PROJECT

PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT REPLACEMENT PROJECT

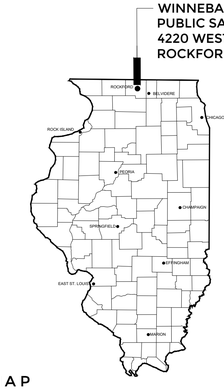
IFB NO. 24B-2357

420 WEST STATE ST.
ROCKFORD, ILLINOIS 61101

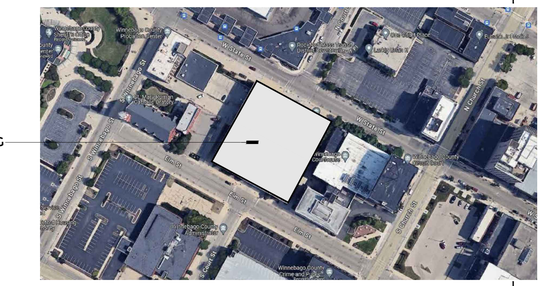
OWNER

WINNEBAGO COUNTY

404 ELM STREET,
ROCKFORD, ILLINOIS 61101



STATE MAP
SCALE: N.T.S.



SITE LOCATION MAP
SCALE: N.T.S.

ARCHITECT OF RECORD

RICHARD L. JOHNSON ASSOCIATES
4703 Charles Street
Rockford IL. 61108
PHONE: 815/398-1231 FAX 815/398-1280
www.rljarch.com
IL. Design Firm No. 187-000524

STATE OF ILLINOIS · SCOTT R. JOHNSON 01 4871 · LICENSED ARCHITECT

8-30-2024
DATE

EXPIRES 11-30-2024

MECHANICAL / ELECTRICAL / PLUMBING

SYSTEM DESIGN SERVICE ENGINEERING
3600 East State Street, Suite 215
Rockford IL. 61108
PHONE: 815/399-3381 FAX 815/399-3383
www.sdsegroup.com
IL. Design Firm No. 184.004999

LICENSED PROFESSIONAL ENGINEER · SCOTT JAY BAIER 062-059748 · STATE OF ILLINOIS

30 AUG 2024

EXPIRES 30 NOV 2025

SHEET INDEX

PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
TITLE SHEET

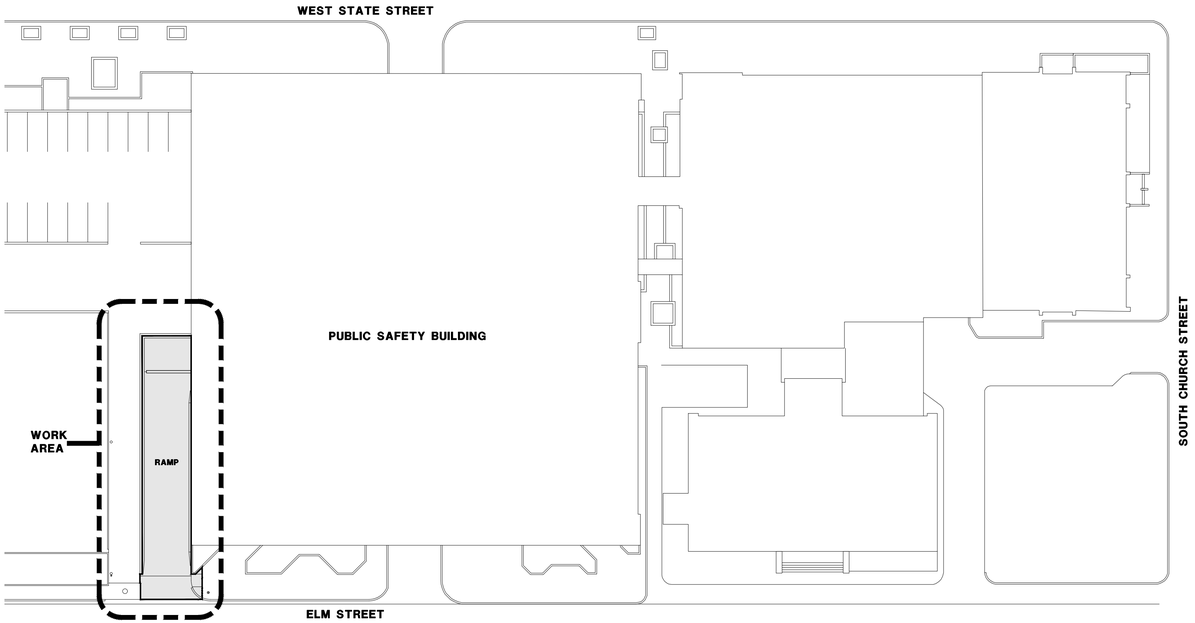
PROJECT INFORMATION

Date	AUGUST 30 2024
RLJA Proj	2023-053

SHEET NUMBER
T101
OF
1

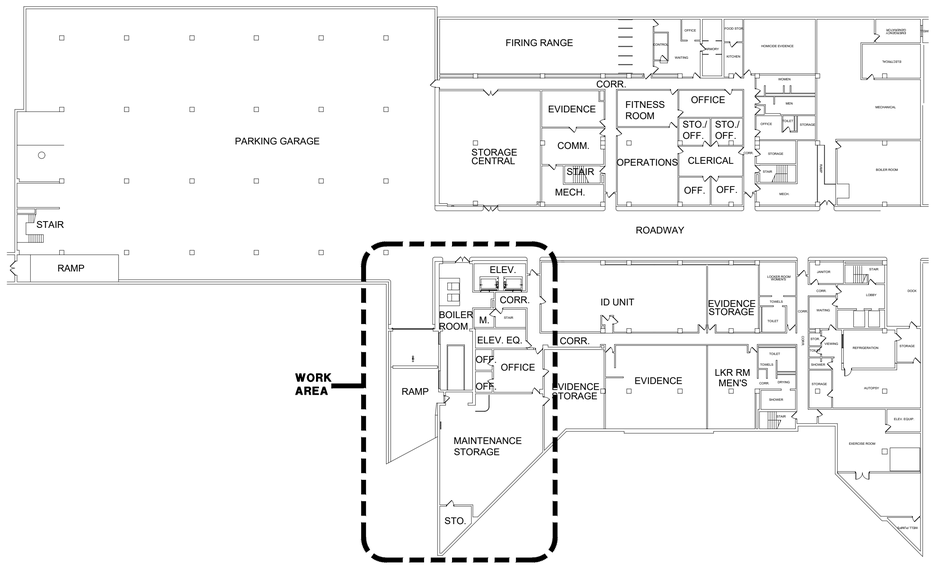
ABBREVIATIONS

ACT	ACOUST. CEILING TILE SYSTEM	CTOP	COUNTERTOP	FAAP	FIRE ALARM ANNUNCIATOR PANEL	IN	INCH	PR	PAIR	STRUC	STRUCTURAL
ACU	AIR CONDITIONING UNIT	CTR	COUNTER	FACP	FIRE ALARM CONTROL PANEL	INSUL	INSULATION	PT	PAINT	SUH	SUSPENDED UNIT HEATER
ADJ	ADJACENT	CUH	CABINET UNIT HEATER	FB	FACE BRICK	INT	INTERIOR	PLYWD	PLYWOOD	SUSP	SUSPENDED
ADS	ADJUSTABLE SHELVES	CUV	CABINET UNIT VENTILATOR	FBO	FURNISHED BY OWNER/OTHERS	JAN	JANITOR	QT	QUARRY TILE	SV	SHEET VINYL
AFF	ABOVE FINISH FLOOR	DEF	DEFIBRILLATOR	FD	FLOOR DRAIN	KEH	KITCHEN EXHAUST HOOD	QTZ	QUARTZ TILE	TB	TACK BOARD
AHU	AIR HANDLING UNIT	DF	DRINKING FOUNTAIN	FDTN	FOUNDATION	LAM	LAMINATE	R	RISER	TERR	TERRAZZO
AL	ALUMINUM	DIA	DIAMETER	FE	FIRE EXTINGUISHER	LAV	LAVATORY	RAD	RADIATION	T/O	TOP OF
ALT	ALTERNATE	DIM	DIMENSION	FEC	FIRE EXTINGUISHER CABINET	LF	LATERAL FILE	RB	RUBBER BASE	TP	TACK PANEL
AVG	AVERAGE	DN	DOWN	FH	FIRE HYDRANT	LK	LOCK/LOCKABLE CABINET	RD	ROOF DRAIN	TS	TACK STRIP
BD	BOARD	DP	DEEP	FHC	FIRE HOSE CABINET	LP	LIGHT POLE	REINF	REINFORCEMENT	TYP	TYPICAL
BITUM	BITUMINOUS	DR	DOOR	FIN	FINISH	LVT	LUXURY VINYL TILE	REQ'D	REQUIRED	UE	UNDERGROUND ELECTRICAL
BLDG	BUILDING	DS	DOWNSPOUT	FLR	FLOOR	MAS	MASONRY	RFT	RUBBER FLOOR TILE	UC	UNDERGROUND CABLE
BM	BEAM	DTL	DETAIL	FP	FOLDING PARTITION	MAX	MAXIMUM	RM	ROOM	UG	UNDERGROUND GAS
B/O	BOTTOM OF	DWG	DRAWING	FRP	FIBERGLASS REINFORCED PANEL	MB	MARKER BOARD	RST	RUBBER STAIR TREAD	UH	UNIT HEATER
BRG	BEARING	EA	EACH	FS	FLOOR SINK	MECH	MECHANICAL	RTU	ROOFTOP UNIT	U.N.O.	UNLESS NOTED OTHERWISE
BS	BACKSPLASH	EEW	EMERGENCY EYE WASH	FT	FEET	MEZZ	MEZZANINE	SAN	SANITARY SEWER	UV	UNIT VENTILATOR
CAB	CABINET	EF	EXHAUST FAN	FTG	FOOTING	MFR	MANUFACTURER	SB	SMART BOARD	VAT	VINYL ASBESTOS TILE
CB	CHALKBOARD	EIFS	EXTERIOR INSULATION & FINISH SYSTEMS	FURN	FURNACE	MH	MANHOLE	SC	SEALED CONCRETE	VCT	VINYL COMPOSITION TILE
CJ	CONTROL JOINT			G	GAS	MIN	MINIMUM	SECT	SECTION	VERT	VERTICAL
CLG	CEILING	EJ	EXPANSION JOINT	GA	GAUGE	MISC	MISCELLANEOUS	SF	SQUARE FOOT	V.I.F.	VERIFY IN FIELD
CLR	CLEAR	EL	ELEVATION	GALV	GALVANIZED	MLB	MAIL BOXES	SG	SINGLE	W	WATER
CMU	CONCRETE MASONRY UNIT	ELEC	ELECTRIC	GL	GLASS	MTL	METAL	SGT	STRUCTURAL GLAZED TILE	WC	WATER CLOSET
CBB	CEMENT BACKER BOARD	ERF	EPOXY RESINOUS FLOORING	GMT	GROMMET	NTS	NOT TO SCALE	SIM	SIMILAR	WD	WOOD
COL	COLUMN	EMRG	EMERGENCY	GYP	GYPSUM WALL BOARD	OC	ON CENTER	SK	SINK	WDW	WINDOW
CONC	CONCRETE	EPDM	ETHYL. PROPYL. DIENE MONOMER	HC	HANDICAP	OE	OVERHEAD ELECTRICAL	SM	SMARTBOARD BY OWNER	WH	WATER HEATER
CONT	CONTINUOUS	EPT	EPOXY PAINT	HDWR	HARDWARE	OH	OVERHEAD	SQ	SQUARE	WS	WATER SOFTENER
CORR	CORRIDOR	EQ	EQUAL	HM	HOLLOW METAL	OPP	OPPOSITE	SS	STAINLESS STEEL	WT	WEIGHT
CPT	CARPET TILES	EXP	EXPOSED/EXPANSION	HORIZ	HORIZONTAL	P.LAM	PLASTIC LAMINATE	ST	STORM SEWER	WWF	WELDED WIRE FABRIC
CPT-W	WALK-OFF CARPET TILES	EXT	EXTERIOR	HR	HOUR	PC	PRECAST CONCRETE	STD	STANDARD	W/	WITH
CR	COAT ROD	EXTG	EXISTING	HT	HEIGHT	PL	PLATE	STL	STEEL	W/O	WITHOUT
CT	CERAMIC TILE	FA	FIRE ALARM	HVAC	HEATING/VENTILATION/AIR COND.	PLAS	PLASTER	STP	STONE PANEL	YR	YEAR



1 OVERALL - SITE PLAN

SCALE: 1/32"=1'-0"



2 LOWER LEVEL - PARTIAL FLOOR PLAN

SCALE: 1/32"=1'-0"

PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT
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RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
OVERALL SITE PLAN AND LOWER LEVEL PARTIAL FLOOR PLAN

PROJECT INFORMATION

Date	AUGUST 30 2024		
RLJA Proj	2023-053		

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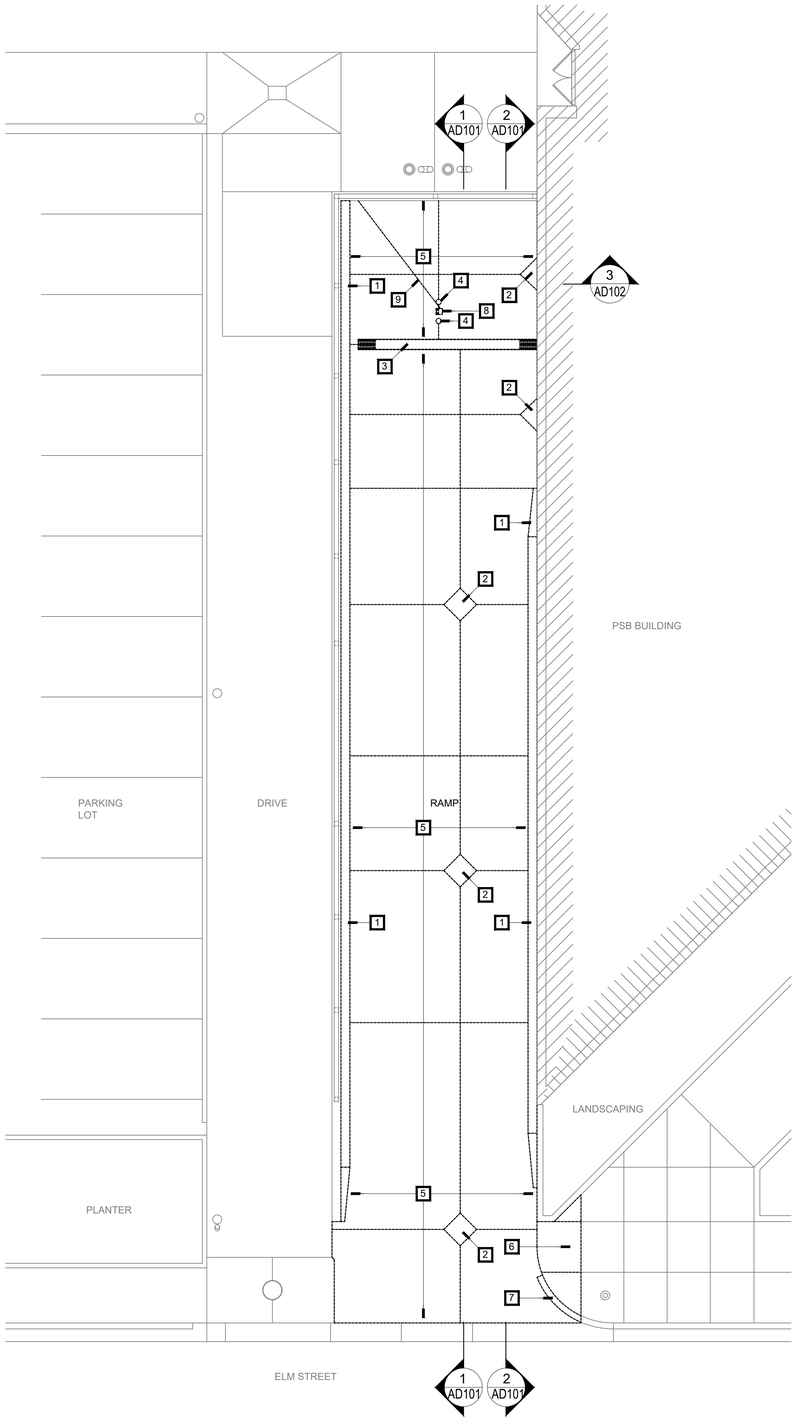
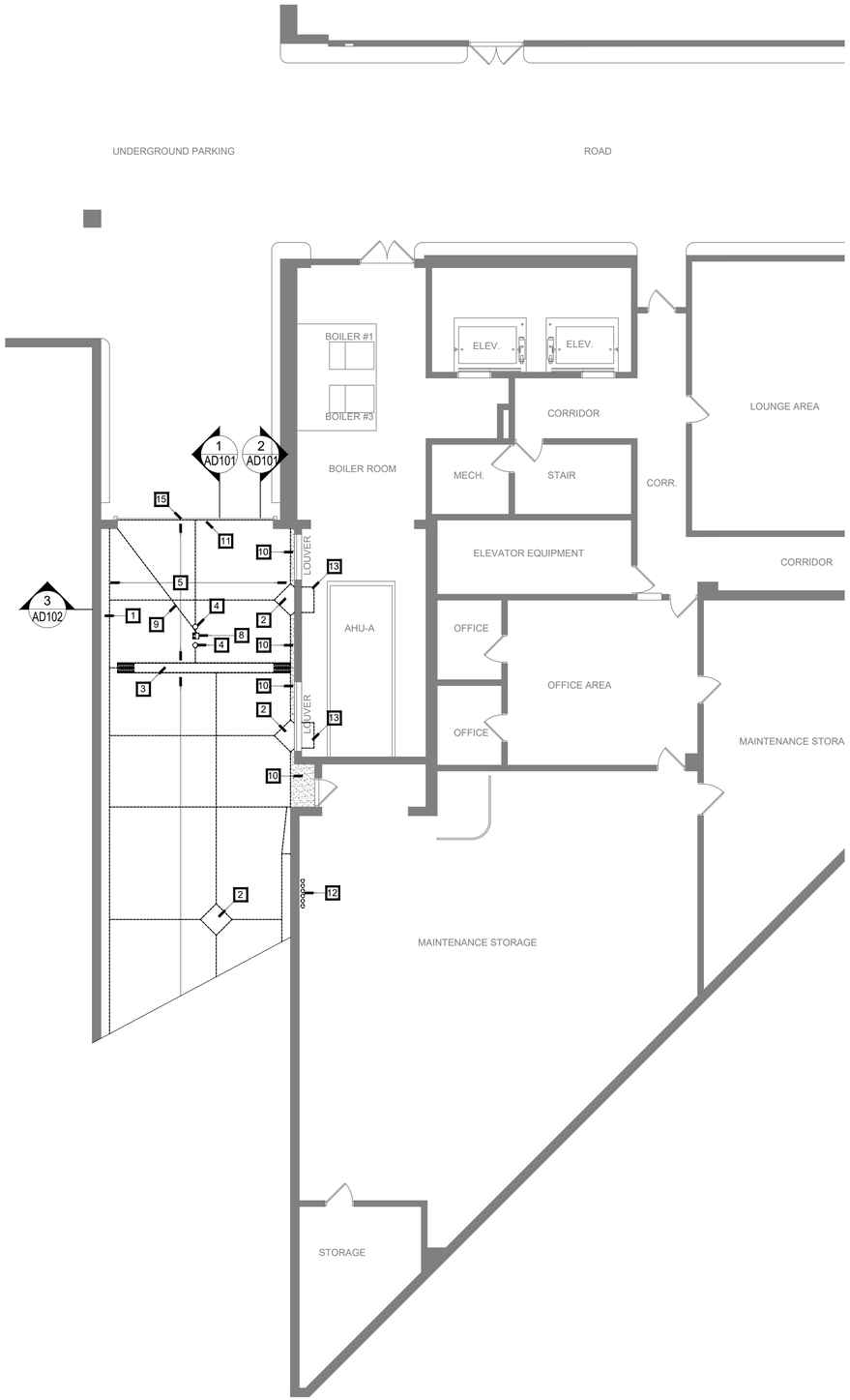
1





DEMOLITION NOTES

1. The contractor shall be responsible for the demolition and removal of all items that impede the proper placement of any items proposed by this plan set.
2. The removal work shall include but not be limited to: obtaining all demolition permits required, saw cutting, and disposal of removed materials.
3. The contractor shall remove all materials deemed unsuitable by the engineer within eight inches of the proposed building footprint to the depth that such unsuitable materials exist. Voids shall be filled in accordance with the "Earthwork Notes" on this plan sheet.
4. Disposal of all materials shall comply with all local, state, and federal regulations. All waste material shall be disposed of off-site. The contractor shall be responsible for the removal of all materials from the site, including all associated permits and regulatory requirements.
5. The contractor shall coordinate disconnection, removal, and relocation of the existing utilities with the appropriate utility companies. The contractor shall be responsible for all fees that are levied by utility companies in conjunction with demolition and removal of existing utilities.
6. The contractor shall ensure that all existing parking, sidewalks, drives, etc., are free and clear of any construction activity and / or excavated and hauled material to ensure easy and safe pedestrian and vehicular traffic to and from adjacent sites.
7. The contractor shall perform a full-depth saw cut along the perimeter of pavement removal that abuts existing pavement that is to remain.
8. Any damage sustained by items that are to remain in place shall be repaired or replaced to the owner's satisfaction at no cost to the owner.
9. reference HVAC, Plumbing and Electrical sheets for items to be removed and/or relocated.
10. This demolition plan is to be used in conjunction with the rest of the sheets in this set.
11. The demolition plan is provided as aid in planning and does not relieve the contractor's responsibility in field verifying the existing job site.
12. Prior to demolition the contractor shall verify with the owner of itemsto be salvaged in the project areas identified for demolition - salvaged items shall be remvoed by the contractor and returned to the owner - any items not wanted by the owner shall be disposed of by the contractor.
13. All items to be removed shall be the responsibility of the general contractor unless noted otherwise.

DEMOLITION BOX NOTES

1. REMOVE EXISTING CONCRETE CURB
2. REMOVE EXISTING STEEL PLATE AND FRAME
3. REMOVE EXISTING TRENCH DRAIN COMPLETE - SEE PLUMBING DWG'S FOR ADDITIONAL DEMOLITION NOTES
4. REMOVE EXISTING PIPE BOLLARDS AND CONCRETE FOUNDATION
5. REMOVE EXISTING CONCRETE WITH IN-SLAB HEATING SYSTEM - EXISTING CONDITION CONSIST OF TWO HEATING SYSTEM AND THREE SEPARATE SLAB POURS RANGING FROM 4"-6" THICK
6. REMOVE EXISTING CONCRETE SIDEWALK
7. REMOVE EXISTING CONCRETE TAPERED CURB
8. REMOVE AND SALVAGE EXISTING ACCESS CONTROL DEVICES AND SUPPORT BRACKETS - REMOVE EXISTING PIPE BOLLARD AND CONCRETE FOUNDATIONS
9. REMOVE EXISTING ACCESS CONTROL WIRING IN SAWCUT JOINT OF EXISTING CONCRETE SLAB
10. EXISTING CONCRETE SLAB TO REMAIN - SAWCUT AND REMOVE CONCRETE SLABS BELOW AS REQUIRED
11. EXISTING ANGLE EMBED INTO CONCRETE SLAB SHALL REMAIN
12. SEE MECHANICAL DRAWINGS FOR DEMOLITION REQUIREMENT OF EXISTING PIPING
13. SEE MEP DRAWING FOR FLOOR DEMOLITION/ RENOVATION WORK IN THIS AREA
14. REMOVE EXISTING CONDUIT BACK TO WALL MOUNTED TEMP PROBE FOR BOILER SYSTEM HEAT SENSOR - SEE ELECTRICAL FOR ADDITIONAL DEMOLITION NOTES
15. EXISTING ROLL UP COILING DOOR TO REMAIN - DEACTIVATE THE ACCESS CONTROL SYSTEM TO THE DOOR DURING CONSTRUCTION - COORDINATE WITH THE OWNER
16. SEE ELECTRICAL DRAWINGS FOR DEMOLITION REQUIREMENTS OF WIRING FOR EXISTING LIGHT FIXTURES

1 DEMOLITION - SITE PLAN
SCALE: 1/8"=1'-0"

2 DEMOLITION - PARTIAL LOWER LEVEL PLAN
SCALE: 1/8"=1'-0"

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REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
DEMOLITION PLANS

PROJECT INFORMATION
Date: AUGUST 30 2024
RLJA Proj: 2023-053

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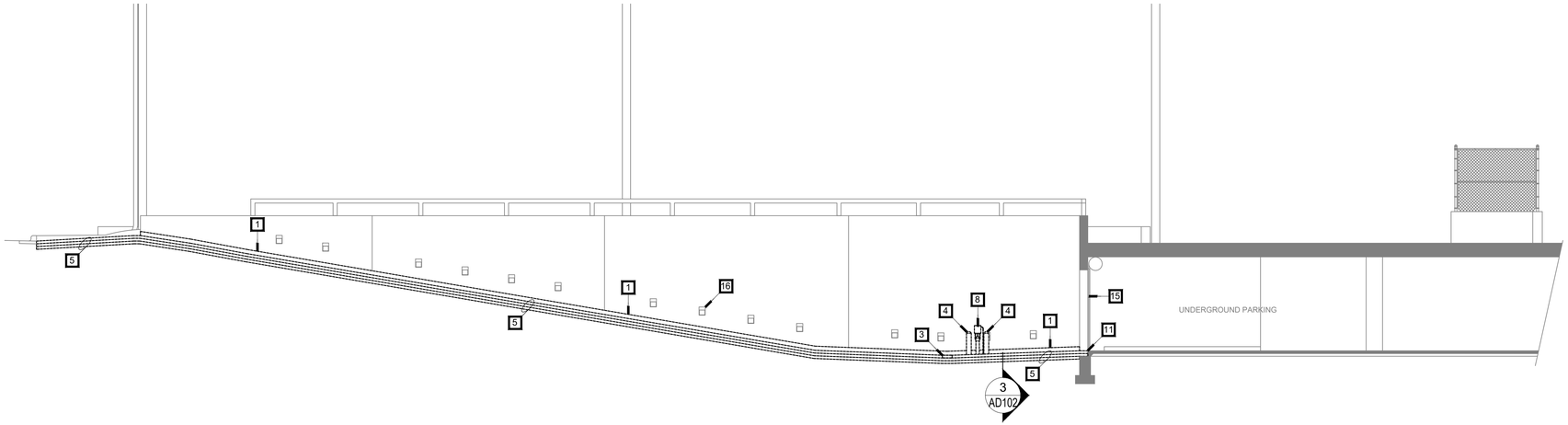
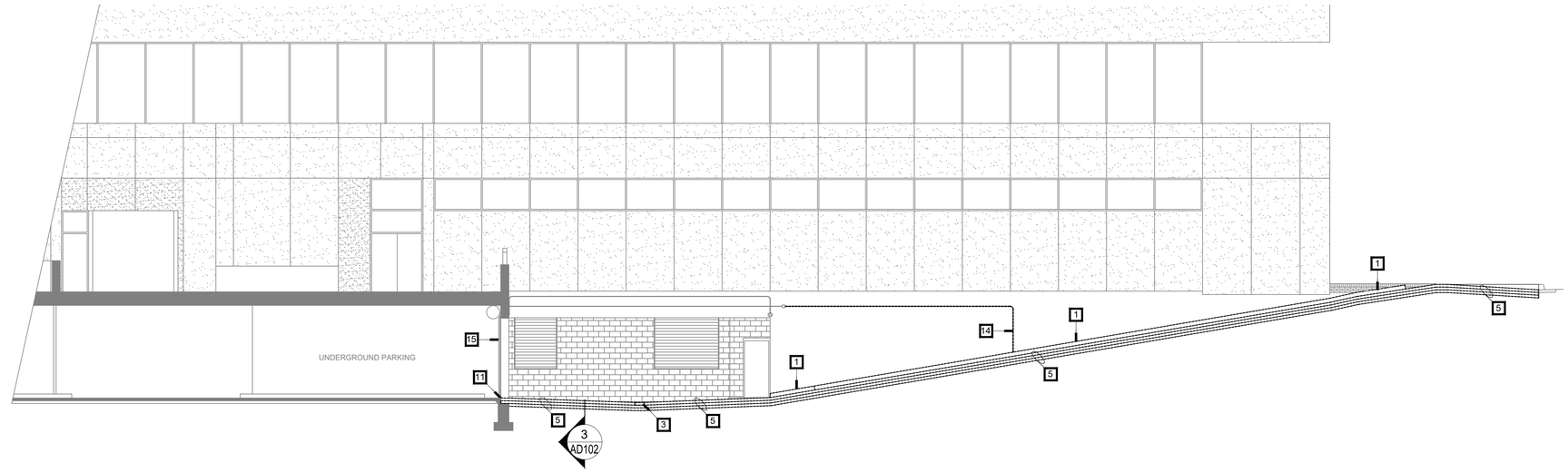


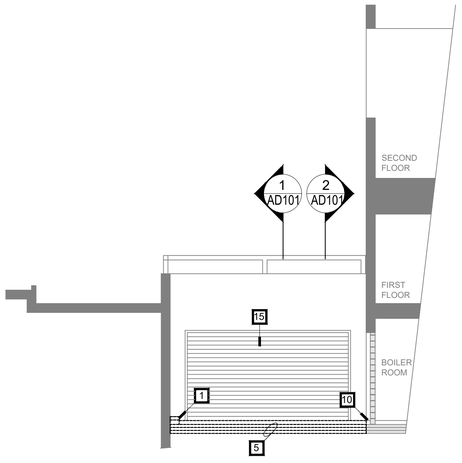
1 DEMOLITION SECTION - WEST

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



2 DEMOLITION SECTION - EAST

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



3 DEMOLITION SECTION - NORTH

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

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PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT REPLACEMENT PROJECT

WINNEBAGO COUNTY

ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION

DEMOLITION SECTIONS

PROJECT INFORMATION

Date	AUGUST 30 2024
RLJA Proj	2023-053

SHEET NUMBER

AD102

OF

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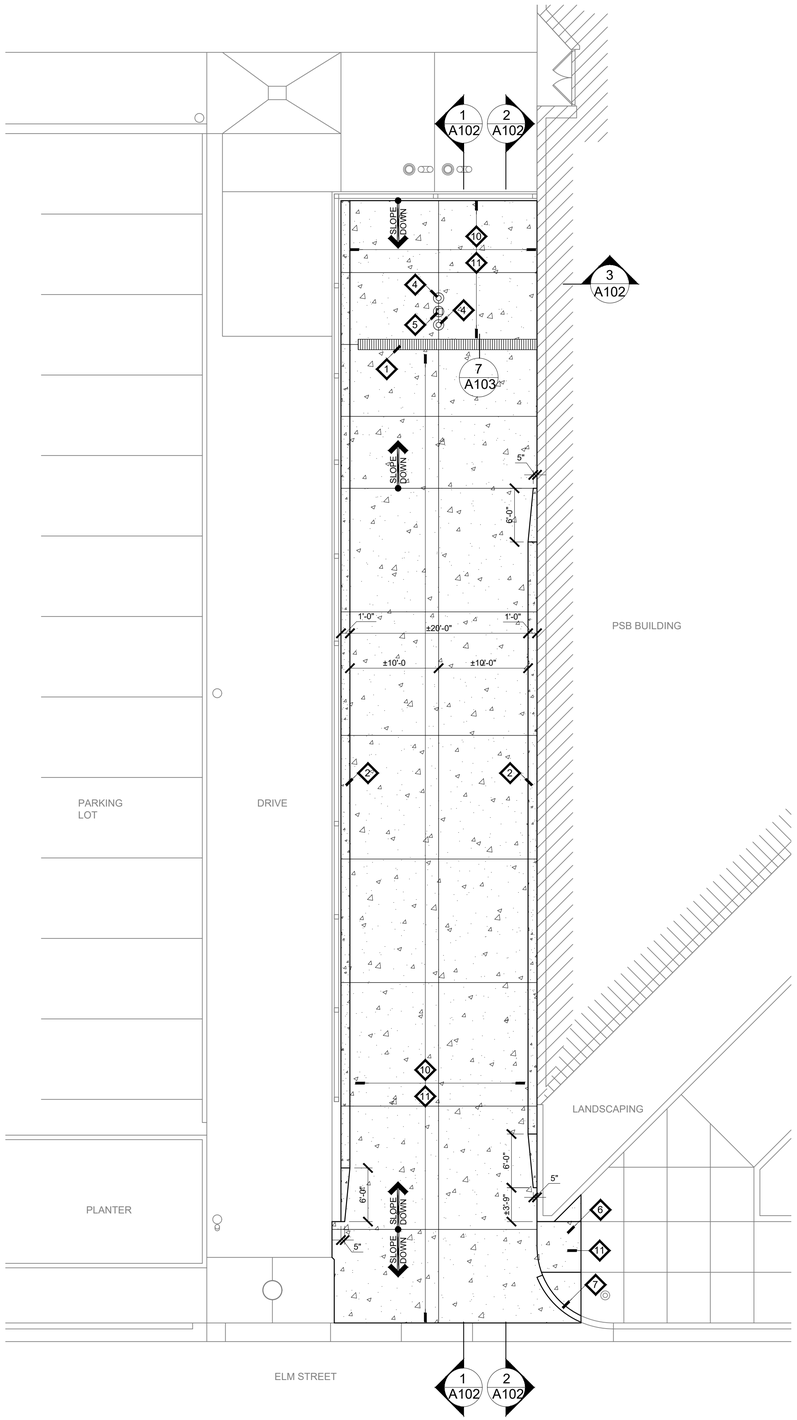

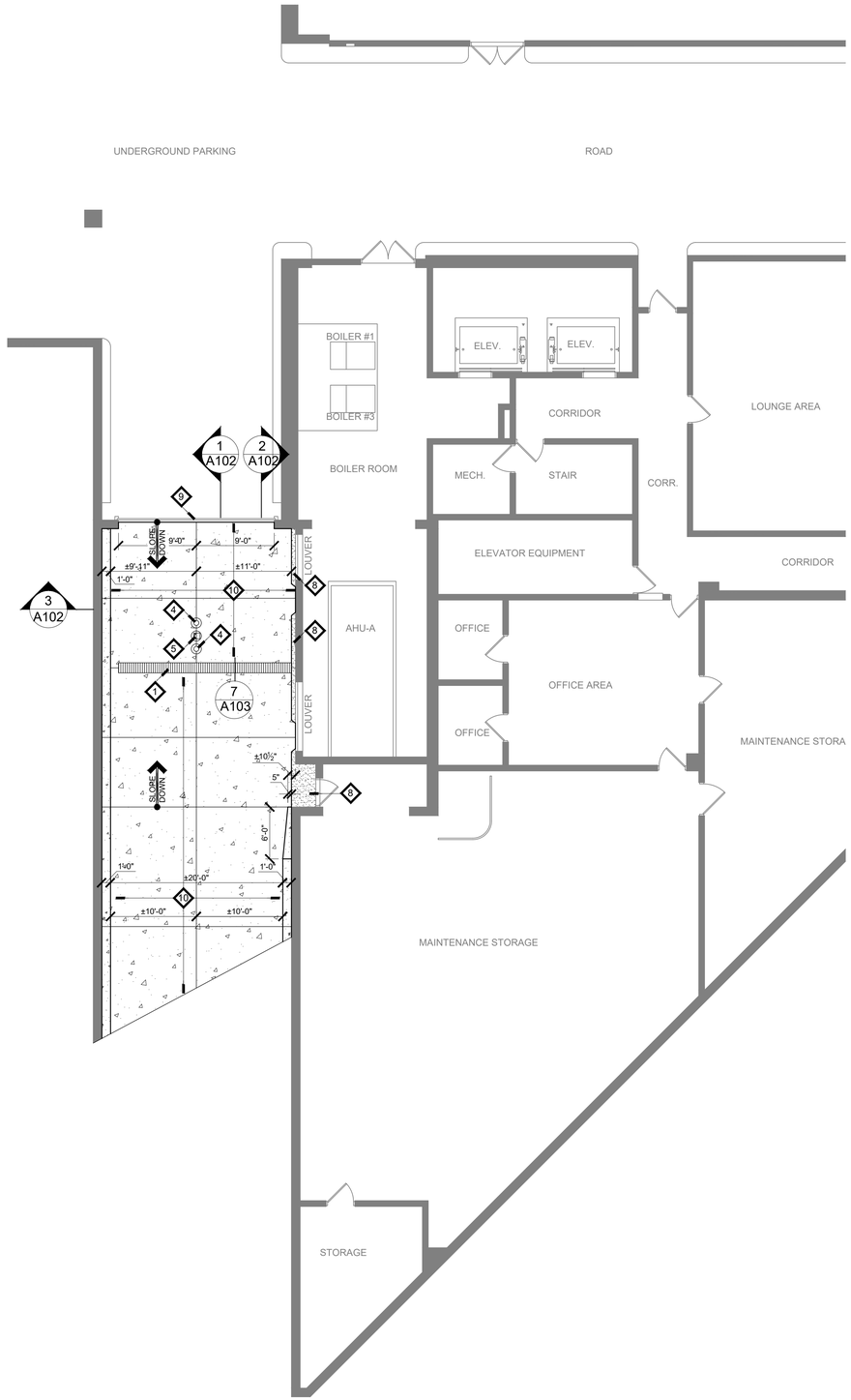

KEY NOTES

1. TRENCH DRAIN - TOP OF DRAIN SHALL MATCH EXISTING ELEVATION - SEE PLUMBING DRAWINGS
2. CONCRETE CURB
3. WALL MOUNTED LIGHT FIXTURES - SEE ELECTRICAL DRAWINGS
4. 6" DIA. CONCRETE FILLED STEEL PIPE BOLLARD WITH PLASTIC BOLLARD SLEEVE - SEE DETAIL 5/A103
5. 4" DIA. CONCRETE FILLED STEEL PIPE BOLLARD WITH PLASTIC BOLLARD SLEEVE - SEE DETAIL 6/A103 - SEE ELECTRICAL FOR ACCESS CONTROL CONDUIT & WIRING
6. NEW PCC SIDEWALK - MATCH EXISTING GRADES AND SLAB THICKNESS - BROOM FINISH
7. NEW PCC TAPERED CURB - MATCH EXISTING
8. EXISTING CONCRETE
9. RECONNECT THE ACCESS CONTROL SYSTEM TO THE EXISTING ROLL UP COILING DOOR
10. 8" CONCRETE PAVEMENT OVER 3" (40 PSI) RIGID INSULATION OVER 15 MIL VAPOR BARRIER OVER AGGREGATE BASE OVER EXISTING AGGREGATE BASE - TOP OF SLAB SHALL MATCH EXISTING GRADES - BROOM FINISH - SEE MECHANICAL FOR IN SLAB HEATING SYSTEM
11. CONTRACTOR SHALL INCLUDE PROSOCO SALT GUARD VOC OR APPROVED SOLVENT BASED SALT GUARD TREATMENT TO ALL PROPOSED CONCRETE SURFACES IN ACCORDANCE WITH SECTION 587 OF THE STANDARD SPECIFICATIONS. APPLICATION SHALL BE IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS

1 RENOVATION - SITE PLAN
SCALE: 1/8"=1'-0"

2 RENOVATION - PARTIAL LOWER LEVEL PLAN
SCALE: 1/8"=1'-0"

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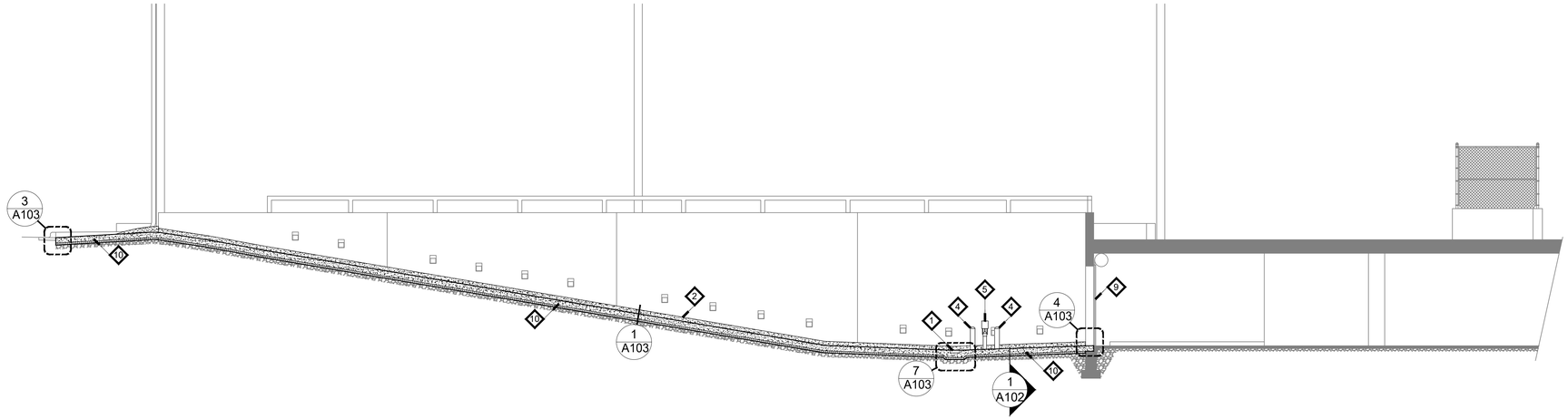
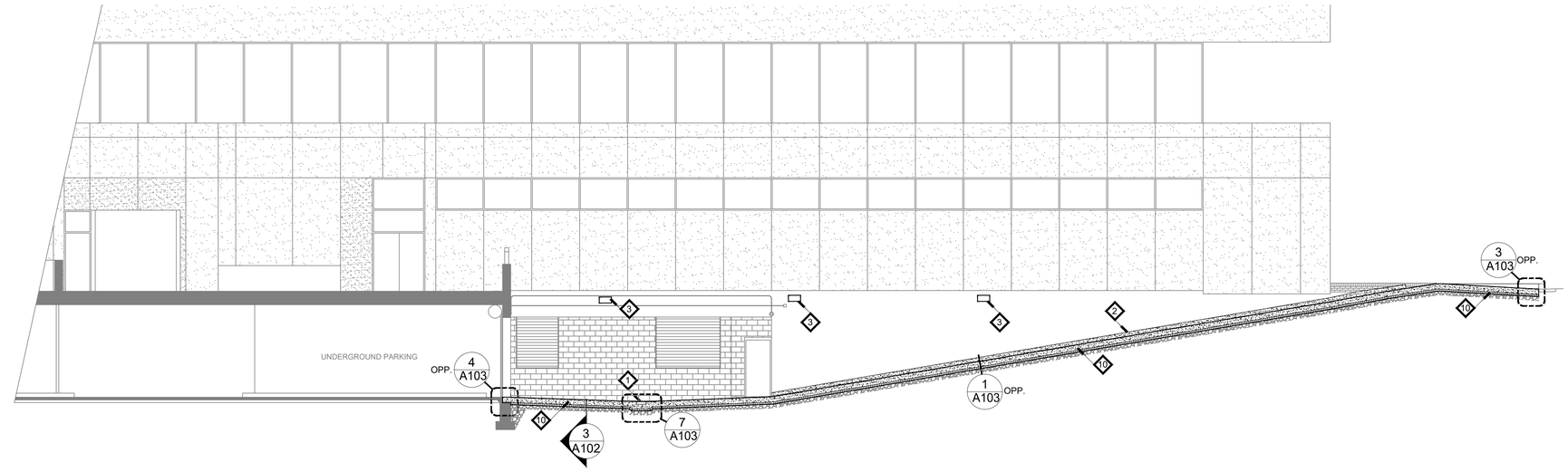


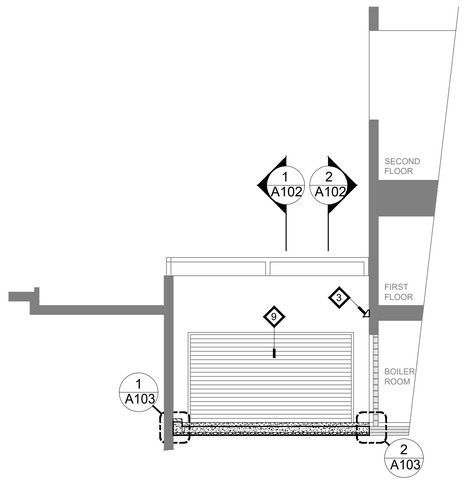
1 RENOVATION SECTION - WEST

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



2 RENOVATION SECTION - EAST

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



3 RENOVATION SECTION - NORTH

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

KEY NOTES

1. TRENCH DRAIN - TOP OF DRAIN SHALL MATCH EXISTING ELEVATION - SEE PLUMBING DRAWINGS
2. CONCRETE CURB
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ASSOCIATES | ARCHITECTS

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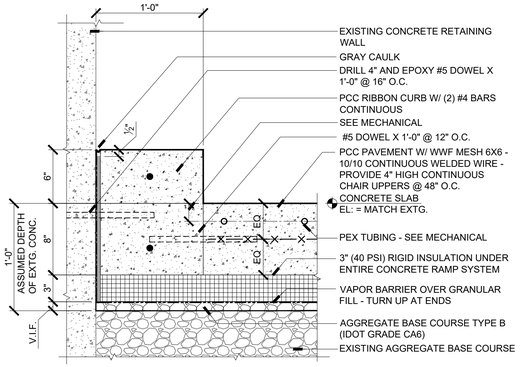
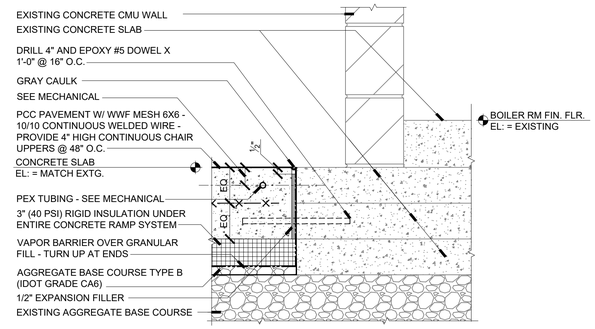
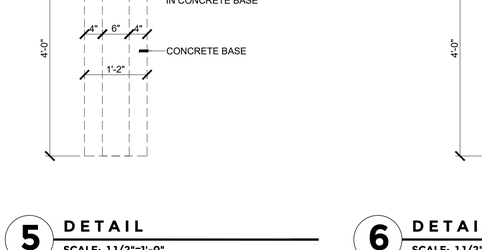


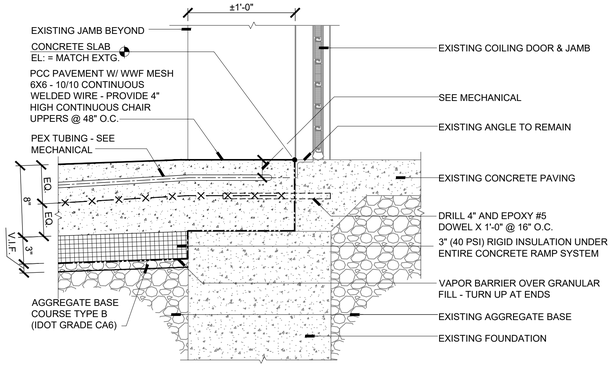
1 DETAIL
SCALE: 1 1/2"=1'-0"



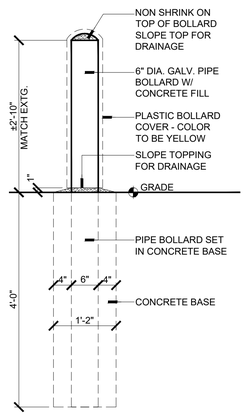
2 DETAIL
SCALE: 1 1/2"=1'-0"



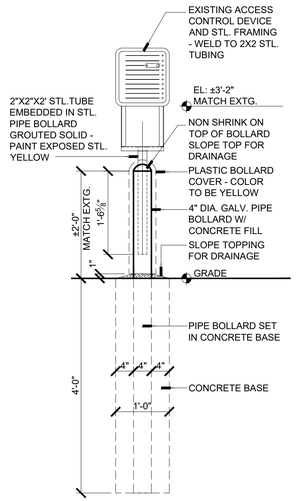
3 DETAIL
SCALE: 1 1/2"=1'-0"



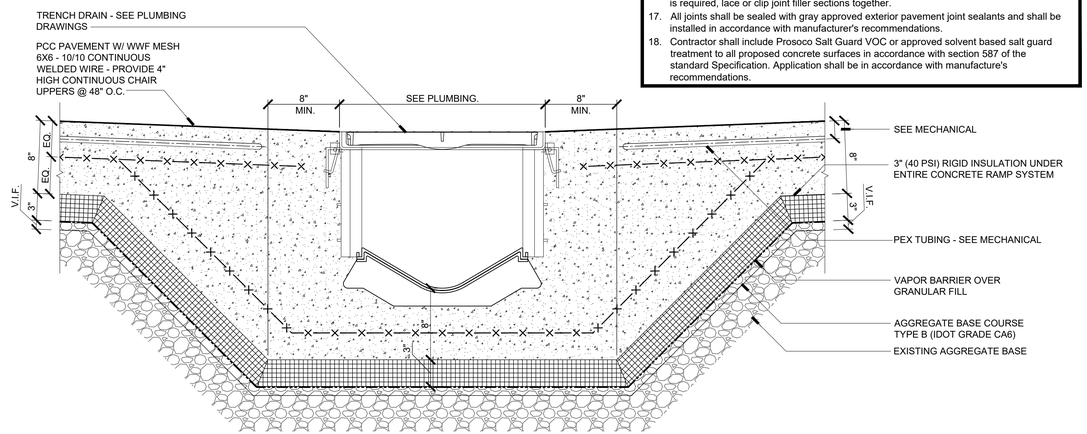
4 DETAIL
SCALE: 1 1/2"=1'-0"



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



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



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

CONCRETE NOTES

1. All pavement shall be constructed in accordance with the following:
   A. Concrete pavement shall be constructed in accordance with the Illinois Department of Transportation (IDOT) "Standard Specifications for Road and Bridge Construction" (Standard Specifications), latest edition, including all updates and standards thereto.
   B. Standards and requirements of the City of Rockford.
   C. Additional details and requirements provided in the contract documents, including this plan set.
2. The subgrade of pavement areas shall be free of all unsuitable material and shall be compacted to a minimum 95 per cent of Standard proctor density.
3. The quantities contained in these documents are approximate and estimated, and are presented as a guide to the contractor in determining the scope of work. It is the Contractor's responsibility to determine all quantities and to become familiar with the site and soil conditions.
4. The paving Contractor is responsible for the final subgrade preparation, concrete placement, concrete jointing, concrete finishing, concrete curing, and all final clean-up and related work associated with the paving operation.
5. The proposed pavement shall be of the type and thickness as specified in the engineering drawings, and constructed in strict conformance with the previously referenced IDOT standard specifications and the City of Rockford.
6. Areas of deficient paving, including compaction, smoothness, thickness, and asphalt mixture, shall be delineated, removed, and replaced in compliance with Specifications requirements unless corrected otherwise as directed and approved by the owner.
7. Field quality control tests specified herein will be conducted by the owner's Independent Testing Laboratory (ITL) at no cost to the contractor. Any testing and inspection resulting from the requirements of necessary permits by the City of Rockford or the State of Illinois shall be at the contractor's expense. The contractor shall perform additional testing as considered necessary by the contractor for assurance of quality control. Retesting required as a result of failed initial tests shall be at the contractor's expense.
   A. Field testing, frequency, and methods may vary as determined by and between the owner, the ITL and the City of Rockford.
   B. No ponding shall occur on paved surfaces.
9. Materials shall comply with the following standards of quality:
   A. Portland Cement: ASTM C150 Type I, Normal ASTM C150 Type II, High-Early-Strength.
   B. Fine Aggregate: ASTM C33, clean sand graded between #100 and #4 sieve limits.
   C. Coarse Aggregate: ASTM C33, uncoated crushed stone or washed gravel.
   D. Water: Potable and fit to drink.
   E. Water-Reducing Admixture: ASTM C494 Type A (normal) or Type D (retarder).
   F. Air Entraining Agent: ASTM C260.
   G. Premoulded Filler Strips: ASTM D994.
   H. Curing Compound: ASTM C309, Type 2 (white, pigmented).
   I. Reinforcement: ASTM A615, Grade 40.
10. Physical characteristics shall comply with the following:
   A. Strength: 4,000 PSI compressive strength in 28 days.
   B. Slump: Maximum 4".
   C. Water to Cement Ratio: Shall not exceed 0.45 by weight.
   D. Air Entrainment: 6% ± 1%
11. All concrete pavement and curb and gutter shall be broom finished.
12. Curing and protection of all concrete shall be in strict conformance with the provisions of Section 1020.13 of the Standard Specifications.
13. The curb and gutter shall have 1" thick premolded fiber expansion joints with 3/4" diameter by 18 inch long plain round steel dowel bars at 100-foot intervals, at all PC's and PT's, and at all curb returns. Construction joints shall be constructed at 20-foot intervals. The cost of these joints shall be incidental to the curb and gutter. Curb joints and ties shall be constructed in accordance with IDOT standard 606001.
14. Depressed curb shall be provided for handicapped ramps and at driveway locations in accordance with IDOT standard 606001.
15. Concrete Pavement joints shall comply with the following:
   A. Construct expansion, weakened-plane control (contraction), and construction joints straight with face perpendicular to concrete surface. Construct transverse joints perpendicular to centerline, unless otherwise detailed.
   B. Provide joints at a spacing of 12'-0" (maximum) on centers each way. Panels shall be kept as square as possible with the length to width ratio not exceeding 125% unless otherwise noted. Construct control joints with a depth equal to at least 1/4 of the concrete thickness, as follows:
      a. Form tooled joints in fresh concrete by grooving top with recommended tool and finishing edge with jointer.
   C. Form sawed joints using powered saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into hardened concrete as soon as surface will not be torn, abraded, or otherwise damaged by cutting action.
   D. Sidewalk contraction joint spacing shall not exceed corresponding width of sidewalk. 12' wide sidewalks shall have a longitudinal contraction joint along the center of the sidewalk and transverse contraction joints shall be spaced at 6' max.
   E. A diamond edge saw bland shall be used for all required contraction and longitudinal pavement joints.
   F. All sawcuts required shall be incidental to items for which direct payment is made.
   G. Place construction joints at end of placements and at locations where placement operations are stopped for period of more than 1/2 hour, except where such placements terminate at expansion joints. Construct joints in accordance with IDOT specifications.
   H. For butt joints against existing pavement:
   I. Place 16" long dowels eight inches into holes drilled into center of existing slab.
      a. Epoxy dowels into holes with approved epoxy compound.
      b. Place dowels prior to concrete placement for new concrete.
      c. Dowel spacing shall be 24" on center unless otherwise shown on construction drawings.
      d. Saw joint and fill with joint sealer.
16. Extend joint fillers full-width and depth of joint, and not less than 1/2-inch nor more than 1-inch below finished surface where joint sealer is indicated. Furnish joint fillers in 1-piece lengths for full width being placed, wherever possible. Where more than 1 length is required, lace or clip joint filler sections together.
17. All joints shall be sealed with gray approved exterior pavement joint sealants and shall be installed in accordance with manufacturer's recommendations.
18. Contractor shall include Prosoco Salt Guard VOC or approved solvent based salt guard treatment to all proposed concrete surfaces in accordance with section 587 of the standard Specification. Application shall be in accordance with manufacture's recommendations.

EARTHWORK NOTES

1. The earthwork contractor is responsible for earth excavation and embankment, shaping and compaction of subgrade, placement and compaction of aggregate base course, removal of spoil material from the underground contractors, and the placement of topsoil to finished grade.
2. Unsuitable Materials:
   Assume that if unsuitable materials are encountered and the replacement of these materials is required, this situation shall be handled as follows:
   A. The site contractor shall notify the general contractor immediately. The project superintendent, prior to the undercutting being completed, shall approve any additional undercutting. The quantities shall be verified by the engineer as the additional removal is being completed.
   B. If approved by the engineer, these materials shall be removed and replaced with compacted granular materials and compacted in accordance to required standards. The cost of this work shall be an extra to the contract, with the cost being adjusted by change order.
   C. If the site contractor is furnishing any off site materials, a representative sample of such materials shall be furnished to the general contractor's approved testing agency to determine a proctor.
   D. These materials shall be placed as homogeneously as possible to facilitate accurate compaction and moisture testing.
3. Definition for materials
   A. "Organic material" is defined as material having an organic content in excess of 8% or as determined by the project owner's engineer.
   B. Topsoil shall be friable and loamy (loam, sandy loam, silt loam, sandy clay loam, or clay loam).
      a. Sand content shall generally be less than 70% by weight.
      b. Clay content shall generally be less than 35% by weight.
      c. Organic soils, such as peat or muck, shall not be used as topsoil.
   C. Topsoil shall be relatively free from large roots, weeds, brush, or stones larger than 25 mm (1 inch). At least 90% shall pass the 2.00 mm (no. 10) sieve.
   D. Topsoil ph shall be between 5.0 and 8.0. Topsoil organic content shall not be less than 1.5% by weight. Topsoil shall contain no substance that is potentially toxic to plant growth.
   E. "Existing on-site material within moisture content limits" is defined as material of such a quality that the specified compaction can be met without any additional work other than "densifying" with a roller. Scarification and drying of this material will not need to be done prior to compaction. On-site material may be reused. The contractor shall consider shaping and compaction of existing materials as incidental.
   F. "Existing on-site material NOT within moisture content limits" is defined as material with a high moisture content that can not meet specified compaction requirements without scarification and drying, chemical stabilization, etc. of this material prior to compaction.
   G. "Unsuitable material" is defined as any materials that:
      a. Cannot be utilized as "topsoil" (organic) for landscape areas.
      b. Cannot be utilized as "engineered fill" regardless of moisture content and / or does not structurally meet the standards of the project owner's engineer's recommendations for "engineered fill".
      c. Can be defined as natural materials or materials from "demolition" and / or excavated areas (i.e., materials that would not be suitable for "engineered fill").
   H. "Off-site material" is defined as any materials that are brought from any area not indicated on this plan set.
   I. "Trench backfill" shall be defined as any materials used for the purposes of backfilling any trench and / or any excavation requiring backfilling. Refer to "Standards for fill areas" to determine acceptable materials and procedures.
   J. The term "stripping" or "strip" as used herein shall be defined as the removal of all "organic materials" from a given area. The term "organic materials" is defined as material having an organic content over 8% based on ASTM D2974, or as defined by the owner's engineer.
4. Standards for cut areas:
   A. A "cut area" is defined as any area where "engineered fill" is not required to bring the site to design subgrade elevation. Instead, excavation or "cutting" is required to achieve design subgrade elevation ("engineered fill" being defined as any material being "offsite material").
   B. In "cut areas" the site contractor shall perform one of the following procedures at the discretion and in the presence of a representative of the owner's engineer and the project architect:
      a. For exposed building or parking lot subgrades consisting primarily of granular soils, the exposed subgrade should be compacted / densified by at least one (1) pass of a smooth-drummed vibratory roller having a minimum gross weight of 10 tons.
      b. For exposed building or parking lot subgrades consisting primarily of cohesive soils, the exposed subgrades should be proof-rolled with a fully-loaded six-wheel truck having a minimum gross weight of 25 tons. The maximum allowable deflection under the specified equipment shall be 1/2".
   C. In the event that adequate stability of granular soils subgrades cannot be achieved by the procedures as outlined in item 1 above, or that deflections greater than 1/2" are observed during the "proof rolling" of cohesive soils subgrades (as outlined in item 2 above) additional corrective measures will be required. These measures could include, but not necessarily be limited to, scarification, moisture conditioning, re-compaction, undercutting and replacement with engineered fill or crushed stone (with or without geotextiles), or chemical stabilization.
   D. It shall be considered as part of the scope of these documents (and thus part of this contractor's responsibility) to perform scarification and drying of the subgrade per Illinois Department of Transportation (IDOT) standards (scarify a 16" depth for 3 days). If this does not work then additional drying measures shall be an extra to the contract.
   E. Any proposed corrective measures by the contractor should be reviewed by the owner's engineer and the project architect. In the event that in the opinion of the owner's engineer and / or the project architect proof rolling is not a good indicator of the subgrade stability, an alternative method shall be specified by the owner's engineer and / or the project architect.
5. Standards for fill areas:
   A. A "fill" area is defined as any area where material is required to adjust the existing elevation to a proposed subgrade elevation (these areas require installation of "engineered fill" to achieve design subgrade elevation). "Engineered fill" material can be defined as either "granular soil" or "soil" that is either from the construction site or is "offsite material". Materials having their origin from the construction site is referred to as "borrow". The composition and the compaction standards of the engineered fill for this project will be specified by owner's engineer and the project architect.
   B. In "fill" areas, "borrow" materials are allowed to be utilized as engineered fill such that the site contractor compacts the "borrow" areas to the specified compaction.
6. Compaction standards (for engineered fill and back filled areas)
   A. Prior to placement of fill in areas below the design grade, the exposed subgrade should be observed by a representative of the owner's engineer to evaluate that adequate stripping has been performed. Additionally, the proof rolling or compacting procedures outlined in the "standards for cut areas" section of these notes should be performed. It is typical practice to proof roll (and densify if necessary) exposed subgrades prior to filling. If soft or unstable subgrades are observed, these areas should be stabilized or undercut. Minimum compaction standards are based upon a percentage of the fill or backfill material's maximum standard proctor dry density (ASTM D698). All engineered subgrades should meet the following minimum compaction:
      a. Areas under foundations bases: 95% standard proctor
      b. Areas under foundation bases and pavement sections: 95% standard proctor
      c. Landscaped areas: 90% standard proctor for all fill placed in landscape areas. These areas should be brought to grade with "topsoil" to a depth of 12 inches in areas to be seeded and 6 inches in areas to be sodded.
      d. Base course portion of pavement sections: 95% standard proctor for all base course materials that are part of a "pavement section".
   B. The option of utilizing the modified proctor (ASTM D1557) in lieu of the specified standard proctor (ASTM D698) shall be at the discretion of the general contractor, contingent upon written approval by the architect and owner's engineer.
   C. All backfill and fill materials shall be placed in lifts not greater than 8" in loose depth. Before compacting, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum density of the area.

PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT
REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

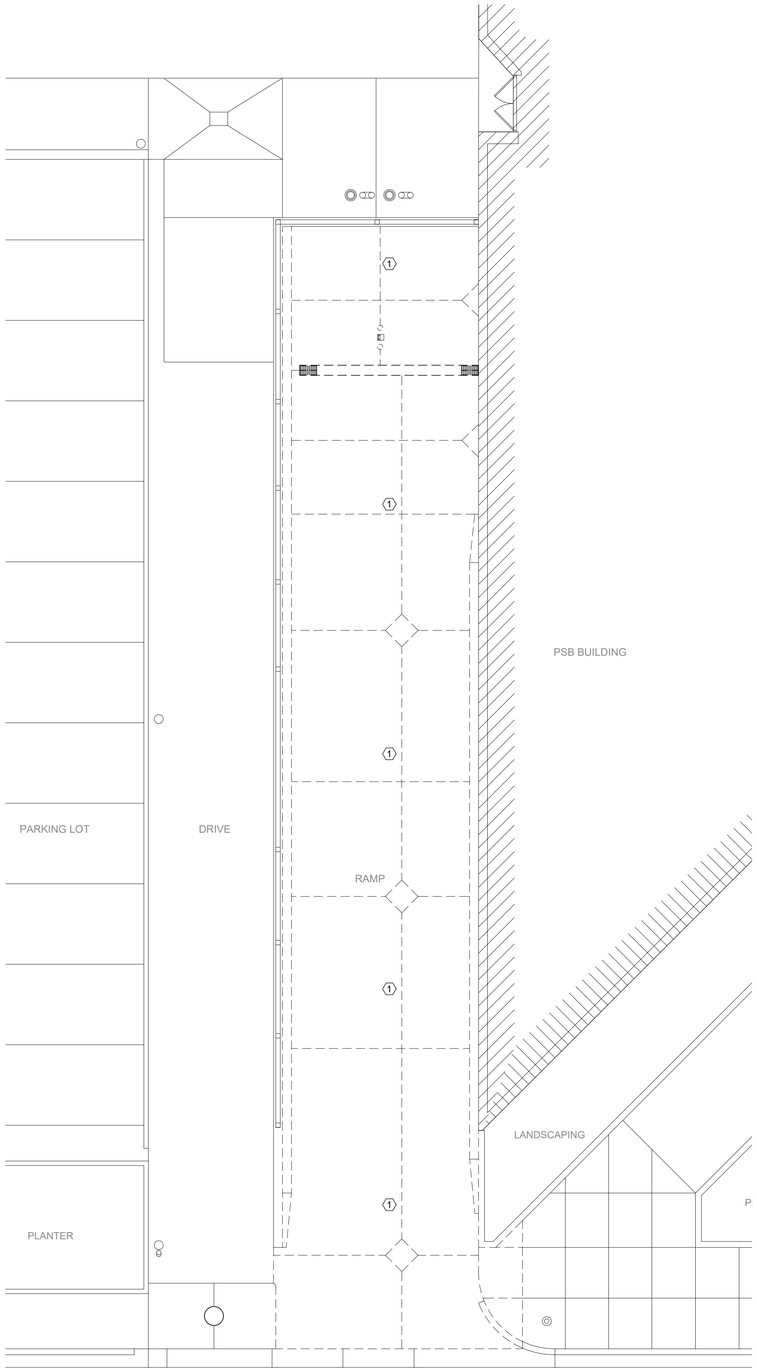
RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
DETAILS AND CONCRETE / EARTHWORK NOTES

PROJECT INFORMATION

Date	
AUGUST 30 2024	
	RLJA Proj
	2023-053

SHEET NUMBER
A103
OF
3

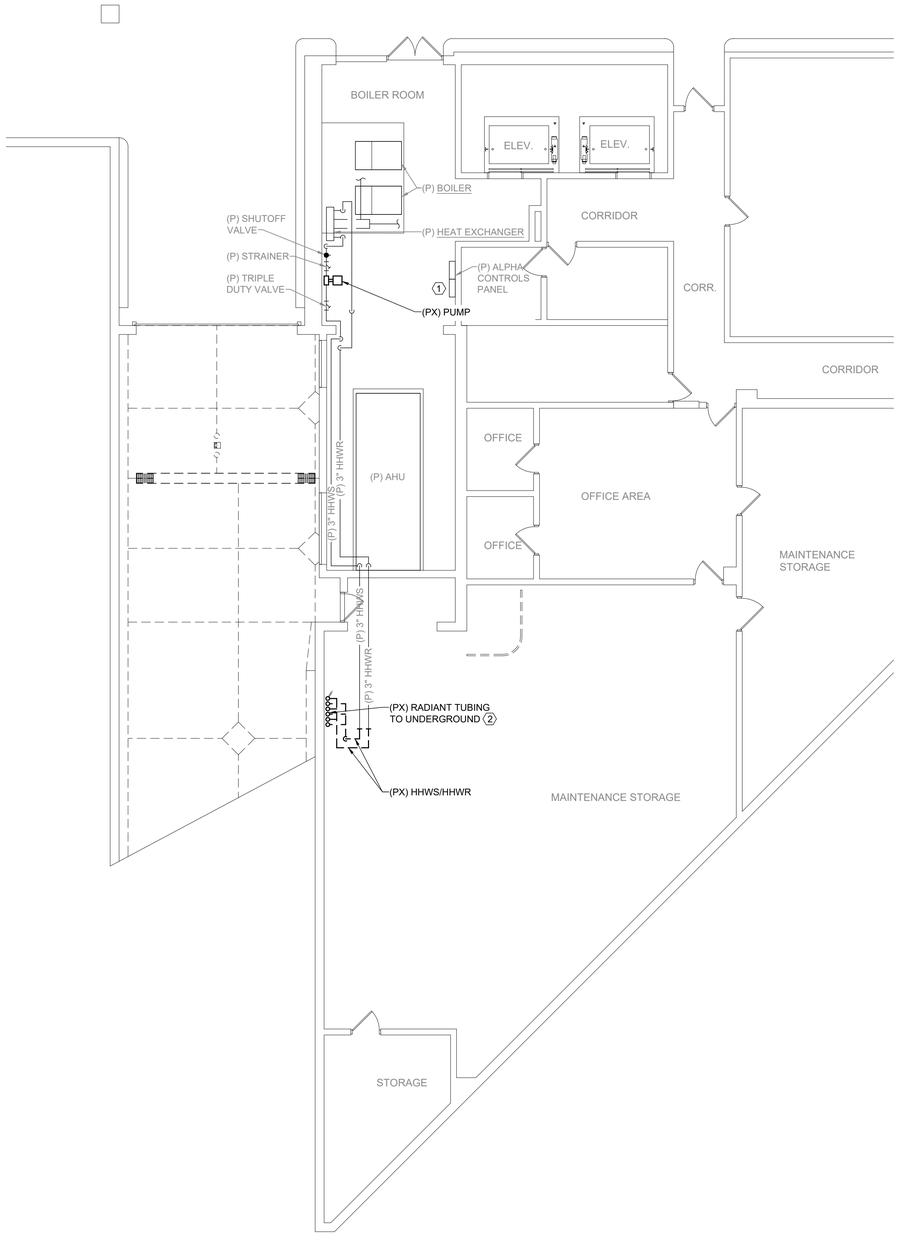


DEMOLITION SITE PLAN - MECHANICAL

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

KEY NOTES:

1. REMOVE ALL EXISTING SNOW MELT PIPING UNDERGROUND (TWO SEPARATE SNOW MELT SYSTEMS EXIST AT DIFFERENT ELEVATIONS).



DEMOLITION FLOOR PLAN - MECHANICAL

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

KEY NOTES:

1. REPLACE ALPHA CONTROLS CONTROLLER.
2. CUT AND PATCH FLOOR AND WALL AS REQUIRED FOR REMOVAL OF PIPING.

SYSTEMS DESIGN SERVICE ENGINEERING
3600 EAST STATE STREET • SUITE 215 • ROCKFORD, ILLINOIS • 61108
PHONE (815) 399-3381 FAX (815) 399-3383 WWW.SDSGROUP.COM
IL PROF DESIGN FIRM #184.004999

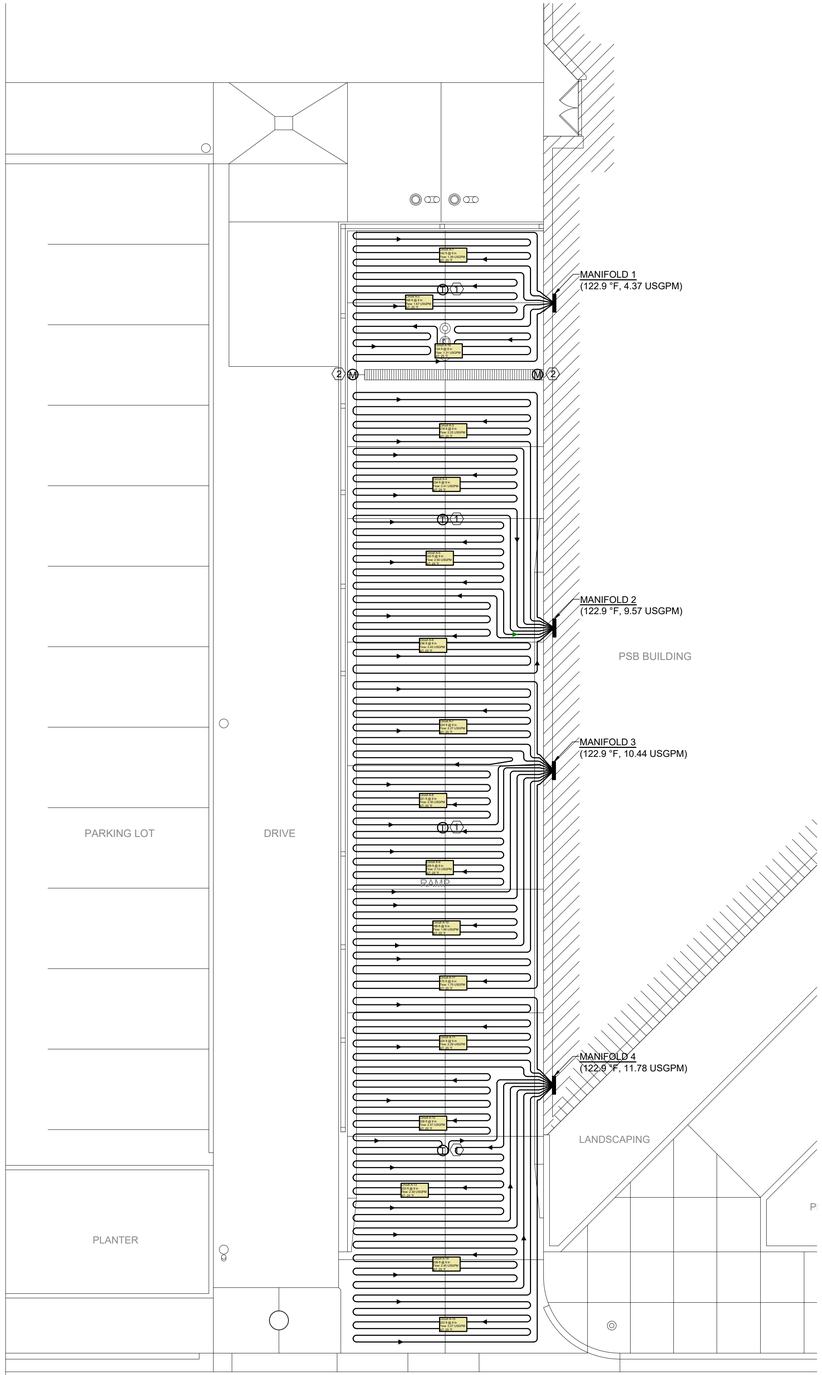
PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT
REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
DEMOLITION MECHANICAL PLANS

PROJECT INFORMATION
Date AUGUST 30 2024
RLJA Proj 2024-027

SHEET NUMBER
M101
OF
6



NEW WORK SITE PLAN - MECHANICAL

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

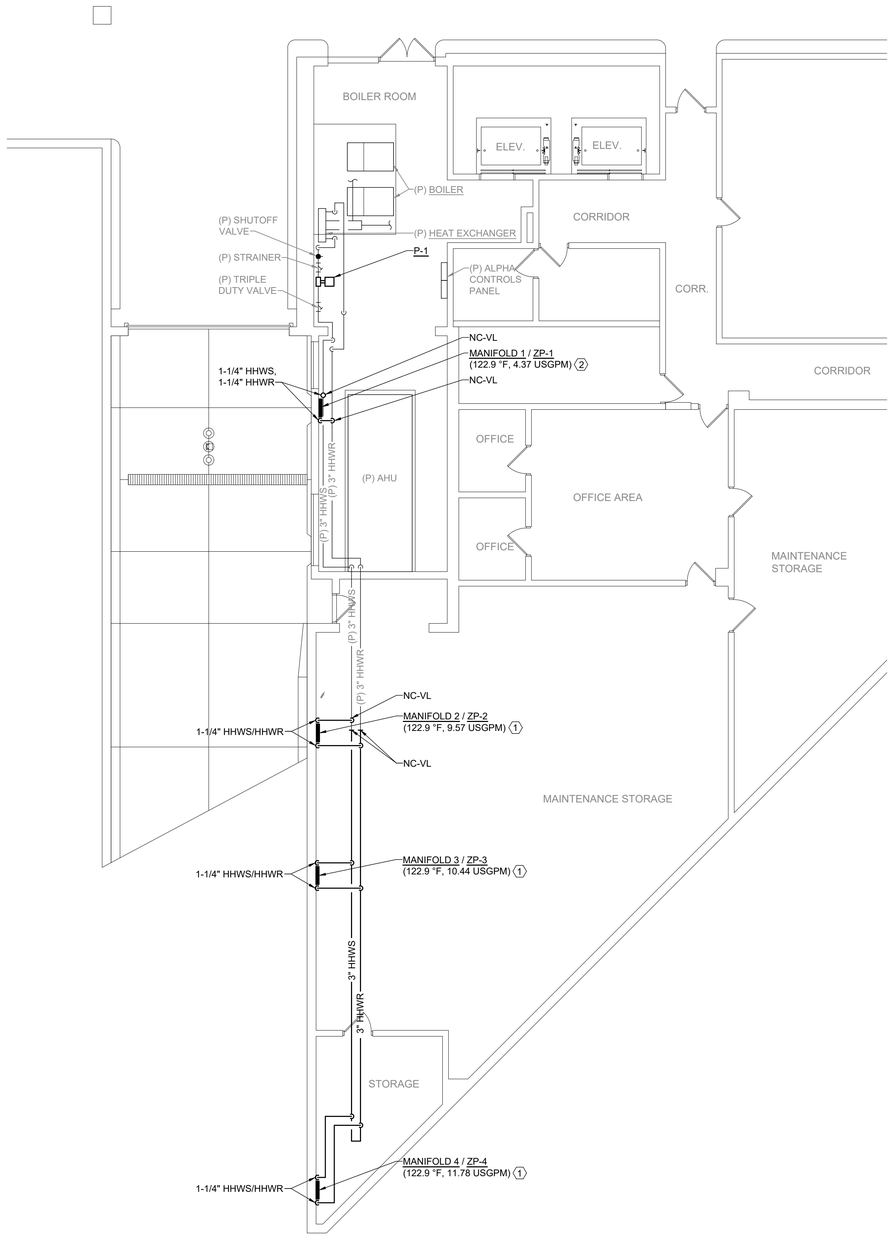
N

KEY NOTES:

1. SLAB MOUNTED TEMPERATURE SENSOR (TEKMAR 073), EMBEDDED IN CONCRETE 1" BELOW SURFACE AND ENCASED IN 1" PVC. SENSOR SHALL BE LOCATED SUCH THAT IT IS CENTERED BETWEEN HEPEX PIPING AND CENTERED WITHIN THE ZONE SPACE.
2. MOISTURE SENSOR (TEKMAR 095), INSTALLED ON 1/2" RIGID METAL CONDUIT APPROXIMATELY 12' ABOVE GRADE AND EXTENDED 12" OUT FROM WALL.

NEW WORK GENERAL NOTES:

1. ENGINEER MUST BE NOTIFIED PRIOR TO ANY CHANGES MADE TO THE DESIGN IF THE CONTRACTOR DESIRES TO CHANGE THE IN-SLAB PIPE ROUTING/LAYOUT.



NEW WORK FLOOR PLAN - MECHANICAL

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

N

KEY NOTES:

1. MANIFOLD SHALL BE MOUNTED AT AN ELEVATION TO PERMIT LOOP PIPING TO NEATLY ROUTE TO DRIVE RAMP. CORE THROUGH CONCRETE WALL AS REQUIRED FOR NEW PIPING PENETRATIONS TO EXTERIOR AND SEAL PENETRATIONS WEATHER TIGHT.
2. MANIFOLD SHALL BE MOUNTED AT AN ELEVATION TO PERMIT MAINTENANCE ACCESS AND PERMIT LOOP PIPING TO ROUTE BELOW SLAB TO DRIVE RAMP. SAW CUT AND PATCH CONCRETE FLOOR AND SLEEVE UNDER CMU WALL TO MATCH EXISTING AS REQUIRED FOR NEW PIPING PENETRATIONS TO EXTERIOR.

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REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
NEW WORK MECHANICAL PLANS

PROJECT INFORMATION

Date	AUGUST 30 2024
RLJA Proj	2024-027

SHEET NUMBER
M102
OF
6

SNOW MELT SYSTEM SCHEDULE:

SYSTEM TOTAL HEATING LOAD	416,513 BTU/HR
SYSTEM TOTAL FLOW RATE	36.16 GPM
FLUID TYPE	WATER W/ 40% PROPYLENE GLYCOL
TUBE TYPE	1" HEPEX
TUBE SPACING	9"
# OF MANIFOLDS	4
# OF CIRCUITS	17
DESIGN TEMP (AVERAGE)	-5 DEG F OUTDOOR TEMP 35 DEG F SURFACE TEMP 123 DEG F LOOP TEMP
MANIFOLD	STAINLESS STEEL, 1-1/4", W/ METER, B&I, AND BALL VALVE
AREA SERVICED	2590 SQFT
CONTROLS	SLAB MOISTURE & TEMP SENSOR
NOTES	1-5

NOTES: SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1. BASIS OF DESIGN IS UPONOR/WIRSBO.
2. ENGINEER MUST BE NOTIFIED PRIOR TO ANY CHANGES MADE TO THE DESIGN IF THE CONTRACTOR DESIRES TO CHANGE THE IN-SLAB PIPE ROUTING/LAYOUT.
3. MECHANICAL CONTRACTOR SHALL DRAIN AND FLUSH SNOW MELT PIPING, CHECK OPERATION OF ALL VALVES AND NOTIFY ENGINEER OF FAILURES. REFILL SYSTEM WITH WATER AND 40% PROPYLENE GLYCOL SOLUTION.
4. ALPHA CONTROLS (NO SUBSTITUTIONS) SHALL PROVIDE ALL DDC CONTROLS REQUIRED TO TIE INTO EXISTING ALPHA CONTROLS SYSTEM PER CONTROLS DIAGRAM ON SHEET M103.ALPHA CONTROLS (NO SUBSTITUTIONS) TO FURNISH AND INSTALL DDC CONTROLS FOR SNOW MELT SYSTEM; CONTROLLER, SYSTEM SENSORS, RELAYS, TRANSFORMERS, WIRING, PROGRAMMING, GRAPHICS, ETC. AS SHOWN IN SPECIFICATIONS AND CONTROLS DIAGRAMS. UNIT TO BE TIED INTO EXISTING ALPHA CONTROLS BUILDING MANAGEMENT SYSTEM.
5. SEQUENCE OF OPERATIONS:
   - 5.1. SNOW MELT SYSTEM SHALL ENABLE AUTOMATICALLY BASED ON FEEDBACK FROM MOISTURE SENSORS AND EXISTING OUTDOOR AIR TEMPERATURE SENSOR. ADDITIONALLY, SNOW MELT SYSTEM SHALL BE ABLE TO BE ENABLED MANUALLY THROUGH THE DDC SYSTEM.
     - 5.1.1. WHEN SNOW MELT SYSTEM IS ENABLED, EXISTING 3 WAY CONTROL VALVE SHALL OPEN AND ALLOW FLOW THROUGH THE EXISTING HEAT EXCHANGER. SYSTEM PUMP (P-1) SHALL START FLOW THROUGH THE SNOW MELT LOOP.
     - 5.1.2. SNOW MELT LOOP SHALL MAINTAIN LOOP TEMPERATURE OF APPROXIMATELY 125-150 DEG F VIA EXISTING MODULATING 3-WAY CONTROL VALVE.
       - 5.1.2.1. EXISTING MODULATING 3-WAY CONTROL VALVE SHALL CLOSE ON HIGH WATER TEMPERATURE AT 150 DEG. TO STOP FLOW THROUGH THE HEAT EXCHANGER.
     - 5.1.3. LOCAL ZONE PUMPS SHALL START BASED ON FEEDBACK FROM THE ASSOCIATED SLAB SENSOR TO START FLOW THROUGH THE SNOW MELT TUBING AND MAINTAIN A SLAB TEMPERATURE SETPOINT IN DDC SYSTEM (INITIALLY SET AT 35 DEG.)

SNOW MELT CIRCUIT SCHEDULE:

Circuit #	Length (ft)	Tube Type	Flow Rate (USGPM)	Head Loss (ft water)	Req. Water Temp (°F)	ΔT (°F)	Total Load (Btu/hr)
Water Temperature (122.9)			36.16	12.8	123		416,302
Manifold 1 (3 Circuits)			4.37	4.3	122		50,300
Circuit A-1	142	hePEX 1"	1.39	0.8	121	25	16,000
Circuit A-2	168	hePEX 1"	1.67	1.3	121	25	19,206
Circuit A-16	134	hePEX 1"	1.31	0.7	122	25	15,094
Manifold 2 (4 Circuits)			9.57	12.4	122		110,192
Circuit A-3	218	hePEX 1"	2.23	2.7	122	25	25,722
Circuit A-4	234	hePEX 1"	2.41	3.3	122	25	27,751
Circuit A-5	242	hePEX 1"	2.5	3.6	122	25	28,744
Circuit A-6	236	hePEX 1"	2.43	3.4	122	25	27,974
Manifold 3 (5 Circuits)			10.44	10.2	123		120,197
Circuit A-7	224	hePEX 1"	2.27	2.9	122	25	26,165
Circuit A-8	221	hePEX 1"	2.3	2.9	123	25	26,478
Circuit A-9	209	hePEX 1"	2.13	2.4	122	25	24,564
Circuit A-10	196	hePEX 1"	1.99	2	122	25	22,856
Circuit A-17	175	hePEX 1"	1.75	1.4	121	25	20,134
Manifold 4 (5 Circuits)			11.78	12.8	122		135,614
Circuit A-11	224	hePEX 1"	2.29	2.9	122	25	26,353
Circuit A-12	238	hePEX 1"	2.47	3.5	122	25	28,434
Circuit A-13	223	hePEX 1"	2.3	2.9	122	25	26,445
Circuit A-14	238	hePEX 1"	2.45	3.5	122	25	28,233
Circuit A-15	223	hePEX 1"	2.27	2.8	122	25	26,147

CIRCULATING PUMP SCHEDULE:

A. ACCEPTABLE MANUFACTURERS: BELL & GOSSET, TACO, AND GRUNDFOS. CONFIRM/VERIFY SIZE WITH MANUFACTURER FOR PROJECT USAGE/SIZING.

B. P-1: SYSTEM CIRCULATING PUMP, CLOSE COUPLED IN-LINE MOUNTED, B & G MODEL SERIES E-80, 2.5x2.5x7B, VOLTAGE 480-3-60, 1.0 HP, 36 GPM, 10' HD., 2.5" SUCTION, 2.5" DISCHARGE, 145JM MOTOR FRAME. EXISTING MOTOR CONTROLLER TO BE REUSED BY ELECTRICAL CONTRACTOR, COORDINATE.

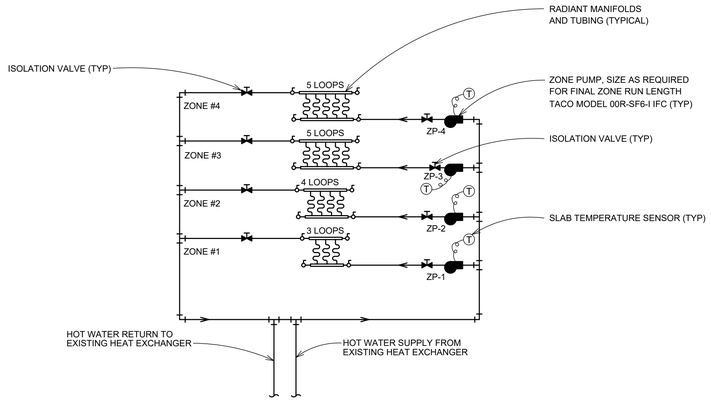
C. ZP-1: ZONE CIRCULATING PUMP, IN-LINE MOUNTED, TACO MODEL 00R-SF6-I IFC, 1-1/4" CONNECTION SIZE, FLANGED, STAINLESS STEEL, WITH INTEGRAL CHECK VALVE, VOLTAGE 120-1-60, 1/25 HP, 0-12.5 GPM, 0-15' HD.

D. ZP-2: ZONE CIRCULATING PUMP, IN-LINE MOUNTED, TACO MODEL 00R-SF6-I IFC, 1-1/4" CONNECTION SIZE, FLANGED, STAINLESS STEEL, WITH INTEGRAL CHECK VALVE, VOLTAGE 120-1-60, 1/25 HP, 0-12.5 GPM, 0-15' HD.

E. ZP-3: ZONE CIRCULATING PUMP, IN-LINE MOUNTED, TACO MODEL 00R-SF6-I IFC, 1-1/4" CONNECTION SIZE, FLANGED, STAINLESS STEEL, WITH INTEGRAL CHECK VALVE, VOLTAGE 120-1-60, 1/25 HP, 0-12.5 GPM, 0-15' HD.

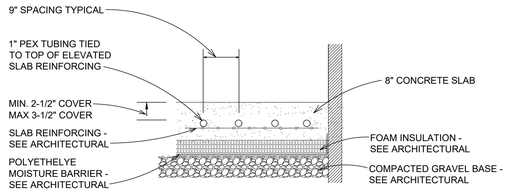
F. ZP-4: ZONE CIRCULATING PUMP, IN-LINE MOUNTED, TACO MODEL 00R-SF6-I IFC, 1-1/4" CONNECTION SIZE, FLANGED, STAINLESS STEEL, WITH INTEGRAL CHECK VALVE, VOLTAGE 120-1-60, 1/25 HP, 0-12.5 GPM, 0-15' HD.

G. ALPHA CONTROLS SHALL RE RESPONSIBLE FOR PROVIDING ALL CONTROLS, WIRING, PROGRAMMING, GRAPHICS, ETC. REQUIRED TO TIE NEW PUMPS INTO EXISTING ALPHA CONTROLS BUILDING MANAGEMENT SYSTEM.



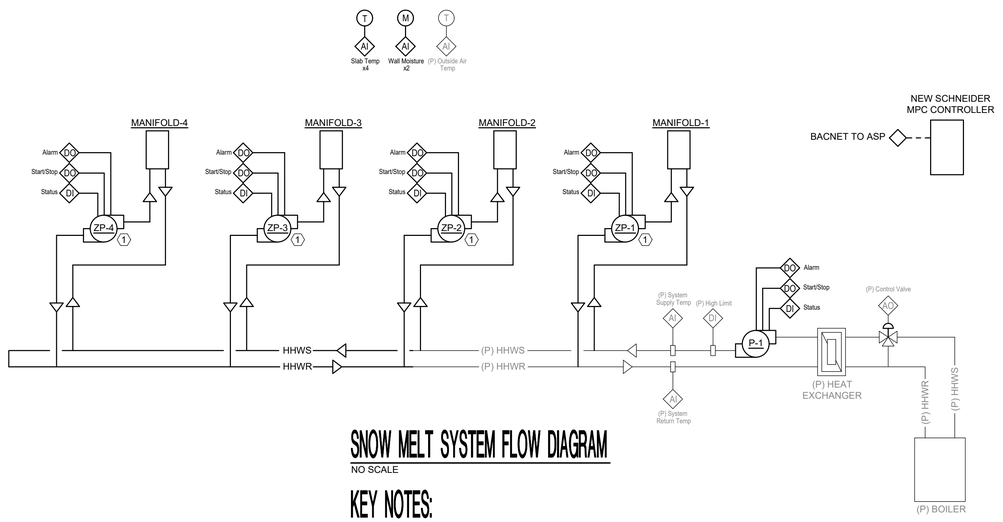
MANIFOLD PIPING DETAIL

NO SCALE



SNOW MELT PIPING DETAIL

NO SCALE



SNOW MELT SYSTEM FLOW DIAGRAM

NO SCALE

KEY NOTES:

(1) PROVIDE RELAY FOR PUMP CONTROL.

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PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
MECHANICAL EQUIPMENT SCHEDULES, DETAILS, AND CONTROLS

PROJECT INFORMATION
Date: AUGUST 30 2024
RLJA Proj: 2024-027

SHEET NUMBER
M103
OF
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PRESENT EQUIPMENT AND DEMOLITION NOTES

A. THE FOLLOWING REMOVED PRESENT EQUIPMENT AND MATERIALS WHICH ARE IN GOOD OPERATING CONDITION (OR ARE PLACED IN GOOD CONDITION), SUITABLE, MEETING THE REQUIREMENTS OF THESE SPECIFICATIONS, AND ARE APPROVED IN WRITING BY ENGINEER, OR CALLED FOR MAY BE REUSED (PXR, PXN, AND PN).
B. REMOVED DUCTWORK MUST NOT BE REUSED.
C. ANY OF ABOVE EQUIPMENT WHICH IS NOT REUSED AND FOLLOWING REMOVED PRESENT EQUIPMENT SHALL BECOME PROPERTY OF CONTRACTOR, AND SHALL BE REMOVED FROM PREMISES (PX).
   1. EQUIPMENT SO DESIGNATED ON DRAWINGS.
D. CONTRACTOR SHALL:
   1. PROVIDE NEW FLOORS UNDER REMOVED PRESENT EQUIPMENT AND WHERE CALLED FOR
   2. REPAIR FLOORS UNDER AND WALLS ADJACENT TO REMOVED EQUIPMENT, TO MATCH ADJACENT CONSTRUCTION.
   3. FILL IN PRESENT CHASES WHICH ARE NO LONGER REQUIRED AND NEATLY PATCH TO MATCH ADJACENT CONSTRUCTION.
   4. CUT OPENINGS REQUIRED FOR:
      a. HIS WORK;
      b. ADMISSION OF NEW EQUIPMENT;
      c. REMOVAL OF PRESENT EQUIPMENT;
      d. NEW CONNECTION TO PRESENT CONSTRUCTION.
   5. PATCH AND REPAIR UNUSED PRESENT HOLES AND OPENINGS, AND THOSE LEFT BY THE REMOVAL OF PRESENT EQUIPMENT AND ADMISSION OF NEW EQUIPMENT.
   6. PATCH AND REPAIR PRESENT EQUIPMENT, AND BUILDING CONSTRUCTION WHICH HAS NOT BEEN CUT, REMOVED, DISTURBED OR MARRED, AS REQUIRED, TO RESTORE IT TO ORIGINAL CONDITION BEFORE BEING DISTURBED.
E. UNUSED OPENINGS IN EQUIPMENT, WALLS, CEILING, FLOOR, ETC. SHALL BE FILLED.
F. PRESENT PAINTED CONSTRUCTION WHICH IS MARRED SHALL BE REPAIRED SAME AS NEW CONSTRUCTION.
G. CERTAIN ABBREVIATIONS OR SYMBOLS, WHEN APPLIED TO PRESENT (TO EXISTING) LINE, DEVICE OR EQUIPMENT, SHALL HAVE THE FOLLOWING MEANINGS:

NC — NEW CONNECTIONS TO PRESENT DUCTWORK, EQUIPMENT, PIPING, ETC. INSTALL, TEST, COVER, PAINT, ETC., SAME AS NEW WORK.

P — TO REMAIN UNCHANGED, IF CHANGE CANNOT BE AVOIDED, CHANGE "P" TO "PXR", AT NO INCREASE IN CONTRACT PRICE. VERIFY LOCATION.

PX — TO BE COMPLETELY REMOVED, INCLUDING UNNEEDED CONNECTIONS, PIPING, DUCTS, WIRING, BASES, ETC., OF EVERY KIND. UNUSED OPENINGS PLUGGED OR CAPPED, TESTED, COVERED, PAINTED SAME AS NEW WORK. OTHER DISTURBED WORK OF EVERY KIND RESTORED, PATCHED, TESTED, COVERED, PAINTED, ETC., TO EQUAL ORIGINAL CONDITION. REMOVED MATERIAL MUST NOT BE REUSED UNLESS OTHERWISE SPECIFIED OR DIRECTED BY ENGINEER.

PXR — SAME AS "PX", EXCEPT REMOVED, CLEANED AND RESTORED TO GOOD OPERATING CONDITION AND REINSTALLED, SAME AS NEW WORK, IN ORIGINAL POSITION, OR CLOSE TO ORIGINAL LOCATION. IF RECONDITIONING IS IMPRACTICAL, PROVIDE NEW DEVICE, AS APPROVED BY ENGINEER, AT NO INCREASE IN CONTRACT PRICE.

PXN — REMOVED, CLEANED AND RESTORED TO GOOD OPERATING CONDITION AND REINSTALLED SAME AS NEW WORK, IN NEW POSITION MARKED "PN". IF RECONDITIONING IS IMPRACTICAL, PROVIDE NEW DEVICE, AS APPROVED BY ENGINEER, AT NO INCREASE IN CONTRACT PRICE. UNUSED OPENINGS PLUGGED OR CAPPED, TESTED, COVERED, PAINTED SAME AS EXISTING OR NEW WORK. OTHER DISTURBED WORK OF EVERY KIND RESTORED, PATCHED, TESTED, COVERED, PAINTED, ETC., EQUAL TO EXISTING OR NEW WORK.

PN — COMPLETELY REINSTALL DEVICE AT NEW LOCATION TO EXISTING OR NEW DUCTWORK AS SHOWN, SAME AS NEW WORK. PROVIDE ALL NECESSARY DUCT OR PIPE EXTENSIONS AS REQUIRED.

PX-DO — SAME AS "PX", EXCEPT REMOVED, CLEANED AND RESTORED INTACT, AS FAR AS PRACTICAL, MATCHED MARKED, AND OTHERWISE IDENTIFIED AS REQUIRED AND DELIVERED TO OWNER OUTSIDE OF BUILDING AS DIRECTED BY ENGINEER.

H. WORK OF EVERY DIVISION SHALL BE COORDINATED WITH ALL OTHER WORK AND PRESENT CONDITIONS, SO THAT
   1. ELECTRICAL SERVICES TO PRESENT BUILDINGS OR PORTIONS OF BUILDING WILL NOT BE INTERRUPTED DURING PERIODS WHEN THOSE SERVICES ARE NEEDED.
   2. SPECIAL SYSTEMS SUCH AS FIRE ALARM, SOUND, ETC., OF EVERY KIND TO PRESENT BUILDINGS WILL NOT BE INTERRUPTED DURING WORKING AND/OR OCCUPIED HOURS, EXCEPT AS APPROVED BY THE OWNER.
I. DUCTWORK SERVING NEW AND/OR PRESENT MECHANICAL DEVICES IN FINISHED PRESENT ROOMS OR SPACES SHALL BE CONCEALED IN FINISHED ROOMS, WHERE POSSIBLE OR SHALL BE RUN IN ADJOINING UNFINISHED ROOMS, SHAFTS, CHAMBERS, CLOAK ROOMS, ETC., EXCEPT WHERE EXPOSED DUCT IS PERMITTED IN FINISHED PRESENT ROOMS BY ARCHITECT IN WRITING, PRESENT DIFFUSERS, GRILLS, REGISTERS, SWITCHES, ETC. SHALL BE REMOVED AS PER NOTE "PX" UNLESS ANOTHER SYMBOL IS SHOWN ON DRAWINGS OR THE DEVICES ARE SERVING OTHER EQUIPMENT. WHERE SPECIFICALLY APPROVED BY ARCHITECT IN WRITING, OPENINGS MAY BE PERMITTED TO REMAIN AND BE PROVIDED WITH NEAT FLUSH COVERS, EXTENDING OVER ENTIRE WALL OPENING.
J. UNNEEDED EQUIPMENT, DUCTWORK, ETC., SHALL BE COMPLETELY REMOVED; AND CONSTRUCTION PATCHED AS PER NOTE "PX". NEW CONNECTIONS TO PRESENT DUCTS/EQUIPMENT, SHALL BE MADE, TESTED, COVERED, PAINTED, ETC., SAME AS NEW EQUIPMENT. PRESENT EQUIPMENT, AND OTHER COVERING DISTURBED BY CONTRACTOR SHALL BE REPAIRED TO EQUAL NEW CONDITION AND PAINTED SAME AS NEW COVERING.
K. WORK SHALL BE COORDINATED SO THAT HEATING, PLUMBING, ELECTRICAL, INTERNET AND TELEPHONE SERVICES TO THE PRESENT BUILDING WILL NOT BE INTERRUPTED, EXCEPT AS APPROVED BY THE OWNER/ARCHITECT.

MECHANICAL GENERAL NOTES:

1. DRAWINGS ARE GENERALLY DIAGRAMMATIC. EACH CONTRACTOR SHALL MAKE REQUIRED CHANGES FROM THE GENERAL ROUTING SHOWN ON THESE DRAWINGS SUCH AS OFF SETS, BENDS OR CHANGES IN ELEVATION DUE TO COORDINATION WITH THE WORK OF OTHER TRADES AND THE BUILDING CONSTRUCTION. ALL CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER. FOR PRESENT CONSTRUCTION, VERIFY ALL EXISTING CONDITIONS PRIOR TO BIDDING TO AVOID CONFLICT. IT IS INTENDED THAT ALL EQUIPMENT, MATERIAL, DEVICES, ETC., SHALL BE LOCATED SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS, NOTWITHSTANDING THE FACT THAT LOCATIONS INDICATED BY THESE DRAWINGS MAY BE DISTORTED FOR CLEARNESS OF PRESENTATION.

   CONTRACTOR IS ALLOWED TO MAKE MINOR CHANGES TO THE PIPING TO AVOID FIELD CONFLICTS AT NO ADDITIONAL COST TO THE OWNER AND AS LONG AS THE RELOCATION DOES NOT AFFECT THE PERFORMANCE OF THE SYSTEM.

   EACH CONTRACTOR SHALL CHECK DRAWINGS OF THE OTHER CONTRACTORS TO VERIFY SPACES IN WHICH THEIR WORK WILL BE INSTALLED IS CLEAR OF OBSTRUCTIONS. MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS AT ALL POINTS IN THE BUILDING. WHERE HEADROOM OR SPACE CONDITIONS APPEAR INADEQUATE, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE INSTALLATION.

   FURNISH ALL TRADES ADVANCE INFORMATION ON LOCATIONS AND SIZES OF PIPING, DUCTWORK, EQUIPMENT, FRAMES, BOXES, SLEEVES AND OPENINGS NEEDED FOR WORK, AND ALSO FURNISH INFORMATION AND SHOP DRAWINGS TO PERMIT TRADES AFFECTED TO INSTALL THEIR WORK PROPERLY AND WITHOUT DELAY.

   WHERE THERE IS EVIDENCE THAT WORK OF ONE TRADE WILL INTERFERE WITH WORK OF OTHER TRADES, ALL TRADES SHALL ASSIST IN WORKING OUT SPACE CONDITIONS TO MAKE SATISFACTORY ADJUSTMENTS.

   CONTRACTOR TO REVIEW, PRIOR TO BIDDING, ALL DRAWINGS TO COORDINATE VARIOUS WORK AS CALLED FOR. CONTRACTOR SHALL CAREFULLY CHECK ALL DRAWINGS FOR ALL TRADES, AND ANY LACK OF COORDINATION BETWEEN HIS WORK AND DRAWINGS FOR JOB CONDITIONS SHALL BE IMMEDIATELY REPORTED TO ARCHITECT.

   CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING, INCLUDING CORE DRILLING, SAW CUTTING, ETC., AS REQUIRED TO ACCOMMODATE HIS WORK. CUTTING AND PATCHING AND PAYMENT OF SAID WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR REQUIRING THE DISTURBANCE. INFORMATION.

   CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF PRESENT CEILINGS, LIGHT FIXTURES, DIFFUSERS, DUCTWORK, PIPING, CONDUIT, ETC., AS REQUIRED FOR THE INSTALLATION OF HIS WORK. REMOVAL, REPLACEMENT AND PAYMENT FOR MECHANICAL/ELECTRICAL ITEMS SHALL BE THE RESPONSIBILITY OF THE APPLICABLE MECHANICAL CONTRACTOR. REMOVAL AND REPLACEMENT OF PRESENT CEILINGS, ETC., SHALL BE THE RESPONSIBILITY OF CONTRACTOR MAKING THE DISTURBANCE.

2. HEATING, VENTILATING, AIR CONDITIONING, AND ELECTRICAL DESIGNS ARE BASED ON THE REQUIREMENTS FOR THE SPECIFIED EQUIPMENT MANUFACTURER. BASED ON THE REQUIREMENTS FOR THE SPECIFIED EQUIPMENT MANUFACTURER. CONDUITS, DISCONNECTS, BREAKERS, FUSES, AND WIRE SIZES ARE SELECTED ON THE BASIS OF SPECIFIED EQUIPMENT MANUFACTURER. INCREASED CURRENT REQUIREMENTS NECESSITATING LARGER WIRE, BREAKERS, FUSES, SWITCHES, ETC. TO ACCOMMODATE ANY ALTERNATE OR SUBSTITUTE MANUFACTURER'S EQUIPMENT OTHER THAN AS SHOWN ON DRAWINGS OR SCHEDULES SHALL BE PROVIDED WITHOUT INCREASE IN CONTRACT PRICE BY THE CONTRACTOR FURNISHING EQUIPMENT. WIRE SIZES ARE SELECTED ON THE BASIS OF SPECIFIED EQUIPMENT.
3. CONTRACTOR SHALL INCLUDE IN HIS WORK THE RELOCATION OF ALL CROSS BRACING, AS REQUIRED TO FIT PIPES BETWEEN JOISTS. THIS WORK SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR WITH ARCHITECTURAL APPROVAL.
4. CONTRACTOR SHALL PROVIDE ALL PIPE DROPS AND OFFSETS TO AVOID INTERFERENCES WITH JOISTS, OTHER DUCTS, LIGHTS, PIPES, ETC.
5. UPON BALANCING, IF SYSTEM(S) CANNOT BE SUCCESSFULLY BALANCED AS AGREED BY OWNER/ARCHITECT/ENGINEER THEN ADDITIONAL DAMPERS, BELTS, SHEAVES, OR PULLEYS WILL BE INSTALLED TO PROVIDE PROPER AIR QUANTITIES, ACCEPTABLE SOUND LEVELS AND TEMPERATURE/ HUMIDITY REQUIREMENTS BY THE HVAC CONTRACTOR WITHOUT INCREASE IN CONTRACT PRICE WITHIN THE GUARANTEE PERIOD.
6. PRESENT PAINTED CONSTRUCTION WHICH IS MARRED SHALL BE REPAINTED SAME AS NEW CONSTRUCTION.
7. THE USER OF THE DRAWINGS AGREES TO HOLD THE ENGINEER HARMLESS FOR ANY RESPONSIBILITY IN REGARD TO CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES AND FOR ANY SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK AND FURTHER SHALL HOLD THE ENGINEER HARMLESS FOR COST AND PROBLEMS ARISING FROM THE NEGLIGENCE OF THE CONTRACTOR, SUBCONTRACTOR, TRADESMEN OR WORKMEN. THE USE OF THESE DRAWINGS ALSO IMPLIES THAT THE ENGINEER SHALL TAKE NO RESPONSIBILITY FOR THE PLANNED USER'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE DRAWINGS OR CONTRACT DOCUMENTS.
8. SEE SPECIFICATIONS FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, PREFIXES AND SUFFIXES.

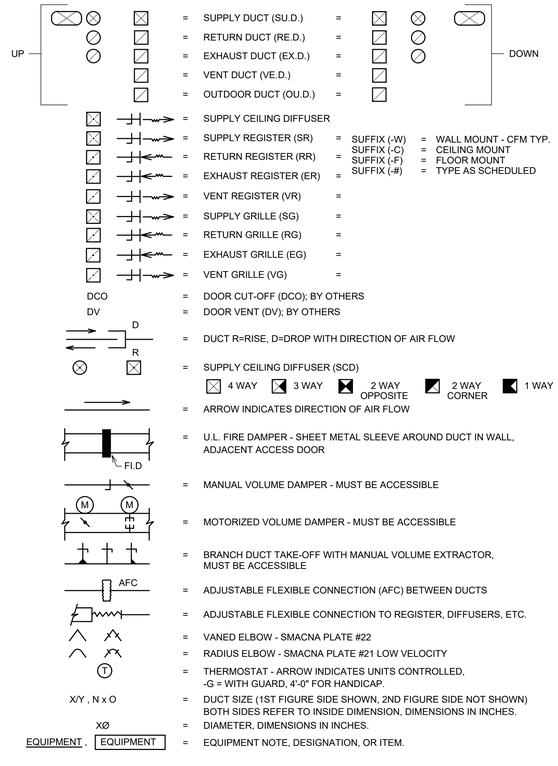
BASIC ABBREVIATIONS

MARK	DESCRIPTION	MARK	DESCRIPTION
AAD	AUTOMATIC ALUMINUM DAMPERS	MC	MECHANICAL CONTRACTOR
ACCU	AIR COOLED CONDENSING UNIT	MTD	MOUNTED
AD	ACCESS DOOR	NC	NEW CONNECTION
AFC	ADJUSTABLE FLEXIBLE CONNECTION	OA	OUTDOOR AIR
AFF	ABOVE FINISH FLOOR	OAD	OUTDOOR AIR DAMPER
ALUM	ALUMINUM	OAI	OUTDOOR AIR INTAKE
AP	ACCESS PANEL	OA.D	OUTDOOR AIR DUCT
ASC	ABOVE SUSPENDED CEILING	P	PRESENT
BOD	BOTTOM OF DUCT	PC	PLUMBING CONTRACTOR
BDD	BACK DRAFT DAMPER	PRE	POWER ROOF EXHAUSTER
BJA	BETWEEN JOISTS ABOVE	RAD	RETURN AIR DAMPER
CAD	COMBUSTION AIR DAMPER	RE.D	RETURN AIR DUCT
CD	CEILING DIFFUSER (S) SUPPLY (R) RETURN	REF	REFERENCE
CFM	CUBIC FEET PER MINUTE	REFRIG.	REFRIGERANT-LIQUID,SUCTION,HGBP
CLG	CEILING	RG	RETURN GRILLE
CTC	CLOSE TO CEILING (EXPOSED)	RR	RETURN REGISTER
CR	CONDENSATE RETURN	RTU	ROOFTOP UNIT
CTW	CLOSE TO WALL (EXPOSED)	SCD	SUPPLY CEILING DIFFUSER
D	DRAIN	SIM	SIMILAR
DC	DUCT COVERING	SG	SUPPLY GRILLE
DCO	DOOR CUTOFF (BY OTHERS)	SLD	SUPPLY LINEAR DIFFUSER
DL	DUCT LINING	SM	SHEET METAL
DS	DISCONNECT SWITCH	SR	SUPPLY REGISTER
DV	DOOR VENT (BY OTHERS)	SS	STAINLESS STEEL
EC	ELECTRICAL CONTRACTOR	STW	SLEEVE THRU WALL AND SEAL
EH	EXHAUST HOOD	SU.D.	SUPPLY DUCT
ER	EXHAUST REGISTER	TBF	TO BELOW FLOOR
EF	EXHAUST FAN	TC	TEMPERATURE CONTROL
EG	EXHAUST GRILLE	TFA	TO FLOOR ABOVE
EX.D	EXHAUST DUCT	TFB	TO FLOOR BELOW
EXP	EXPOSED	TF.D.	TRANSFER DUCT
FA.D	FRESH AIR DUCT	TG	TRANSFER GRILLE
FBO	FURNISHED BY OTHERS	TJA	THRU JOIST ABOVE
FFA	FROM FLOOR ABOVE	TOD	TOP OF DUCT
FFB	FROM FLOOR BELOW	TR	THROUGH ROOF
FI.D.	FIRE DAMPER	TYP	TYPICAL
G	GAS PIPING	VE.D.	VENT AIR DUCT
GC	GENERAL CONTRACTOR	VD	VOLUME DAMPER
HGBP	HOT GAS BYPASS PIPING	VG	VENT GRILLE
HVAC	HEATING, VENTILATING & AIR CONDITION.	VTR	VENT THRU ROOF
LPS	LOW PRESSURE STEAM	W/	WITH

SEE SPECIFICATIONS FOR ADDITIONAL ABBREVIATIONS, PREFIXES, SUFFIXES, ETC.

HVAC SHEET METAL SYMBOLS:

(SEE SPECIFICATIONS FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, ETC.)



PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT
REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
MECHANICAL DEMOLITION NOTES, GENERAL NOTES, AND ABBREVIATIONS

PROJECT INFORMATION
Date: AUGUST 30 2024
RLJA Proj: 2024-027

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OF
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DIVISION 23 - MECHANICAL

SECTION 23010 - BASIC MECHANICAL REQUIREMENTS:

1. CONDITIONS:

THIS SECTION SHALL APPLY TO ALL SECTIONS IN DIVISION 23.

GENERAL CONDITIONS OF THE CONTRACT AND THE ARCHITECTURAL SUPPLEMENTARY AND GENERAL CONDITIONS APPLY TO THIS SECTION/DIVISION. THE SUPPLEMENTARY GENERAL CONDITIONS FOR DIVISION 26 - ELECTRICAL, ALSO APPLY TO THIS SECTION/DIVISION.

2. SCOPE OF WORK:

PROVIDE COMPLETE SYSTEMS AS CALLED FOR, AND/OR SHOWN, AND/OR SPECIFIED. HVAC OR RESPECTIVE SUBCONTRACTORS SHALL FURNISH AND COMPLETELY INSTALL THE SYSTEM, SERVICE, EQUIPMENT, OR MATERIAL NAMED, TOGETHER WITH OTHER ASSOCIATED DEVICES, EQUIPMENT, MATERIALS, WIRING, PIPING, ETC., AS REQUIRED FOR A COMPLETE SATISFACTORY OPERATING INSTALLATION BY THE RESPECTIVE CONTRACTOR. OTHER SUBCONTRACTORS, AS REQUIRED TO PERFORM WORK CALLED FOR, SHALL BE RESPONSIBLE TO THE HVAC CONTRACTOR RESPECTIVELY. SECURE ALL PERMITS FOR WORK AND INSPECTIONS AS REQUIRED.

3. BASIC SYSTEMS:

SYSTEMS PROVIDED SHALL INCLUDE BUT SHALL NOT BE LIMITED TO:

A. CONDITIONS, SCOPE OF WORK, BASIC SYSTEMS, PERMITS AND FEES, CODES, STANDARDS AND REGULATIONS.
B. MATERIALS AND EQUIPMENT, WORK PRIORITY OVER OTHER TRADES, COORDINATION, WIRING, OPENINGS, SLEEVES AND CHASES, EQUIPMENT INSTALLATION (FBO)-FURNISHED BY OTHERS, ACCESS PANELS, EQUIVALENT MAKE EQUIPMENT, SHOP DRAWINGS.
C. VERIFICATION, SUPERVISION AND INSTRUCTION, IDENTIFICATION, PAINTING, CLEANING, TESTING AND BALANCING, GUARANTEE, RECORD DOCUMENTS.

4. PERMITS AND FEES:

HVAC SHALL BE RESPONSIBLE FOR THE OBTAINING OF THEIR RESPECTIVE PERMITS, AND THEIR COSTS, AS WELL AS OTHER FEES NECESSARY TO THE PROJECT INCLUDING INSPECTIONS. PERMITS AND FEES SHALL ALL BE INCLUDED FOR ALL REQUIRED NATURAL GAS, BUILDING DEPT. REQUIREMENTS, ETC.

5. CODES, STANDARDS, AND REGULATIONS:

EQUIPMENT, DEVICES, APPARATUS AND INSTALLATIONS TO BE IN FULL COMPLIANCE WITH CURRENT (LATEST EDITION) APPLICABLE LOCAL, CITY, COUNTY, STATE AND GOVERNMENT REQUIREMENTS, RULES, REGULATIONS, CODES, STATUTES, ORDINANCES, ETC., OWNER'S INSURANCE COMPANY STANDARDS, AMERICANS WITH DISABILITIES ACT, LATEST EDITION OF ILLINOIS ACCESSIBILITY CODE, LATEST EDITION AND AMENDMENTS OF ILLINOIS STATE PLUMBING CODE, NATIONAL ASSOCIATION OF ROOFING CONTRACTORS, LOCAL GAS AND ELECTRIC UTILITY COMPANIES, LABOR REGULATIONS, AND OTHER STATE OF ILLINOIS DEPARTMENT OF PUBLIC HEALTH RULES. CHANGES REQUIRED TO CONFORM TO REQUIREMENTS SHALL BE MADE WITHOUT INCREASE IN CONTRACT PRICE AS APPROVED BY THE ARCHITECT.

ELECTRICAL EQUIPMENT, WIRING, GAS BURNING EQUIPMENT, HANDLING AND STORAGE EQUIPMENT, ALL WATER/STEAM/DRAIN/WASTE/VENT PIPING, REFRIGERATION PIPING, GAS VALVES AND PIPING, INSULATING MATERIALS, ETC., SHALL COMPLY WITH REQUIREMENTS OF NFPA, NEC, UL, AGA, OSHA, EPA, ICC, STATE AND FEDERAL SAFETY CODES FOR A PARTICULAR TYPE INSTALLATION AND SHALL BE SO LABELED WHERE APPLICABLE.

ELECTRICAL DESIGN FOR NUMBER OF WIRES AND SIZES, CONDUIT SIZES, CIRCUIT BREAKER SIZES, ETC., ARE BASED ON ELECTRICAL CHARACTERISTICS OF EQUIPMENT SCHEDULED OR SPECIFIED. IF ELECTRICAL CHARACTERISTICS OF EQUIPMENT TO BE USED DIFFER FROM THOSE SPECIFIED, ALL CHANGES (IF REQUIRED) RELATIVE TO CIRCUIT BREAKER SIZES, NUMBER OF WIRES AND SIZES, CONDUIT SIZES, ETC., SHALL BE THE RESPONSIBILITY OF THE RESPECTIVE EQUIPMENT FURNISHING OR INSTALLING CONTRACTOR. CHANGES RELATIVE TO THE ABOVE SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT, ENGINEER, AND TRADES INVOLVED, IN WRITING AND SHALL BE APPROVED BEFORE INSTALLATION TO AVOID CONFLICT. CHANGES SHALL BE MADE WITHOUT INCREASE OF CONTRACT PRICE TO THE OWNER.

6. MATERIALS AND EQUIPMENT:

MATERIALS AND EQUIPMENT SHALL BE OF NEW CONSTRUCTION, AND QUALITY SPECIFIED.

7. WORK PRIORITY OVER THE OTHER TRADES:

ALL CONTRACTORS FOR THE MECHANICAL-ELECTRICAL TRADES ARE TO BE GOVERNED AS FOLLOWS AND WORK IN COOPERATION WITH ONE ANOTHER TO FIT PIPING AND DUCTWORK INTO THE STRUCTURE AS JOB CONDITIONS MAY DEMAND. ALL FINAL DECISIONS AS TO RIGHT OF WAY AND RUN OF PIPE, DUCTS, ETC., TO BE MADE BY ARCHITECT.

IN GENERAL, PRIORITY IS TO BE ARRANGED AS FOLLOWS:

A. HVAC PIPING.
B. ELECTRICAL CONDUITS.
C. CONTROL AIR LINES OR CONDUIT.

8. COORDINATION:

COORDINATE WORK OF HVAC, TEMPERATURE CONTROLS, PLUMBING WORK, FIRE PROTECTION WORK, ELECTRICAL WORK, GENERAL CONTRACTOR TYPE WORK, ETC., TO AVOID INTERFERENCES AND CONFLICTS OF WORK INDICATED. WORK MUST BE COMPLETED AS SCHEDULED BY THE ARCHITECT. VERIFY AT TIME OF BIDDING TO AVOID MISUNDERSTANDING. ANY DISCREPANCIES NOTICED AT TIME OF PRE-BID MEETING AND/OR INSPECTION OF SITE BY THOSE INSPECTING FOR BIDDING THE PROJECT SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION IMMEDIATELY SO THAT CORRECTIONS CAN BE MADE BY ADDENDUM PRIOR TO BID DATE.

9. WIRING:

WIRING TO BE IN COMPLIANCE WITH CURRENT (LATEST EDITION) N.E.C. AND ALL APPLICABLE CODES. ALL MOTORS, EQUIPMENT, WIRING, CABLING, DEVICES, ETC., TO BE NON-RADIO INTERFERING. LINE WIRES, OF PROPER SIZE, SHALL BE FURNISHED TO THE EQUIPMENT WITH FINAL POWER CONNECTIONS MADE BY ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR WILL FURNISH DISCONNECT SWITCHES FOR EQUIPMENT AND WILL FURNISH STARTERS, EXCEPT FOR PACKAGED EQUIPMENT WHICH COMES FACTORY-WIRED COMPLETE WITH STARTERS. HVAC CONTRACTOR WITHIN HIS CONTRACT, SHALL BE RESPONSIBLE FOR PROVIDING RESPECTIVE CONTROLS FOR ALL OF HIS EQUIPMENT, PROVIDE CONTROL DEVICES, CONTROL PANELS, CONTROLS, INTERLOCKS, ETC., TO GIVE A COMPLETE/SATISFACTORY OPERATING SYSTEM. IF ELECTRICAL CONTRACTOR FAILS TO COORDINATE OR PROVIDE REQUIRED STARTERS, HVAC CONTRACTOR SHALL PROVIDE AS REQUIRED, TO GIVE A COMPLETE OPERATING, ACCEPTABLE SYSTEM. RESPECTIVE CONTRACTORS OR RESPECTIVE SUBCONTRACTORS WILL DO ALL CONTROL WIRING, INTERLOCK WIRING, ETC., FROM INFORMATION PROVIDED BY THE RESPECTIVE HVAC CONTRACTOR FOR WORK REQUIRED.

FOR ELECTRIC/ELECTRONIC PORTION OF THE SYSTEM, PROVIDE ALL RELAYS, TRANSFORMERS, PROTECTION, CONTACTORS, DEVICES, ETC., WITH WIRING IN CONDUIT AS REQUIRED BY LATEST USE. CONCEAL PIPING, CONDUITS, WIRING, ETC., IN ALL FINISHED AREAS. RUN PIPING, CONDUITS, ETC., EXPOSED IN UNFINISHED AREAS SUCH AS MECHANICAL ROOMS, ETC., AND WHERE ALLOWED. WHERE EXPOSED, RUN CONDUIT AND PIPING IN STRAIGHT LINES, PARALLEL TO WALLS AND CEILING. WHERE RETURN AIR PLENUMS ARE USED, PIPING, WIRING AND ALL CABLES USED SHALL BE SUITABLE FOR THIS TYPE INSTALLATION AND SHALL NOT CONTRIBUTE TO COMBUSTION OR PRODUCTION OF SMOKE IN EVENT OF FIRE. FOR CONTROL SYSTEMS, PROVIDE SHIELDED CABLE AND CONNECTIONS AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

10. OPENINGS, SLEEVES, AND CHASES:

EACH RESPECTIVE CONTRACTOR SHALL SET SLEEVES AND INSERTS REQUIRED FOR PIPING, HANGERS, INTAKES, LOUVERS, VENTILATORS, DUCTWORK, CURBS, ETC., IN CONSTRUCTION. RESPECTIVE CONTRACTOR TO FURNISH GENERAL CONTRACTOR WITH COMPLETE INFORMATION AS TO SIZE AND LOCATION OF OPENINGS THROUGH WALLS, FLOORS, ROOFS, ETC., FOR INSTALLING THIS WORK. IF THIS INFORMATION IS NOT SUPPLIED BEFORE NEW WALLS, FLOORS, ROOFS, ETC., ARE BUILT, RESPECTIVE CONTRACTOR SHALL FURNISH, CUT AND PATCH ALL REQUIRED OPENINGS FOR INSTALLATION OF EQUIPMENT, MATERIAL, DEVICES, ETC., AS REQUIRED AND APPROVED BY THE ARCHITECT. FOR NEW CONSTRUCTION, GENERAL CONTRACTOR WILL CUT HOLES THROUGH ROOF AND ROOFING CONTRACTOR WILL DO ALL FLASHING, ROOF PATCHING, ETC., UNLESS OTHERWISE NOTED. ROOF OPENINGS 18" AND LARGER SHALL BE FRAMED WITH HEADERS CONNECTED TO ROOF JOISTS WITH STEEL MEMBERS FRAMED BETWEEN. VERIFY WITH ARCHITECT. ALL ROOFING WORK AND EQUIPMENT TO MEET REQUIREMENTS OF NATIONAL ASSOCIATION OF ROOFING CONTRACTORS.

11. EQUIVALENT MAKE EQUIPMENT:

EQUIVALENT MAKE EQUIPMENT FOR EQUIPMENT MANUFACTURERS NOT LISTED IN SPECIFICATIONS ARE SUBJECT TO REVIEW OF SAID EQUIPMENT BEFORE BIDDING. PRIOR TO BIDDING, ANY COMPANY WHO EXPECTS TO BE NAMED BY CONTRACTOR AS A SUPPLIER OF EQUIPMENT SPECIFIED AND/OR CALLED FOR ON PLANS OR IN SPECIFICATIONS, SHALL HAVE ON FILE WITH THE DESIGN ENGINEER COPIES OF COMPLETE PUBLISHED TECHNICAL DATA.

IT SHALL BE THE MANUFACTURER'S RESPONSIBILITY TO CERTIFY THE FOLLOWING:

A. SHOW PERFORMANCE CHARACTERISTICS OF SELECTED EQUIPMENT, SIZES INDICATED AND DIMENSIONAL DATA TO SHOW THAT EQUIPMENT WILL FIT INTO SPACE ALLOWED.
B. INDICATE EQUIPMENT CONSTRUCTION AND MATERIALS USED IN SAME.
C. INDICATE APPLICATION AS CALLED FOR.
D. INDICATE ELECTRICAL REQUIREMENTS THAT ARE EQUAL TO OR LESS THAN EQUIPMENT SPECIFIED, COMPLETE SEQUENCE OF OPERATION AND COMPLETE INSTALLATION INSTRUCTIONS AS REQUIRED BY MANUFACTURER FOR INTENDED USE.
E. SHOW DATA, ITEM FOR ITEM, FOR EQUIPMENT SPECIFIED.

DATA SUBMITTED MUST BE RECEIVED BY THE DESIGN ENGINEER NOT LATER THAN TEN (10) WORKING DAYS PRIOR TO THE BID DATE TO ALLOW SUFFICIENT TIME FOR REVIEW OF SUBMITTALS. AN ADDENDA WILL BE ISSUED IF EQUIPMENT IS TO BE CONSIDERED AS AN "EQUIVALENT MAKE."

EQUIPMENT NOT CONFORMING TO THE ABOVE WILL NOT BE CONSIDERED.

12. SHOP DRAWINGS:

EACH RESPECTIVE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL, BEFORE CONSTRUCTION IS STARTED, SHOP DRAWINGS FOR EQUIPMENT, DEVICES, MATERIAL, CONTROLS, ACCESSORIES, WIRING DIAGRAMS, ETC., FOR RESPECTIVE INSTALLATION. SUBMITTALS SHALL BE IN ACCORDANCE WITH DIVISION 1 REQUIREMENTS.

13. VERIFICATION:

VERIFICATION OF MECHANICAL ITEMS FOR PROJECT SHALL BE INCLUDED. CONTRACTOR, PRIOR TO BIDDING, SHALL SECURE ALL NECESSARY INFORMATION, POINTS FOR NEW CONNECTIONS TO ANY TYPE OF SERVICE AS REQUIRED AND SHALL INCLUDE NECESSARY COST FOR FEE AS REQUIRED IN HIS BID FOR THESE CONNECTIONS. CONTRACTOR SHALL CAREFULLY EXAMINE THE SITE FOR THE WORK TO ELIMINATE MISCONCEPTIONS OF FACT, TO VERIFY AND DETERMINE DIMENSIONS, ELEVATIONS, LOCATION OF EXISTING EQUIPMENT, SERVICES, PIPING, AND TO OBSERVE FEATURES AFFECTING WORKING CONDITIONS, TRANSPORTATION AND STORAGE FACILITIES. CONTRACTOR SHALL GIVE DUE CONSIDERATION TO SAME IN PREPARING PROPOSALS AS NO EXCEPTIONS WILL BE CONSIDERED AFTER AWARDING OF CONTRACT, NOR WILL CONTRACTOR BE ENTITLED TO ANY EXTRA COMPENSATION FOR HIS FAILURE TO VERIFY CONDITIONS AT THE SITE OR AT POINTS OF CONNECTION.

THE RUN OF ALL LINES SHOWN ON DRAWINGS IS TO BE REGARDED AS DIAGRAMMATIC AND TENTATIVE. CONTRACTOR SHALL CAREFULLY VERIFY LOCATION, DEPTH, AND SIZE OF LINE OR SEWER TO WHICH CONNECTION IS PROPOSED. BEFORE INSTALLING ANY LINES, CONTRACTOR SHALL ASSURE THAT THEY CAN BE RUN AS CONTEMPLATED WITHOUT TRAPPING OR INTERFERING WITH FOOTING, OTHER PIPING, FIXTURES, ETC. ANY NECESSARY DEVIATION SHALL BE REFERRED TO ARCHITECT FOR APPROVAL BEFORE ANY LINES OR SERVICE ARE RUN, AT NO INCREASE IN CONTRACT PRICE.

14. SUPERVISION AND INSTRUCTION:

SPECIAL SUPERVISION AND INSTRUCTIONS SHALL BE INCORPORATED INTO THE PROJECT. EACH SPECIALIZED INSTALLATION SHALL BE MADE UNDER SUPERVISION OF A FACTORY TRAINED ENGINEER OR CONTRACTOR'S SUPERINTENDENT WHO SHALL: (A) SUBMIT A WRITTEN REPORT THAT THE INSTALLATION HAS BEEN INSTALLED IN KEEPING WITH SPECIFIED REQUIREMENTS AND THE MANUFACTURER'S STANDARDS; (B) INSTRUCT OWNER'S OPERATING PERSONNEL BEFORE FINAL ACCEPTANCE; (C) PREPARE PERMANENT FORM OPERATING INSTRUCTIONS, PARTS LISTS, WIRING DIAGRAMS AND CONTROL DIAGRAMS, IN BOOKLET FORM, IN TRIPLICATE, TURNED OVER TO OWNER; (D) CERTIFY THAT INSTALLATION IS OPERATING SATISFACTORILY UNDER OWNER'S PERSONNEL; AND (E) VERIFY AND CERTIFY IN WRITING TO THE ARCHITECT THAT ALL EQUIPMENT AND CONTROL OPERATING INSTRUCTIONS, SERVICE AND MAINTENANCE MANUALS, AND COORDINATION OF EQUIPMENT TO OPERATION HAS BEEN COMPLETED. CERTIFICATION AND SIGN-OFF SHALL BE COMPLETED BY OWNER OR OWNER'S REPRESENTATIVE.

INSTRUCTION ON EQUIPMENT SHALL BE AS FOLLOWS:

INSTALLATION	REQUIRED EACH FOR 2 HOURS OR MORE NUMBER OF INSTRUCTION VISITS
HVAC SYSTEMS - TOTAL	1

15. IDENTIFICATION:

IDENTIFY EACH PIECE OF EQUIPMENT AND EACH CONTROL PANEL WITH 1" HIGH BLACK OR NOTICEABLE COLORED, PAINTED, STENCIL TYPE LETTERS ON THE EQUIPMENT. IDENTIFICATION TO BE VISIBLE USING ABBREVIATIONS AS CALLED FOR ON DRAWINGS. EQUIPMENT INCLUDES EF, EWH, FI.D, RTU, TC, ETC.

PROVIDE POLISHED BRASS VALVE TAG ON ALL VALVES, COCKS AND CONTROL DEVICES ON EACH PIPING SYSTEM. PROVIDE TYPED INDEX, MOUNTED IN LOCATION AS DIRECTED BY ARCHITECT. PROVIDE MARKED UP SET OF REDUCED SIZE DRAWINGS WHICH INDICATE LOCATIONS OF RESPECTIVE TAGGED VALVES. PROVIDE INCONSPICUOUS CEILING MARKERS INDICATING EQUIPMENT, VALVES, OR CONTROL DEVICES LOCATED ABOVE CEILINGS. REDUCED SIZE, FILE TYPE DRAWINGS SHALL BE SUBMITTED FOR REVIEW, SAME AS SHOP DRAWINGS, AND SHALL INCLUDE INDEX AND INDICATOR/LOCATOR FOR RESPECTIVE TAGGED VALVES AND/OR EQUIPMENT.

PROVIDE PIPE MARKERS ON ALL PIPING SYSTEMS PER ANSI A13.1 SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS AND 253.1 SAFETY COLOR CODE FOR MARKING PHYSICAL HAZARDS. MARKERS SHALL INCLUDE ARROWS TO SHOW NORMAL DIRECTION OF FLOW. LOCATE PIPE MARKERS AS FOLLOWS:

A. WHEREVER PIPING IS EXPOSED TO VIEW IN NON-CONCEALED LOCATIONS.
B. ON PIPING ABOVE REMOVEABLE ACOUSTICAL CEILINGS.
C. NEAR EACH VALVE AND CONTROL DEVICE.
D. NEAR EACH BRANCH CONNECTION.
E. NEAR LOCATIONS WHERE PIPES PASS THROUGH WALLS OR FLOORS/CEILINGS OR ENTER NON-ACCESSIBLE ENCLOSURES.
F. AT ACCESS DOORS AND SIMILAR ACCESS POINTS.
G. NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGINATION AND TERMINATION.
H. SPACED INTERMEDIATELY AT MAXIMUM SPACING OF 50 FEET ALONG EACH PIPING RUN, EXCEPT REDUCE SPACING TO 25 FEET IN CONGESTED AREAS OF PIPING AND EQUIPMENT.
I. FUEL GAS PIPING SHALL BE IDENTIFIED AT INTERVALS OF NOT MORE THAN 50 FEET IN EXPOSED LOCATIONS, NOT MORE THAN 25 FEET IN CONCEALED LOCATIONS AND NOT LESS THAN ONCE IN ANY ROOM OR SPACE.

16. PAINTING:

COORDINATE PAINTING REQUIREMENTS WITH GENERAL CONTRACTOR PRIOR TO BIDDING.

17. CLEANING, TESTING, AND BALANCING:

EACH CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING OF THEIR EQUIPMENT AND SYSTEMS AND SHALL REMOVE ALL DEBRIS CREATED BY THEMSELVES FROM THE PREMISES, PRIOR TO FINAL ACCEPTANCE.

EACH HEATING, AIR CONDITIONING, VENTILATING, EXHAUST, AIR MOVING SYSTEM, ETC., SHALL BE TESTED AND BALANCED (REBALANCE AS NECESSARY) TO APPROPRIATE AIR QUANTITIES, SOUND LEVELS, TEMPERATURE AND HUMIDITY AS CALLED FOR, TO GIVE UNIFORM OWNER ACCEPTABLE AIR DISTRIBUTION AND COMFORT. UPON BALANCING IF SYSTEM CANNOT BE SUCCESSFULLY BALANCED AS AGREED BY OWNER/ARCHITECT/ENGINEER THEN ADDITIONAL DAMPERS, BELTS, SHEAVES, OR PULLEYS WILL BE INSTALLED TO PROVIDE PROPER AIR QUANTITIES, ACCEPTABLE SOUND LEVELS AND TEMPERATURE/HUMIDITY REQUIREMENTS BY THE HVAC CONTRACTOR WITHOUT INCREASE IN CONTRACT PRICE WITHIN THE GUARANTEE PERIOD.

BALANCING TO BE DONE IN ACCORDANCE WITH AABC, ASHRAE, SMACNA, NEBB, SMARTA, OR EQUIVALENT STANDARDS. ALL AIR QUANTITIES OR SETTINGS SHALL BE RECORDED ON "AS-BUILT" DRAWINGS.

FINAL CERTIFIED REPORTS SHALL BE SUBMITTED IN THE FORM OF SHOP-DRAWINGS FOR REVIEW AND FINAL ACCEPTED SIGNATURES BY OWNER/ARCHITECT/ENGINEER.

18. GUARANTEE:

HVAC CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT, APPARATUS, MATERIALS AND WORKMANSHIP ENTERING INTO THIS CONTRACT AND SHALL REPLACE ALL PARTS AT HIS OWN EXPENSE WHICH HAVE PROVEN DEFECTIVE WITHIN ONE (1) YEAR FROM FORMAL ACCEPTANCE. INDIVIDUAL ITEMS SHALL BE GUARANTEED AS CALLED FOR IN ADDITION TO THE ABOVE.

19. RECORD DOCUMENTS:

CONTRACTOR SHALL MAINTAIN ONE (1) COMPLETE MARKED UP SET OF "AS-BUILT" PROJECT PRINTS DURING CONSTRUCTION. CONTRACTOR SHALL SUBMIT "AS-BUILTS" FOR REVIEW BY GENERAL CONTRACTOR AND ARCHITECT OR ENGINEER AT EACH WEEKLY PROJECT MEETING. AT COMPLETION OF PROJECT, "AS-BUILTS" SHALL BE SUBMITTED FOR REVIEW, SAME AS REQUIRED FOR SHOP DRAWINGS. UPON ACCEPTANCE, CONTRACTOR SHALL PROVIDE TWO (2) SEPARATE SETS OF REPRODUCIBLES OF THESE "AS-BUILT" PRINTS, ONE (1) SET FOR THE OWNER AND ONE (1) SET FOR THE ARCHITECT. CONTRACTOR SHALL RETAIN COPY OF PROJECT FOR HIS RECORDS. REFER TO DIVISION 1 SPECIFICATIONS FOR ADDITIONAL INFORMATION.

END OF SECTION 23010

SYSTEMS DESIGN SERVICE ENGINEERING
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PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT
REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
MECHANICAL SPECIFICATIONS

PROJECT INFORMATION
Date: AUGUST 30 2024
RLJA Proj: 2024-027

SHEET NUMBER
M105
OF
6

DIVISION 23 - MECHANICAL

SECTION 23500 - HVAC SPECIFICATIONS/NOTATIONS

1. CONDITIONS:

GENERAL CONDITIONS OF THE CONTRACT AND THE ARCHITECTURAL SUPPLEMENTARY AND GENERAL CONDITIONS APPLY TO THIS SECTION/DIVISION. THE SUPPLEMENTARY GENERAL CONDITIONS FOR DIVISION 26 - ELECTRICAL, ALSO APPLY TO THIS SECTION/DIVISION.

SECTION 23010 - BASIC MECHANICAL REQUIREMENTS ALSO APPLIES TO THIS SECTION.

2. SYSTEMS:

MECHANICAL SYSTEM PROVIDED SHALL INCLUDE BUT NOT BE LIMITED TO:

A. CONDITIONS, SYSTEMS.
B. HEATING AND COOLING PIPING, PIPING ACCESSORIES AND INSTALLATION, PIPING INSULATION, VALVES.
C. SNOW MELT SYSTEM, CIRCULATING WATER PUMPS.
D. AUTOMATIC TEMPERATURE CONTROLS.

3. HEATING AND COOLING PIPING:

HEATING WATER PIPING SHALL BE TYPE "L" COPPER WITH WROUGHT COPPER FITTINGS WITH SOLDERED JOINTS OR SHALL BE STANDARD WEIGHT STEEL, WITH CAST IRON FITTINGS, WITH SCREWED JOINTS, OR PIPING MAY BE WELDED USING ELECTRIC ARC OR OXYACETYLENE WELDING IN ACCORDANCE WITH STANDARDS OF HEATING, PIPING AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION; BY A TRAINED EXPERIENCED WELDER. INSTALL UNIONS OR FLANGE UNIONS IN BRANCHES AND ADJACENT TO EVERY VALVE OR EVERY GROUP OF VALVES AND TRAPS AND/OR BALANCE VALVES.

HOT WATER HEATING MAINS SLOPE UP 1" IN 40'-0" AND BRANCHES 1" IN 10'-0" IN DIRECTION OF FLOW AS SHOWN BY ARROWS. CONNECTIONS SHALL BE TAKEN FROM TOP OF MAIN AT 45 DEG. OR 90 DEG., UNLESS OTHERWISE NOTED. BRANCH CONNECTIONS AND CONNECTIONS TO HEATING ELEMENTS AND CABINETS MUST BE FLEXIBLE AND PIPING MUST BE FREE TO EXPAND AND CONTRACT WITHOUT NOISE OR STRAIN. HEATING ELEMENTS SHALL BE DRAINED THROUGH ECCENTRICS OR SLIGHT DROPS OR FROM BOTTOM OF HEATER. MAIN AND RISERS SHALL BE TRUE, STRAIGHT, PARALLEL TO WALLS. RISERS SHALL BE PLUMB AND SECURELY BRACED. VALVES MUST BE ACCESSIBLE FOR SERVICING AND HAVE FLEXIBLE SWING CONNECTIONS. WHERE PIPES PASS THROUGH FIRE-RATED WALLS, PARTITIONS, FLOORS AND CEILINGS, SEAL OPENINGS IN ACCORDANCE WITH ICC M-300, M-1200, AND/OR NEC 300-21. HYDROSTATIC WATER TEST SHALL BE PERFORMED AT 175 PSI FOR TWO HOURS WITH A MAXIMUM PRESSURE LOSS OF 2 PSI. VENT ALL HIGH POINTS IN THE PIPING AND AT ALL RISES/ DROPS.

4. PIPING ACCESSORIES AND INSTALLATION:

HANGERS FOR COPPER PIPING WHERE DIRECT CONTACT IS MADE SHALL BE COPPER, COPPER LINED OR COPPER PLATED WITH COPPER PLATED OR NON-FERROUS FASTENERS OR PLASTIC/RUBBER INSULATED OR ISOLATED TYPE MOUNTING TO PREVENT ELECTROLYSIS. HANGERS IN CONTACT WITH GALVANIZED SHEET METAL SHIELDS OR STEEL PIPING TO BE STEEL. REFER TO PIPING INSULATION FOR APPLICATIONS. HANG PIPE ALONG WALLS WITH RING OR BRACKET TYPE HANGERS; PIPING OTHER THAN COPPER OR STEEL HANG WITH ADJUSTABLE STEEL RODS AND RING TYPE CLEVISED HANGERS. HANGERS TO BE DOUBLE NUTTED OR COACH SCREW TYPE BY CRANE, CRAWFORD, FEE MASON, GRINNELL, OR EQUIVALENT MAKE. COPPER AND STEEL PIPE HANGER MINIMUM SPACING ARE AS FOLLOWS: UP TO 1/4": 4'-0" O.C., 3/8" TO 1-1/4": 6'-0" O.C., 1-1/2" TO 4": 10'-0" O.C., 5" TO 12": 12'-0" O.C., HANGER SPACING FOR PVC PIPING SHALL BE AS FOLLOWS: ALL SIZES- 4'-0" O.C. ALL IN ACCORDANCE WITH APPLICABLE CODES INVOLVED. PLACE SUPPORT OR HANGER WITHIN 1 FOOT OF EACH HORIZONTAL ELBOW, JOINT OR CONNECTION. SUPPORT VERTICAL PIPING AT EVERY FLOOR LINE. WHERE SEVERAL PIPES CAN BE INSTALLED IN PARALLEL AT THE SAME ELEVATION, PROVIDE MULTIPLE OR TRAPEZE HANGERS. WHERE PRACTICAL, SUPPORT RISER PIPING INDEPENDENTLY OF CONNECTED HORIZONTAL PIPING.

INSTALL DIELECTRIC INSULATING FITTINGS OR UNION AT ALL JOINING OF DISSIMILAR METALS.

PROVIDE SLEEVES WHERE PIPES PASS THROUGH ROOFS, WALLS, PARTITIONS, FLOORS, ETC., OF PROPER SIZE TO ALLOW FOR EXPANSION AND CONTRACTION AND TRIMMED FLUSH WITH SURFACES. PROVIDE ESCUTCHEON PLATES AS SLEEVES IN FINISHED AREAS. SLEEVES ON PIPING SHALL BE LARGE ENOUGH TO PERMIT COVERING TO BE CONTINUOUS. SEAL SLEEVES, PIPE TO SLEEVE, SLEEVE TO CONSTRUCTION AT FIRE RATED CONSTRUCTION AS DETAILED ON DRAWING AND/OR SEAL OPENINGS IN ACCORDANCE WITH ICC M-707.4, WITH UL RATED MATERIALS.

FLASH AND COUNTER-FLASH WHERE MECHANICAL EQUIPMENT, PIPING OR PIPING EQUIPMENT PASSES THROUGH WEATHER OR WATERPROOFED WALLS, FLOORS AND ROOFS. FOR PIPES THROUGH OUTSIDE WALLS, TURN FLANGE BACK INTO WALL AND CAULK. PROVIDE CURBS FOR MECHANICAL ROOF INSTALLATIONS 12 INCHES MINIMUM HIGH. FLASH AND COUNTERFLASH WITH STEEL, SOLDERED AND WATERPROOFED.

5. PIPING INSULATION:

1-1/2" OR SMALLER HWS, HWR, WATER PIPING/FITTINGS/VALVES WHERE CALLED FOR SHALL BE COVERED WITH 1-1/2" AND PIPING GREATER THAN 1-1/2" TO BE 2" FIBERGLASS WITH FACTORY-APPLIED ALL-PURPOSE JACKET CONSISTING OF HIGH DENSITY, WHITE KRAFT PAPER BONDED TO ALUMINUM FOIL AND REINFORCED WITH FIBERGLASS YARN, STAPLED 6" O.C. AND SEALED WITH VAPOR BARRIER ADHESIVE OR USING SELF-SEALING LAP. COVERING SHALL BE EQUAL TO MANVILLE PRODUCTS MICRO-LOK 650 AND SHALL BE SUITABLE FOR SERVICES FROM 35 DEGREES F TO 650 DEGREES F, 3.5 POUND DENSITY. COVERING SHALL BE ARMSTRONG, KNAUF, MANVILLE, OWENS CORNING, OR EQUIVALENT MAKE. COVERING ON PIPING SHALL BE CONTINUOUS THROUGH HANGERS AND SLEEVES. HANGERS ON PIPING SHALL ENCIRCLE PIPE COVERING, BEAR ON A 20 GAUGE SHEET METAL PLATE 4 DIAMETERS LONG WHICH SHALL ENCIRCLE COVERING. ENDS OF COVERING SHALL BE NEATLY TAPERED AND SEALED. ANY MILDEWED COVERING MUST BE REPLACED. FITTINGS SHALL BE COVERED WITH A ZESTON FITTING COVER AND FACTORY-SUPPLIED FIBERGLASS INSERT WHERE AVAILABLE, ALL INSTALLED ACCORDING TO MANUFACTURERS INSTRUCTIONS.

THE FLAME SPREAD AND SMOKE DEVELOPED RATINGS TO MEET OR EXCEED CURRENT (LATEST EDITION) OF APPLICABLE CODE. FLAME SPREAD/SMOKE DEVELOPED RATINGS OF 25/50 IN ACCORDANCE WITH ASTM E 84, NFPA 255, AND UL 723.

6. VALVES:

VALVES SHALL BE APOLLO, B & G, CRANE, GRISWALD, HAMMOND, ILLINOIS, JENKINS, NIBCO, POWELL, STACKHAM, TOUR & ANDERSSON, WALWORTH OR EQUIVALENT MAKE WITH METAL HANDLES BUILT FOR 125 PSI WORKING PRESSURE FOR ALL USES. VALVES PROVIDED SHALL BE SUITABLE FOR INTENDED SERVICE. THROTTLING TYPE SHALL HAVE GLOBE PATTERN. SHUT-OFF TYPE SHALL BE GATE PATTERN OR BALL TYPE. BALANCE VALVES (4" AND SMALLER) WITH BRONZE BODY, BRASS

MACHINED BALL, VARIABLE ORIFICE FLOW METER, MEMORY STOP INDICATOR, MINIMAL PRESSURE DROP FOR DIFFERENTIAL FLOW INDICATOR AND READ OUT, OPTIONAL (PERMANUFACTURER) DRAIN. USE OF THREADED ENDS OR FLANGED ENDS OR SOLDERED ENDS IN THE CONTRACTORS OPTION WITHIN THE SIZE LISTED. VALVES AND COCKS MUST BE ACCESSIBLE FOR SERVICING AND MUST HAVE FLEXIBLE SWING CONNECTIONS AND UNIONS IF NOT FLANGED CONNECTED. BALL VALVES ON INSULATED PIPING SYSTEMS SHALL BE PROVIDED WITH EXTENDED HANDLES.

7. SNOW MELT SYSTEM:

PART 1 GENERAL

1.1 SUMMARY

A. SECTION INCLUDES: HYDRONIC SNOW AND ICE MELTING SYSTEMS, INSTALLATION APPLICATIONS AND CONTROL STRATEGIES USING CROSSLINKED POLYETHYLENE (PEX) TUBING AND FITTINGS.

1.2 REFERENCES

A. UPONOR INC.
1. UPONOR SNOW AND ICE MELTING DESIGN AND INSTALLATION MANUAL, CURRENT EDITION.
2. UPONOR PEX PIPING SYSTEMS DESIGN AND INSTALLATION MANUAL (PDIM), CURRENT EDITION.
3. UPONOR PEX PIPING SYSTEMS INSTALLATION GUIDE, CURRENT EDITION.
B. ASTM INTERNATIONAL (ASTM):
1. ASTM E814 STANDARD TEST METHOD FOR FIRE TESTS OF THROUGH-PENETRATION FIRE STOPS.
2. ASTM F876 STANDARD SPECIFICATION FOR CROSSLINKED POLYETHYLENE (PEX) TUBING.
3. ASTM F877 STANDARD SPECIFICATION FOR CROSSLINKED POLYETHYLENE (PEX) PLASTIC HOT- AND COLD-WATER DISTRIBUTION SYSTEMS.
4. ASTM F1960 STANDARD SPECIFICATION FOR COLD EXPANSION FITTINGS WITH PEX REINFORCING RINGS FOR USE WITH CROSSLINKED POLYETHYLENE (PEX) TUBING.
5. ASTM F2389 STANDARD SPECIFICATION FOR PRESSURE-RATED POLYPROPYLENE (PP) PIPING SYSTEMS.
C. INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (IAPMO)
1. UNIFORM MECHANICAL CODE (UMC)
D. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)
1. ISO 15874 PLASTICS PIPING SYSTEMS FOR HOT AND COLD WATER INSTALLATIONS - POLYPROPYLENE (PP).

1.3 SUBMITTALS

A. PRODUCT DATA: SUBMIT MANUFACTURER'S PRODUCT SUBMITTAL DATA AND INSTALLATION INSTRUCTIONS.
B. SHOP DRAWINGS: PROVIDE INSTALLATION DRAWINGS INDICATING: PIPING LAYOUT, SIZE DIMENSION BY INSTALLATION SEGMENT, VAULT LOCATIONS, SUPPORT FIXTURES AND SCHEDULES WITH ALL DETAILS REQUIRED FOR INSTALLATION OF THE SYSTEM.

1.4 DELIVERY, STORAGE AND HANDLING

A. GENERAL: COMPLY WITH DIVISION 1 PRODUCT REQUIREMENT SECTION.
B. COMPLY WITH MANUFACTURER'S ORDERING INSTRUCTIONS AND LEAD-TIME REQUIREMENTS TO AVOID CONSTRUCTION DELAYS.
C. DELIVERY: DELIVER MATERIALS IN MANUFACTURER'S ORIGINAL, UNOPENED, UNDAMAGED CONTAINERS WITH IDENTIFICATION LABELS INTACT.
D. STORAGE AND PROTECTION: STORE MATERIALS PROTECTED FROM EXPOSURE TO HARMFUL ENVIRONMENTAL CONDITIONS AND AT TEMPERATURE AND HUMIDITY CONDITIONS RECOMMENDED BY THE MANUFACTURER.
1. STORE PEX PIPING IN CARTONS OR UNDER COVER TO AVOID DIRT OR FOREIGN MATERIAL FROM ENTERING THE PIPING.
2. DO NOT EXPOSE WHITE OR BLUE PEX PIPING TO DIRECT SUNLIGHT FOR MORE THAN ONE MONTH. DO NOT EXPOSE RED PEX PIPING TO DIRECT SUNLIGHT FOR MORE THAN SIX MONTHS.
3. STORE PIPING ON A FLAT SURFACE TO PREVENT UNWANTED DEFORMATION.

1.5 WARRANTY

A. PROJECT WARRANTY: REFER TO CONDITIONS OF THE CONTRACT FOR PROJECT WARRANTY PROVISIONS.
B. MANUFACTURER'S WARRANTY:
1. PEX-A MANUFACTURER SYSTEM WARRANTY SHALL COVER PIPING AND FITTINGS FROM DEFECT FOR A DURATION OF 25 YEARS FROM THE DATE OF INSTALLATION. PIPING SYSTEM WARRANTY SHALL APPLY TO SYSTEMS CONSTRUCTED OF PIPE AND FITTING PRODUCTS SOURCED FROM THE SAME MANUFACTURER.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. ACCEPTABLE MANUFACTURER: UPONOR, LOCATED AT: 5925 148TH ST. W.; APPLE VALLEY, MN, 55124; TOLL-FREE: 800-321-4739; TEL: 952-891-2000;

2.2 CROSSLINKED POLYETHYLENE PEX PIPE AND FITTINGS

A. PERFORMANCE REQUIREMENTS:
1. HEPEX-A PIPING AND FITTINGS SHALL MEET PRESSURE AND TEMPERATURE RATINGS PER ASTM F876:
B. PEX-A (ENGEL-METHOD CROSSLINKED POLYETHYLENE) PIPING:
1. SDR 9, ASTM F876 AND F877 (CAN/CSA-B137.5) BY UPONOR (WIRSBO) WITH AN OXYGEN BARRIER MEETING DIN 4726.
C. FITTINGS:
1. PROPEX®: ELBOWS, ADAPTERS, COUPLINGS, PLUGS, TEES AND MULTIPORT TEES (1/2 INCH THROUGH 3 INCH NOMINAL PIPE SIZE): ASTM F1960 COLD-EXPANSION FITTINGS IN BRASS OR ENGINEERED POLYMER (EP) MANUFACTURED BY THE PIPE MANUFACTURER, UTILIZING COLD-EXPANSION PEX-A REINFORCING RINGS MADE OF SAME MATERIAL AS THE PIPE.
2. FITTINGS SHALL BE THIRD-PARTY CERTIFIED TO NSF 14 AND ASTM F1960 AND SHALL BE LISTED TO ASTM F876 AND ASTM F877.

2.3 TRANSITION FITTINGS

A. PEX-TO METAL TRANSITION FITTINGS
1. MANUFACTURERS: PROVIDE TRANSITION FITTINGS FROM THE SAME MANUFACTURER AS THE PIPING.
2. PEX TO THREADED TRANSITION: TWO-PIECE FEMALE BRASS UNION NUT PROPEX ASTM F1960 COLD-EXPANSION END, WITH PEX-A REINFORCING COLD-EXPANSION RING.
3. PEX COMPRESSION TO THREADED FITTING: TWO-PIECE FEMALE BRASS UNION NUT BY COMPRESSION FITTING WITH COMPRESSION RING LISTED TO ASTM F877.

2.4 MANIFOLDS

A. STAINLESS-STEEL MANIFOLDS
1. STAINLESS-STEEL MANIFOLD ASSEMBLIES SHALL HAVE 1-1/4 INCH BARREL, WITH AN R32 UNION CONNECTION ON THE RESPECTIVE SUPPLY AND RETURN INLET AND OUTLET.
MANIFOLD ASSEMBLIES SHALL BE FURNISHED AND INSTALLED WITH:
a. SUPPLY AND RETURN BALL VALVES WITH TEMPERATURE GAUGES
b. LOOP BALANCING AND ISOLATION VALVES
c. SUPPLY AND RETURN VENT AND DRAIN CONNECTIONS
d. MOUNTING BRACKET
e. MANUAL BALANCING VALVES WITH VISUAL FLOW INDICATORS
f. LOOP FITTING ASSEMBLIES
g. CAPABLE OF INDIVIDUAL LOOP ACTUATOR
3. MANIFOLD CONNECTIONS FROM 5/16 INCH THROUGH 3/4 INCH PEX TUBING.

2.5 ACCESSORIES

A. USE ACCESSORIES ASSOCIATED WITH THE INSTALLATION OF THE SNOW AND ICE MELTING SYSTEM AS RECOMMENDED BY OR AVAILABLE FROM THE PEX TUBING MANUFACTURER.
B. FIXING WIRE: 6 INCHES (152 MM) GALVANIZED STEEL ALLOY WIRE TIES SHALL BE USED TO SECURE PEX TUBING TO WIRE MESH OR REINFORCING BAR.
C. PVC BEND SUPPORTS: 90-DEGREE PVC BEND SUPPORTS SHALL BE USED TO SLEEVE TUBING AT SLAB PENETRATIONS. BEND SUPPORTS SHALL BE SIZED FOR APPROPRIATE TUBING DIAMETER.
D. PEX STAND-UP BRACKET: SECURES TO DECK OR CONCRETE FORMS, FOR ROUGH IN FROM SLAB TO MANIFOLD CABINET.

PART 3 EXECUTION

3.1 EXAMINATION

A. VERIFY THAT SITE CONDITIONS ARE ACCEPTABLE FOR INSTALLATION OF THE SNOW AND ICE MELTING SYSTEM.
B. DO NOT PROCEED WITH INSTALLATION OF THE SNOW AND ICE MELTING SYSTEM UNTIL UNACCEPTABLE CONDITIONS ARE CORRECTED.

3.2 MANUFACTURER'S INSTRUCTIONS

A. COMPLY WITH MANUFACTURER'S PRODUCT DATA, INCLUDING PRODUCT TECHNICAL BULLETINS, INSTALLATION INSTRUCTIONS AND DESIGN DRAWINGS.

3.3 INSTALLATION

A. MANIFOLD SUPPLY AND RETURN PIPING REFER TO HYDRONIC PIPING.
B. INSTALL RADIANT SYSTEM ACCORDING TO APPROVED SHOP DRAWINGS OR COORDINATION DRAWINGS.
C. COMPLY WITH MANUFACTURER'S PRODUCT DATA, INCLUDING PRODUCT TECHNICAL BULLETINS, INSTALLATION INSTRUCTIONS AND DESIGN DRAWINGS, INCLUDING THE FOLLOWING.
1. UPONOR SNOW AND ICE MELTING DESIGN AND INSTALLATION MANUAL, CURRENT EDITION.
2. UPONOR PEX PIPING SYSTEMS DESIGN AND INSTALLATION MANUAL (PDIM), CURRENT EDITION.
3. UPONOR PEX PIPING SYSTEMS INSTALLATION GUIDE, CURRENT EDITION.
4. UPONOR COMPLETE DESIGN ASSISTANCE MANUAL (CDAM), CURRENT EDITION.
D. WHITE AND BLUE PEX SHALL NOT BE INSTALLED OUTDOORS WHERE IT IS EXPOSED TO DIRECT SUNLIGHT LIGHT FOR MORE THAN ONE MONTH. RED PEX SHALL NOT BE INSTALLED OUTDOORS WHERE IT IS EXPOSED TO DIRECT SUNLIGHT FOR MORE THAN SIX MONTHS.
E. SLAB ON-GRADE CONSTRUCTION WITH UNDER-SLAB INSULATION.
1. DO NOT INSTALL TUBING CLOSER THAN 6 INCHES FROM THE EDGE OF THE HEATED SLAB.
2. INSTALL THE TUBING AT A CONSISTENT DEPTH BELOW THE SURFACE ELEVATION AS INDICATED ON DRAWINGS. TUBING INSTALLATION WILL ENSURE SUFFICIENT CLEARANCE FOR ALL CONTROL JOINT CUTS.
3. EXPANSION JOINTS
a. IN AREAS WHERE TUBING MUST CROSS METAL EXPANSION JOINTS THAT OCCUR IN THE CONCRETE, THE TUBING SHALL PASS BELOW THE METAL EXPANSION JOINTS.
b. FIBROUS EXPANSION JOINTS MAY BE PENETRATED FOLLOWING THE TUBING MANUFACTURER'S AND STRUCTURAL ENGINEER'S RECOMMENDATION.
4. METAL OR PLASTIC BEND SUPPORTS WILL BE USED TO SUPPORT THE TUBING WHEN DEPARTING FROM THE SLAB IN A 90-DEGREE BEND.
F. GLYCOL/WATER SOLUTION
1. USE A PREMIXED OR SITE MIXED GLYCOL/WATER SOLUTIONS AT 40% CONCENTRATION.
a. MIX THE GLYCOL/WATER SOLUTION TO PROPER CONCENTRATION LEVELS TO PROTECT THE SYSTEM FREEZING DURING OPERATION SHUTDOWN.
b. SYSTEM CIRCULATORS MUST OPERATE CONTINUOUSLY FOR A MINIMUM OF 30 DAYS AFTER THE SYSTEM IS FILLED TO ENSURE THE GLYCOL AND WATER DOES NOT SEPARATE IN A STATIC SYSTEM.
2. REFER TO DIVISION 23 SECTION "HYDRONIC PIPING" FOR GLYCOL REQUIREMENTS.

3.4 FIELD QUALITY CONTROL

A. SITE TESTS
1. TO ENSURE SYSTEM INTEGRITY, PRESSURE TEST THE SYSTEM BEFORE COVERING TUBING IN CONCRETE OR WHEN OTHER TRADES ARE WORKING IN THE VICINITY OF THE TUBING.
2. TEST ALL ELECTRICAL CONTROLS IN ACCORDANCE WITH RESPECTIVE INSTALLATION MANUALS.

3.5 ADJUSTING

A. BALANCING ACROSS THE MANIFOLD
1. BALANCE ALL LOOPS ACROSS EACH MANIFOLD FOR EQUAL FLOW RESISTANCE BASED ON ACTUAL LOOP LENGTHS AND TOTAL MANIFOLD FLOW.
2. BALANCING IS UNNECESSARY WHEN ALL LOOP LENGTHS ACROSS THE MANIFOLD ARE WITHIN 3 PERCENT OF EACH OTHER IN LENGTH. INSTALL THE SUPPLY AND RETURN PIPING TO THE MANIFOLD IN A REVERSE-RETURN CONFIGURATION TO ENSURE SELF-BALANCING.
B. BALANCING BETWEEN MANIFOLDS IS ACCOMPLISHED WITH A FLOW CONTROL DEVICE INSTALLED ON THE RETURN PIPING LEG FROM EACH MANIFOLD WHEN DIRECT RETURN PIPING IS USED FOR THE SUPPLY AND RETURN MAINS.
C. ADJUST ALL SYSTEM CONTROLS AFTER THE SYSTEM HAS STABILIZED TO ENSURE PROPER OPERATION IN ACCORDANCE WITH THE SYSTEM DESIGN.

3.6 CLEANING

A. REMOVE TEMPORARY COVERINGS AND PROTECTION OF ADJACENT WORK AREAS.
B. REPAIR OR REPLACE DAMAGED INSTALLED PRODUCTS.
C. CLEAN THE 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

3.7 DEMONSTRATION

A. DEMONSTRATE OPERATION OF HYDRONIC SNOW MELTING SYSTEM TO OWNER'S PERSONNEL.
B. ADVISE THE OWNER'S REPRESENTATIVE ABOUT THE TYPE AND CONCENTRATION OF GLYCOL/WATER SOLUTION USED IN THE SNOW AND ICE MELTING SYSTEM.
1. THE OWNER MONITORS THE SOLUTION EFFECTIVENESS THROUGH AN ESTABLISHED MAINTENANCE PROGRAM AS OUTLINED BY THE GLYCOL MANUFACTURER.

3.8 PROTECTION

A. PROTECT INSTALLED WORK FROM DAMAGE CAUSED FROM SUBSEQUENT CONSTRUCTION ACTIVITY.

8. CIRCULATING WATER PUMPS:

HOT WATER HEATING SYSTEM CIRCULATING PUMPS TO BE OF TYPE AS MANUFACTURED BY B & G, GRUNDFOS, TACO, OR EQUIVALENT MAKE.

MOTORS TO HAVE INTEGRAL THERMAL PROTECTION AND TO BE PROVIDED WITH FUSETRON DISCONNECTS BY ELECTRICAL CONTRACTOR.

PUMPS TO HAVE FACTORY MOUNTED NAMEPLATE OR EACH PUMP TO INDICATE: A) PUMP MODEL NUMBER, B) PUMP CAPACITY, C) MOTOR HP, RPM, VOLTAGE CHARACTERISTICS, AND D) MANUFACTURER. ALL PUMPS TO BE FACTORY PAINTED, PROPERLY LUBRICATED, CLEANED, TESTED FOR CAPACITY AND PROPER ALIGNMENT, AND PROVIDED WITH COMPLETE INSTALLATION INSTRUCTIONS. PUMP MUST BE QUIET. SEE DRAWINGS FOR CAPACITY REQUIRED.

IN-LINE CIRCULATING PUMPS TO BE SINGLE STAGE, VERTICAL SPLIT CASE OF CAST IRON, BRONZE FITTED. IMPELLER TO BE ENCLOSED TYPE, DYNAMICALLY BALANCED, KEYED AND LOCKED TO SHAFT. SEALS TO BE STANDARD MECHANICAL TYPE, UNLESS OTHERWISE NOTED. MOTOR, BEARING AND SHAFT ASSEMBLY TO BE FITTED WITH OIL-LUBRICATED JOURNAL BEARING WITH CONVENIENT LUBRICATION POINTS. FLEXIBLE COUPLER BETWEEN MOTOR AND PUMP TO ABSORB TORSIONAL

HEATING CONTRACTOR SHALL INSTALL BASE MOUNTED PUMP(S) AND UPON START-UP, A FACTORY TRAINED REPRESENTATIVE OR ENGINEER SHALL SUPERVISE THE INSTALLATION AND ASSIST HEATING CONTRACTOR TO CHECK PUMP ROTATION AND ELECTRICAL WIRING CONNECTIONS, PUMP PRIMING, PROPER LUBRICATION, TO BALANCE WATER AND HEAD CAPACITY OF PUMP(S), TO HELP LEVEL AND REALIGN PUMP(S) AS REQUIRED TO PROVIDE QUIET, EFFICIENT OPERATION. HEATING CONTRACTOR TO INCLUDE A SUFFICIENT SUM TO SERVICES OF ABOVE MENTIONED FACTORY REPRESENTATIVE, WITHOUT INCREASE IN CONTRACT PRICE.

9. AUTOMATIC TEMPERATURE CONTROLS:

FURNISH AND INSTALL A COMPLETE EXTENSION OF THE EXISTING SCHNEIDER DDC CONTROLS SYSTEM (BY ALPHA CONTROLS, NO SUBSTITUTIONS) FOR ALL NEW HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT AS SHOWN ON PLANS, INCLUDING BUT NOT LIMITED TO CONTROL VALVES, SENIORS, CONTROLLERS AND OTHER DEVICES WHERE SPECIFICALLY CALLED FOR. THE ELECTRIC SYSTEM SHALL BE SUITABLE FOR PRIMARY POWER SUPPLY OF 120 VOLT, 1 PHASE, 60 CYCLE CURRENT UNLESS OTHERWISE NOTED.

THE TEMPERATURE CONTROL CONTRACTOR SHALL FURNISH PROGRAMMING, GRAPHIC SCREENS, STATUS AND TEMPERATURE MONITORING, ALARM REPORTING, TREND REPORTING, INSTALLATION, AND STARTUP. THIS SYSTEM SHALL BE BASED ON THE EXISTING SCHNEIDER SYSTEM. THE SYSTEM SHALL BE WARRANTED FOR A PERIOD OF ONE YEAR. PROVIDE ONE DAY OF OWNER INSTRUCTIONS AND TRAINING.

SYSTEM SHALL BE COMPLETE IN ALL RESPECTS WITH COMPLETE PERMANENT FORM OPERATING SYSTEM INSTRUCTIONS, HARDWARE, SOFTWARE, AND CONTROL DIAGRAMS. NOTE: PROVIDE COMPLETE SHOP DRAWINGS OF CONTROLS, SEQUENCE OF OPERATION, CONTROLS AND PROPOSED CONTROL INSTALLATION, FOR REVIEW, PRIOR TO ROUGH-IN OR INSTALLATION. REGARDLESS OF TYPE OF SYSTEM, VALVES AND DAMPERS MUST ASSUME SPECIFIED NORMAL POSITIONS ON CURRENT FAILURE. THE INSTALLATION, INCLUDING SUPERVISION OF WIRING, SHALL BE MADE BY THE CONTROL OR THE HVAC CONTRACTOR (AS APPLICABLE) IN CONJUNCTION WITH THE CONTRACTOR AND/OR SUBCONTRACTOR.

COMMISSION AND PROGRAM SHALL BE PROVIDED TO INTEGRATE THE NEW CONTROL SYSTEMS INTO THE EXISTING. PROVIDE ON-SITE TRAINING TO FULLY FAMILIARIZE THE OWNER WITH THE NEW CONTROL COMPONENTS AND THEIR OPERATION.

THE SYSTEM SHALL INCLUDE ALL NECESSARY CONTROL WIRING, THERMOSTATS, TEMPERATURE TRANSMITTERS, CONTROLLERS, AUTOMATIC VALVES, DAMPER OPERATORS, P.E. AND E.P. SWITCHES, CONTROL PANELS, AND OTHER ACCESSORY EQUIPMENT ALONG WITH A COMPLETE SYSTEM OF ELECTRICAL WIRING TO FILL THE INTENT OF THE SPECIFICATIONS AND PROVIDE FOR A COMPLETE AND OPERABLE SYSTEM. ALL CONTROL EQUIPMENT SHALL BE FULLY PROPORTIONING, EXCEPT AS NOTED OTHERWISE.

ON ELECTRIC/ELECTRONIC PORTION OF THE SYSTEM, PROVIDE ALL RELAYS, TRANSFORMERS, PROTECTION, CONTACTORS, DEVICES, ETC., WITH WIRING IN CONDUIT AS REQUIRED BY LATEST EDITION OF N.E.C. WIRING IN CONDUIT SHALL BE TYPE AS APPROVED BY N.E.C. FOR INTENDED USE. CONCEAL PIPING, CONDUITS, WIRING, ETC., IN ALL FINISHED AREAS. RUN PIPING, CONDUITS, ETC., EXPOSED IN UNFINISHED AREA SUCH AS MECHANICAL ROOMS, BOILER ROOMS, TUNNELS, ETC., AND WHERE ALLOWED. WHERE EXPOSED, RUN CONDUIT AND PIPING IN STRAIGHT LINES, PARALLEL TO WALLS AND CEILINGS. WHERE RETURN AIR PLENUMS ARE USED, PIPING, WIRING, AND ALL CABLES USED SHALL BE SUITABLE FOR THIS TYPE INSTALLATION AND SHALL NOT CONTRIBUTE TO COMBUSTION OR PRODUCTION OF SMOKE IN EVENT OF FIRE. PROTECTED TYPE CABLING REQUIRED FOR INSTALLATION OF ALL CONTROLS SHALL BE PROVIDED, AS REQUIRED, TO ASSURE PROPER OPERATION AND INSTALLATION AS RECOMMENDED BY MANUFACTURER.

LABEL ALL CONTROLS, SET POINTS, DEVICES BEING CONTROLLED, ETC. FURNISH AS-BUILT CONTROL DRAWINGS AND SUBMIT FOR REVIEW AT PROJECT COMPLETION. PROVIDE OWNER AND ARCHITECT/ENGINEER WITH (FINAL) COPIES.

AFTER COMPLETION OF THE INSTALLATION, CONTROL CONTRACTOR IN CONJUNCTION WITH HVAC CONTRACTOR SHALL PERFORM THE FINAL CALIBRATION AND ADJUSTMENT OF ALL THE EQUIPMENT. CONTRACTOR TO LABEL ALL CONTROLS, SET POINTS, DEVICES BEING CONTROLLED, ETC. FURNISH "AS-BUILT" CONTROL DRAWINGS AND EQUIPMENT AT PROJECT COMPLETION. SUBMIT FOR FINAL REVIEW SAME AS SHOP DRAWINGS. PRIOR TO CLOSE OUT. LOCATED AT PROJECT SITE IN OWNER'S POSSESSION AND COPY WITH ENGINEER.

CONTROL CONTRACTOR SHALL PROVIDE UPON COMPLETION OF THE INSTALLATION, THREE COPIES OF AN OPERATOR'S MANUAL DESCRIBING ALL OPERATING AND ROUTINE MAINTENANCE SERVICE PROCEDURES TO BE USED WITH THE TEMPERATURE CONTROL. THE HVAC CONTRACTOR AND CONTROL CONTRACTOR WILL BE INVOLVED TO INSTRUCT THE OWNER'S DESIGNATED REPRESENTATIVES IN THESE PRODUCERS DURING THE START UP AND TEST PERIOD. PROVIDE INSTRUCTION TIME AS SCHEDULED UNDER SPECIAL SUPERVISION.

ALL SYSTEM DEVICES AND THE INSTALLATION ARE WARRANTED TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE YEAR FROM THE DATE OF JOB ACCEPTANCE BY THE OWNER. ANY EQUIPMENT, SOFTWARE REVISIONS, PROGRAMMING, SOFTWARE OR LABOR FOUND TO BE DEFECTIVE DURING THIS PERIOD WILL BE REPAIRED OR REPLACED WITHOUT EXPENSE TO THE OWNER (WIRING BY HVAC CONTRACTOR).

FOR SPECIFIC CONTROL OF EQUIPMENT SEE RESPECTIVE EQUIPMENT SECTION, SEQUENCE OF OPERATION SECTION AND/OR DRAWINGS FOR OPERATION AND CONTROL AS CALLED FOR.

PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT
REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
MECHANICAL SPECIFICATIONS

PROJECT INFORMATION
Date: AUGUST 30 2024
RLJA Proj: 2024-027

SHEET NUMBER
M106
OF
6

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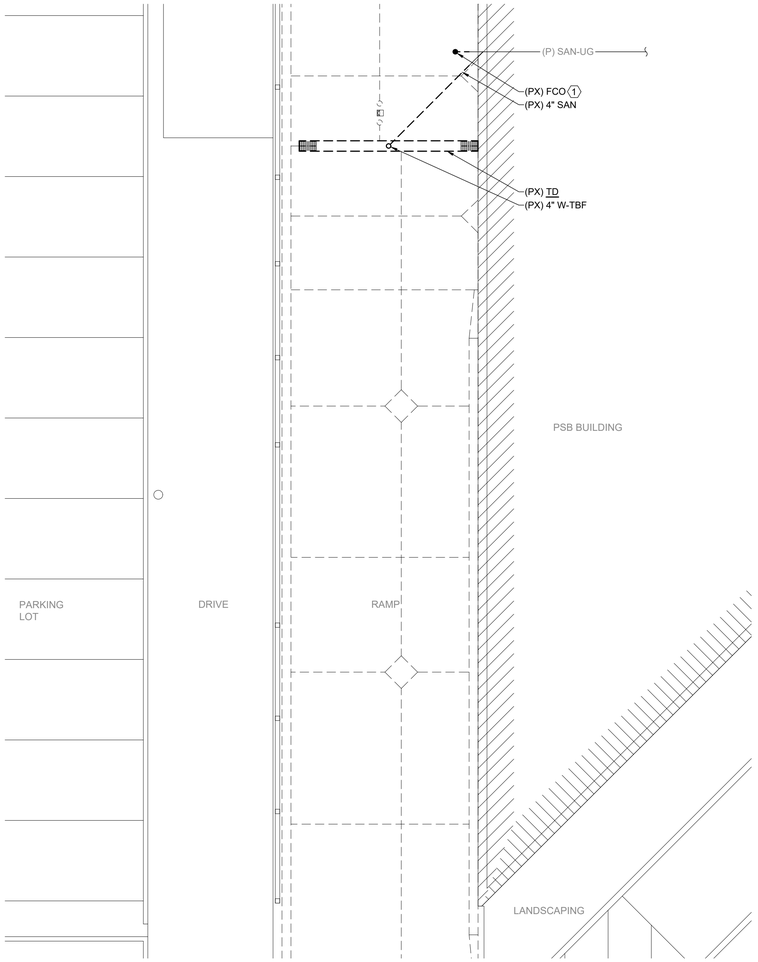


DEMOLITION PLAN - SANITARY

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

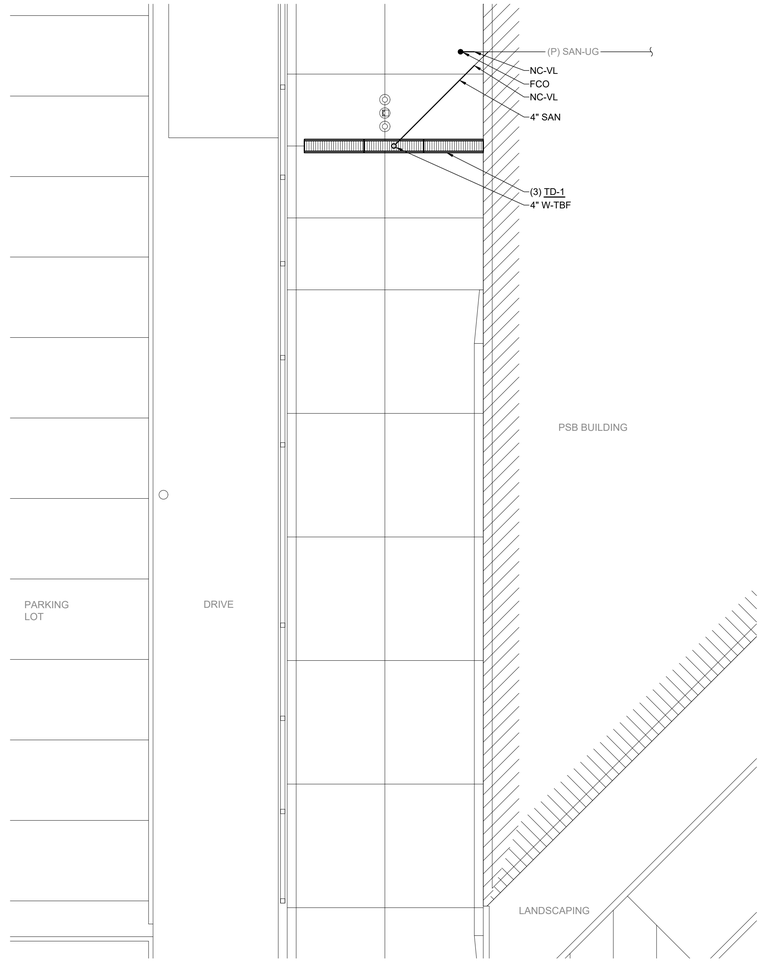
N

DEMOLITION KEY NOTES:

1. VERIFY LOCATION OF FCO. POSSIBLY LOCATED UNDER CONCRETE SLAB.

GENERAL DRAWING NOTES: (APPLIES TO THIS SHEET)

1. PIPING DRAWN FROM EXISTING DRAWINGS. CONTRACTOR TO FIELD VERIFY ALL EXISTING UNDERGROUND SANITARY/VENT PIPING PRIOR TO STARTING WORK.



NEW WORK PLAN - SANITARY

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

N

NEW WORK KEY NOTES:

1. DOMESTIC WATER PIPING IN SPACE BETWEEN JOISTS.

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ROCKFORD, ILLINOIS

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SHEET IDENTIFICATION
DEMOLITION AND NEW WORK SANITARY PLANS

PROJECT INFORMATION

Date	AUGUST 30 2024
RLJA Proj	2024-027

SHEET NUMBER
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OF
3

BASIC ABBREVIATIONS

MARK	DESCRIPTION	MARK	DESCRIPTION
D	DROP	NC	NEW CONNECTION
DWV	DROP W/ WASTE, RISE W/ VENT	P	PRESENT TO REMAIN
FBF	FROM BELOW FLOOR	R	RISE
FBO	FURNISHED BY OTHERS	SAN	SANITARY SEWER
FCO	FLOOR CLEANOUT	TBF	TO BELOW FLOOR
FD	FLOOR DRAIN	UG	UNDER GROUND
FFE	FINISHED FLOOR ELEVATION	VL	VERIFY LOCATION
FGE	FINISH GRADE ELEVATION	W	WASTE PIPING
FV	FIELD VERIFY	YCO	YARD CLEANOUT

SEE SPECIFICATIONS FOR ADDITIONAL ABBREVIATIONS, PREFIXES, SUFFIXES, ETC.

PLUMBING SYMBOLS:

(SEE SPECIFICATIONS FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, ETC.)

= DIRECTION OF SYSTEM FLOW

= VENT

WCO = WALL CLEANOUT - EXPOSED

FCO = FLOOR CLEANOUT

SA = SANITARY SEWER - UNDERGROUND

YCO = YARD CLEANOUT

FD = FLOOR DRAIN

= RISE

= DROP

NC = NEW CONNECTION

ALL VENTING AND PIPE SIZES ARE MINIMUMS. ADDITIONAL VENTS SHALL BE ADDED, AND/OR PIPE SIZES SHALL BE INCREASED AS REQUIRED BY APPLICABLE CODES, STATUTES, REGULATIONS, ETC., WITHOUT INCREASE IN CONTRACT PRICE.

PIPING STRAIGHT AND PARALLEL TO WALLS, FREE TO EXPAND AND CONTRACT. WATER LINES MUST DRAIN COMPLETELY THRU LOWER FIXTURE, UNION, BRASS CAP, BRASS PLUG AT LOW POINT, AND MUST VENT COMPLETELY THRU FIXTURE ABOVE OR AIR VENT.

EQUIPMENT , [EQUIPMENT] = EQUIPMENT NOTE, DESIGNATION, OR ITEM.

-P = EXISTING OR PRESENT EQUIP./ DEVICE/ SERVICE/ LINE

PX = PX OF EXISTING OR PRESENT EQUIP./ DEVICE/ SERVICE/ LINE

CLEANOUT SCHEDULE:

A. ACCEPTABLE MANUFACTURERS: JOSAM, OATEY, SMITH, WADE, WATTS, ZURN.

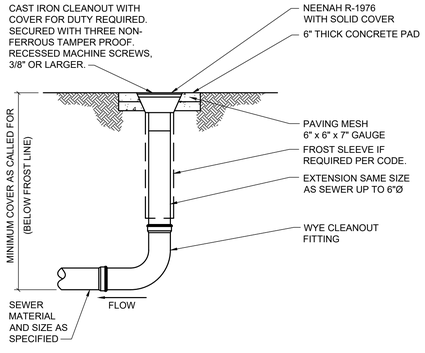
B. CONCRETE FLOOR CLEANOUT: CAST IRON, THREADED OR INSIDE CAULK AT GRADE ADJUSTABLE HOUSING, FERRULE WITH PLUG, MEDIUM DUTY CAST IRON SECURED SCORED COVER, VANDAL PROOF. SMITH NO. 4245.

C. WALL CLEANOUT: CLEANOUT BRASS PLUG, ROUND STAINLESS STEEL ACCESS COVER, VANDAL PROOF. SMITH NO. 4472.

TRENCH DRAIN SCHEDULE:

A. ACCEPTABLE MANUFACTURERS: MILFAB, JOSAM, OATEY, POLYCAST, POLYDRAIN, SMITH, WADE, WATTS, ZURN.

B. TD-1: 18" WIDE x 80" LONG INTERLOCKING CHANNELS, CORROSION RESISTANT POLYPROPYLENE PRECAST TRENCH DRAIN WITH INTEGRAL REBAR CLIPS, HEAVY DUTY FRAME OPTION FOR DYNAMIC LOADS (WISKERS ANCHORS), GALVANIZED DUCTILE IRON GRATE, LOCKING DEVICES, 4" DIA. BOTTOM OUTLET WITH OPTIONAL DOME STRAINER. CHANNELS SHALL HAVE A BUILT-IN SLOPE OF 1.04%. QUANTITY OF CHANNELS SHALL BE BASED ON LENGTH OF TRENCH DRAIN SHOWN ON DRAWINGS. ZURN-Z874-18-HDG-GDC-DB.



FLOOR CLEANOUT (FCO) DETAIL

NO SCALE

PLUMBING GENERAL NOTES:

1. DRAWINGS ARE GENERALLY DIAGRAMMATIC. EACH CONTRACTOR SHALL MAKE DRAWINGS ARE GENERALLY DIAGRAMMATIC. EACH CONTRACTOR SHALL MAKE WITH THE WORK OF OTHER TRADES AND THE BUILDING CONSTRUCTION. ALL CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER. FOR PRESENT CONSTRUCTION, VERIFY ALL EXISTING CONDITIONS PRIOR TO BIDDING TO AVOID CONFLICT. IT IS INTENDED THAT ALL EQUIPMENT, MATERIAL, DEVICES, ETC., SHALL BE LOCATED SYMMETRICALLY WITH THE ARCHITECTURAL ELEMENTS, NOTWITHSTANDING THE FACT THAT LOCATIONS INDICATED BY THESE DRAWINGS MAY BE DISTORTED FOR CLEARNESS OF PRESENTATION.

   CONTRACTOR IS ALLOWED TO MAKE MINOR CHANGES TO THE PIPING TO AVOID FIELD CONFLICTS AT NO ADDITIONAL COST TO THE OWNER AND AS LONG AS THE RELOCATION DOES NOT AFFECT THE PERFORMANCE OF THE SYSTEM.

   EACH CONTRACTOR SHALL CHECK DRAWINGS OF THE OTHER CONTRACTORS TO VERIFY SPACES IN WHICH THEIR WORK WILL BE INSTALLED IS CLEAR OF OBSTRUCTIONS. MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS AT ALL POINTS IN THE BUILDING. WHERE HEADROOM OR SPACE CONDITIONS APPEAR INADEQUATE, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE INSTALLATION.

   FURNISH ALL TRADES ADVANCE INFORMATION ON LOCATIONS AND SIZES OF PIPING, DUCTWORK, EQUIPMENT, FRAMES, BOXES, SLEEVES AND OPENINGS NEEDED FOR WORK, AND ALSO FURNISH INFORMATION AND SHOP DRAWINGS TO PERMIT TRADES AFFECTED TO INSTALL THEIR WORK PROPERLY AND WITHOUT DELAY.

   WHERE THERE IS EVIDENCE THAT WORK OF ONE CONTRACTOR WILL INTERFERE WITH THE WORK OF OTHER CONTRACTORS, EACH SHALL ASSIST IN WORKING OUT SPACE CONDITIONS TO MAKE SATISFACTORY ADJUSTMENTS.

   CONTRACTOR TO REVIEW, PRIOR TO BIDDING, ALL DRAWINGS TO COORDINATE VARIOUS WORK AS CALLED FOR. CONTRACTOR SHALL CAREFULLY CHECK ALL DRAWINGS FOR ALL TRADES, AND ANY LACK OF COORDINATION BETWEEN HIS WORK AND DRAWINGS FOR JOB CONDITIONS SHALL BE IMMEDIATELY REPORTED TO ARCHITECT.

   CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING, INCLUDING CORE DRILLING, SAW CUTTING, ETC., AS REQUIRED TO ACCOMMODATE HIS WORK. CUTTING AND PATCHING AND PAYMENT OF SAID WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR REQUIRING THE DISTURBANCE.

   CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF PRESENT CEILINGS, LIGHT FIXTURES, DIFFUSERS, DUCTWORK, PIPING, CONDUIT, ETC., AS REQUIRED FOR THE INSTALLATION OF HIS WORK. REMOVAL, REPLACEMENT AND PAYMENT FOR MECHANICAL/ELECTRICAL ITEMS SHALL BE THE RESPONSIBILITY OF THE APPLICABLE PLUMBING CONTRACTOR. REMOVAL AND REPLACEMENT OF PRESENT CEILINGS, ETC., SHALL BE THE RESPONSIBILITY OF CONTRACTOR MAKING THE DISTURBANCE.

2. THE INSTALLATION OF ALL PIPING SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS IT PERTAINS WITH CLEARANCE OF PIPING IN RELATIONSHIP TO ELECTRICAL EQUIPMENT, SWITCHGEAR, PANELS, ETC. PIPING SHALL NOT CROSS OVER THE TOP OR IMPINGE UPON THE ELECTRICAL EQUIPMENT.

3. ALL WATER LINES SHALL DRAIN COMPLETELY THROUGH LOWER FIXTURES, UNIONS, BRASS CAP OR PLUG AT LOW POINTS AND MUST VENT COMPLETELY THROUGH FIXTURE ABOVE AIR VENT.

4. PROVIDE ALL REQUIRED CLEANOUTS AS REQUIRED BY CODE. UNDERGROUND CLEANOUTS TO HAVE WYE FITTINGS AND ALL HORIZONTAL DRAINS TO HAVE CLEANOUTS.

5. NO UNDERGROUND SANITARY PIPING IS TO BE LESS THAN 2". CONFIRM WITH LOCAL CODE REQUIREMENTS. INSTALL AS REQUIRED.

6. PROVIDE TRAP REQUIREMENTS AS REQUIRED BY CODE.

7. BACKFLOW PREVENTERS FOR DISHWASHER, ICE MAKER, COFFEE MACHINE, VENDING EQUIPMENT, WATER SOFTENER, ETC., TO BE LINE SIZE AND EQUIVALENT TO FEBCO MODEL 850, WATTS SERIES 007 ASSE-1015 DOUBLE CHECK ASSEMBLY OR WATTS SERIES 7, WILKINS 700 SERIES DUAL CHECK VALVE. BACKFLOW PREVENTERS FOR CARBONATOR/SODA MACHINES TO BE STAINLESS STEEL DUAL CHECK VALVES WITH ATMOSPHERIC VENT EQUIVALENT TO WILKINS MODEL 740, WATTS SERIES SD-3. BACKFLOW PREVENTERS FOR CHILLER, BOILER, BLOW DOWN SEPERATOR, CONDENSATE RETURN, AND OTHER SIMILAR HAZARD CATEGORIES SHALL BE LINE SIZE AND EQUAL TO WATTS SERIES 009 ASSE-1013 RPZ ASSEMBLIES. VERIFY/CONFIRM WITH LOCAL CODE REQUIREMENTS FOR INSTALLATIONS.

8. PROVIDE WATER HAMMER ARRESTORS AND INSTALL AS REQUIRED PER CODE. ARRESTORS TO BE LINE SIZE AND EQUIVALENT TO ZURN-1700 SERIES.

9. PROVIDE LINE SIZE THERMOSTATIC MIXING VALVE(S) PER ANSI/ASSE 1016-1990 SINGLE USE AND/OR 1017-1990 MULTI-USE AND/OR 1071 EMERGENCY FIXTURES. VALVE(S) MUST CONTAIN MANUFACTURER'S STAMP SHOWING COMPLIANCE WITH APPLICABLE ANSI/ASSE STANDARDS. VALVE(S) TO BE USED AT LAVATORIES, HAND SINKS, ETC. WHERE DOMESTIC HOT WATER EXCEEDS 120 DEGREES F. INSTALL AS RECOMMENDED BY MANUFACTURER. UNIT IS ADJUSTABLE AND IS TO BE FIELD SET AT 105 DEGREES F OR AS PER LOCAL CODE. EQUIVALENT TO LEONARD TYPE TM FOR HIGH FLOW GREATER THAN 9 GPM OR MODEL 210 FOR LOW FLOW LESS THAN 9 GPM, BRADLEY, SYMMONS, MAXLINE, WILKINS OR EQUIVALENT.

10. ALL VENT CONNECTIONS TO HORIZONTAL DRAIN PIPING SHALL BE AT A POINT ABOVE CENTER LINE ON THE DRAIN PIPING AS REQUIRED PER CODE.

11. CROSS CONNECTION CONTROL DEVICES SHALL BE USED AND INSTALLED AS REQUIRED BY CODE.

12. UNUSED OPENINGS IN DUCTS, SEWERS, MANHOLES, ETC., SHALL BE CAPPED; THOSE IN PIPING SHALL BE CAPPED OR PLUGGED; THOSE IN CONDUITS, BOXES, CABINETS AND PANELS SHALL BE FILLED. STRUCTURAL MEMBRANES AND SUPPORTS SHALL NOT BE CUT UNLESS AUTHORIZED BY ARCHITECT, IN WRITING.

13. PRESENT PAINTED CONSTRUCTION WHICH IS MARRED SHALL BE REPAINTED SAME AS NEW CONSTRUCTION.

14. THE ENGINEER IS NOT PROVIDING PROJECT ADMINISTRATION OR ANY FORM OF PROJECT MANAGEMENT FOR THE CONSTRUCTION OF THIS BUILDING. THE USE OF THESE DRAWINGS BY ANY CONTRACTOR, SUB-CONTRACTOR, BUILDERS, TRADESMEN OR WORKER SHALL INSTIGATE A HOLD HARMLESS AGREEMENT BETWEEN THE DRAWING USER AND THE ENGINEER.

15. THE USER OF THESE DRAWINGS AGREES TO HOLD THE ENGINEER HARMLESS FOR ANY RESPONSIBILITY IN REGARD TO CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES AND FOR ANY SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK AND FURTHER SHALL HOLD THE ENGINEER HARMLESS FOR COST AND PROBLEMS ARISING FROM THE NEGLIGENCE OF CONTRACTOR, SUBCONTRACTOR, TRADESMEN OR WORKMEN. THE USE OF THESE DRAWINGS ALSO IMPLIES THAT THE ENGINEER SHALL TAKE NO RESPONSIBILITY FOR THE PLANNED USER'S FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE DRAWINGS CONTRACT DOCUMENTS.

16. SEE SPECIFICATIONS FOR ADDITIONAL NOTES, SYMBOLS, ABBREVIATIONS, PREFIXES AND SUFFIXES.

PRESENT EQUIPMENT AND DEMOLITION NOTES:

A. THE FOLLOWING REMOVED PRESENT EQUIPMENT AND MATERIALS WHICH ARE IN GOOD OPERATING CONDITION (OR ARE PLACED IN GOOD CONDITION), SUITABLE, MEETING THE REQUIREMENTS OF THESE SPECIFICATIONS, AND ARE APPROVED IN WRITING BY ENGINEER, OR CALLED FOR MAY BE REUSED (PXR, PXN, AND PN).
B. REMOVED PIPING MUST NOT BE REUSED.
C. ANY OF ABOVE EQUIPMENT WHICH IS NOT REUSED AND FOLLOWING REMOVED PRESENT EQUIPMENT SHALL BECOME PROPERTY OF CONTRACTOR, AND SHALL BE REMOVED FROM PREMISES (PX).
   1. EQUIPMENT SO DESIGNATED ON DRAWINGS.
D. CONTRACTOR SHALL:
   1. PROVIDE NEW FLOORS UNDER REMOVED PRESENT EQUIPMENT AND WHERE CALLED FOR.
   2. REPAIR FLOORS UNDER AND WALLS ADJACENT TO REMOVED EQUIPMENT, TO MATCH ADJACENT CONSTRUCTION.
   3. FILL IN PRESENT CHASES WHICH ARE NO LONGER REQUIRED AND NEATLY PATCH TO MATCH ADJACENT CONSTRUCTION.
   4. CUT OPENINGS REQUIRED FOR:
      a. HIS WORK
      b. ADMISSION OF NEW EQUIPMENT
      c. REMOVAL OF PRESENT EQUIPMENT
      d. NEW CONNECTION TO PRESENT CONSTRUCTION
         - PATCH AND REPAIR UNUSED PRESENT HOLES AND OPENINGS, AND THOSE LEFT BY THE REMOVAL OF PRESENT EQUIPMENT AND ADMISSION OF NEW EQUIPMENT.
         - PATCH AND REPAIR PRESENT EQUIPMENT, AND BUILDING CONSTRUCTION WHICH HAS NOT BEEN CUT, REMOVED, DISTURBED OR MARRED, AS REQUIRED, TO RESTORE IT TO ORIGINAL CONDITION BEFORE BEING DISTURBED.
      e. UNUSED OPENINGS IN EQUIPMENT, WALLS, CEILING, FLOOR, ETC. SHALL BE FILLED.
      f. PRESENT PAINTED CONSTRUCTION WHICH IS MARRED SHALL BE REPAIRED SAME AS NEW CONSTRUCTION.
E. CERTAIN ABBREVIATIONS OR SYMBOLS, WHEN APPLIED TO PRESENT (TO EXISTING) LINE, DEVICE OR EQUIPMENT, SHALL HAVE THE FOLLOWING MEANINGS:

NC — NEW CONNECTIONS TO PRESENT PIPING, DEVICE WIRING, EQUIPMENT, ETC. INSTALL, TEST, COVER, PAINT, ETC., SAME AS NEW WORK.

P — TO REMAIN UNCHANGED, IF CHANGE CANNOT BE AVOIDED, CHANGE "P" TO "PXR", AT NO INCREASE IN CONTRACT PRICE. VERIFY LOCATION.

PX — TO BE COMPLETELY REMOVED, INCLUDING UNNEEDED CONNECTIONS, PIPING, DUCTS, WIRING, BASES, ETC., OF EVERY KIND. UNUSED OPENINGS PLUGGED OR CAPPED, TESTED, COVERED, PAINTED SAME AS NEW WORK. OTHER DISTURBED WORK OF EVERY KIND RESTORED, PATCHED, TESTED, COVERED, PAINTED, ETC., TO EQUAL ORIGINAL CONDITION. REMOVED MATERIAL MUST NOT BE REUSED UNLESS OTHERWISE SPECIFIED OR DIRECTED BY ENGINEER.

F. WORK OF EVERY DIVISION SHALL BE COORDINATED WITH ALL OTHER WORK AND PRESENT CONDITIONS, SO THAT
   1. ELECTRICAL SERVICES TO PRESENT BUILDINGS OR PORTIONS OF BUILDING WILL NOT BE INTERRUPTED DURING PERIODS WHEN THOSE SERVICES ARE NEEDED.
   2. SPECIAL SYSTEMS SUCH AS FIRE ALARM, SOUND, ETC., OF EVERY KIND TO PRESENT BUILDINGS WILL NOT BE INTERRUPTED DURING WORKING AND/OR OCCUPIED HOURS, EXCEPT AS APPROVED BY THE OWNER.
G. NEW PIPING SERVING NEW AND/OR PRESENT EQUIPMENT IN FINISHED PRESENT ROOMS OR SPACES SHALL BE CONCEALED IN FINISHED ROOMS, WHERE POSSIBLE OR SHALL BE RUN IN ADJOINING UNFINISHED ROOMS, SHAFTS, CHAMBERS, CLOAK ROOMS, ETC., EXCEPT WHERE EXPOSED PIPING IS PERMITTED IN FINISHED PRESENT ROOMS BY ARCHITECT IN WRITING,
H. UNNEEDED EQUIPMENT, PIPING, ETC., SHALL BE COMPLETELY REMOVED; AND CONSTRUCTION PATCHED AS PER NOTE "PX". NEW CONNECTIONS TO PRESENT EQUIPMENT, SHALL BE MADE, TESTED, COVERED, PAINTED, ETC., SAME AS NEW EQUIPMENT. PRESENT EQUIPMENT, AND OTHER COVERING DISTURBED BY CONTRACTOR SHALL BE REPAIRED TO EQUAL NEW CONDITION AND PAINTED SAME AS NEW COVERING.
I. WORK SHALL BE COORDINATED SO THAT HEATING, PLUMBING, ELECTRICAL, INTERNET AND TELEPHONE SERVICES TO THE PRESENT BUILDING WILL NOT BE INTERRUPTED, EXCEPT AS APPROVED BY THE OWNER/ARCHITECT.

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PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT
REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
PLUMBING ABBREVIATIONS, SYMBOLS, NOTES, DETAILS, AND SCHEDULES

PROJECT INFORMATION
Date: AUGUST 30 2024
RLJA Proj: 2024-027

SHEET NUMBER
P102
OF
3

DIVISION 22 - PLUMBING

SECTION 22010 - BASIC PLUMBING REQUIREMENTS:

1. CONDITIONS:
THIS SECTION SHALL APPLY TO ALL SECTIONS IN DIVISION 22.

GENERAL CONDITIONS OF THE CONTRACT AND THE ARCHITECTURAL SUPPLEMENTARY AND GENERAL CONDITIONS APPLY TO THIS SECTION/DIVISION. THE SUPPLEMENTARY GENERAL CONDITIONS FOR DIVISION 26 - ELECTRICAL, ALSO APPLY TO THIS SECTION/DIVISION.

2. SCOPE OF WORK:
PROVIDE COMPLETE SYSTEMS AS CALLED FOR, AND/OR SHOWN, AND/OR SPECIFIED. PLUMBING OR RESPECTIVE SUBCONTRACTORS SHALL FURNISH AND COMPLETELY INSTALL THE SYSTEM, SERVICE, EQUIPMENT, OR MATERIAL NAMED, TOGETHER WITH OTHER ASSOCIATED DEVICES, EQUIPMENT, MATERIALS, WIRING, PIPING, ETC., AS REQUIRED FOR A COMPLETE SATISFACTORY OPERATING INSTALLATION BY THE RESPECTIVE CONTRACTOR. OTHER SUBCONTRACTORS, AS REQUIRED TO PERFORM WORK CALLED FOR, SHALL BE RESPONSIBLE TO THE PLUMBING CONTRACTOR RESPECTIVELY. SECURE ALL PERMITS FOR WORK AND INSPECTIONS AS REQUIRED.

3. BASIC SYSTEMS:
SYSTEMS PROVIDED SHALL INCLUDE BUT SHALL NOT BE LIMITED TO:

A. CONDITIONS, SCOPE OF WORK, BASIC SYSTEMS, PERMITS AND FEES, CODES, STANDARDS AND REGULATIONS.
B. MATERIALS AND EQUIPMENT, WORK PRIORITY OVER OTHER TRADES, COORDINATION, OPENINGS, SLEEVES AND CHASES, EQUIVALENT MAKE EQUIPMENT, SHOP DRAWINGS.
C. VERIFICATION, IDENTIFICATION, PAINTING, EXCAVATION, TRENCHING AND BACKFILLING, CLEANING, TESTING AND BALANCING, GUARANTEE, RECORD DOCUMENTS.

4. PERMITS AND FEES:
PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR THE OBTAINING OF THEIR RESPECTIVE PERMITS, AND THEIR COSTS, AS WELL AS OTHER FEES NECESSARY TO THE PROJECT MANAGER INCLUDING INSPECTIONS. PERMITS AND FEES SHALL ALL BE INCLUDED FOR ALL REQUIRED SANITARY, BUILDING DEPT. REQUIREMENTS, ETC.

5. CODES, STANDARDS, AND REGULATIONS:
EQUIPMENT, DEVICES, APPARATUS AND INSTALLATIONS TO BE IN FULL COMPLIANCE WITH CURRENT (LATEST EDITION) APPLICABLE LOCAL, CITY, COUNTY, STATE AND GOVERNMENT REQUIREMENTS, RULES, REGULATIONS, CODES, STATUTES, ORDINANCES, ETC., OWNER'S INSURANCE COMPANY STANDARDS, AMERICANS WITH DISABILITIES ACT, LATEST EDITION OF ILLINOIS ACCESSIBILITY CODE, LATEST EDITION AND AMENDMENTS OF ILLINOIS STATE PLUMBING CODE, NATIONAL ASSOCIATION OF ROOFING CONTRACTORS, LOCAL GAS AND ELECTRIC UTILITY COMPANIES, LABOR REGULATIONS, AND OTHER STATE OF ILLINOIS DEPARTMENT OF PUBLIC HEALTH RULES. CHANGES REQUIRED TO CONFORM TO REQUIREMENTS SHALL BE MADE WITHOUT INCREASE IN CONTRACT PRICE AS APPROVED BY THE ARCHITECT.

ALL WASTE/VENT PIPING, INSULATING MATERIALS, ETC., SHALL COMPLY WITH REQUIREMENTS OF NFPA, NEC, UL, AGA, OSHA, EPA, ICC, STATE AND FEDERAL SAFETY CODES FOR A PARTICULAR TYPE INSTALLATION AND SHALL BE SO LABELED WHERE APPLICABLE.

6. MATERIALS AND EQUIPMENT:
MATERIALS AND EQUIPMENT SHALL BE OF NEW CONSTRUCTION, AND QUALITY SPECIFIED.

7. WORK PRIORITY OVER THE OTHER TRADES:
ALL CONTRACTORS FOR THE MECHANICAL-ELECTRICAL TRADES ARE TO BE GOVERNED AS FOLLOWS AND WORK IN COOPERATION WITH ONE ANOTHER TO FIT PIPING AND DUCTWORK INTO THE STRUCTURE AS JOB CONDITIONS MAY DEMAND. ALL FINAL DECISIONS AS TO RIGHT OF WAY AND RUN OF PIPE, DUCTS, ETC., TO BE MADE BY ARCHITECT.

IN GENERAL, PRIORITY IS TO BE ARRANGED AS FOLLOWS:

A. RECESSED LIGHTING FIXTURES.
B. SHEET METAL DUCT WORK/HVAC UNITS.
C. PLUMBING WASTE LINES, DOWN SPOUTS AND VENTS.
D. REFRIGERATION LINES.
E. SPRINKLER LINES.
F. PLUMBING WATER LINES.
G. ELECTRICAL CONDUITS.
H. CONTROL AIR LINES OR CONDUIT.

8. COORDINATION:
COORDINATE WORK OF HVAC, TEMPERATURE CONTROLS, PLUMBING WORK, ELECTRICAL WORK, GENERAL CONTRACTOR TYPE WORK, ETC., TO AVOID INTERFERENCES AND CONFLICTS OF WORK INDICATED. WORK MUST BE COMPLETED AS SCHEDULED BY THE ARCHITECT. VERIFY AT TIME OF BIDDING TO AVOID MISUNDERSTANDING. ANY DISCREPANCIES NOTICED AT TIME OF PRE-BID MEETING AND/OR INSPECTION OF SITE BY THOSE INSPECTING FOR BIDDING THE PROJECT SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION IMMEDIATELY SO THAT CORRECTIONS CAN BE MADE BY ADDENDUM PRIOR TO BID DATE.

9. OPENINGS, SLEEVES, AND CHASES:
EACH RESPECTIVE CONTRACTOR SHALL SET SLEEVES AND INSERTS REQUIRED FOR PIPING, HANGERS, INTAKES, LOUVERS, VENTILATORS, DUCTWORK, CURBS, ETC., IN CONSTRUCTION. RESPECTIVE CONTRACTOR TO FURNISH GENERAL CONTRACTOR WITH COMPLETE INFORMATION AS TO SIZE AND LOCATION OF OPENINGS THROUGH WALLS, FLOORS, ROOFS, ETC., FOR INSTALLING THIS WORK. IF THIS INFORMATION IS NOT SUPPLIED BEFORE NEW WALLS, FLOORS, ROOFS, ETC., ARE BUILT, RESPECTIVE CONTRACTOR SHALL FURNISH, CUT AND PATCH ALL REQUIRED OPENINGS FOR INSTALLATION OF EQUIPMENT, MATERIAL, DEVICES, ETC., AS REQUIRED AND APPROVED BY THE ARCHITECT. FOR NEW CONSTRUCTION, GENERAL CONTRACTOR WILL CUT HOLES THROUGH ROOF AND ROOFING CONTRACTOR WILL DO ALL FLASHING, ROOF PATCHING, ETC., UNLESS OTHERWISE NOTED. ROOF OPENINGS 18" AND LARGER SHALL BE FRAMED WITH HEADERS CONNECTED TO ROOF JOISTS WITH STEEL MEMBERS FRAMED BETWEEN. VERIFY WITH ARCHITECT. ALL ROOFING WORK AND EQUIPMENT TO MEET REQUIREMENTS OF NATIONAL ASSOCIATION OF ROOFING CONTRACTORS.

10. EQUIVALENT MAKE EQUIPMENT:
EQUIVALENT MAKE EQUIPMENT FOR EQUIPMENT MANUFACTURERS NOT LISTED IN SPECIFICATIONS ARE SUBJECT TO REVIEW OF SAID EQUIPMENT BEFORE BIDDING. PRIOR TO BIDDING, ANY COMPANY WHO EXPECTS TO BE NAMED BY CONTRACTOR AS A SUPPLIER OF EQUIPMENT SPECIFIED AND/OR CALLED FOR ON PLANS OR IN SPECIFICATIONS, SHALL HAVE ON FILE WITH THE DESIGN ENGINEER COPIES OF COMPLETE PUBLISHED TECHNICAL DATA.

IT SHALL BE THE MANUFACTURER'S RESPONSIBILITY TO CERTIFY THE FOLLOWING:

A. SHOW PERFORMANCE CHARACTERISTICS OF SELECTED EQUIPMENT, SIZES INDICATED AND DIMENSIONAL DATA TO SHOW THAT EQUIPMENT WILL FIT INTO SPACE ALLOWED.
B. INDICATE EQUIPMENT CONSTRUCTION AND MATERIALS USED IN SAME.
C. INDICATE APPLICATION AS CALLED FOR.
D. INDICATE ELECTRICAL REQUIREMENTS THAT ARE EQUAL TO OR LESS THAN EQUIPMENT SPECIFIED, COMPLETE SEQUENCE OF OPERATION AND COMPLETE INSTALLATION INSTRUCTIONS AS REQUIRED BY MANUFACTURER FOR INTENDED USE.
E. SHOW DATA, ITEM FOR ITEM, FOR EQUIPMENT SPECIFIED.

DATA SUBMITTED MUST BE RECEIVED BY THE DESIGN ENGINEER NOT LATER THAN TEN (10) WORKING DAYS PRIOR TO THE BID DATE TO ALLOW SUFFICIENT TIME FOR REVIEW OF SUBMITTALS. AN ADDENDA WILL BE ISSUED IF EQUIPMENT IS TO BE CONSIDERED AS AN "EQUIVALENT MAKE."

EQUIPMENT NOT CONFORMING TO THE ABOVE WILL NOT BE CONSIDERED.

11. SHOP DRAWINGS:
PLUMBING CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL, BEFORE CONSTRUCTION IS STARTED, SHOP DRAWINGS FOR EQUIPMENT, DEVICES, MATERIAL, CONTROLS, ACCESSORIES, WIRING DIAGRAMS, ETC., FOR RESPECTIVE INSTALLATION. SUBMITTALS SHALL BE IN ACCORDANCE WITH DIVISION 1 REQUIREMENTS.

12. VERIFICATION:
VERIFICATION OF PLUMBING ITEMS FOR PROJECT SHALL BE INCLUDED. CONTRACTOR, PRIOR TO BIDDING, SHALL SECURE ALL NECESSARY INFORMATION, POINTS FOR NEW CONNECTIONS TO ANY TYPE OF SERVICE AS REQUIRED AND SHALL INCLUDE NECESSARY COST FOR FEE AS REQUIRED IN HIS BID FOR THESE CONNECTIONS. CONTRACTOR SHALL CAREFULLY EXAMINE THE SITE FOR THE WORK TO ELIMINATE MISCONCEPTIONS OF FACT, TO VERIFY AND DETERMINE DIMENSIONS, ELEVATIONS, LOCATION OF EXISTING EQUIPMENT, SERVICES, PIPING, AND TO OBSERVE FEATURES AFFECTING WORKING CONDITIONS, TRANSPORTATION AND STORAGE FACILITIES. CONTRACTOR SHALL GIVE DUE CONSIDERATION TO SAME IN PREPARING PROPOSALS AS NO EXCEPTIONS WILL BE CONSIDERED AFTER AWARDING OF CONTRACT, NOR WILL CONTRACTOR BE ENTITLED TO ANY EXTRA COMPENSATION FOR HIS FAILURE TO VERIFY CONDITIONS AT THE SITE OR AT POINTS OF CONNECTION.

THE RUN OF ALL LINES SHOWN ON DRAWINGS IS TO BE REGARDED AS DIAGRAMMATIC AND TENTATIVE. CONTRACTOR SHALL CAREFULLY VERIFY LOCATION, DEPTH, AND SIZE OF LINE OR SEWER TO WHICH CONNECTION IS PROPOSED. BEFORE INSTALLING ANY LINES, CONTRACTOR SHALL ASSURE THAT THEY CAN BE RUN AS CONTEMPLATED WITHOUT TRAPPING OR INTERFERING WITH FOOTING, OTHER PIPING, FIXTURES, ETC. ANY NECESSARY DEVIATION SHALL BE REFERRED TO ARCHITECT FOR APPROVAL BEFORE ANY LINES OR SERVICE ARE RUN, AT NO INCREASE IN CONTRACT PRICE.

13. IDENTIFICATION:
IDENTIFY EACH PIECE OF EQUIPMENT AND EACH CONTROL PANEL WITH 1" HIGH BLACK OR NOTICEABLE COLORED, PAINTED, STENCIL TYPE LETTERS ON THE EQUIPMENT. IDENTIFICATION TO BE VISIBLE USING ABBREVIATIONS AS CALLED FOR ON DRAWINGS. EQUIPMENT INCLUDES EWH-1, HWC-P-1, ETC.

PROVIDE POLISHED BRASS VALVE TAG ON ALL VALVES, COCKS AND CONTROL DEVICES ON EACH PIPING SYSTEM. PROVIDE TYPED INDEX, MOUNTED IN LOCATION AS DIRECTED BY ARCHITECT. PROVIDE MARKED UP SET OF REDUCED SIZE DRAWINGS WHICH INDICATE LOCATIONS OF RESPECTIVE TAGGED VALVES. PROVIDE INCONSPICUOUS CEILING MARKERS INDICATING EQUIPMENT, VALVES, OR CONTROL DEVICES LOCATED ABOVE CEILINGS. REDUCED SIZE, FILE TYPE DRAWINGS SHALL BE SUBMITTED FOR REVIEW, SAME AS SHOP DRAWINGS, AND SHALL INCLUDE INDEX AND INDICATOR/LOCATOR FOR RESPECTIVE TAGGED VALVES AND/OR EQUIPMENT.

PROVIDE PIPE MARKERS ON ALL PIPING SYSTEMS PER ANSI A13.1 SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS AND 253.1 SAFETY COLOR CODE FOR MARKING PHYSICAL HAZARDS. MARKERS SHALL INCLUDE ARROWS TO SHOW NORMAL DIRECTION OF FLOW. LOCATE PIPE MARKERS AS FOLLOWS:

A. WHEREVER PIPING IS EXPOSED TO VIEW IN NON-CONCEALED LOCATIONS.
B. ON PIPING ABOVE REMOVEABLE ACOUSTICAL CEILINGS.
C. NEAR EACH VALVE AND CONTROL DEVICE.
D. NEAR EACH BRANCH CONNECTION.
E. NEAR LOCATIONS WHERE PIPES PASS THROUGH WALLS OR FLOORS/CEILINGS OR ENTER NON-ACCESSIBLE ENCLOSURES.
F. AT ACCESS DOORS AND SIMILAR ACCESS POINTS.
G. NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGINATION AND TERMINATION.
H. SPACED INTERMEDIATELY AT MAXIMUM SPACING OF 50 FEET ALONG EACH PIPING RUN, EXCEPT REDUCE SPACING TO 25 FEET IN CONGESTED AREAS OF PIPING AND EQUIPMENT.
I. FUEL GAS PIPING SHALL BE IDENTIFIED AT INTERVALS OF NOT MORE THAN 50 FEET IN EXPOSED LOCATIONS, NOT MORE THAN 25 FEET IN CONCEALED LOCATIONS AND NOT LESS THAN ONCE IN ANY ROOM OR SPACE.

14. PAINTING:
COORDINATE PAINTING REQUIREMENTS WITH GENERAL CONTRACTOR PRIOR TO BIDDING.

15. EXCAVATION, TRENCHING, AND BACKFILLING:
FOR EXCAVATION, TRENCHING AND BACKFILLING, DEPTH OF BURY OR COVER OVER EXTERIOR UNDERGROUND CONSTRUCTION SHALL NOT BE LESS THAN THE FOLLOWING, UNLESS OTHERWISE NOTED ON DRAWINGS:

A. GAS SERVICE 30"
B. DOMESTIC WATER SERVICE 72"
C. SANITARY SERVICE 48"

DEPTH OF COVER OR BURY SHALL BE INCREASED AS REQUIRED TO CONFORM TO THE STANDARDS OF ALL AUTHORITIES HAVING JURISDICTION, WITHOUT INCREASE IN CONTRACT PRICE.

EACH CONTRACTOR SHALL DO EXCAVATING REQUIRED TO INSTALL THEIR WORK. AFTER WORK HAS BEEN TESTED AND APPROVED, EACH CONTRACTOR SHALL REPLACE ROADS, STREETS, DRIVES, CURBS, WALKS, TOP SOIL AND SOD, WHICH THEY HAVE DISTURBED. SURPLUS EARTH AND DEBRIS SHALL BE REMOVED FROM THE PREMISES AS DIRECTED BY THE ARCHITECT. BACKFILL UNDER FLOOR SLABS, ROADS, STREETS, DRIVES, WALKS, FOOTINGS, FOUNDATIONS, ETC., AND WITHIN 5' 0" OF SAME SHALL BE THOROUGHLY COMPACTED SAND OR SMALL SIZE GRAVEL. OTHER BACKFILL SHALL BE FREE OF DEBRIS, ROCK, CONCRETE, ETC., AND SETTLED WITH WATER IN LAYERS AS DIRECTED BY THE ARCHITECT. NO MATERIALS EXCEPT CLEAN SAND SHALL BE PLACED WITHIN 6" OF ANY PIPE, CONDUIT, CABLE OR METAL PART.

EXCESSIVE EXCAVATIONS REQUIRED TO REACH UNDISTURBED SOIL SHALL BE FILLED WITH THOROUGHLY COMPACTED SAND (MAXIMUM 9" LIFTS) TO PROVIDE ADEQUATE BEDDING AND SUPPORT. LINES SHALL BE BEDDED ON AT LEAST 2" THICK COMPACTED SAND.

NO TRENCHES SHALL BE FILLED UNTIL WORK HAS BEEN INSPECTED AND APPROVED BY THE ARCHITECT AND ALL AUTHORITIES HAVING JURISDICTION. TOP SOIL SHALL BE CAREFULLY REMOVED, STORED, AND REPLACED, AS DIRECTED BY THE ARCHITECT.

16. CLEANING, TESTING, AND BALANCING:
EACH CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING OF THEIR EQUIPMENT AND SYSTEMS AND SHALL REMOVE ALL DEBRIS CREATED BY THEMSELVES FROM THE PREMISES, PRIOR TO FINAL ACCEPTANCE. VALVES, PIPING, LAVS, WATER CLOSETS, URINALS, SINKS, DRAINS, EQUIPMENT, DOMESTIC WATER SERVICE, FIRE PROTECTION SERVICE, ETC., SHALL BE FLUSHED, TESTED AND INSPECTED PRIOR TO FINAL ACCEPTANCE.

17. GUARANTEE:
PLUMBING CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT, APPARATUS, MATERIALS AND WORKMANSHIP ENTERING INTO THIS CONTRACT AND SHALL REPLACE ALL PARTS AT HIS OWN EXPENSE WHICH HAVE PROVEN DEFECTIVE WITHIN ONE (1) YEAR FROM FORMAL ACCEPTANCE. INDIVIDUAL ITEMS SHALL BE GUARANTEED AS CALLED FOR IN ADDITION TO THE ABOVE.

18. RECORD DOCUMENTS:
CONTRACTOR SHALL MAINTAIN ONE (1) COMPLETE MARKED UP SET OF "AS-BUILT" PROJECT PRINTS DURING CONSTRUCTION. CONTRACTOR SHALL SUBMIT "AS-BUILTS" FOR REVIEW BY GENERAL CONTRACTOR AND ARCHITECT OR ENGINEER AT EACH WEEKLY PROJECT MEETING. AT COMPLETION OF PROJECT, "AS-BUILTS" SHALL BE SUBMITTED FOR REVIEW, SAME AS REQUIRED FOR SHOP DRAWINGS. UPON ACCEPTANCE, CONTRACTOR SHALL PROVIDE TWO (2) SEPARATE SETS OF REPRODUCIBLES OF THESE "AS-BUILT" PRINTS, ONE (1) SET FOR THE OWNER AND ONE (1) SET FOR THE ARCHITECT. CONTRACTOR SHALL RETAIN COPY OF PROJECT FOR HIS RECORDS. REFER TO DIVISION 1 SPECIFICATIONS FOR ADDITIONAL INFORMATION.

END OF SECTION 22010

DIVISION 22 - PLUMBING

SECTION 22400 - PLUMBING SPECIFICATIONS/NOTATIONS:

1. CONDITIONS:
GENERAL CONDITIONS OF THE CONTRACT AND THE ARCHITECTURAL SUPPLEMENTARY AND GENERAL CONDITIONS APPLY TO THIS SECTION/DIVISION. THE SUPPLEMENTARY GENERAL CONDITIONS FOR DIVISION 26 - ELECTRICAL, ALSO APPLY TO THIS SECTION/DIVISION.

SECTION 22010 - BASIC PLUMBING REQUIREMENTS ALSO APPLIES TO THIS SECTION.

2. SYSTEMS:
PLUMBING SYSTEM PROVIDED SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO:

A. CONDITIONS, SYSTEMS.
B. PIPING, PIPING INSULATION, VALVES, PLUMBING FIXTURES.
C. TRENCHING, EXTERIOR EXCAVATION AND BACKFILLING.

3. PIPING:
ABOVE AND BELOW GROUND SANITARY SEWER AND VENT PIPING SHALL BE HUBLESS SERVICE WEIGHT CAST IRON PIPE PER CISPI 301, TAR COATED INSIDE AND OUTSIDE, JOINTS SHALL BE CAST IRON NO-HUB WITH NEOPRENE COMPRESSION GASKETS PER CISPI 310, NEOPRENE GASKET PER ASTM C564; OR SERVICE WEIGHT CAST IRON SOIL PIPE, TAR COATED INSIDE AND OUTSIDE PER ASTM A74 WITH LEAD AND OAKUM, HUB AND SPIGOT, PUSH-ON JOINTS; OR PVC DRAIN, WASTE AND VENT PIPE AND FITTINGS, WITH SOCKET WELD JOINTS PER ASTM D2665.

TEST WASTE/VENT SYSTEM BY FILLING SYSTEM WITH A MINIMUM OF 10 FOOT HEAD OF WATER. ALL WATER MUST REMAIN IN SYSTEM OR PORTION THEREOF TESTED FOR A MINIMUM OF 30 MINUTES. SYSTEM MUST BE TIGHT AT ALL JOINTS. WHEN AIR TESTING SYSTEM, APPLY MINIMUM 5 PSI WITH FORCE PUMP AND MAINTAIN A MINIMUM PRESSURE FOR 1 HOUR WITH NO APPARENT LEAKAGE. USE MERCURY-COLUMN GAUGE IN MAKING TEST.

WHERE PIPES PASS THROUGH FIRE-RATED WALLS, PARTITIONS, FLOORS AND CEILINGS, SEAL OPENINGS IN ACCORDANCE WITH ICC, NEC AND LOCAL REQUIREMENTS.

MAKE AMPLE PROVISIONS FOR EXPANSION AND CONTRACTION IN PIPING, WITH EXTRA PRECAUTIONS FOR COPPER PIPE. PIPING SHALL BE HUNG INDEPENDENTLY OF CONNECTIONS AND SLEEVES. ALL PIPING TO BE IDENTIFIED. REFER TO SECTION ON "IDENTIFICATION" FOR ADDITIONAL INFORMATION.

HANGERS FOR COPPER PIPING WHERE DIRECT CONTACT IS MADE SHALL BE COPPER, COPPER LINED OR COPPER PLATED WITH COPPER PLATED OR NON-FERROUS FASTENERS OR PLASTIC/RUBBER INSULATED OR ISOLATED TYPE MOUNTING TO PREVENT ELECTROLYSIS. HANGERS IN CONTACT WITH GALVANIZED SHEET METAL SHIELDS OR STEEL PIPING TO BE STEEL. REFER TO PIPING INSULATION FOR APPLICATIONS. HANG PIPE ALONG WALLS WITH RING OR BRACKET TYPE HANGERS; PIPING OTHER THAN COPPER OR STEEL HANG WITH ADJUSTABLE STEEL RODS AND RING TYPE CLEVISED HANGERS. HANGERS TO BE DOUBLE NUTTED OR COACH SCREW TYPE BY CRANE, CRAWFORD, FEE MASON, GRINNELL, OR EQUIVALENT COPPER AND STEEL PIPE HANGER MINIMUM SPACING ARE AS FOLLOWS: UP TO 1/4": 4'-0" O.C., 3/8" TO 1-1/4": 6'-0" O.C., 1-1/2" TO 4": 10'-0" O.C., 5" TO 12": 12'-0" O.C., HANGER SPACING FOR PVC PIPING SHALL BE AS FOLLOWS: ALL SIZES- 4'-0" O.C. ALL IN ACCORDANCE WITH APPLICABLE CODES INVOLVED. PLACE SUPPORT OR HANGER WITHIN 1 FOOT OF EACH HORIZONTAL ELBOW, JOINT OR CONNECTION. SUPPORT VERTICAL PIPING AT EVERY FLOOR LINE. WHERE SEVERAL PIPES CAN BE INSTALLED IN PARALLEL AT THE SAME ELEVATION, PROVIDE MULTIPLE OR TRAPEZE HANGERS. WHERE PRACTICAL, SUPPORT RISER PIPING INDEPENDENTLY OF CONNECTED HORIZONTAL PIPING. INSTALL DIELECTRIC INSULATING FITTINGS OR UNION AT ALL JOINING OF DISSIMILAR METALS.

PROVIDE SLEEVES WHERE PIPES PASS THROUGH ROOFS, WALLS, PARTITIONS, FLOORS, ETC., OF PROPER SIZE TO ALLOW FOR EXPANSION AND CONTRACTION AND TRIM FLUSH WITH SURFACES. PROVIDE ESCUTCHEON PLATES AT SLEEVES IN FINISHED AREAS. SLEEVES ON PIPING SHALL BE LARGE ENOUGH TO PERMIT COVERING TO BE CONTINUOUS. SEAL SLEEVES, PIPE TO SLEEVE, SLEEVE TO CONSTRUCTION AT FIRE RATED CONSTRUCTION AS DETAILED ON DRAWING AND/OR SEAL OPENINGS IN ACCORDANCE WITH LOCAL BUILDING CODES OR WITH UL RATED MATERIALS.

VERTICAL PIPING SHALL BE SECURED TO KEEP PIPING IN ALIGNMENT AND CARRY THE WEIGHT OF PIPING AT THE PIPE MAXIMUM LOADED CAPACITY. STACKS SHALL BE SUPPORTED AT THE BASE, SPECIFIED INTERVALS AND AT EACH FLOOR BY FLOOR CLAMPS AS REQUIRED BY THE RESPECTIVE CODES.

FLASH AND COUNTER-FLASH WHERE MECHANICAL EQUIPMENT, PIPING OR PIPING EQUIPMENT PASSES THROUGH WEATHER OR WATERPROOFED WALLS, FLOORS AND ROOFS.

INSTALL CLEANOUT PLUGS AT EACH 90° CHANGE IN DIRECTION IN HORIZONTAL SEWER PIPING. WHERE NOT OTHERWISE INDICATED, INSTALL CLEANOUTS AT 50 FOOT INTERVALS FOR PIPING 4" AND SMALLER, AND AT 100 FOOT INTERVALS FOR PIPING 6" AND LARGER. INSTALL FLOOR AND WALL CLEANOUTS AT LOCATIONS INDICATED AND AS REQUIRED BY CODE. CLEANOUTS SHALL BE SAME SIZE AS MAINS UP TO AND INCLUDING 4" DIAMETER PIPING AND MINIMUM OF 4" DIAMETER FOR LARGER LINES.

4. PIPING INSULATION:
VENT PIPING SHALL BE COVERED WITH FIBERGLASS INSULATION WITH FACTORY-APPLIED ALL-PURPOSE JACKET CONSISTING OF HIGH-DENSITY, WHITE KRAFT PAPER BONDED TO ALUMINUM FOIL AND REINFORCED WITH FIBERGLASS YARN, STAPLED 6" O.C. AND SEALED WITH VAPOR BARRIER ADHESIVE OR USING SELF-SEALING LAP. COVERING SHALL BE EQUAL TO MANVILLE PRODUCTS MICRO-LOK 650 AND SHALL BE SUITABLE FOR SERVICES FROM 35 DEGREES F TO 650 DEGREES F, 3.5 POUND DENSITY. VENT PIPE INSULATION SHALL BE 1/2" THICKNESS. COVERING SHALL BE ARMSTRONG, KNAUF, MANVILLE, OWENS-CORNING OR EQUIVALENT MAKE. COVERING ON PIPING SHALL BE CONTINUOUS THROUGH HANGERS AND SLEEVES. HANGERS ON PIPING SHALL ENCIRCLE PIPE COVERING, BEAR ON A 20 GAUGE SHEET METAL PLATE 4 DIAMETERS LONG. ENDS OF COVERING SHALL BE NEATLY TAPERED AND SEALED. ANY MILDEWED COVERING MUST BE REPLACED. FITTINGS SHALL BE COVERED WITH A ZESTON FITTING COVER AND FACTORY-SUPPLIED FIBERGLASS INSERT WHERE AVAILABLE, ALL INSTALLED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. VENT PIPING TO BE INSULATED TO 5'-0" BELOW ROOF PENTRATION.

5. PLUMBING FIXTURES:
ALL NEW PLUMBING FIXTURES SHALL BE OF COMMERCIAL GRADE AND COMPLETE WITH ALL ASSOCIATED TRIM, SUPPORTS, CARRIERS, ETC. PLUMBING FIXTURE SUPPORTS SHALL BE AS REQUIRED BY THE PLUMBING AND DRAINAGE INSTITUTE (PDI).

INSPECT MILLWORK SHOP DRAWINGS AND CONFIRM LOCATION AND SIZE OF FIXTURES AND OPENINGS BEFORE ROUGH-IN AND INSTALLATION. INSPECT ROUGHED-IN WASTE PIPING SYSTEMS TO VERIFY ACTUAL PIPING CONNECTION LOCATIONS PRIOR TO FIXTURE INSTALLATION; INSPECT FLOORS, BASES AND CONDITIONS UNDER WHICH FIXTURE WORK WILL BE ACCOMPLISHED; NOTIFY APPROPRIATE PARTIES IN WRITING OF ALL UNSATISFACTORY CONDITIONS.

SEE PLUMBING FIXTURE SCHEDULE ON DRAWINGS.

6. TRENCHING:
PROVIDE A MINIMUM OF 3" SAND BEDDING UNDER ALL UNDERGROUND PIPING. SAND BEDDING SHALL EXTEND TO A MINIMUM OF 12" ABOVE THE SPRING LINE OF THE PIPE. COMPACT TO 95% PER ASTM D1557.

7. EXTERIOR EXCAVATION AND BACKFILLING:
CONTRACTOR SHALL DO EXCAVATING REQUIRED TO INSTALL WORK INDICATED (INCLUDING DEPRESSIONS FOR TILE BELLS, VALVE BODIES, FLANGES, ETC.). AFTER THE WORK HAS BEEN INSTALLED, TESTED AND APPROVED, CONTRACTOR SHALL BACKFILL AND THOROUGHLY TAMP EARTH AROUND PIPES AND SHALL SETTLE THE EARTH AS DIRECTED BY THE ARCHITECT. BACKFILL UNDER ROADS, PARKING AREAS, STREETS, DRIVES, WALKS, FOOTINGS, ETC., AND WITHIN 5'-0" OF FOOTINGS SHALL BE SETTLED WITH WATER IN 8" LAYERS TO 85% OF OPTIMUM DENSITY. NO MATERIALS EXCEPT CLEAN SAND OR SOIL SHALL BE PLACED WITHIN 6" OF ANY METAL PIPE, VALVE OR METAL PART. EXCESS EXCAVATIONS SHALL BE FILLED WITH THOROUGHLY COMPACTED SAND OR LEAN CONCRETE TO PROVIDE ADEQUATE BEDDING AND SUPPORT FOR ALL LINES. NO TRENCHES SHALL BE FILLED UNTIL WORK HAS BEEN INSPECTED AND APPROVED BY THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION. TOP SOIL SHALL BE REMOVED, STORED AND REPLACED AS DIRECTED BY THE ARCHITECT.

END OF SECTION 22400

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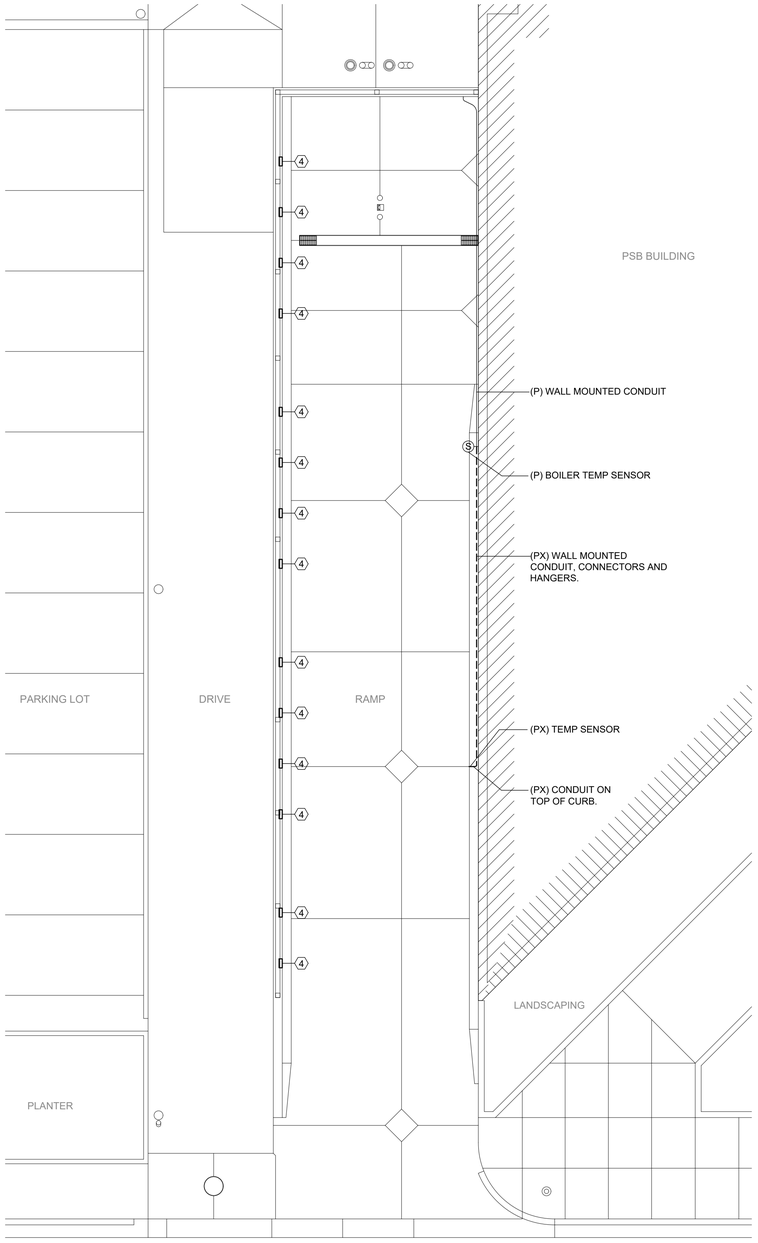
PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
PLUMBING SPECIFICATIONS

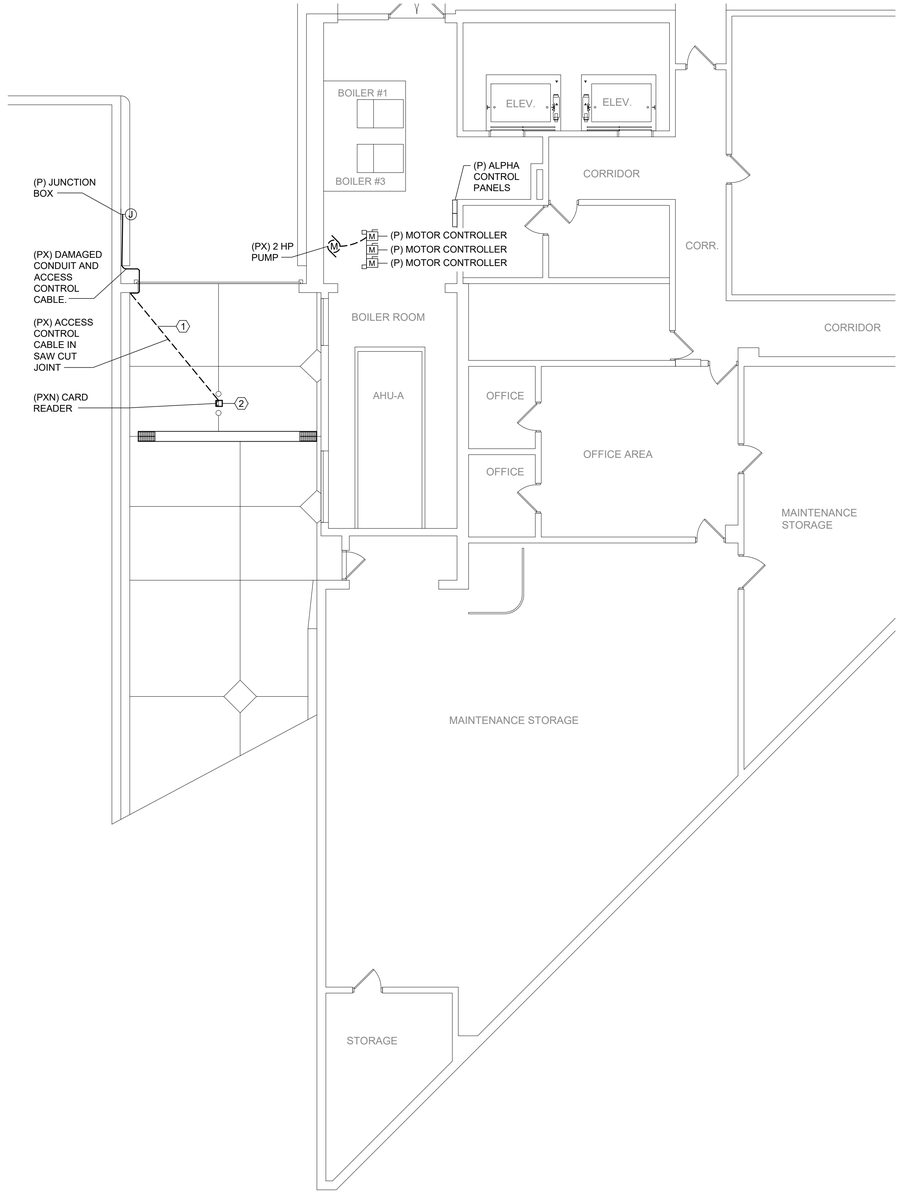
PROJECT INFORMATION				
Date	AUGUST 30 2024			
RLJA Proj	2024-027			

SHEET NUMBER
P103
OF
3



DEMOLITION SITE PLAN - ELECTRICAL

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



DEMOLITION FLOOR PLAN - ELECTRICAL

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

DRAWING KEY NOTES

1. (PX) ACCESS CONTROL WIRING IN SAWCUT JOINT OF EXISTING CONCRETE SLAB BEING REMOVED.
2. (PXN) ACCESS CONTROL CARD READER, AND ASSOCIATED EXPOSED CONDUIT MOUNTED ON CONCRETE POST BEING REMOVED.
3. (PX) WALL MOUNTED CONDUIT, CONNECTORS AND HANGERS BACK TO PRESENT BOILER TEMP. SENSOR THAT IS TO REMAIN IN USE.
4. EC TO DISCONNECT WALL MOUNTED RECESSED LIGHT FIXTURES. COMPLETELY REMOVE ASSOCIATED WIRING, BALLASTS AND LAMPS. FIXTURE HOUSING TO REMAIN IN PLACE. WIRING SHALL BE REMOVED BACK TO THE ORIGINATION POINT OF THE BRANCH CIRCUITS SERVING THESE FIXTURES.

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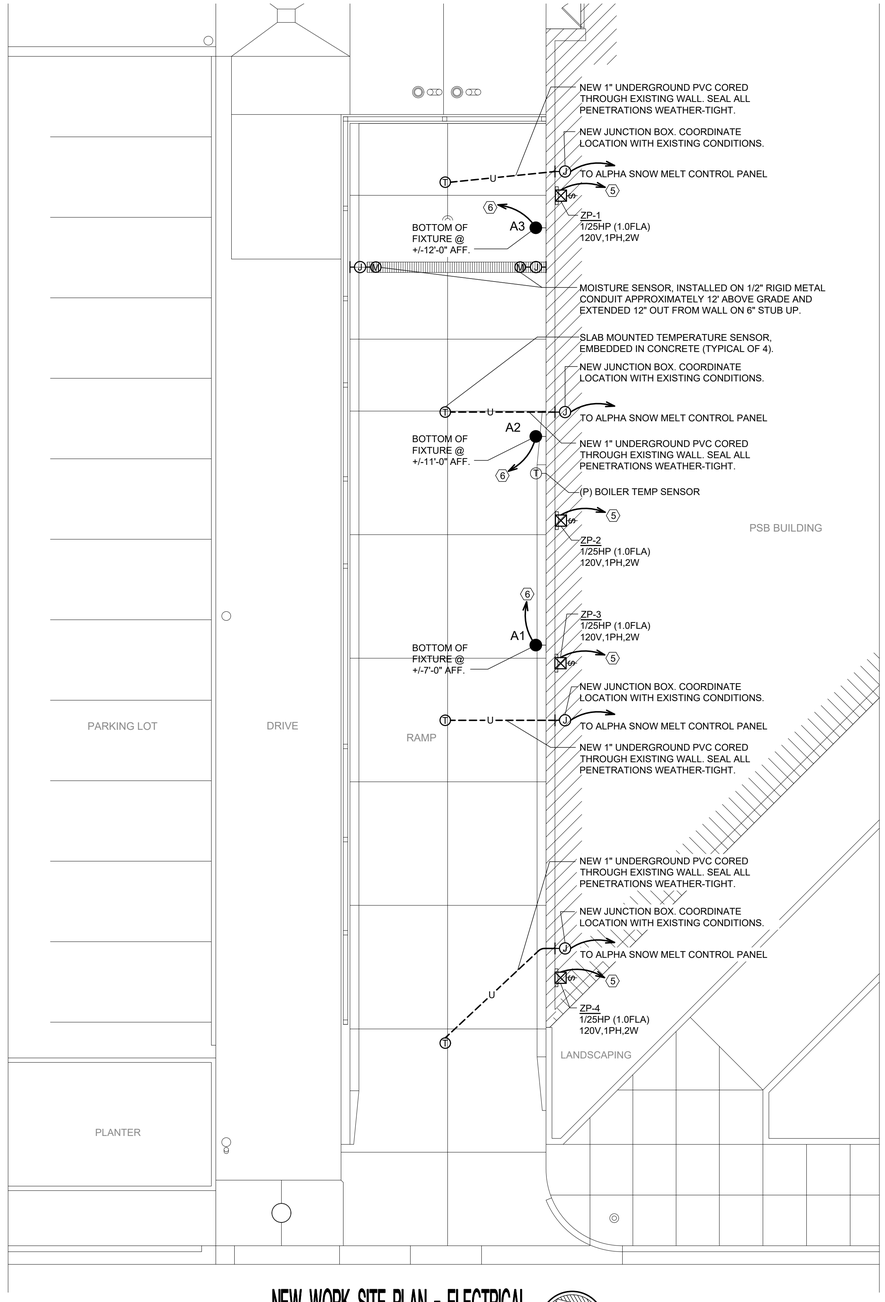
REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
DEMOLITION ELECTRICAL PLANS

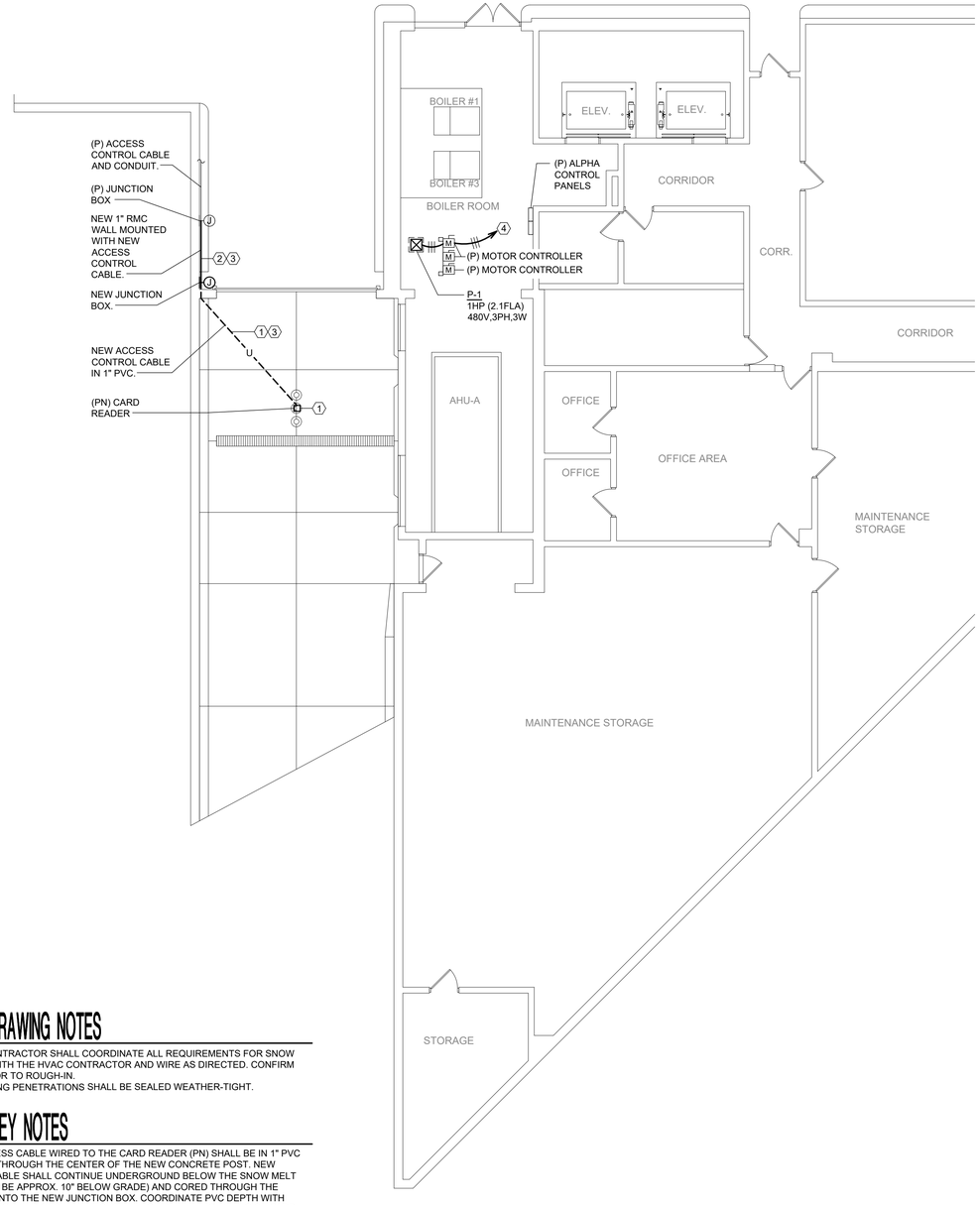
PROJECT INFORMATION	
Date	AUGUST 30 2024
RLJA Proj	2024-027

SHEET NUMBER
E101
OF
4



NEW WORK SITE PLAN - ELECTRICAL

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



NEW WORK FLOOR PLAN - ELECTRICAL

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

GENERAL DRAWING NOTES

1. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS FOR SNOW MELT SYSTEM WITH THE HVAC CONTRACTOR AND WIRE AS DIRECTED. CONFIRM LOCATIONS PRIOR TO ROUGH-IN.
2. ALL NEW BUILDING PENETRATIONS SHALL BE SEALED WEATHER-TIGHT.

DRAWING KEY NOTES

1. NEW CARD ACCESS CABLE WIRED TO THE CARD READER (PN) SHALL BE IN 1" PVC ROUTED DOWN THROUGH THE CENTER OF THE NEW CONCRETE POST. NEW CONDUIT AND CABLE SHALL CONTINUE UNDERGROUND BELOW THE SNOW MELT CABLES (PVC TO BE APPROX. 10" BELOW GRADE) AND CORED THROUGH THE EXISTING WALL INTO THE NEW JUNCTION BOX. COORDINATE PVC DEPTH WITH HVAC CONTRACTOR AND SNOW MELT SYSTEM EQUIPMENT. MOUNTING OF CARD READER ON EXISTING BRACKET SHALL BE COORDINATED WITH THE ARCHITECT.
2. NEW 1" RMC CONDUIT FROM NEW JUNCTION BOX TO EXISTING JUNCTION BOX MOUNTED JUST ABOVE THE CURB INSIDE THE GARAGE. SPLICE NEW CARD ACCESS CABLE IN EXISTING JUNCTION BOX TO CONNECT WITH EXISTING CABLE.
3. NEW ACCESS CONTROL CABLE: PLENUM-RATED, PAIRED READER CABLE: NFPA 70, TYPE CMP. 3 PAIR, TWISTED, NO. 22 AWG, STRANDED (19X30) TINNED COPPER CONDUCTORS. FLUORINATED ETHYLENE PROPYLENE INSULATION. PLASTIC JACKET. FLAME RESISTANCE: NFPA 262, FLAME TEST.
4. P-1: WIRE NEW 1HP PUMP TO (P) MOTOR CONTROLLER THAT IS WIRED TO PRESENT 20A/3P BREAKER IN "MECH" PANEL-2,(4,6) - CURRENTLY SERVING 2HP PUMP BEING REMOVED. REPLACE MOTOR STARTER AND FUSES IN PRESENT MOTOR CONTROLLER TO ACCOMMODATE NEW 1HP MOTOR IF REQUIRED. EXISTING PANEL = SQUARE D, 200AMP, 277/480V, 3PH PANELBOARD WITH MAIN BREAKER. PANEL IS LOCATED IN THE NORTH EAST BOILER ROOM.
5. WIRE TO NEAREST 120/208V PANELBOARD WITH AVAILABLE SPACE SERVING THIS AREA. PROVIDE NEW 20A/1P BREAKER IN AVAILABLE SPACE IN EXISTING PANELBOARD AS REQUIRED FOR NEW WORK. NEW BREAKER TO MATCH EXISTING PANELBOARD CONSTRUCTION.
6. WIRE TO NEAREST 277/480V PANELBOARD WITH AVAILABLE SPACE SERVING THIS AREA. PROVIDE NEW 20A/1P BREAKER IN AVAILABLE SPACE IN EXISTING PANELBOARD AS REQUIRED FOR NEW WORK. NEW BREAKER TO MATCH EXISTING PANELBOARD CONSTRUCTION. TIE INTO EXISTING BUILDING MANAGEMENT EXTERIOR LIGHTING SYSTEM FOR ON-OFF CONTROL OF NEW LIGHT FIXTURES.

PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
NEW WORK ELECTRICAL PLANS

PROJECT INFORMATION
Date AUGUST 30 2024
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PRESENT EQUIPMENT AND DEMOLITION NOTES

A. FOLLOWING REMOVED PRESENT EQUIPMENT AND MATERIALS WHICH ARE IN GOOD OPERATING CONDITION (OR ARE PLACED IN GOOD CONDITION), SUITABLE, MEET REQUIREMENTS OF THESE SPECIFICATIONS, AND ARE APPROVED IN WRITING BY ENGINEER, OR CALLED FOR MAY BE REUSED (PXN-PN).
1. LIGHTING FIXTURES

B. REMOVED PIPE AND WIRE MUST NOT BE REUSED.

C. ANY OF ABOVE EQUIPMENT WHICH IS NOT REUSED AND FOLLOWING REMOVED PRESENT EQUIPMENT SHALL BECOME PROPERTY OF CONTRACTOR, AND SHALL BE REMOVED FROM PREMISES BY HIM (PX).
1. EQUIPMENT SO DESIGNATED ON DRAWINGS.

D. FOLLOWING PRESENT EQUIPMENT SHALL BE CAREFULLY REMOVED, INTACT, MATCH MARKED, INSOFAR AS IS PRACTICAL, SHALL REMAIN PROPERTY OF OWNER, AND SHALL BE DELIVERED TO OWNER OUTSIDE OF BUILDING WHERE DIRECTED BY THE ENGINEER (PX-DO).
1. EQUIPMENT SO DESIGNATED ON DRAWINGS.

E. CONTRACTOR SHALL:
1. PROVIDE NEW FLOORS UNDER REMOVED PRESENT EQUIPMENT AND WHERE CALLED FOR
2. REPAIR FLOORS UNDER AND WALLS ADJACENT TO REMOVED EQUIPMENT, TO MATCH ADJACENT CONSTRUCTION.
3. FILL IN PRESENT CHASES WHICH ARE NO LONGER REQUIRED AND NEATLY PATCH TO MATCH ADJACENT CONSTRUCTION.
4. CUT OPENINGS REQUIRED FOR:
   A. HIS WORK;
   B. ADMISSION OF NEW EQUIPMENT;
   C. REMOVAL OF PRESENT EQUIPMENT;
   D. NEW CONNECTION TO PRESENT CONSTRUCTION.
5. PATCH AND REPAIR UNUSED PRESENT HOLES AND OPENINGS, AND THOSE LEFT BY THE REMOVAL OF PRESENT EQUIPMENT AND ADMISSION OF NEW EQUIPMENT.
6. PATCH AND REPAIR PRESENT EQUIPMENT, AND BUILDING CONSTRUCTION WHICH HAS NOT BEEN CUT, REMOVED, DISTURBED OR MARRED, AS REQUIRED, TO RESTORE IT TO ORIGINAL CONDITION BEFORE BEING DISTURBED.

F. UNUSED OPENINGS IN ENCLOSURES, IN CONDUITS, BOXES, CABINETS, AND PANELS SHALL BE FILLED.

G. PRESENT PAINTED CONSTRUCTION WHICH IS MARRED SHALL BE REPAIRED SAME AS NEW CONSTRUCTION.

H. CERTAIN ABBREVIATIONS OR SYMBOLS, WHEN APPLIED TO PRESENT (TO EXISTING) LINE, DEVICE OR EQUIPMENT, SHALL HAVE THE FOLLOWING MEANINGS.

NC	NEW CONNECTIONS TO PRESENT PIPING, DEVICE WIRING, EQUIPMENT, ETC. INSTALL, TEST, COVER, PAINT, ETC., SAME AS NEW WORK.
P	TO REMAIN UNCHANGED, IF CHANGE CANNOT BE AVOIDED, CHANGE "P" TO "PXR", AT NO INCREASE IN CONTRACT PRICE. VERIFY LOCATION.
PX	TO BE COMPLETELY REMOVED, INCLUDING UNNEEDED CONNECTIONS, PIPING, DUCTS, WIRING, BASES, ETC., OF EVERY KIND. UNUSED OPENINGS PLUGGED OR CAPPED, TESTED, COVERED, PAINTED SAME AS NEW WORK. OTHER DISTURBED WORK OF EVERY KIND RESTORED, PATCHED, TESTED, COVERED, PAINTED, ETC., TO EQUAL ORIGINAL CONDITION. REMOVED MATERIAL MUST NOT BE REUSED UNLESS OTHERWISE SPECIFIED OR DIRECTED BY ENGINEER.
PX-DO	SAME AS "PX", EXCEPT REMOVED, CLEANED AND RESTORED INTACT, AS FAR AS PRACTICAL, MATCHED MARKED, AND OTHERWISE IDENTIFIED AS REQUIRED AND DELIVERED TO OWNER OUTSIDE OF BUILDING AS DIRECTED BY ENGINEER.
PXR	SAME AS "PX", EXCEPT REMOVED, CLEANED AND RESTORED TO GOOD OPERATING CONDITION AND REINSTALLED, SAME AS NEW WORK, IN ORIGINAL POSITION. IF RECONDITIONING IS IMPRACTICAL, PROVIDE NEW DEVICE, AS APPROVED BY ENGINEER, AT NO INCREASE IN CONTRACT PRICE.
PXN ETC.	SAME AS "PXR" EXCEPT REMOVED, CLEANED AND RESTORED TO GOOD OPERATING CONDITION AND REINSTALLED SAME AS NEW WORK, IN NEW POSITION MARKED "PN". IF RECONDITIONING IS IMPRACTICAL, PROVIDE NEW DEVICE, AS APPROVED BY ENGINEER, AT NO INCREASE IN CONTRACT PRICE.
PN ETC.	COMPLETELY REINSTALL DEVICE, LINE OR EQUIPMENT REMOVED, AT NEW LOCATION, SAME, AS NEW WORK.

I. WORK OF EVERY DIVISION SHALL BE COORDINATED WITH ALL OTHER WORK AND PRESENT CONDITIONS, SO THAT
1. ELECTRICAL SERVICES TO PRESENT BUILDINGS OR PORTIONS OF BUILDING WILL NOT BE INTERRUPTED DURING PERIODS WHEN THOSE SERVICES ARE NEEDED.
2. SPECIAL SYSTEMS SUCH AS FIRE ALARM, SOUND, ETC., OF EVERY KIND TO PRESENT BUILDINGS WILL NOT BE INTERRUPTED DURING WORKING AND/OR OCCUPIED HOURS, EXCEPT AS APPROVED BY ENGINEER.

J. NEW CONDUIT SERVING NEW AND/OR PRESENT ELECTRICAL DEVICES IN FINISHED PRESENT ROOMS OR SPACES SHALL BE CONCEALED IN FINISHED ROOMS, WHERE POSSIBLE OR SHALL BE RUN IN ADJOINING UNFINISHED ROOMS, SHAFTS, STORAGE ROOMS, ETC., WHERE EXPOSED CONDUIT IS PERMITTED IN FINISHED PRESENT ROOMS BY ARCHITECT IN WRITING, IT SHALL BE WIREMOLD, WITH MATCHING BOXES, RUN INCONSPICUOUSLY AS POSSIBLE, IN STRAIGHT LINES, PARALLEL TO WALLS AND CEILINGS, WITH NEAT BENDS, UNNEEDED BOXES, SWITCHES AND WIRING SHALL BE COMPLETELY REMOVED AND OPENINGS PATCHED. IN PRESENT ROOMS OR LOCATIONS WHERE NEW LIGHTING EQUIPMENT IS SHOWN, PRESENT FIXTURES, BOXES, WIRING, SWITCHES, ETC. SHALL BE REMOVED AS PER NOTE "PX" UNLESS ANOTHER SYMBOL IS SHOWN ON DRAWINGS. WHERE SPECIFICALLY APPROVED BY ARCHITECT IN WRITING, BOXES MAY BE PERMITTED TO REMAIN AND BE PROVIDED WITH NEAT FLUSH COVERS, EXTENDING OVER ENTIRE WALL OPENING.

K. UNNEEDED ELECTRICAL FIXTURES, SWITCHES, STARTERS, DEVICES, ETC., SHALL BE COMPLETELY REMOVED; AND CONSTRUCTION PATCHED AS PER NOTE "PX" NEW CONNECTIONS TO PRESENT EQUIPMENT, SHALL BE MADE, TESTED, COVERED, PAINTED, ETC., SAME AS NEW EQUIPMENT. PRESENT EQUIPMENT, AND OTHER COVERING DISTURBED BY CONTRACTOR SHALL BE REPAIRED TO EQUAL NEW CONDITION AND PAINTED SAME AS NEW COVERING.

L. WHERE DEVICES ARE OMITTED FROM PRESENT BRANCH CIRCUITS, THE REMAINING DEVICES, ON THE SAME CIRCUIT AND/OR CONDUIT RUN, SHALL BE REWIRED, IF NEEDED AND AS REQUIRED, TO REMAIN ON THEIR RESPECTIVE CIRCUITS AND IN OPERATING CONDITION.

M. LIGHTING FIXTURES WHICH ARE REUSED SHALL HAVE LENS AND REFLECTORS CLEANED. ALL FIXTURES SHALL BE PROVIDED WITH NEW LAMPS.

N. WORK SHALL BE COORDINATED SO THAT HEATING, PLUMBING, ELECTRICAL, AND TELEPHONE SERVICES TO THE PRESENT BUILDING WILL NOT BE INTERRUPTED, EXCEPT AS APPROVED BY THE ARCHITECT.

ELECTRICAL SYMBOLS

F1◎#a	RECESSED CEILING FIXTURE (◇ =WALL WASHER)
●	SURFACE OR PENDANT CEILING FIXTURE
●⊢	BRACKET FIXTURE
▭	RECESSED LED FIXTURE
⊢○⊣	SURFACE OR PENDANT LED FIXTURE
⊢▭⊣	WALL LED FIXTURE (VERIFY HEIGHT)
⊗→	BRACKET EXIT LIGHT (→ DIRECTIONAL ARROW)
⊗	CEILING EXIT LIGHT
●●●	LIGHT TRACK
■	EXTERIOR POLE FIXTURE
●	BOLLARD FIXTURE
E	BATTERY EMERGENCY FIXTURE (R=REMOTE HEAD)
	NUMBER=CIRCUIT LETTER=SWITCH F1,F2,F3=FIXTURE SEE SPECIFICATIONS AND FIXTURE SCHEDULE
$\multimap$	SINGLE POLE SWITCH
3 $\multimap$	THREE WAY SWITCH
4 $\multimap$	FOUR WAY SWITCH
P $\multimap$	SWITCH WITH PILOT LIGHT
K $\multimap$	KEY OPERATED SWITCH
OS $\multimap$	OCCUPANCY SENSOR SWITCH (EQUAL TO LEVITON DECORA INFRARED ODS15-ID,UNO)
$\multimap$■	DIMMER CONTROL SWITCH
$\multimap$	SWITCH WITH GROUNDED DUPLEX RECEPTACLE
■	REMOTE CONTROL SWITCH OR PUSH BUTTON
	UP 4'-0", UNLESS NOTED OTHERWISE
	GROUNDED DUPLEX RECEPTACLE
	GROUNDED DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER HEIGHT
	GROUNDED DUPLEX GFCI RECEPTACLE
	GROUNDED DUPLEX GFCI RECEPTACLE MOUNTED ABOVE COUNTER HEIGHT
	GROUNDED CEILING MOUNTED RECEPTACLE
	SPECIAL GROUNDED RECEPTACLE, SIZE AND TYPE AS SPECIFIED
	GROUNDED FLUSH FLOOR RECEPTACLE
—WM—	PLUGMOLD (VERIFY TYPE AND MOUNTING)
P D/T	POWER, DATA AND TELEPHONE FLUSH FLOOR BOX WITH COVER. PROVIDE EMPTY CONDUIT FOR DATA/TELEPHONE TO ABOVE SUSPENDED CEILING AS REQUIRED. SEE LOW VOLTAGE CONDUIT SIZING TABLE. (VERIFY)
⊠	OUTLET WITH FINAL CONNECTIONS TO EQUIPMENT. EQUIPMENT FURNISHED BY OTHERS (FBO). PROVIDE NECESSARY RECEPTACLE, SAFETY SWITCH, WIRING ETC. FOR COMPLETE INSTALLATION VERIFY EXACT LOCATION AND HEIGHT BEFORE ROUGH-IN.
J	CEILING JUNCTION BOX
J	WALL JUNCTION BOX (WITH FLUSH COVER)
F	SAFETY SWITCH (F=FUSED)
	SURFACE ELECTRICAL PANELBOARD
	RECESSED ELECTRICAL PANELBOARD
M	MOTOR STARTER OR CONTROLLER
R	CONTROL RELAY (LETTER=FLOOR, NUMBER=NO. OF RELAY)
T	TRANSFORMER
	CONDUIT RUN CONCEALED (OR PARTIALLY CONCEALED) IN CEILINGS OR WALLS
#/	CONDUIT RUN CONCEALED IN OR UNDER FLOORS
X	CONDUIT RUN EXPOSED, IN STRAIGHT LINES
U	CONDUIT RUN UNDERGROUND
E	EMERGENCY WIRING, IN CONDUIT, CONCEALED
#/	HOMERUN TO PANEL, IN CONDUIT, CONCEALED ARROWS INDICATE NUMBER OF CIRCUITS
	CHARACTER MARKS= NUMBER OF WIRES, IF NONE ARE SHOWN TWO ARE REQUIRED
T	TELEPHONE CONDUIT RUN ABOVE CEILINGS OR IN WALLS
T	TELEPHONE CONDUIT RUN IN OR UNDER FLOORS
	EMPTY CONDUIT, CONCEALED
D▼	TELEPHONE/DATA OUTLET BOX SEE TELECOMM DETAILS FOR ADDITIONAL REQUIREMENTS, IF APPLICABLE FOR THIS PROJECT.
	WITH COVERPLATE AND 1" CONDUIT TO JUNCTION BOX PER SCHEDULE- PULL STRING - W=WALL PHONE

NOTES:

ELECTRICAL OUTLET BOXES INSTALLED IN FIRE RATED ASSEMBLIES SHALL COMPLY WITH LATEST IBC, SECTION 712 (NOT LESS THAN 24" O.C.)

ELECTRICAL DEVICES INSTALLED IN ACCORDANCE WITH ADA SPECIFICATIONS. VERIFY HEIGHTS AND SPECIFIC DIMENSIONS.

ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY LIGHTING CONTROLS AS TO COMPLY WITH LOCAL ENERGY CODE REQUIREMENTS. ENERGY MANGAGEMENT PRODUCTS SHALL BE EQUAL TO SENSORSWITCH. E.C. TO DETERMINE IF WALL OR CEILING OCCUPANCY DEVICE TYPE IS REQUIRED BASED ON PROJECT DESIGN AND IDEAL USE OF DEVICE. PROVIDE CONTROL DEVICE WITH SUITABLE FEATURES FOR INSTALLATION LOCATIONS OF THE CONTROL DEVICES REQUIRED FOR ENERGY CODE COMPLIANCE.

ELECTRICAL ABBREVIATIONS

AC	ABOVE COUNTER	JB	JUNCTION BOX
AFF	ABOVE FINISHED FLOOR	KW	KILOWATTS
ASC	ABOVE SUSPENDED CEILING	LTG	LIGHTING
C	CONDUIT	MAX	MAXIMUM
CF	CARPET FLANGE	MFG	MANUFACTURER
CTC	CLOSE TO CEILING	MIN	MINIMUM
CTF	CLOSE TO FLOOR	MOB	MOTOR OUTLET BOX
CTW	CLOSE TO WALL	MTD	MOUNTED
E	EMERGENCY	NEC	NATIONAL ELECTRICAL CODE
EDH	ELECTRIC DUCT HEATER	NL	NIGHT LIGHT
ESUH	ELECTRIC SUSPENDED UNIT HEATER	OS	OCCUPANCY SENSING DEVICE
		PH	PHASE (Ø)
EWC	ELECTRIC WATER COOLER	PNL	PANEL
EWH	ELECTRIC WATER HEATER	SW	SWITCH
FAAP	FIRE ALARM ANNUNCIATOR PANEL	TFA	TO FLOOR ABOVE
FACP	FIRE ALARM CONTROL PANEL	TFB	TO FLOOR BELOW
FBO	FURNISHED BY OTHERS	TTC	TELEPHONE TERMINAL CABINET
FFA	FROM FLOOR ABOVE	UNO	UNLESS NOTED OTHERWISE
FFB	FROM FLOOR BELOW	V	VOLTS
FLA	FULL LOAD AMPS	W	WIRE
GFI	GROUND FAULT INTERRUPTER	WP	WEATHER PROOF
HP	HORSEPOWER	WR	WEATHER RESISTANT
IWS	IN WALL SPACE		

GENERAL NOTES APPLY TO ALL SHEETS

SEE DETAILS AND SCHEDULES ON DRAWINGS AND SPECIFICATIONS FOR MEANING OF ABBREVIATIONS AND ADDITIONAL REQUIREMENTS AND INFORMATION. CHECK ARCHITECTURAL, STRUCTURAL, AND OTHER MECHANICAL AND ELECTRICAL DRAWINGS FOR SCALE, SPACE LIMITATIONS, BEAMS, DOOR SWINGS, WINDOWS, COORDINATION, ADDITIONAL INFORMATION, ETC. AND REPORT ANY DESCREPANCIES, CONFLICTS, ETC. TO ARCHITECT PRIOR TO SUBMITTING BID.

ALL EQUIPMENT FURNISHED BY OTHERS (FBO) SHALL BE PROVIDED WITH PROPER MOTOR STARTERS, DISCONNECTS, CONTROLS, ETC. BY THE ELECTRICAL CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE. THE ELECTRICAL CONTRACTOR SHALL INSTALL AND COMPLETELY WIRE ALL ASSOCIATED EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S WIRING DIAGRAMS AND AS REQUIRED FOR A COMPLETE OPERATING INSTALLATION. ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF (FBO) EQUIPMENT PRIOR TO ROUGH-IN OF CONDUIT AND WIRING TO AVOID CONFLICTS.

CONTRACTOR SHALL VERIFY FINAL LOCATIONS AND CEILING TYPES FOR ALL ELECTRICAL EQUIPMENT WITH ARCHITECTURAL REFLECTED CEILING PLAN AND ALL TRADES BEFORE ORDERING OR ROUGH-IN OF EQUIPMENT TO AVOID CONFLICTS.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING, INCLUDING CORE DRILLING, SAW CUTTING, ETC., AS REQUIRED TO ACCOMMODATE HIS WORK. CUTTING AND PATCHING AND PAYMENT OF SAID WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR REQUIRING THE DISTURBANCE BUT SAME SHALL BE DONE BY A GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE APPROPRIATE ELECTRICAL CONTRACTOR TO GIVE QUANTITIES OF PATCHING REQUIREMENTS TO A GENERAL CONTRACTOR.

CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF PRESENT CEILINGS, LIGHT FIXTURES, DIFFUSERS, DUCTWORK, PIPING, CONDUIT, ETC., AS REQUIRED FOR THE INSTALLATION OF HIS WORK. REMOVAL, REPLACEMENT AND PAYMENT FOR MECHANICAL/PLUMBING ITEMS SHALL BE THE RESPONSIBILITY OF THE APPLICABLE ELECTRICAL CONTRACTOR. REMOVAL AND REPLACEMENT OF PRESENT CEILINGS, ETC., SHALL BE THE RESPONSIBILITY OF CONTRACTOR MAKING THE DISTURBANCE BUT SAME SHALL BE DONE BY A GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE APPROPRIATE ELECTRICAL CONTRACTOR TO GIVE QUANTITIES OF REMOVAL/REPLACEMENT REQUIREMENTS TO A GENERAL CONTRACTOR.

ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR LEGALLY DISPOSING OF ALL FIXTURE BALLASTS AND LAMPS FROM THE OWNER'S PROPERTY. MANAGEMENT AND DISPOSAL OF FLUORESCENT LIGHT BULBS AND OTHER MERCURY-CONTAINING BULBS SHALL COMPLY WITH THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) UNIVERSAL WASTE RULE (UWR) AND SUBTITLE C HAZARDOUS WASTE REGULATIONS. REFER TO SPECIFICATIONS SECTION 017419 FOR ADDITIONAL INFORMATION.

GENERAL DEMOLITION NOTE

FOR ALL WALLS, CEILINGS, FLOORS, ETC. REQUIRED FOR CONSTRUCTION DEMOLITION WORK OR NEW CONSTRUCTION WORK, INCLUDING, BUT NOT LIMITED TO ITEMS SHOWN REMOVE (PX) AND/OR REMOVE AND RELOCATE (PXN-PN): ALL ELECTRICAL EQUIPMENT, DEVICES, BOXES, CONDUIT, WIRING, ETC., AS REQUIRED, FOR DEMOLITION OF PRESENT CONSTRUCTION AND TO AVOID INTERFERENCE WITH NEW CONSTRUCTION. (VERIFY BEFORE BIDDING TO INCLUDE ALL NECESSARY MATERIALS AND LABOR)

ELECTRICAL COORDINATION NOTE

THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS ASSOCIATED WITH ALL OTHER TRADES THAT INVOLVE THE ELECTRICAL CONTRACTOR TO PROVIDE POWER WIRING FOR DEVICES AND SYSTEMS PROVIDED BY OTHER TRADES. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL ASPECTS OF WORK RELATED TO THESE SYSTEMS AND DEVICES PRIOR TO SUBMITTING FINAL BID, INCLUDE ALL NECESSARY LABOR AND MATERIALS ASSOCIATED WITH OTHER TRADES AS REQUIRED FOR COMPLETE OPERATIONAL SYSTEMS THAT REQUIRE THE ELECTRICAL CONTRACTOR TO WIRE.

LIGHTING FIXTURE SCHEDULE

FIXTURE TYPE	LAMP SIZE AND TYPE	MOUNTING	MANUFACTURER'S NUMBER	REMARKS
A1	70 CRI LED, 4000K LP840 (52 WATTS)	WALL MOUNTED (SEE ARCHITECT ELEVATIONS AND COORD. W/ EXISTING CONDITIONS IN THE FIELD).	LITHONIA NO. WDGE3-LED-P1-40K-70CRI-R4-MVOLT-SRM-*PBBW-DDBTXD *=VERIFY IF REQUIRED FOR INSTALLATION.	WALL MOUNTED LED FIXTURE, MULTI-VOLT DRIVER, WITH TYPE 4 OPTIC DISTRIBUTION. HOUSING WITH TEXTURED DARK BRONZE FINISH. TIE INTO EXTERIOR LIGHTING CONTROL SYSTEM AS REQUIRED. COORDINATE WITH OWNER FOR LOCATION. PROVIDE ALL MOUNTING ACCESSORIES AND ANY RELATED CONTROL DEVICES REQUIRED FOR INSTALLATION.
A2	70 CRI LED, 4000K LP840 (52 WATTS)	WALL MOUNTED (SEE ARCHITECT ELEVATIONS AND COORD. W/ EXISTING CONDITIONS IN THE FIELD).	LITHONIA NO. WDGE3-LED-P1-40K-70CRI-R3-MVOLT-SRM-*PBBW-DDBTXD *=VERIFY IF REQUIRED FOR INSTALLATION.	WALL MOUNTED LED FIXTURE, MULTI-VOLT DRIVER, WITH TYPE 3 OPTIC DISTRIBUTION. HOUSING WITH TEXTURED DARK BRONZE FINISH. TIE INTO EXTERIOR LIGHTING CONTROL SYSTEM AS REQUIRED. COORDINATE WITH OWNER FOR LOCATION. PROVIDE ALL MOUNTING ACCESSORIES AND ANY RELATED CONTROL DEVICES REQUIRED FOR INSTALLATION.
A3	70 CRI LED, 4000K LP840 (72 WATTS)	WALL MOUNTED (SEE ARCHITECT ELEVATIONS AND COORD. W/ EXISTING CONDITIONS IN THE FIELD).	LITHONIA NO. WDGE3-LED-P3-40K-70CRI-R3-MVOLT-SRM-*PBBW-DDBTXD *=VERIFY IF REQUIRED FOR INSTALLATION.	WALL MOUNTED LED FIXTURE, MULTI-VOLT DRIVER, WITH TYPE 3 OPTIC DISTRIBUTION. HOUSING WITH TEXTURED DARK BRONZE FINISH. TIE INTO EXTERIOR LIGHTING CONTROL SYSTEM AS REQUIRED. COORDINATE WITH OWNER FOR LOCATION. PROVIDE ALL MOUNTING ACCESSORIES AND ANY RELATED CONTROL DEVICES REQUIRED FOR INSTALLATION.
NOTES:	**ALL FIXTURES SHALL INCLUDE THE REQUIRED COMPONENTS REQUIRED FOR LIGHTING CONTROLS. ALL RELATED DEVICES SHALL BE INCLUDED AS REQUIRED FOR A COMPLETE SYSTEM. E.C. TO COORDINATE WITH MANUFACTURER AS REQUIRED PRIOR TO INSTALLATION FOR TIE INTO EXISTING BUILDING MANAGEMENT SYSTEM.** FIXTURE SELECTIONS AND FINISHES MUST BE APPROVED BY THE OWNER PRIOR TO ORDERING FIXTURES SPECIFIED ON THIS SCHEDULE. THE FIXTURE SCHEDULE DOES NOT NECESSARILY LIST ALL ACCESSORIES AND HARDWARE NECESSARY FOR THE COMPLETION OF INSTALLATION, NOR DOES IT DETAIL THE CEILING CONSTRUCTION TO BE ENCOUNTERED FOR THIS PROJECT. IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO PROPERLY DETERMINE AND PROVIDE THE CORRECT COMPONENTS, ACCESSORIES AND HARDWARE AS REQUIRED FOR THE INSTALLATION. ALL ADDITIONAL HARDWARE FOR MOUNTING FIXTURES SHALL BE PROVIDED AT NO EXTRA COST.			

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PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
ELECTRICAL SYMBOLS, NOTES, ABBREVIATIONS AND LIGHTING FIXTURE SCHEDULE

PROJECT INFORMATION
Date: AUGUST 30 2024
RLJA Proj: 2024-027

SHEET NUMBER
E103
OF
4

DIVISION 26 ELECTRICAL SPECIFICATIONS

SECTION 26 05 00 ELECTRICAL

PART 1 GENERAL

THE SUPPLEMENTARY GENERAL CONDITIONS ALONG WITH THESE SPECIFICATIONS AND THE ACCOMPANYING DRAWINGS GOVERN WORK UNDER THIS SECTION. IT IS THE INTENT OF THE CONTRACT DOCUMENTS TO PROVIDE FOR A COMPLETE OPERATING SYSTEM. THE OMISSION OF REFERENCE TO MINOR SYSTEM COMPONENTS WHICH ARE REASONABLY REQUIRED FOR THE PROPER FUNCTIONING AND/OR SAFE OPERATION OF THE SYSTEM SHALL NOT RELIEVE THE CONTRACTOR FROM PROVIDING SAME AT NO ADDITIONAL COST TO THE OWNER. IT IS THE FURTHER INTENT THAT THE SYSTEM SHALL BE TURNED OVER TO THE OWNER IN A FUNCTIONAL AND OPERATING CONDITION. THE CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE ELECTRICAL SYSTEM INCLUDING, BUT NOT LIMITED TO, SERVICE, LIGHTING, POWER, DEVICES, PANELS, CIRCUIT BREAKERS, CONDUIT AND WIRING. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND PAY FOR TEMPORARY AND NEW SERVICE. (VERIFY BEFORE BIDDING TO INCLUDE ALL WORK AS REQUIRED). THE WORK SHALL BE IN ACCORDANCE WITH THE REFERENCES LISTED BELOW AND ALL LOCAL CODES, LAWS, ORDINANCES AND STATE REGULATIONS WHICH GOVERN THE INSTALLATION.

1.1 REFERENCES
THE PUBLICATIONS LISTED BELOW FORM A PART OF THIS SPECIFICATION TO THE EXTENT REFERENCED. THE PUBLICATIONS ARE REFERRED TO WITHIN THE TEXT BY THE BASIC DESIGNATION ONLY.

ASTM D 709	(2016) LAMINATED THERMOSETTING MATERIALS
EIA 480	(1981) TOGGLE SWITCHES
IEEE STDS DICTIONARY	(2009) IEEE STANDARDS DICTIONARY: GLOSSARY OF TERMS & DEFINITIONS
ICC/ANSI A117.1	(2009) ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES
ICC	(2012) INTERNATIONAL ENERGY CONSERVATION CODE
ANSI Z535.1	(2006, R 2011) AMERICAN NATIONAL STANDARD FOR SAFETY--COLOR CODE
ANSI/NEMA FB 1	(2014) STANDARD FOR FITTINGS, CAST METAL BOXES, AND CONDUIT BODIES FOR CONDUIT, ELECTRICAL METALLIC TUBING, AND CABLE
ANSI/NEMA OS 1	(2013) SHEET-STEEL OUTLET BOXES, DEVICE BOXES, COVERS, AND BOX SUPPORTS
ANSI/NEMA OS 2	(2013) NONMETALLIC OUTLET BOXES, DEVICE BOXES, COVERS, AND BOX SUPPORTS
NEMA 250	(2014) ENCLOSURES FOR ELECTRICAL EQUIPMENT (1000 VOLTS MAXIMUM)
NEMA KS 1	(2013) ENCLOSED AND MISCELLANEOUS DISTRIBUTION EQUIPMENT SWITCHES (600 V MAXIMUM)
NEMA PB 1	(2011) PANELBOARDS
NEMA RN 1	(2005, R 2013) POLYVINYL-CHLORIDE (PVC) EXTERNALLY COATED GALVANIZED RIGID STEEL CONDUIT AND INTERMEDIATE METAL CONDUIT
NEMA TC 2	(2013) STANDARD FOR ELECTRICAL POLYVINYL CHLORIDE (PVC) CONDUIT
NEMA TC 3	(2015) STANDARD FOR POLYVINYL CHLORIDE (PVC) FITTINGS FOR USE WITH RIGID PVC CONDUIT AND TUBING
NEMA WD 1	(1999; R 2015) STANDARD FOR GENERAL COLOR REQUIREMENTS FOR WIRING DEVICES
NEMA WD 6	(2016) WIRING DEVICES DIMENSIONS SPECIFICATIONS
NFPA 70	(2023) NATIONAL ELECTRICAL CODE
NFPA 70E	(2015) STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE
UL 1	(2005; REPRINT JUL 2007) STANDARD FOR FLEXIBLE METAL CONDUIT
UL 1242	(2006; REPRINT MAR 2014) STANDARD FOR ELECTRICAL INTERMEDIATE METAL CONDUIT -- STEEL
UL 489	(2016) MOLDED-CASE CIRCUIT BREAKERS, MOLDED-CASE SWITCHES, AND CIRCUIT-BREAKER ENCLOSURES
UL 6	(2007; REPRINT NOV 2014) ELECTRICAL RIGID METAL CONDUIT-STEEL
UL 797	(2007; REPRINT DEC 2012) ELECTRICAL METALLIC TUBING -- STEEL
UL 870	(2016) STANDARD FOR WIREWAYS, AUXILIARY GUTTERS, AND ASSOCIATED FITTINGS

1.2 DEFINITIONS
A. UNLESS OTHERWISE SPECIFIED OR INDICATED, ELECTRICAL AND ELECTRONICS TERMS USED IN THESE SPECIFICATIONS, AND ON THE DRAWINGS, SHALL BE AS DEFINED IN IEEE STDS DICTIONARY.
B. THE TECHNICAL SECTIONS REFERRED TO HEREIN ARE THOSE SPECIFICATION SECTIONS THAT DESCRIBE PRODUCTS, INSTALLATION PROCEDURES, AND EQUIPMENT OPERATIONS AND THAT REFER TO THIS SECTION FOR DETAILED DESCRIPTION OF SUBMITTAL TYPES.
C. VERTICAL ASSEMBLY: A VERTICAL ASSEMBLY IS A POLE, TOWER OR OTHER SUCH SUPPORT, MOUNTING HARDWARE, ARMS, BRACKETS AND THE LOAD. LOAD CAN BE A LUMINAIRE, SIREN, LOUDSPEAKER OR OTHER DEVICE. ALL COMPONENTS OF A VERTICAL ASSEMBLY WILL BE RATED BY THE MANUFACTURER TO WITHSTAND 135 MPH WIND LOADING.

1.3 SUBMITTALS
SUBMIT THE FOLLOWING IN ACCORDANCE WITH SECTION SUBMITTAL PROCEDURES:
PRE-CONSTRUCTION SUBMITTALS (SHOP DRAWINGS): SUBMIT PRODUCT DATA FOR THE FOLLOWING: CONDUITS, RACEWAYS AND FITTINGS, WIRE AND CABLE, SPLICES AND CONNECTORS, SWITCHES, RECEPTACLES, OUTLETS, OUTLET BOXES, AND PULL BOXES, CIRCUIT BREAKERS, PANELBOARDS, LAMPS AND LIGHTING FIXTURES, AND DRY-TYPE DISTRIBUTION TRANSFORMERS.
CLOSEOUT SUBMITTALS (O&M INSTRUCTIONS): SUBMIT TEST REPORTS FOR THE FOLLOWING: FIRE ALARM TEST, LOW VOLTAGE CABLE TEST, CONTINUITY TEST, PHASE-ROTATION TESTS, INSULATION RESISTANCE TEST, SUBMIT MANUFACTURER'S INSTRUCTIONS, MANUFACTURER'S START-UP AND CHECK-OUT CHECKLISTS, SUBMIT STATE FIRE ALARM CERTIFICATION, AND PRE-ENERGIZATION CHECKLISTS.

1.4 GENERAL REQUIREMENTS
SUBMIT MATERIAL, EQUIPMENT, AND FIXTURE LISTS FOR THE FOLLOWING ITEMS SHOWING MANUFACTURER'S STYLE OR CATALOG NUMBERS, SPECIFICATION AND DRAWING REFERENCE NUMBERS, WARRANTY INFORMATION, AND FABRICATION SITE.SUBMIT MANUFACTURER'S INSTRUCTIONS INCLUDING SPECIAL PROVISIONS REQUIRED TO INSTALL EQUIPMENT COMPONENTS AND SYSTEM PACKAGES. SPECIAL NOTICES SHALL DETAIL IMPEDANCES, HAZARDS AND SAFETY PRECAUTIONS. SUBMIT CERTIFICATION REQUIRED TO INSTALL EQUIPMENT COMPONENTS AND SYSTEM PACKAGES.

1.5 MANUFACTURER'S NAMEPLATE
EACH ITEM OF EQUIPMENT SHALL HAVE A NAMEPLATE BEARING THE MANUFACTURER'S NAME, ADDRESS, MODEL NUMBER, AND SERIAL NUMBER SECURELY AFFIXED IN A CONSPICUOUS PLACE; THE NAMEPLATE OF THE DISTRIBUTING AGENT WILL NOT BE ACCEPTABLE.

1.6 FIELD FABRICATED NAMEPLATES
ASTM D 709. PROVIDE LAMINATED PLASTIC NAMEPLATES FOR EACH EQUIPMENT ENCLOSURE, RELAY, SWITCH, AND DEVICE; AS SPECIFIED IN THE TECHNICAL SECTIONS OR AS INDICATED ON THE DRAWINGS. EACH NAMEPLATE INSCRIPTION SHALL IDENTIFY THE FUNCTION AND, WHEN APPLICABLE, THE POSITION. NAMEPLATES SHALL BE MELAMINE PLASTIC, 0.125 INCH THICK, WHITE WITH BLACK CENTER CORE. SURFACE SHALL BE MATTE FINISH. CORNERS SHALL BE SQUARE. ACCURATELY ALIGN LETTERING AND ENGRAVE INTO THE CORE. MINIMUM SIZE OF NAMEPLATES SHALL BE ONE BY 2.5 INCHES. LETTERING SHALL BE A MINIMUM OF 0.25 INCH HIGH NORMAL BLOCK STYLE.

1.7 WARNING SIGNS
PROVIDE WARNING SIGNS FOR THE ENCLOSURES OF ELECTRICAL EQUIPMENT INCLUDING SUBSTATIONS, PAD-MOUNTED TRANSFORMERS, PAD-MOUNTED SWITCHES, GENERATORS, AND SWITCHGEAR HAVING A NOMINAL RATING EXCEEDING 600 VOLTS.

A. WHEN THE ENCLOSURE INTEGRITY OF SUCH EQUIPMENT IS SPECIFIED TO BE IN ACCORDANCE WITH IEEE C57.12.28 OR IEEE C57.12.29, SUCH AS FOR PAD-MOUNTED TRANSFORMERS, PROVIDE SELF-ADHESIVE WARNING SIGNS ON THE OUTSIDE OF THE HIGH VOLTAGE COMPARTMENT DOOR(S). SIGN SHALL BE A DECAL AND HAVE NOMINAL DIMENSIONS OF 7 BY 10 INCHES WITH THE LEGEND "DANGER HIGH VOLTAGE" PRINTED IN TWO LINES OF NOMINAL 2 INCH HIGH LETTERS. THE WORD "DANGER" SHALL BE IN WHITE LETTERS ON A RED BACKGROUND AND THE WORDS "HIGH VOLTAGE" SHALL BE IN BLACK LETTERS ON A WHITE BACKGROUND. DECAL SHALL BE PANDUIT NO. PPSO710D72 OR APPROVED EQUAL.

1.8 VERIFICATION OF POINTS
BEFORE SUBMITTING THEIR BID, THE CONTRACTOR SHALL VISIT THE SITE AND CONTACT THE CITY AND ALL UTILITIES TO CAREFULLY VERIFY ALL EXPOSED, CONCEALED AND BURIED POINTS OF CONNECTIONS, AS TO LOCATIONS, SIZE, TYPE, DEPTH, OPERATING CHARACTERISTICS ,ETC. INCLUDING BUT NOT LIMITED TO: PRESENT SITE CONDITIONS, PRESENT UTILITY COMPANY ELECTRICAL DISTRIBUTION SYSTEM, WORK ASSOCIATED WITH EQUIPMENT BY OTHERS, NEW CONNECTIONS TO PRESENT EQUIPMENT OR CONSTRUCTION, PRESENT EQUIPMENT TO BE REMOVED AND/OR RELOCATED. IF THE CONTRACTOR FINDS THAT PRESENT POINTS OF CONNECTION ARE INCORRECTLY SPECIFIED, THEY SHALL NOTIFY THE ARCHITECT, IN WRITING, AT LEAST 7 CALENDAR DAYS BEFORE BIDS ARE TO BE SUBMITTED. THE ARCHITECT WILL ISSUE AN ADDENDUM TO ADDRESS THE REVISED POINTS OF CONNECTION. IF THE CONTRACTOR FAILS TO NOTIFY THE ARCHITECT, IN WRITING, AS OUTLINED ABOVE, IT WILL BE ASSUMED THEIR THEIR BID INCLUDES EVERYTHING REQUIRED TO PROVIDE CONNECTIONS AS THEY ACTUALLY EXIST, OR AS THEY WILL BE REQUIRED BY THE UTILITY OR AUTHORITY HAVING JURISDICTION WITHOUT INCREASE TO THE CONTRACT PRICE.

1.9 COORDINATION
CERTAIN MOTORS, EQUIPMENT, CONTROLS, ETC ARE PROVIDED BY THE HEATING, VENTILATION, PLUMBING AND/OR OTHER CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL REQUIRED MOTOR STARTERS, SAFETY SWITCHES, VARIABLE FREQUENCY DRIVES, CONTROLS, ETC AND COMPLETELY WIRE ALL EQUIPMENT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CODES. SEE SPECIFICATIONS AND DRAWINGS FOR ALL OTHER TRADES TO AVOID CONFLICTS OR DUPLICATING WORK TO BE PROVIDED BY OTHERS. (VERIFY PRIOR TO ROUGH-IN).

BEFORE BIDDING, THE CONTRACTOR SHALL CAREFULLY CHECK ALL PLANS AND SPECIFICATIONS FOR EVERY TRADE AND SHALL INCLUDE IN THEIR BID ALL ASSOCIATED ELECTRICAL WORK TO BE PROVIDED FOR THE PROJECT. BEFORE ANY WORK IS INSTALLED OR ANY EQUIPMENT IS PURCHASED, THE CONTRACTOR SHALL CAREFULLY CHECK PLANS AND SPECIFICATIONS FOR EVERY TRADE AS WELL AS THE JOB CONDITIONS. ANY LACK OF COORDINATION BETWEEN THE WORK OF THE E.C. AND THEIR SUBS, SHALL BE REPORTED IMMEDIATELY TO THE ARCHITECT. THE ARCHITECT WILL WORK OUT CONFLICTS AND ADJUSTMENTS IN CONTRACT PRICE, IF WARRANTED. CHANGES IN EQUIPMENT SHALL BE INCORPORATED IN THE SHOP DRAWINGS.

IF CONFLICTS ARISE DURING THE CONSTRUCTION PERIOD, THEY SHALL BE REPORTED TO THE ARCHITECT, IN WRITING, AND THEY SHALL BE WORKED OUT BETWEEN THE ARCHITECT, GENERAL CONTRACTOR, AND OTHER ASSOCIATED TRADE AT NO INCREASE TO THE CONTRACT PRICE.

PART 2 PRODUCTS

2.1 MATERIALS
MATERIALS AND EQUIPMENT TO BE PROVIDED SHALL BE NEW, UL LISTED FOR THE REQUIRED LOCATION/USE, AND BEAR THE MANUFACTURER'S NAME, MODEL NUMBER, AND OTHER IDENTIFICATION MARKINGS. THE STANDARD CATALOGED PRODUCTS OF MANUFACTURER'S REGULARLY ENGAGED IN THE MANUFACTURE OF THE PRODUCTS. MATERIALS AND EQUIPMENT SHALL BE OF THE SAME MANUFACTURER THROUGHOUT THE PROJECT TO PROVIDE A UNIFORM APPEARANCE, OPERATION AND MAINTENANCE.

2.1.1 RIGID STEEL CONDUIT: RIGID STEEL CONDUIT SHALL COMPLY WITH UL 6 AND BE GALVANIZED BY THE HOT-DIP PROCESS. RIGID STEEL CONDUIT SHALL BE POLYVINYLCHLORIDE (PVC) COATED IN ACCORDANCE WITH NEMA RN 1, WHERE UNDERGROUND AND IN CORROSIVE AREAS, OR MUST BE PAINTED WITH BITUMASTIC. FITTINGS FOR RIGID STEEL CONDUIT SHALL BE THREADED. GASKETS SHALL BE SOLID. CONDUIT FITTINGS WITH BLANK COVERS SHALL HAVE GASKETS, EXCEPT IN CLEAN, DRY AREAS OR AT THE LOWEST POINT OF A CONDUIT RUN WHERE DRAINAGE IS REQUIRED. COVERS SHALL HAVE CAPTIVE SCREWS AND BE ACCESSIBLE AFTER THE WORK HAS BEEN COMPLETED.

2.1.2 ELECTRICAL METALLIC TUBING (EMT): EMT SHALL BE IN ACCORDANCE WITH UL 797 AND BE ZINC COATED STEEL. COUPLINGS AND CONNECTORS SHALL BE ZINC-COATED, RAINTIGHT, GLAND COMPRESSION WITH INSULATION THROAT. CRIMP, SPRING, OR SETSCREW TYPE FITTINGS ARE NOT ACCEPTABLE.

2.1.3 FLEXIBLE METALLIC CONDUIT: FLEXIBLE METALLIC CONDUIT SHALL COMPLY WITH UL 1 AND BE GALVANIZED STEEL. FITTINGS FOR FLEXIBLE METALLIC CONDUIT SHALL BE SPECIFICALLY DESIGNED FOR SUCH CONDUIT. PROVIDE LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT WITH A PROTECTIVE JACKET OF PVC EXTRUDED OVER A FLEXIBLE INTERLOCKED GALVANIZED STEEL CORE TO PROTECT WIRING AGAINST MOISTURE, OIL, CHEMICALS, AND CORROSIVE FUMES. SPECIFICALLY DESIGN FITTINGS FOR LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT.

2.1.4 INTERMEDIATE METAL CONDUIT: INTERMEDIATE METAL CONDUIT SHALL COMPLY WITH UL 1242 AND BE GALVANIZED.

2.1.5 RIGID NONMETALLIC CONDUIT: RIGID NONMETALLIC CONDUIT SHALL COMPLY WITH NEMA TC 2 AND NEMA TC 3 WITH WALL THICKNESS NOT LESS THAN SCHEDULE 40.

2.1.6 WIREWAYS AND AUXILIARY GUTTERS: WIREWAY AND AUXILIARY GUTTERS SHALL BE A MINIMUM 4-BY 4 INCH TRADE SIZE CONFORMING TO UL 870.

2.1.7 SURFACE RACEWAYS AND ASSEMBLIES: SURFACE METAL RACEWAYS AND MULTI-OUTLET ASSEMBLIES SHALL CONFORM TO NFPA 70. RECEPTACLES SHALL CONFORM TO NEMA WD 1, TYPE 5-20R.

2.1.8 CABLE TRAYS: PROVIDE LADDER TYPE CABLE TRAYS CONFORMING TO NEMA VE 1.

2.2 WIRE AND CABLE
CONDUCTORS INSTALLED IN CONDUIT ABOVE GROUND SHALL BE COPPER 600-VOLT TYPE THWN, CONDUCTORS INSTALLED UNDERGROUND SHALL BE TYPE XHHW. ALL CONDUCTORS AWG NO. 8 AND LARGER, SHALL BE STRANDED. ALL CONDUCTORS SMALLER THAN AWG NO. 8 SHALL BE SOLID. FLEXIBLE CABLE SHALL BE TYPE SO AND CONTAIN A GROUNDING CONDUCTOR WITH GREEN INSULATION. CONDUCTORS INSTALLED IN PLENUMS SHALL BE MARKED PLENUM RATED.

2.3 SPLICES AND CONNECTORS
MAKE ALL SPLICES IN AWG NO. 8 AND SMALLER WITH APPROVED INSULATED ELECTRICAL TYPE OR INDENTOR CRIMP-TYPE CONNECTORS AND COMPRESSION TOOLS. MAKE ALL SPLICES IN AWG NO. 6 AND LARGER WITH BOLTED CLAMP-TYPE CONNECTORS. JOINTS SHALL BE WRAPPED WITH AN INSULATING TAPE THAT HAS AN INSULATION AND TEMPERATURE RATING EQUIVALENT TO THAT OF THE CONDUCTOR.

2.4 SWITCHES
ALL WIRING DEVICES SHALL BE HUBBELL, P & S, BYRANT, G.E. OR LEVITON UNDERWRITER'S APPROVED, NEC RATED AND SPECIFICATION GRADE

2.4.1 SAFETY SWITCHES: SAFETY SWITCHES SHALL COMPLY WITH NEMA KS 1, AND BE THE HEAVY-DUTY TYPE WITH ENCLOSURE, VOLTAGE, CURRENT RATING, NUMBER OF POLES, AND FUSING AS INDICATED. MAKE PROVISIONS TO LOCK THE HANDLE IN THE "OFF" POSITION, BUT THE SWITCH SHALL NOT BE CAPABLE OF BEING LOCKED IN THE "ON" POSITION. PROVIDE SWITCHES OF THE QUICK-MAKE, QUICK-BREAK TYPE. APPROVE TERMINAL LUGS FOR USE WITH COPPER CONDUCTORS. SAFETY COLOR CODING FOR IDENTIFICATION OF SAFETY SWITCHES SHALL CONFORM TO ANSI Z535.1.

2.4.2 TOGGLE SWITCHES: TOGGLE SWITCHES SHALL COMPLY WITH EIA 480, CONTROL INCANDESCENT, MERCURY, AND FLUORESCENT LIGHTING FIXTURES AND BE OF THE HEAVY DUTY, GENERAL PURPOSE, NON-INTERCHANGEABLE FLUSH-TYPE. TOGGLE SWITCHES SHALL BE COMMERCIAL GRADE TOGGLE TYPE, SINGLE, DOUBLE-POLE, THREE/FOUR-WAY TWO-POSITION DEVICES RATED 20 AMPERES AT 277 VOLTS, 60 HERTZ ALTERNATING CURRENT (AC) ONLY. ALL TOGGLE SWITCHES SHALL BE PRODUCTS OF THE SAME MANUFACTURER.

2.5 RECEPTACLES
RECEPTACLES SHALL BE COMMERCIAL GRADE, 20A, 125 VAC, 2-POLE, 3-WIRE DUPLEX CONFORMING TO NEMA WD 6, NEMA 5-20R.

2.6 OUTLETS, OUTLET BOXES, AND PULL BOXES
OUTLET BOXES FOR USE WITH CONDUIT SYSTEMS SHALL BE IN ACCORDANCE WITH ANSI/NEMA FB 1 AND ANSI/NEMA OS 1 AND BE NOT LESS THAN 1-1/2 INCHES DEEP. FURNISH ALL PULL AND JUNCTION BOXES WITH SCREW-FASTENED COVERS.

2.7 PANELBOARDS
LIGHTING AND APPLIANCE BRANCH CIRCUIT PANELBOARDS SHALL BE THE CIRCUIT-BREAKER TYPE IN ACCORDANCE WITH NEMA PB 1. BOLT CIRCUIT BREAKERS TO THE BUS. PLUG-IN CIRCUIT BREAKERS ARE NOT ACCEPTABLE. BUSES SHALL BE COPPER OF THE RATING INDICATED, WITH MAIN LUGS OR MAIN CIRCUIT BREAKER AS INDICATED. PROVIDE ALL PANELBOARDS FOR USE ON GROUNDED AC SYSTEMS WITH A FULL-CAPACITY ISOLATED NEUTRAL BUS AND A SEPARATE GROUNDING BUS BONDED TO THE PANELBOARD ENCLOSURE. PANELBOARD ENCLOSURES SHALL BE NEMA 250, TYPE 1, IN ACCORDANCE WITH NEMA PB 1. PROVIDE LOCKING ENCLOSURE FRONTS WITH LATCHABLE HINGED DOORS. PANELS SHALL BE MANUFACTURED BY SIEMENS ,SQUARE D, EATON/CUTLER HAMMER, OR GENERAL ELECTRIC.

2.8 CIRCUIT BREAKERS
CIRCUIT-BREAKER INTERRUPTING RATING SHALL BE NOT LESS THAN THOSE INDICATED AND IN NO EVENT LESS THAN THE MAXIMUM AVAILABLE FAULT CURRENT AT THE LOCATION. MULTIPOLE CIRCUIT BREAKERS SHALL BE THE COMMON-TRIP TYPE WITH A SINGLE HANDLE. MOLDED CASE CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE CONFORMING TO UL 489.

2.9 LAMPS AND LIGHTING FIXTURES
MANUFACTURERS AND CATALOG NUMBERS SHOWN ARE INTENDED TO RESTRICT THE SELECTION TO FIXTURES OF THE PARTICULAR MANUFACTURER UNLESS STATED AS "OR EQUAL" IN THE SCHEDULE. FIXTURES WITH THE SAME SALIENT FEATURES AND EQUIVALENT LIGHT DISTRIBUTION AND BRIGHTNESS CHARACTERISTICS, OF EQUAL FINISH AND QUALITY, MAY BE ACCEPTABLE. PROVIDE LAMPS OF THE PROPER TYPE AND WATTAGE FOR EACH FIXTURE. BALLASTS SHALL BE HIGH POWER FACTOR AND BE ENERGY EFFICIENT. BALLASTS SHALL HAVE A CLASS P TERMINAL PROTECTIVE DEVICE FOR 120 OR 277-VOLT OPERATION AS INDICATED AND BE RAPID-START FLUORESCENT. BALLASTS SHALL BE "A" SOUND RATED. FLUORESCENT LAMPS SHALL BE STANDARD REDUCED WATTAGE TYPE. HIGH INTENSITY DISCHARGE (HID) LIGHTING FIXTURES SHALL HAVE PREWIRED INTEGRAL BALLASTS AND CAST ALUMINUM HOUSINGS COMPLETE WITH TEMPERED GLASS LENSES SUITABLE FOR INSTALLATION IN DAMP OR WET LOCATIONS. PROVIDE FIXTURES AND LAMPS.

PART 3 EXECUTION
ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL CODES BY LICENSED, TRAINED, EXPERIENCED PERSONNEL SKILLED IN THEIR VARIOUS CRAFTS, UNDER THE FULL TIME SUPERVISION OF AN APPROVED ENGINEER OR FOREMAN.

3.1 CONDUITS, RACEWAYS AND FITTINGS
CONDUIT RUNS BETWEEN OUTLET AND OUTLET, BETWEEN FITTING AND FITTING, OR BETWEEN OUTLET AND FITTING SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF THREE 90-DEGREE BENDS, INCLUDING THOSE BENDS LOCATED IMMEDIATELY AT THE OUTLET OR FITTING. DO NOT INSTALL CRUSHED OR DEFORMED CONDUIT. AVOID TRAPPED CONDUIT RUNS WHERE POSSIBLE. TAKE CARE TO PREVENT THE LODGMENT OF FOREIGN MATERIAL IN THE CONDUIT, BOXES, FITTINGS, AND EQUIPMENT DURING THE COURSE OF CONSTRUCTION. CLEAR ANY CLOGGED CONDUIT OF OBSTRUCTIONS OR BE REPLACED. CONDUIT AND RACEWAY RUNS CONCEALED IN OR BEHIND WALLS, ABOVE CEILINGS, OR EXPOSED ON WALLS AND CEILINGS 5 FEET OR MORE ABOVE FINISHED FLOORS AND NOT SUBJECT TO MECHANICAL DAMAGE MAY BE ELECTRICAL METALLIC TUBING (EMT).

3.1.1 RIGID STEEL CONDUIT
MAKE FIELD-MADE BENDS AND OFFSETS WITH APPROVED HICKEY OR CONDUIT BENDING MACHINE. CONDUIT ELBOWS LARGER THAN 2-1/2 INCHES SHALL BE LONG RADIUS. PROVIDE ALL CONDUIT STUBBED-UP THROUGH CONCRETE FLOORS FOR CONNECTIONS TO FREE-STANDING EQUIPMENT WITH THE EXCEPTION OF MOTOR-CONTROL CENTERS, CUBICLES, AND OTHER SUCH ITEMS OF EQUIPMENT, WITH A FLUSH COUPLING WHEN THE FLOOR SLAB IS OF SUFFICIENT THICKNESS. OTHERWISE,PROVIDE A FLOOR BOX SET FLUSH WITH THE FINISHED FLOOR. CONDUITS INSTALLED FOR FUTURE USE SHALL BE TERMINATED WITH A COUPLING AND PLUG SET FLUSH WITH THE FLOOR.

3.1.2 ELECTRICAL METALLIC TUBING (EMT)
EMT SHALL BE GROUNDED IN ACCORDANCE WITH NFPA 70, USING PRESSURE GROUNDING CONNECTORS ESPECIALLY DESIGNED FOR EMT.

3.1.3 FLEXIBLE METALLIC CONDUIT
USE FLEXIBLE METALLIC CONDUIT TO CONNECT RECESSED FIXTURES FROM OUTLET BOXES IN CEILINGS, FOR TRANSFORMERS CONNECTIONS, AND MOTOR DRIVEN EQUIPMENT CONNECTIONS ONLY. BONDING WIRES SHALL BE USED IN FLEXIBLE CONDUIT AS SPECIFIED IN NFPA 70. FLEXIBLE CONDUIT SHALL NOT BE USED IN LENGTHS GREATER THAN 6 FEET. ELECTRICAL CONNECTIONS TO VIBRATION-ISOLATED EQUIPMENT SHALL BE MADE WITH LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT. LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED IN WET AND OILY LOCATIONS AND TO COMPLETE CONNECTIONS TO MOTOR-DRIVEN EQUIPMENT.

3.1.4 INTERMEDIATE CONDUIT
MAKE ALL FIELD-MADE BENDS AND OFFSETS WITH APPROVED HICKEY OR CONDUIT BENDING MACHINE. USE INTERMEDIATE METAL CONDUIT ONLY FOR INDOOR INSTALLATIONS.

3.1.5 RIGID NONMETALLIC CONDUIT
RIGID PVC CONDUIT SHALL BE DIRECT BURIED. A GREEN INSULATED COPPER GROUNDING CONDUCTOR SHALL BE IN CONDUIT WITH CONDUCTORS AND BE SOLIDLY CONNECTED TO GROUND AT EACH END. GROUNDING WIRES SHALL BE SIZED IN ACCORDANCE WITH NFPA 70.

3.1.6 WIREWAY AND AUXILIARY GUTTER
STRAIGHT SECTIONS AND FITTINGS SHALL BE BOLTED TOGETHER TO PROVIDE A RIGID, MECHANICAL CONNECTION AND ELECTRICAL CONTINUITY. DEAD ENDS OF WIREWAYS AND AUXILIARY GUTTERS SHALL BE CLOSED. PLUG ALL UNUSED CONDUIT OPENINGS. WIREWAYS FOR OVERHEAD DISTRIBUTION AND CONTROL CIRCUITS SHALL BE SUPPORTED AT MAXIMUM 5-FOOT INTERVALS. AUXILIARY GUTTERS USED TO SUPPLEMENT WIRING SPACES FOR EQUIPMENT NOT CONTAINED IN A SINGLE ENCLOSURE SHALL CONTAIN NO SWITCHES, OVERCURRENT DEVICES, APPLIANCES, OR APPARATUS AND BE NOT MORE THAN 30 FEET LONG.

3.1.7 SURFACE RACEWAYS AND ASSEMBLIES
SURFACE RACEWAYS SHALL BE MOUNTED PLUMB AND LEVEL, WITH THE BASE AND COVER SECURED. MINIMUM CIRCUIT RUN SHALL BE THREE-WIRE WITH ONE WIRE DESIGNATED AS GROUND.

3.1.8 CABLE TRAYS
SUPPORT CABLE TRAYS FROM CEILING HANGERS, EQUIPMENT BAYS, OR FLOOR OR WALL SUPPORTS. CABLE TRAYS MAY BE MOUNTED ON EQUIPMENT RACKS. PROVIDE SUPPORT WHEN THE FREE END EXTENDS BEYOND 3 FEET. MAXIMUM SUPPORT SPACING SHALL BE 6 FEET. TRAYS 10-INCHES WIDE OR LESS SHALL BE SUPPORTED BY ONE HANGER. TRAYS GREATER THAN 10-INCHES WIDE SHALL BE SUPPORTED BY TWO HANGERS. BOND CABLE TRAYS AT SPLICES.

3.1.9 CONDUIT SCHEDULE

A. OUTDOORS:
1. EXPOSED AND NOT SUBJECT TO PHYSICAL DAMAGE: CORROSION-RESISTANT EMT.
2. EXPOSED AND SUBJECT TO PHYSICAL DAMAGE: CORROSION-RESISTANT IMC.
3. CONCEALED ABOVEGROUND: EMT.
4. CONNECTIONS TO MECHANICAL EQUIPMENT: LFMC.

B. INDOORS:
1. EXPOSED IN NON-FINISHED AREAS AND NOT SUBJECT TO PHYSICAL DAMAGE: EMT.
2. EXPOSED IN NON-FINISHED AREAS AND SUBJECT TO PHYSICAL DAMAGE: IMC.
3. EXPOSED IN FINISHED AREAS, ONLY WHERE CONCEALMENT IS NOT FEASIBLE: SURFACE METAL RACEWAY.
4. CONCEALED IN CEILINGS AND INTERIOR WALLS AND PARTITIONS: EMT.
5. DAMP OR WET LOCATIONS: CORROSION-RESISTANT EMT.
6. CONNECTIONS TO MECHANICAL EQUIPMENT: LFMC.
7. CONCEALED CONNECTIONS TO LIGHTING FIXTURES: FMC NOT TO EXCEED 6 FEET IN LENGTH.

3.2 WIRING
CONDUCTORS UP TO AND INCLUDING AWG NO. 2 SHALL BE MANUFACTURED WITH COLORED INSULATING MATERIALS. CONDUCTORS LARGER THAN AWG NO. 2 SHALL HAVE ENDS IDENTIFIED WITH COLOR PLASTIC TAPE IN OUTLET, PULL, OR JUNCTION BOXES. SPLICE IN ACCORDANCE WITH THE NFPA 70. PROVIDE CONDUCTOR IDENTIFICATION WITHIN EACH ENCLOSURE WHERE A TAP, SPLICE, OR TERMINATION IS MADE AND AT THE EQUIPMENT TERMINAL OF EACH CONDUCTOR. TERMINAL AND CONDUCTOR IDENTIFICATION SHALL MATCH AS INDICATED. WHERE SEVERAL FEEDERS PASS THROUGH A COMMON PULLBOX, THE FEEDERS SHALL BE TAGGED TO CLEARLY INDICATE THE ELECTRICAL CHARACTERISTICS, CIRCUIT NUMBER, AND PANEL DESIGNATION.

3.3 SAFETY SWITCHES
SECURELY FASTEN SWITCHES TO THE SUPPORTING STRUCTURE OR WALL, UTILIZING A MINIMUM OF FOUR 1/4 INCH BOLTS. DO NOT USE SHEET METAL SCREWS AND SMALL MACHINE SCREWS FOR MOUNTING. DO NOT MOUNT SWITCHES IN AN INACCESSIBLE LOCATION OR WHERE THE PASSAGEWAY TO THE SWITCH MAY BECOME OBSTRUCTED. MOUNTING HEIGHT OF HANDLE SHALL BE 5 FEET ABOVE FLOOR LEVEL, WHEN POSSIBLE.

3.4 WIRING DEVICES
3.4.1 WALL SWITCHES AND RECEPTACLES: INSTALL WALL SWITCHES AND RECEPTACLES SO THAT WHEN DEVICE PLATES ARE APPLIED, THE PLATES WILL BE ALIGNED VERTICALLY TO WITHIN 1/16 INCH. GROUND TERMINAL OF EACH FLUSH-MOUNTED RECEPTACLE SHALL BE BONDED TO THE OUTLET BOX WITH AN APPROVED GREEN BONDING JUMPER WHEN USED WITH DRY WALL TYPE CONSTRUCTION.

3.4.2 DEVICE PLATES
DEVICE PLATES FOR SWITCHES THAT ARE NOT WITHIN SIGHT OF THE LOADS CONTROLLED SHALL BE SUITABLY ENGRAVED WITH A DESCRIPTION OF THE LOADS. DEVICE PLATES AND RECEPTACLE COVER PLATES FOR RECEPTACLES OTHER THAN 125-VOLT, SINGLE-PHASE, DUPLEX, CONVENIENCE OUTLETS SHALL BE SUITABLY MARKED, SHOWING THE CIRCUIT NUMBER, VOLTAGE, FREQUENCY, PHASING, AND AMPERAGE AVAILABLE AT THE RECEPTACLE. REQUIRED MARKING SHALL CONSIST OF A SELF-ADHESIVE LABEL HAVING 1/4 INCH EMBOSSED LETTERS. DEVICE PLATES FOR CONVENIENCE OUTLETS SHALL BE SIMILARLY MARKED INDICATING THE SUPPLY PANEL AND CIRCUIT NUMBER.

3.5 BOXES AND FITTINGS
FURNISH AND INSTALL PULLBOXES WHERE NECESSARY IN THE CONDUIT SYSTEM TO FACILITATE CONDUCTOR INSTALLATION. CONDUIT RUNS LONGER THAN 100 FEET OR WITH MORE THAN THREE RIGHT-ANGLE BENDS SHALL HAVE A PULLBOX INSTALLED AT A CONVENIENT INTERMEDIATE LOCATION. SECURELY MOUNT BOXES AND ENCLOSURES TO THE BUILDING STRUCTURE WITH SUPPORTING FACILITIES INDEPENDENT OF THE CONDUIT ENTERING OR LEAVING THE BOXES. MOUNTING HEIGHT OF WALL-MOUNTED OUTLET AND SWITCH BOXES, MEASURED BETWEEN THE BOTTOM OF THE BOX AND THE FINISHED FLOOR, SHALL BE IN ACCORDANCE WITH ICC/ANSI A117.1 AND AS FOLLOWS:

LOCATION	MOUNTING HEIGHT
RECEPTACLES IN OFFICES	18 INCHES
RECEPTACLES IN CORRIDORS	18 INCHES
RECEPTACLES IN SHOPS AND LABORATORIES	48 INCHES
RECEPTACLES IN REST ROOMS	42 INCHES
SWITCHES FOR LIGHT CONTROL	42 INCHES

3.6 LAMPS AND LIGHTING FIXTURES
INSTALL NEW LAMPS OF THE PROPER TYPE AND WATTAGE IN EACH FIXTURE. SECURELY FASTEN FIXTURES AND SUPPORTS TO STRUCTURAL MEMBERS AND INSTALL PARALLEL AND PERPENDICULAR TO MAJOR AXES OF STRUCTURES.

3.7 PANELBOARDS
SECURELY MOUNT PANELBOARDS SO THAT THE TOP OPERATING HANDLE DOES NOT EXCEED 72-INCHES ABOVE THE FINISHED FLOOR. DO NOT MOUNT EQUIPMENT WITHIN 42 INCHES OF THE FRONT OF THE PANEL. DIRECTORY CARD INFORMATION SHALL BE COMPLETE, TYPED AND LEGIBLE.

3.8 ELECTRICAL STUDY
COMPLETE A COMPUTER-BASED, ARC FLASH, FAULT-CURRENT AND OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY PER ANSI/NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) AND NFPA 70E - STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
1. ESA INC. EASY POWER
2. SKM SYSTEMS ANALYSIS, INC. POWER TOOLS

COMPLETE STUDY FOR ALL NEW EQUIPMENT. TRANSFORMERS, SWITCHBOARD, DISCONNECTS AS WELL AS EXISTING PANELBOARDS.

A. FAULT CURRENT STUDY: CALCULATE THE MAXIMUM AVAILABLE SHORT-CIRCUIT CURRENT IN AMPERES RMS SYMMETRICAL AT CIRCUIT-BREAKER POSITIONS OF THE ELECTRICAL POWER DISTRIBUTION SYSTEM. THE CALCULATION SHALL BE FOR A CURRENT IMMEDIATELY AFTER INITIATION AND FOR A THREE-PHASE BOLTED SHORT CIRCUIT.
STUDY ELECTRICAL DISTRIBUTION SYSTEM FROM NORMAL UTILITY POWER SOURCES THROUGHOUT ELECTRICAL DISTRIBUTION SYSTEM FOR PROJECT. INCLUDE STUDIES OF SYSTEM-SWITCHING CONFIGURATIONS AND ALTERNATE OPERATIONS THAT COULD RESULT IN MAXIMUM FAULT CONDITIONS. INITIAL FAULT CALCULATION SHALL BE COMPLETED AND SUBMITTED PRIOR TO ELECTRICAL EQUIPMENT SUBMITTALS.

B. COORDINATION STUDY: PERFORM COORDINATION STUDY USING APPROVED COMPUTER SOFTWARE PROGRAM. PREPARE A WRITTEN REPORT USING RESULTS OF FAULT-CURRENT STUDY. COMPLY WITH IEEE 399. CALCULATE THE MAXIMUM AND MINIMUM 1/2-CYCLE SHORT-CIRCUIT CURRENTS. CALCULATE THE MAXIMUM AND MINIMUM GROUND-FAULT CURRENTS. COMPLY WITH IEEE 242 RECOMMENDATIONS FOR FAULT CURRENTS AND TIME INTERVALS.

C. ARC FLASH STUDY: COMPLETE AN ARC FLASH HAZARD ANALYSIS ON THE ELECTRICAL DISTRIBUTION SYSTEM PER NFPA 70E REGULATIONS AND NEC 110.16. THE ANALYSIS INCLUDES THE SITE DATA COLLECTION AND VERIFICATION OF THE ELECTRICAL DISTRIBUTION SYSTEM ATTRIBUTES THAT AFFECT THE INCIDENT ENERGY AVAILABLE. VINYL UV RESISTANT ARC FLASH LABELS SHALL BE INSTALLED ON ALL APPLICABLE ELECTRICAL ENCLOSURES. THE LABELS SHALL CLEARLY INDICATE THE ELECTRICAL HAZARDS PRESENT IN THE ELECTRICAL PANELS. THE HAZARD LABELS LIST DETAILED INFORMATION SUCH AS: THE REQUIRED SAFE WORK DISTANCE FOR EACH TASK, THE ARC FLASH HAZARD IN CAL/CM^2, THE LEVEL AND TYPE OF PERSONAL PROTECTIVE EQUIPMENT THAT MUST BE WORN WHEN WORKING IN THE ENCLOSURE LIVE AND IDENTIFICATION OF THE ENCLOSURE WITH A SPECIFIC NAME.

3.9 IDENTIFICATION PLATES AND WARNINGS
FURNISH AND INSTALL IDENTIFICATION PLATES FOR LIGHTING AND POWER PANELBOARDS, MOTOR CONTROL CENTERS, ALL LINE VOLTAGE HEATING AND VENTILATING CONTROL PANELS, FIRE DETECTOR AND SPRINKLER ALARMS, DOOR BELLS, PILOT LIGHTS, DISCONNECT SWITCHES, MANUAL STARTING SWITCHES, AND MAGNETIC STARTERS. PROCESS CONTROL DEVICES AND PILOT LIGHTS SHALL HAVE IDENTIFICATION PLATES. FURNISH IDENTIFICATION PLATES FOR ALL LINE VOLTAGE ENCLOSED CIRCUIT BREAKERS, IDENTIFYING THE EQUIPMENT SERVED, VOLTAGE, PHASE(S) AND POWER SOURCE. CIRCUITS 480 VOLTS AND ABOVE SHALL HAVE CONSPICUOUSLY LOCATED WARNING SIGNS IN ACCORDANCE WITH OSHA REQUIREMENTS. EACH IDENTIFICATION NAMEPLATE SHALL INCLUDE BUILDING NAME, PANELBOARD DESIGNATION, VOLTAGE AND WHERE PANELBOARD IS FED FROM.

3.10 FIELD TESTING
SUBMIT TEST REPORTS IN ACCORDANCE WITH REFERENCED STANDARDS IN THIS SECTION. AFTER COMPLETION OF THE INSTALLATION AND SPLICING, AND PRIOR TO ENERGIZING THE CONDUCTORS, PERFORM WIRE AND CABLE CONTINUITY AND INSULATION TESTS AS HEREIN SPECIFIED BEFORE THE CONDUCTORS ARE ENERGIZED. CONTRACTOR SHALL PROVIDE ALL NECESSARY TEST EQUIPMENT, LABOR, AND PERSONNEL TO PERFORM THE TESTS, AS HEREIN SPECIFIED. ISOLATE COMPLETELY ALL WIRE AND CABLE FROM ALL EXTRANEOUS ELECTRICAL CONNECTIONS AT CABLE TERMINATIONS AND JOINTS. SUBSTATION AND SWITCHBOARD FEEDER BREAKERS, DISCONNECTS IN COMBINATION MOTOR STARTERS, CIRCUIT BREAKERS IN PANELBOARDS, AND OTHER DISCONNECTING DEVICES SHALL BE USED TO ISOLATE THE CIRCUITS UNDER TEST.

PERFORM INSULATION-RESISTANCE TEST ON EACH FIELD-INSTALLED CONDUCTOR WITH RESPECT TO GROUND AND ADJACENT CONDUCTORS. APPLIED POTENTIAL SHALL BE 500 VOLTS DC FOR 300 VOLT RATED CABLE AND 1000 VOLTS DC FOR 600 VOLT RATED CABLE. TAKE READINGS AFTER 1 MINUTE AND UNTIL THE READING IS CONSTANT FOR 15 SECONDS. MINIMUM INSULATION-RESISTANCE VALUES SHALL NOT BE LESS THAN 25 MEGOHMS FOR 300 VOLT RATED CABLE AND 100 MEGOHMS FOR 600 VOLT RATED CABLE. FOR CIRCUITS WITH CONDUCTOR SIZES 8AWG AND SMALLER INSULATION RESISTANCE TESTING IS NOT REQUIRED.

PERFORM CONTINUITY TEST TO INSURE CORRECT CABLE CONNECTION (I.E CORRECT PHASE CONDUCTOR, GROUNDED CONDUCTOR, AND GROUNDING CONDUCTOR WIRING) END-TO END. ANY DAMAGES TO EXISTING OR NEW ELECTRICAL EQUIPMENT RESULTING FROM CONTRACTOR MIS-WIRING WILL BE REPAIRED AND RE-VERIFIED AT CONTRACTOR'S EXPENSE. ALL REPAIRS SHALL BE APPROVED BY THE ARCHITECT PRIOR TO ACCEPTANCE OF THE REPAIR.

CONDUCT PHASE-ROTATION TESTS ON ALL THREE-PHASE CIRCUITS USING A PHASE-ROTATION INDICATING INSTRUMENT. PERFORM PHASE ROTATION OF ELECTRICAL CONNECTIONS TO CONNECTED EQUIPMENT CLOCKWISE, FACING THE SOURCE.

3.11 GUARANTEE
THE CONTRACTOR SHALL GUARANTEE THE ELECTRICAL SYSTEM TO BE FREE FROM DEFECTIVE MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE. DEFECTIVE MATERIALS OR INSTALLATIONS SHALL BE REPLACED AND/OR REPAIRED.

END OF SECTION 26 50 00

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PUBLIC SAFETY BUILDING CONCRETE RAMP SNOW AND ICE MELT
REPLACEMENT PROJECT
WINNEBAGO COUNTY
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON
ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
ELECTRICAL SPECIFICATIONS

PROJECT INFORMATION	
Date	AUGUST 30 2024
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