2NU–OD | R448A | 6 | 21.8 | 5 F | 110 F | 44 | 1175 | 460/3/60 | SEE SPEC | |

### AIR COOLED CONDENSERS

| NO. | TYPE | MANUF. | MODEL | REF. | THR (MBH) | SET TEMP | COND TEMP | AMBIENT TEMP | TD TEMP | NO. FANS | FAN HP | FAN RPM | V/P/HZ | FLA | MOPD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CU–1 | AIR | KEEPRITE | KCL260–T4AC27V | R448A | 2264 | 5 F | 110 F | 85 F | 19.8 F | 12 | 3 | 1140 | 460/3/60 | 43.40 | 60 |

NOTE:
1. 2 CIRCUIT UNIT
2. PROVIDE EC MOTORS.

### HEAT EXCHANGERS

| NO. | DESCRIPTION | MANUF. | MODEL | CAP. (MBH) | SHELL | | TUBE | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | REF. | COND. TEMP | FLUID | GPM | TEMP IN | TEMP OUT | PSI MAX | |
| H–1 | HEAT RECOVERY | | | 300 | R448A | 95 F | 40% E.G. | 80 | 40 | 45 | | DESUPERHEATER |

### EXPANSION, COMPRESSION AND OTHER TANKS

| NO. | DESCRIPTION | MANUF. | CAP. (GAL) | SIZE | ACCESSORIES | | REMARKS |
|---|---|---|---|---|---|---|---|
| | | | | | TANK FITTING | SITE GLASS | |
| T–1 | ICE RINK | BELL&GOSSETT | 100 | | AFTL | YES | MAIN RINK – EXPANSION |
| T–2 | ICE RINK | BELL&GOSSETT | 40 | | AFTL | YES | STUDIO RINK – EXPANSION |
| T–3 | SNOW MELT | BELL&GOSSETT | 60 | | AFTL | YES | EXPANSION |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Consultants:

Project:
**WINDOM ICE ARENA ICE SYSTEM REPLACEMENT**

Location:
**1480 8TH AVE, WINDOM, MN 56101**

Certification:

NOT FOR CONSTRUCTION FOR REVIEW ONLY

| | |
|---|---|
| Drawn By | AMT |
| Checked By | SAW |
| Project No. | 900-17-287 |
| Date | 12/15/2017 |

Scale:

Revisions:

| No. | Date | Description |
|---|---|---|
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**CONSTRUCTION DOCUMENTS**

Sheet Title:
**ICE RINK DETAILS AND SCHEDULES**

Sheet No.:
**R502**

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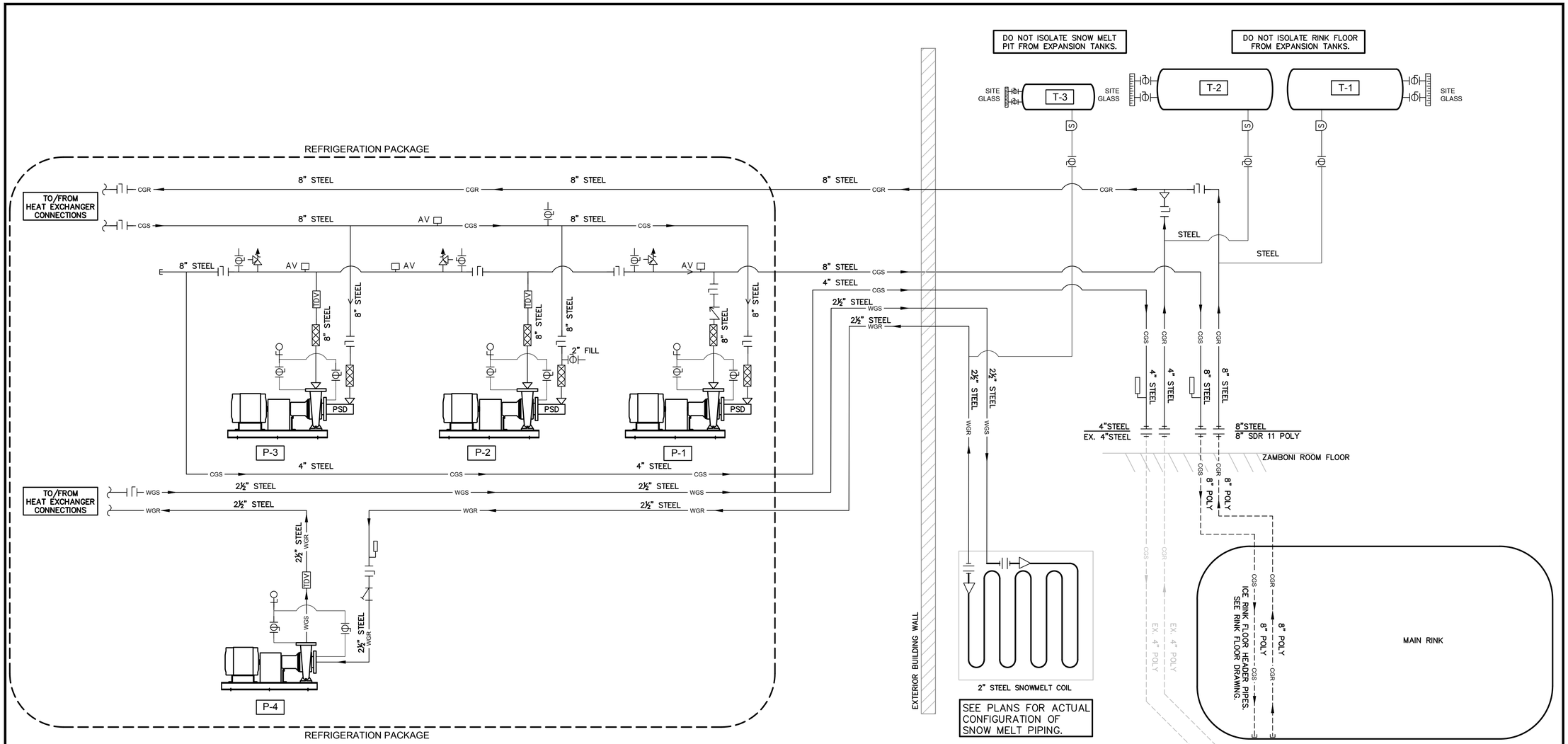


## GENERAL NOTES

1. THE REFRIGERATION FLOW DIAGRAM SHOWS GENERAL SYSTEM REQUIREMENTS ONLY. ICE CONTRACTOR TO FURNISH AND INSTALL ALL MATERIALS AND EQUIPMENT FOR A COMPLETE OPERATING SYSTEM AND AS NECESSARY TO MEET CURRENT STATE AND LOCAL MECHANICAL CODES.
2. PIPING MATERIAL AS SPECIFIED. INSULATE ALL PIPING AS SPECIFIED IN INSULATION SCHEDULE. SEE DETAIL ICE–163
3. CHILLER ARRANGMENT MAYBE DIFFERENT THAN PICTURED ABOVE. SEE ICE EQUIPMENT SCHEDULE.
4. INSTALL PIPE UNIONS ON EACH SIDE OF ALL EQUIPMENT AND VALVES FOR MAINTENANCE.
5. PROVIDE CRANKCASE OIL EQUALIZATION LINES BETWEEN COMPRESSORS WITH ALL ASSOCIATED VALVES, FLOATS, GAUGES, ETC. AS RECOMMENDED BY THE MANUFACTURER.
6. ALL VALVES AND PIPING SPECIALTIES SHALL BE FULL LINE SIZE.
7. ALL GAUGES SHALL BE MOUNTED AT EYE LEVEL WHERE POSSIBLE.
8. LENGTH OF DRIP LEGS SHALL MEET LOCAL CODE REQUIREMENTS.
9. THE CONTRACTOR IS RESPONSIBLE FOR PLACEMENT AND DESIGN OF ALL HANGERS AND SUPPORT SYSTEMS AND SHALL VERIFY THAT BUILDING AND ROOF STRUCTURE IS DESIGNED TO SUPPORT SYSTEM LOADS.
10. PROVIDE ALL CONTROL VALVES REQUIRED BY CMC, ASHRAE 15 AND ALL OTHER LOCAL, STATE AND FEDERAL CODES.


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**CONSTRUCTION DOCUMENTS**

Sheet Title:

**SECONDARY REFRIGERANT FLOW DIAGRAM**

Sheet No.:

**R600**

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