PROJECT

INTERIOR VERTICAL PLATFORM LIFT FOR LINCOLN MIDDLE SCHOOL

1500 CHARLES STREET,
ROCKFORD, ILLINOIS 61104

OWNER

ROCKFORD PUBLIC SCHOOL DISTRICT 205

501 SEVENTH STREET,
ROCKFORD, ILLINOIS 61104

ROCKFORD PUBLIC SCHOOLS

LINCOLN MIDDLE SCHOOL
1500 CHARLES STREET
ROCKFORD, IL 61104

STATE MAP
SCALE: N.T.S.

SITE LOCATION MAP
SCALE: N.T.S.

ARCHITECT OF RECORD	STRUCTURAL	MECHANICAL / ELECTRICAL / PLUMBING		
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 DRAWINGS: T101, G101, A101, A120, A103, A104 STATE OF ILLINOIS SCOTT R. JOHNSON 01 4871 LICENSED ARCHITECT 2-14-2018 DATE EXPIRES 11-30-2018	HIGHLAND ENGINEERING P.C. Consulting & Forensic Engineers 700 INDUSTRIAL DRIVE, SUITE A CARY IL. 61108 PHONE: 847/639-9000 FAX 847/639-9002 www.highlandengineeringpc.com IL. Design Firm No. 184.003362 DRAWINGS: S000, S100, S200 STATE OF ILLINOIS TODD M. LESPERANCE 081-006057 LICENSED STRUCTURAL ENGINEER Date: 2-14-2018 Exp.: 11-30-2018	SYSTEM DESIGN SERVICE ENGINEERING 3600 EAST STATE STREET, SUITE 215 Rockford IL. 61108 PHONE: 815/399-3381 FAX 815/399-3381 www.sdsegroup.com IL. Design Firm No. 184.004999 DRAWINGS: M101, M102, P101, P102, E101, E102, E103 LICENSED PROFESSIONAL ENGINEER SCOTT JAY BAIER 062-059748 STATE OF ILLINOIS 14 FEB 2018 EXP 30 Nov 2019		

SHEET INDEX

INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
TITLE SHEET

PROJECT INFORMATION
Date FEBRUARY 14, 2018
Rev. Date
RLJA Proj 2016-034

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	RSTR	RUBBER STAIR TREAD & RISER	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
CO	CLEANOUT	ELEV	ELEVATOR	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-1	CARPET TILES	EXP	EXPOSED/EXPANSION	HORIZ	HORIZONTAL	P.LAM	PLASTIC LAMINATE	ST	STORM SEWER	WWF	WELDED WIRE FABRIC
CPT-2	WALK-OFF CARPET TILES	EXT	EXTERIOR	HR	HOUR	PCC	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

MATERIAL / CONSTRUCTION LEGEND

BUILDING SECTION
- 1 / A-6 — DETAIL NUMBER / SHEET NUMBER

BUILDING ELEVATION
- 1 / A-6 — DETAIL NUMBER / SHEET NUMBER

DETAIL SYMBOL
- 1 / A-6 — DETAIL NUMBER / SHEET NUMBER

PLAN SYMBOLS
- 1 — KEY NOTE
- A — PARTITION INDENTIFICATION
- 12 — DEMOLITION BOX NOTE

DOOR IDENTIFICATION
- 102 — NEW DOOR AND FRAME
- DOOR NUMBER
- EXISTING DOOR

STANDARD WALL IDENTIFICATION
- NEW MASONRY PARTITION
- NEW DRYWALL PARTITION W/BATT. INSUL.
- NEW DRYWALL PARTITION W/O BATT. INSUL.
- EXISTING WALL PARTITION
- EXISTING ITEMS TO BE DEMOLISHED

REFLECTED CEILING GENERAL NOTES

1. ALL CEILING HEIGHTS ARE TAKEN FROM FINISH FLOOR OF INDIVIDUAL AREAS
2. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION OF BUILT-IN ITEMS, INCLUDING SUPPLY DIFFUSERS, EXHAUST REGISTERS, ETC.
3. VERIFY NEW CEILING HEIGHT SHOWN.
4. PROVIDE ADEQUATE CLEARANCE FOR ELECTRICAL AND MECHANICAL WORK.
5. PRIOR TO THE INSTALLATION OF ANY MODIFIED CEILING HEIGHTS NOTIFY ARCHITECT

REFLECTED CEILING PLAN LEGEND

LIGHTING IDENTIFICATION
- EXISTING 2' X 4' RECESSED FLUORESCENT LIGHT FIXTURE - SEE ELECTRICAL DWGS
- EXISTING PENDENT OR SURFACE MOUNTED LIGHT FIXTURE - SEE ELECTRICAL DWGS
- NEW RECESSED CAN LIGHT FIXTURE - SEE ELECTRICAL DRAWINGS

CEILING TILE IDENTIFICATION
- 2'X2' ACOUSTICAL CEILING TILE AND GRID
- GYPSUM WALL BOARD CEILING OR SOFFIT - PAINT

CEILING HEIGHT SYMBOL
- 103 — ROOM NUMBER
- 9'-0" — CEILING HEIGHT

DETAIL SYMBOL
- 1 / A-6 — DETAIL NUMBER / SHEET NUMBER

REFLECTED CEILING KEY NOTES

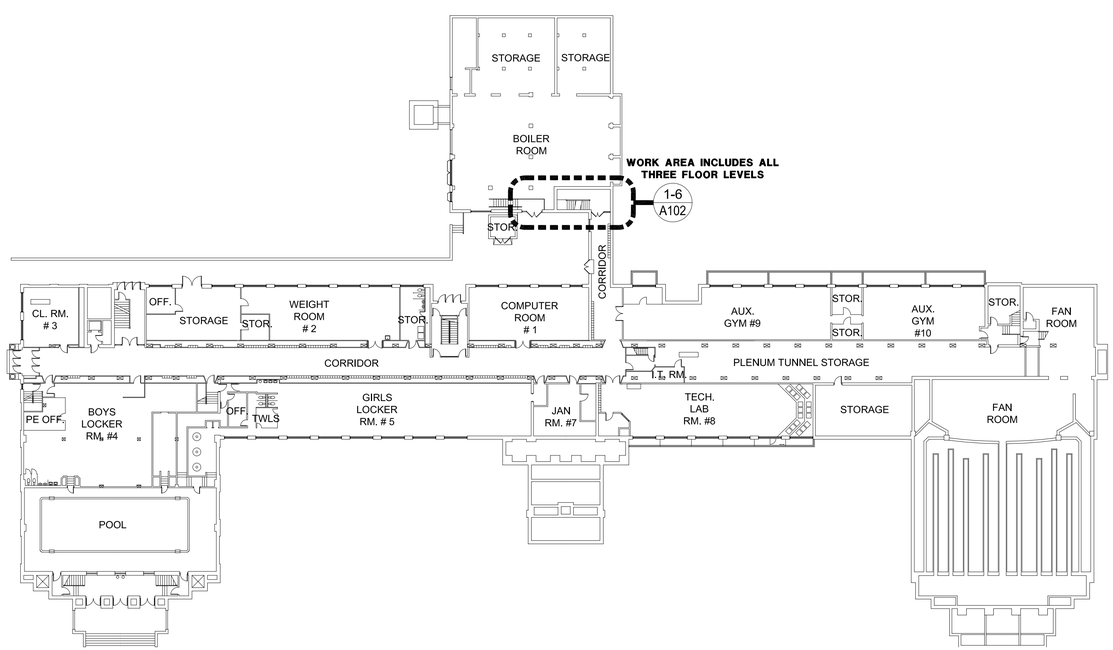
A ELECTRICAL ENCLOSURE BUILT WITH 5/8" TYPE "X " GYP BOARD ON SIDE OF 3 5/8" METAL STUDS (PAINT) - PROVIDE HINGED METAL ACCESS PANEL ON INTERIOR SIDE OF SHAFT - ACCESS PANEL TO BE SIZED ACCORDINGLY PER SIZE OF JUNCTION BOX - SEE ELECTRICAL

PARTITION TYPES

A___ 8" CMU WALL - 1 HR FIRE RATED ASSEMBLY TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE

B___ 5/8" TYPE "X" GYP BOARD EACH SIDE OF 3 5/8" METAL STUDS @ 16" O.C. W/ SOUND BATT INSULATION - ASSEMBLY TO EXTEND TO UNDERSIDE OF STRUCTURE ABOVE - 1 HR RATED

C___ NEW MASONRY VERIFY AND MATCH EXISTING THICKNESS AND COURSING



FIRST FLOOR LEVEL - EXISTING OVERALL PLAN

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

DEMOLITION GENERAL NOTES

1. THE GENERAL CONTRACTOR IS TO COORDINATE AND PROVIDE ALL DEMOLITION AND REMOVAL OF DEBRIS NECESSARY TO ACCOMMODATE NEW CONSTRUCTION
2. THE DEMOLITION PLAN IS PROVIDED AS AID IN PLANNING AND DOES NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY IN FIELD VERIFYING THE EXISTING JOB SITE
3. PROVIDE ALL TEMPORARY SHORING AS REQUIRED TO SUPPORT STRUCTURES AND FINISHES TO REMAIN
4. ALL AREAS, FINISHES AND ITEMS NOT REQUIRING DEMOLITION MUST BE PROTECTED DURING DEMOLITION AND CONSTRUCTION WORK
5. THIS DEMOLITION PLAN IS TO BE USED IN CONJUNCTION WITH THE REST OF THE SHEETS IN THE SET
6. EACH CONTRACTOR IS RESPONSIBLE TO PATCH AND MATCH EXISTING TO REMAINING OPENINGS CREATED FROM DEMOED PENETRATIONS THRU WALLS, CEILINGS AND FLOORS
7. ALL ITEMS TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR UNLESS NOTED OTHERWISE
8. **REFERENCE HVAC, PLUMBING, AND ELECTRICAL SHEETS FOR ITEMS TO BE REMOVED, RELOCATED AND PATCHED - EACH TRADE RESPONSIBLE FOR PATCHING**
9. PRIOR TO DEMOLITION THE CONTRACTOR SHALL VERIFY WITH THE OWNER OF ITEMS TO BE SALVAGED IN THE PROJECT AREAS IDENTIFIED FOR DEMOLITION - SALVAGED ITEMS SHALL BE REMOVED BY THE CONTRACTOR AND RETURNED TO THE OWNER - ANY ITEMS NOT WANTED BY THE OWNER SHALL BE DISPOSED OF BY THE CONTRACTOR

DEMOLITION BOX NOTES

1. REMOVE EXISTING STL. COLUMN - SUPPORT EXISTING BAR GRATE STAIR/PLATFORM AS REQUIRED
2. REMOVE EXISTING STAIR PLATFORM AND FRAMING AS REQUIRED - SUPPORT EXISTING STRUCTURE
3. REMOVE EXISTING MASONRY AS REQUIRED
4. REMOVE EXISTING ELECTRICAL PANEL AND RELOCATE - SEE ELEC. DRAWINGS
5. REMOVE EXISTING DOOR, DOOR FRAME, TRIM AND HARDWARE
6. REMOVE EXISTING STUD PARTITION SYSTEM AND WALL BASE
7. REMOVE EXISTING DOOR, DOOR FRAME AND HARDWARE
8. REMOVE EXISTING FLOOR FINISH, WALL BASE, SUSPENDED CEILING AND LIGHTS
9. APPROXIMATE LIMITS OF DEMOLITION FOR NEW CORRIDOR
10. SAWCUT AND REMOVE EXISTING CONCRETE FLOOR SYSTEM AS REQUIRED - VERIFY OPENING REQUIREMENTS WITH LIFT MANUFACTURER
11. REMOVE EXISTING FLOOR FINISH AND WALL BASE ON SECOND FLOOR STAIR LANDING AREA
12. EXISTING CEILING TO REMAIN
13. REMOVE EXISTING STAIR FINISH ON TREADS, RISERS AND LOWER LANDING - PREP FOR NEW STAIR FINISHES
14. REWORK EXISTING SUSPENDED CEILING AND LIGHTS AS REQUIRED
15. OMITTED
16. EXISTING BAR GRATE STAIR SYSTEM TO REMAIN - TOP STAIR LANDING / FRAMING TO BE REWORKED AS REQUIRED
17. REMOVE AND SALVAGE EXISTING WALL MOUNTED FIRE EXTINGUISHER
18. REMOVE EXISTING FRAMED ENCLOSURE BELOW EXISTING ELECTRICAL PANEL

GENERAL NOTES

1. FIN. FLR. EL: = 0'-0" = 780.65' UNLESS NOTED OTHERWISE.
2. SEE MEP'S FOR ALTERATIONS TO EXISTING CEILINGS FOR INSTALLATION OF ABOVE-CEILING PIPING
3. CONTRACTOR SHALL COORDINATE ALL MECHANICAL AND ELECTRICAL FLOOR, ROOF AND WALL SLEEVES AND ALL MECHANICAL SHAFTS AND OPENINGS WITH MECHANICAL, PLUMBING, FIRE PROTECTION, ELECTRICAL, STRUCTURAL AND ARCHITECTURAL DRAWINGS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES. GENERAL CONTRACTOR SHALL PROVIDE SLEEVES AT FLOOR AND ROOF OPENINGS AS REQUIRED TO ALLOW INSTALLATION OF ALL DUCTS AND PIPING AS SHOWN ON THE MECHANICAL AND ELECTRICAL DRAWINGS.
4. PARTITIONS ARE DIMENSIONED TO THE FACE OF THE WALL UNLESS NOTED OTHERWISE.
5. WHERE DISCREPANCIES EXIST BETWEEN THE DRAWINGS OF THE VARIOUS TRADES, CONSULT THE ARCHITECT BEFORE PROCEEDING WITH WORK.
6. COORDINATE PLACEMENT OF ALL CEILING ELEMENTS WITH MECHANICAL, ELECTRICAL AND INSTALLER. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND INSTALLATION, REVIEW WITH ARCHITECT PRIOR TO PROCEEDING.
7. CONTRACTOR'S RESPONSIBILITY FOR DAMAGE DURING CONSTRUCTION: THE CONTRACTOR WILL REPAIR AND/OR REPLACE ALL DAMAGED MATERIALS THAT ARE FOUND TO HAVE BEEN MADE DURING THE COURSE OF THE WORK AND CLEAN-UP PROCEDURE. REPAIR SHALL MEAN THE ITEM(S) ARE RETURNED TO THEIR ORIGINAL STATE, AS A MINIMUM, AS DETERMINED BY THE OWNER.
8. ALL REFUSE AND DEBRIS SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF BY THE CONTRACTOR.
9. WHERE SPECIFIC DIMENSIONS, DETAILS OR DESIGN INTENT CANNOT BE DETERMINED, CONSULT THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

KEY NOTES

1. EXISTING CONCRETE COLUMN
2. BEAM - SEE STRUCTURAL
3. PRECAST PLANKS - SEE STRUCTURAL
4. 2" CMU SOAP OVER EXISTING MASONRY AND AT JAMB OPENINGS
5. EXISTING FLOOR SUMP BELOW TO REMAIN
6. EXISTING CONCRETE PAD WITH WATER TREATMENT TANKS TO REMAIN
7. EXISTING STAIR/PLATFORM SYSTEM - REWORKED AND SECURED INTO NEW CONSTRUCTION - SEE STRUCTURAL - TOUCH UP PAINT AS REQUIRED
8. INTEGRAL RUBBER TREAD AND RISER WITH ABRASIVE SAFETY INSERT - SEE DETAIL 3/A101
9. NEW ELECTRICAL PANEL - SEE ELECTRICAL
10. CLEAN AND PATCH EXISTING WALL - PREP FOR PAINT
11. CLEAN AND PATCH EXISTING WHERE DOOR FRAME WAS REMOVED - PREP AND PAINT
12. PAINT EXPOSED STEEL STAIR SUPPORT FRAMING, RAILINGS, POSTS AND PANEL INFILLS - CLEAN PREP AS REQUIRED
13. REWORK EXISTING CEILING AS REQUIRED
14. SUSPENDED CEILING SYSTEM AND LIGHTING - SEE ELECTRICAL
15. EXISTING GUARDRAIL SYSTEM - REWORK AND SECURE INTO NEW MASONRY WALL CONSTRUCTION - PAINT NEW RAILING SUPPORTS AND TOUCH-UP PAINT EXISTING RAILINGS AS REQUIRED
16. ELECTRICAL ENCLOSURE BUILT WITH 5/8" TYPE "X " GYP BOARD ON SIDE OF 3 5/8" METAL STUDS (PAINT) - PROVIDE HINGED METAL ACCESS PANEL ON INTERIOR SIDE OF SHAFT - ACCESS PANEL TO BE SIZED ACCORDINGLY PER SIZE OF JUNCTION BOX - SEE ELECTRICAL
17. REINSTALL EXISTING WALL MOUNTED FIRE EXTINGUISHER - VERIFY WITH OWNER FOR EXACT LOCATION
18. PROVIDE LIGHT FIXTURE UNDERNEATH STRUCTURAL FLOOR SYSTEM - SEE ELECTRICAL
19. 5/8" TYPE "X" GYP BOARD OVER 2 1/2" METAL STUD FRAMING @ 16" O.C. OVER EXISTING WALL (PAINT) - FURRING TO CONCEAL EXPOSED CONDUIT'S AND ENTIRE EXISTING WALL.
20. FIRE CAULK EXISTING WALL PENITRATIONS AS REQUIRED
21. PROVIDE SOLID RUBBER COVER RISER FOR THE FIRST TWO BOTTOM RISERS
22. JUNCTION BOX - SEE ELECTRICAL
23. FIRE CAULK CONDUIT PENITRATIONS AT CEILING AS REQURIED
24. RUBBER FLOORING INFILL AT LANDING

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SHEET IDENTIFICATION
GENERAL INFORMATION OVERALL PLAN AND PLAN NOTES

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ROOM FINISH SCHEDULE - BASEMENT FLOOR LEVEL

ROOM NO.	ROOM	FLOOR	BASE	WALLS NORTH	WALLS SOUTH	WALLS EAST	WALLS WEST	CEILING	REMARKS
24.2	LIFT	-	-	-	-	-	-	-	NOTE 4
B1 LOWER	BOILER ROOM	-	-	-	-	-	-	-	-
B3	STAIR	-	-	EXTG/PT	EXTG/PT	EXTG/PT	EXTG/PT	EXTG/PT	NOTE 7,8
B2	MECH. TUNNEL	-	-	-	-	-	-	-	-

ROOM FINISH SCHEDULE - FIRST FLOOR LEVEL

ROOM NO.	ROOM	FLOOR	BASE	WALLS NORTH	WALLS SOUTH	WALLS EAST	WALLS WEST	CEILING	REMARKS
24.2	LIFT	-	-	-	-	-	-	-	NOTE 4
B5	CORRIDOR	SC	RB	CMU/PT	CMU/PT	CMU/PT	CMU/PT	ACT-1	-
B4	STAIR	-	-	EXTG/PT	EXTG/PT	EXTG/PT	EXTG/PT	-	NOTE 3,7
B1 UPPER	BOILER ROOM	-	-	-	-	-	-	-	-

ROOM FINISH SCHEDULE - SECOND FLOOR LEVEL

ROOM NO.	ROOM	FLOOR	BASE	WALLS NORTH	WALLS SOUTH	WALLS EAST	WALLS WEST	CEILING	REMARKS
24.2	LIFT	-	-	-	-	-	-	-	NOTE 4
24	STAIR	CPT-1/RSTR	EXTG/RB	EXTG/PT	EXTG/PT	EXTG/PT	CMU/PT	EXTG/PT	NOTE 1,2,3,7
24.1	CORRIDOR	CPT-1	EXTG/RB	GYP/PT	EXTG/PT	EXTG/PT	EXTG/CMU/PT	ACT-1	-
23	OFFICE	-	-	-	-	-	-	-	-
20	BAND ROOM	EXTG	EXTG/RB	-	EXTG/CMU/PT	EXTG/CMU/PT	-	-	-
21	ORCHESTRA/CHOIR	EXTG	EXTG/RB	-	GYP/PT	-	-	-	NOTE 5
22.1	STORAGE	EXTG	EXTG/RB	EXTG/CMU/PT	EXTG/PT	CMU/PT	EXTG/PT	EXTG/PT	NOTE 6

ROOM SCHEDULE NOTES

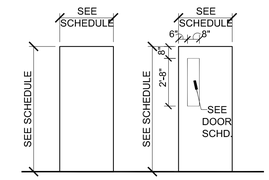
NOTE 1: RUBBER BASE TO BE INSTALLED ON NEW CMU WALLS - EXTG. WOOD BASE TO BE CLEANED AND PREPPED FOR PAINT
NOTE 2: STAIRS LEADING FROM SECOND FLOOR TO FIRST FLOOR TO RECEIVE RUBBER LANDING, STAIR TREADS AND RISERS - PROVIDE ONE STAIR TREAD AT TOP OF STAIR ON SECOND FLOOR
NOTE 3: PAINT EXISTING WOOD BASE
NOTE 4: SEE SPECIFICATION
NOTE 5: REWORK EXISTING CEILING AS REQURIED
NOTE 6: EXISTING CONCRETE FLOOR SHALL BE CLEANED AND PREP FOR FUTURE FLOOR FINISH BY OWNER
NOTE 7: PAINT EXPOSED STEEL STAIR SUPPORT FRAMING, RAILINGS, POSTS AND PANEL INFILLS - CLEAN PREP AS REQUIRED
NOTE 8: EPOXY PAINT EXPOSED CONCRETE STAIR TREADS, LANDINGS AND METAL RISER - CLEAN PREP AS REQUIRED

DOOR SCHEDULE

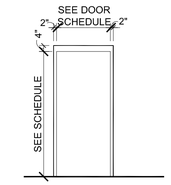
DOOR NO.	DOORS SG/PR	DOORS WIDTH	DOORS HEIGHT	DOORS THICK	DOOR TYPE MTL	DOOR TYPE ELEV.	FRAMES MTL	FRAMES ELEV.	GLAZING DOOR	GLAZING FRAME	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	HDWR GROUP	LABEL	REMARKS
20A	SG	3'-0"	7'-0"	1 3/4	WD	D2	HM	F1	GL-1	-	H1	J1	-	01	20 MIN.	-
20B	SG	2'-8"	7'-0"	1 3/4*	WD	D1	HM	F1	-	-	H1 SIM	J1 SIM.	-	02	-	-
21	SG	3'-0"	7'-0"	1 3/4	WD	D2	HM	F1	GL-1	-	H2	J2	-	03	20 MIN.	-
(2)-24.2	SG	3'-0"	6'-8"	-	-	-	-	-	-	-	2/A103	J3	-	-	60 MIN.	ELEVATOR "PRODOOR"

GLASS TYPES

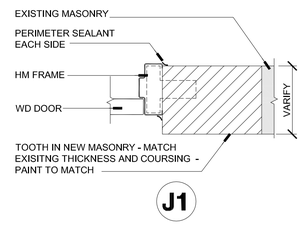
GL-1	5/16" FIRE-RATED GLASS

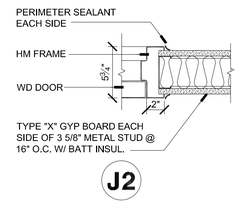


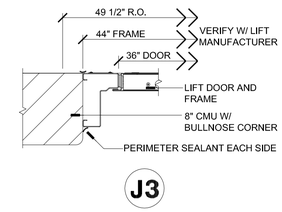
DOOR TYPES
SCALE: 1/4"=1'-0"



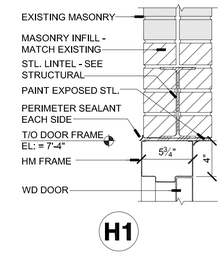
FRAME TYPES
SCALE: 1/4"=1'-0"

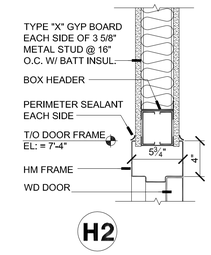




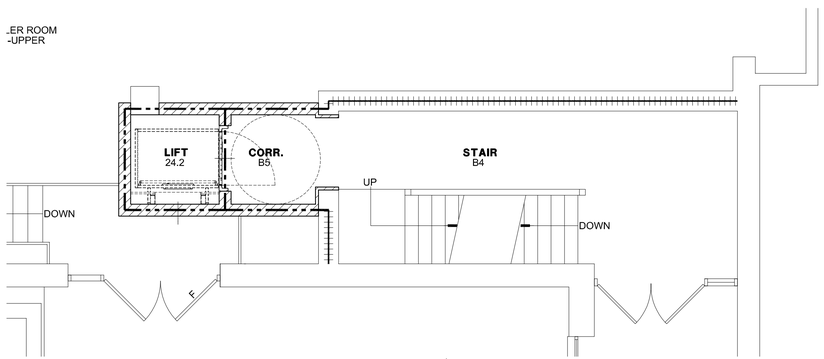


JAMB DETAILS
SCALE: 1/4"=1'-0"

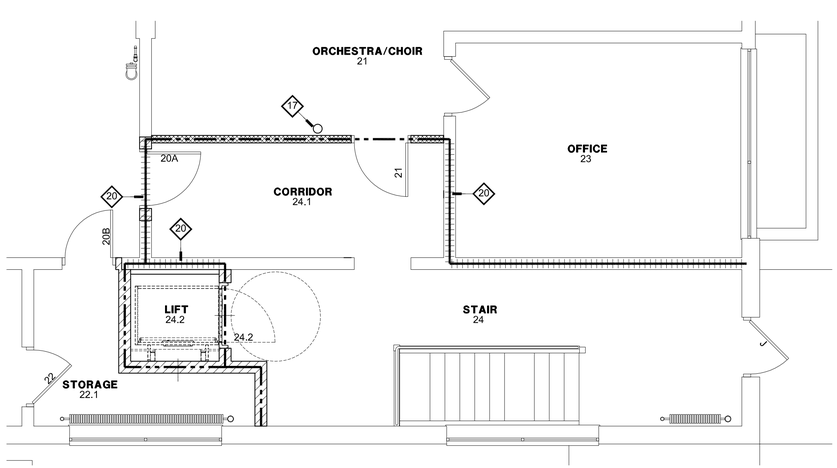




HEAD DETAILS
SCALE: 1/4"=1'-0"



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



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

- SEE SHEET G101 FOR KEY NOTES

APPLICABLE CODES

2015	INTERNATIONAL BUILDING CODE
2015	INTERNATIONAL FIRE CODE
2015	INTERNATIONAL ENERGY CONSERVATION CODE
2015	INTERNATIONAL MECHANICAL CODE
2014	NATIONAL ELECTRIC CODE
2014	ILLINOIS PLUMBING CODE
2010	ADA STANDARDS
1997	ILLINOIS ACCESSIBILITY CODE

CODE COMPLIANCE NOTES

1. BUILDING USE: EDUCATION (E)
2. TYPE OF PROJECT: INTERIOR PLATFORM LIFT ADDITION
3. TYPE OF CONSTRUCTION: 2B
4. FIRE EXTINGUISHERS: EXISTING - SEE PLAN

FIRE RESISTANCE LEGEND

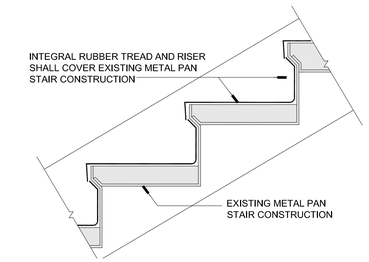
1 HOUR FIRE SEPERATION
1 HOUR FIRE SEPERATION - EXISTING

FIRE RATINGS OF EXISTING WALLS

NOTE:
ANY PENETRATIONS THRU EXISTING FIRE RATED WALLS AND FLOORS NEED TO BE PROPERLY FIRE CAULKED AND SEALED.

PLUMBING FIXTURES

NOTE:
PLUMBING FIXTURES ARE EXISTING



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

INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
CODE MATRIX, SCHEDULES, DOOR DETAILS

PROJECT INFORMATION
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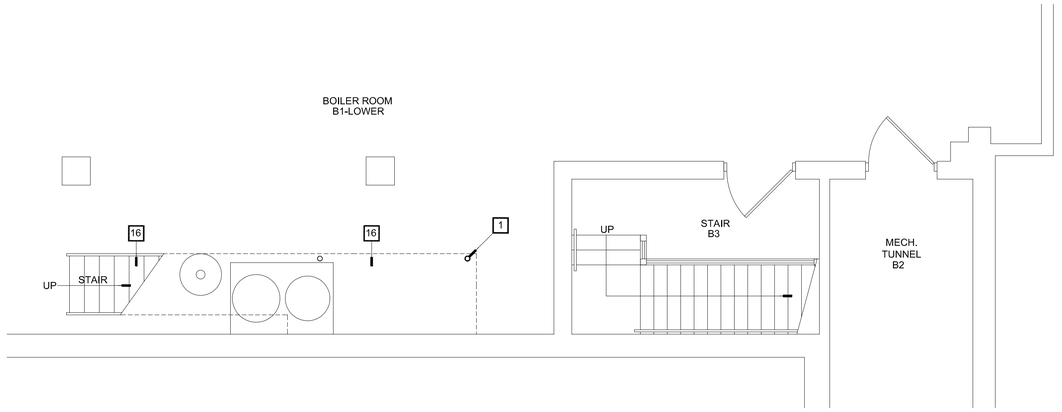

1 BASEMENT LEVEL - DEMOLTION
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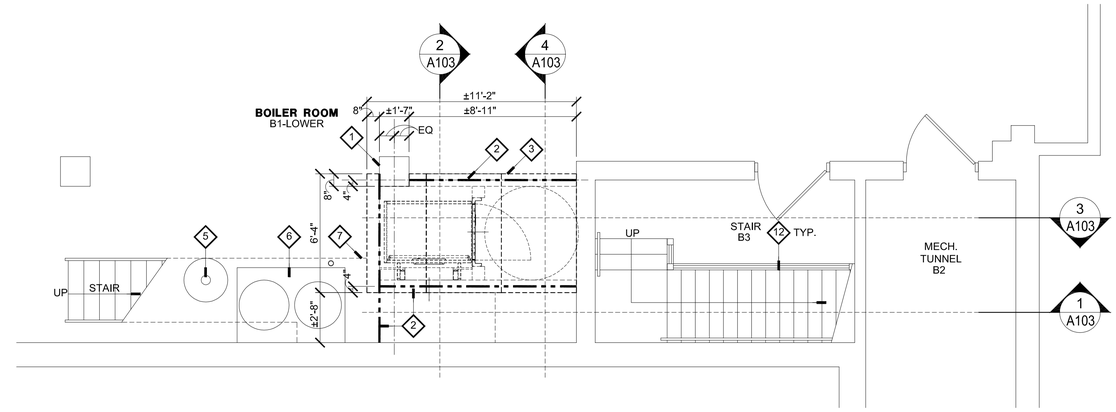
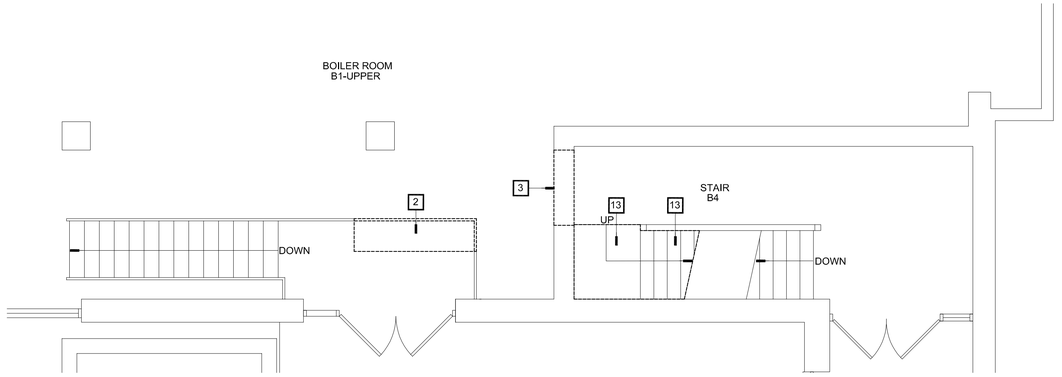


2 BASEMENT LEVEL - PLAN
SCALE: 1/4"=1'-0"



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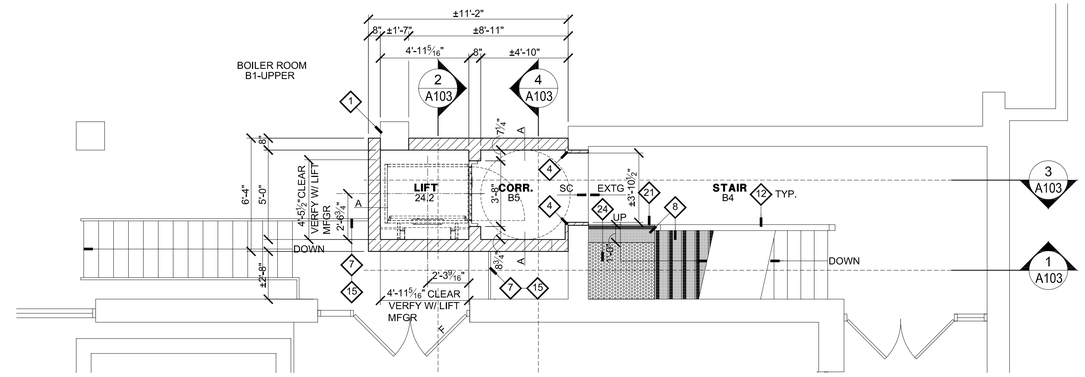

4 FIRST FLOOR LEVEL - PLAN
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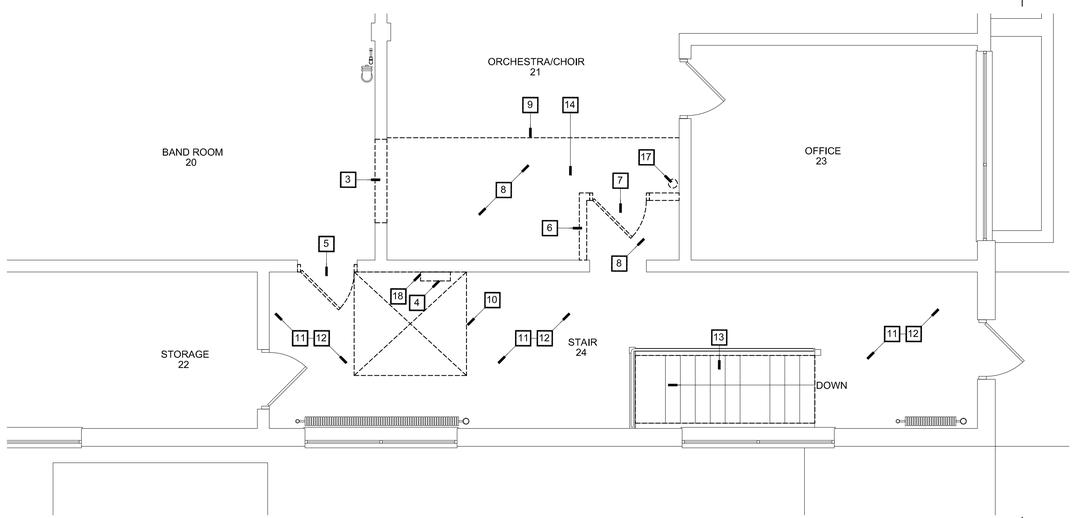
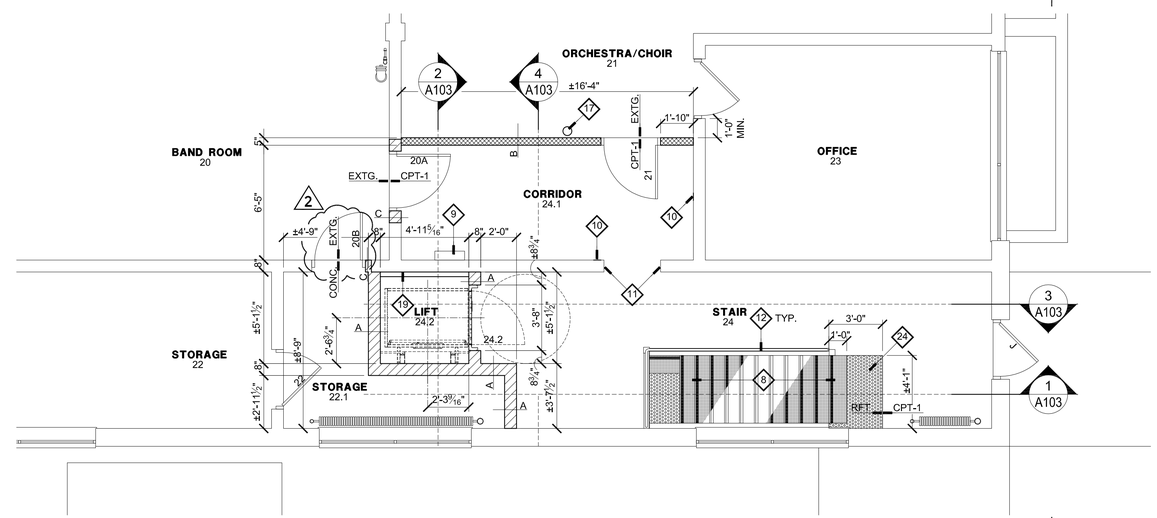


5 SECOND FLOOR LEVEL - DEMOLTION
SCALE: 1/4"=1'-0"

- SEE SHEET G101 FOR DEMOLITION NOTES



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

- SEE SHEET G101 FOR KEY NOTES

INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
LARGE SCALE DEMOLITION AND FLOOR PLANS

PROJECT INFORMATION
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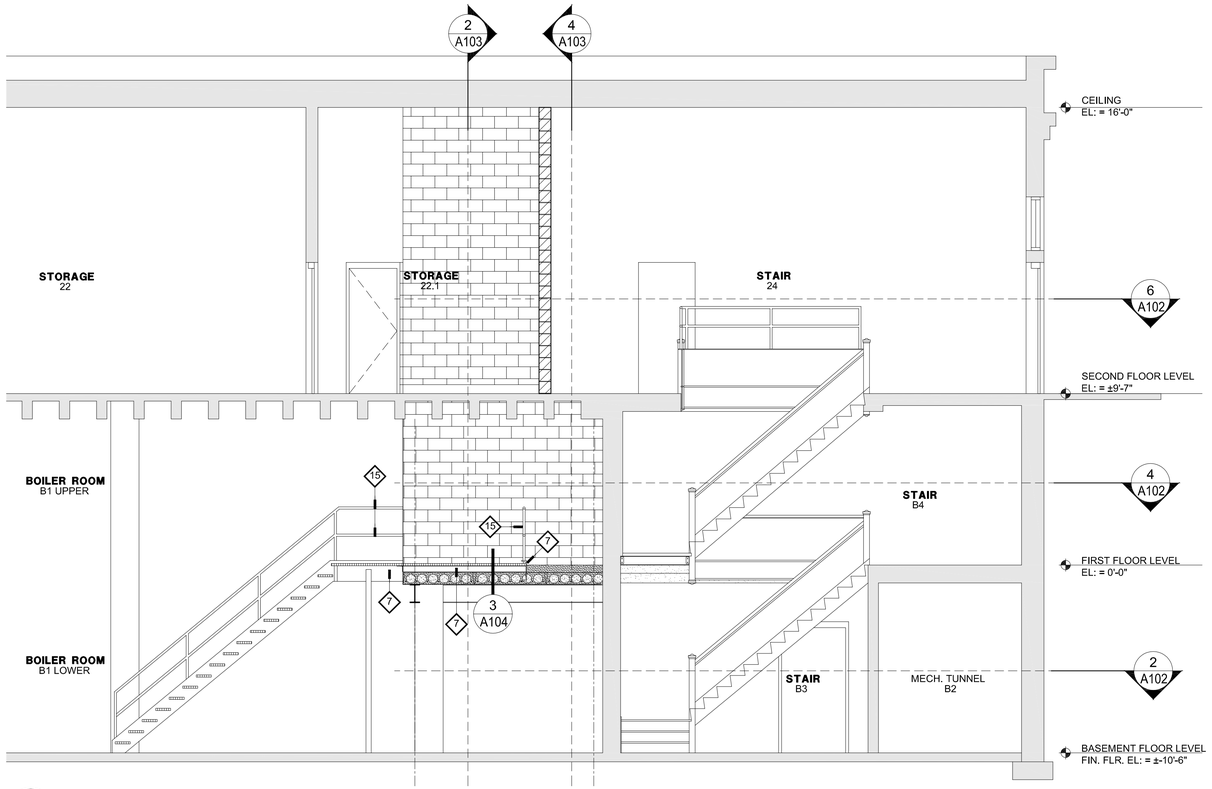

1 BUILDING SECTION

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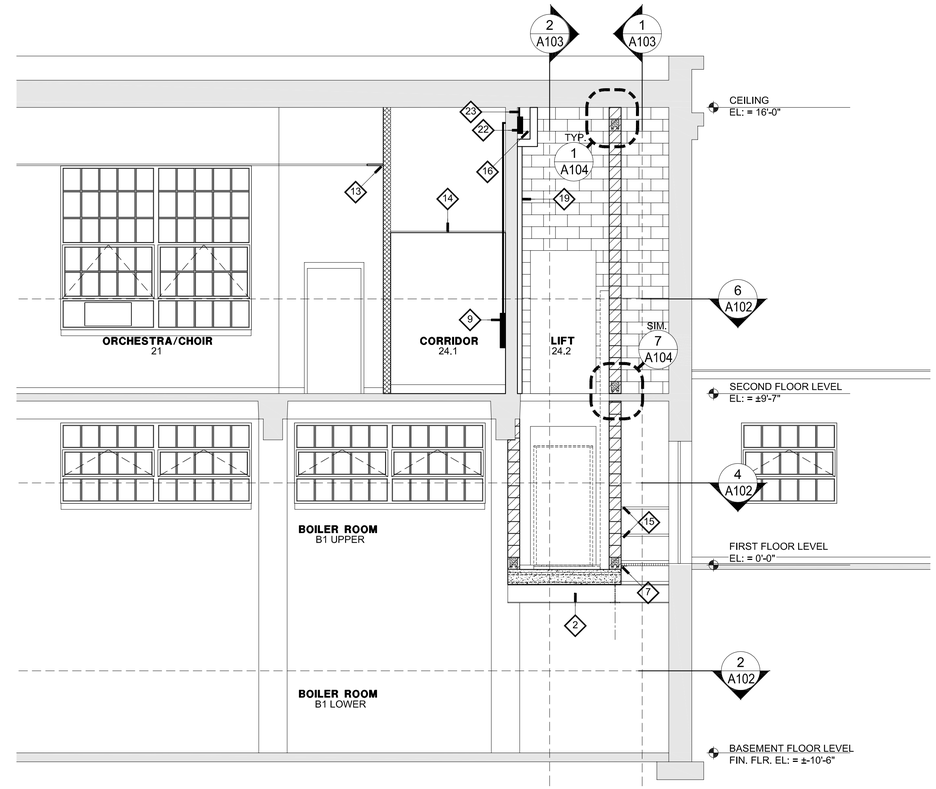

2 BUILDING SECTION

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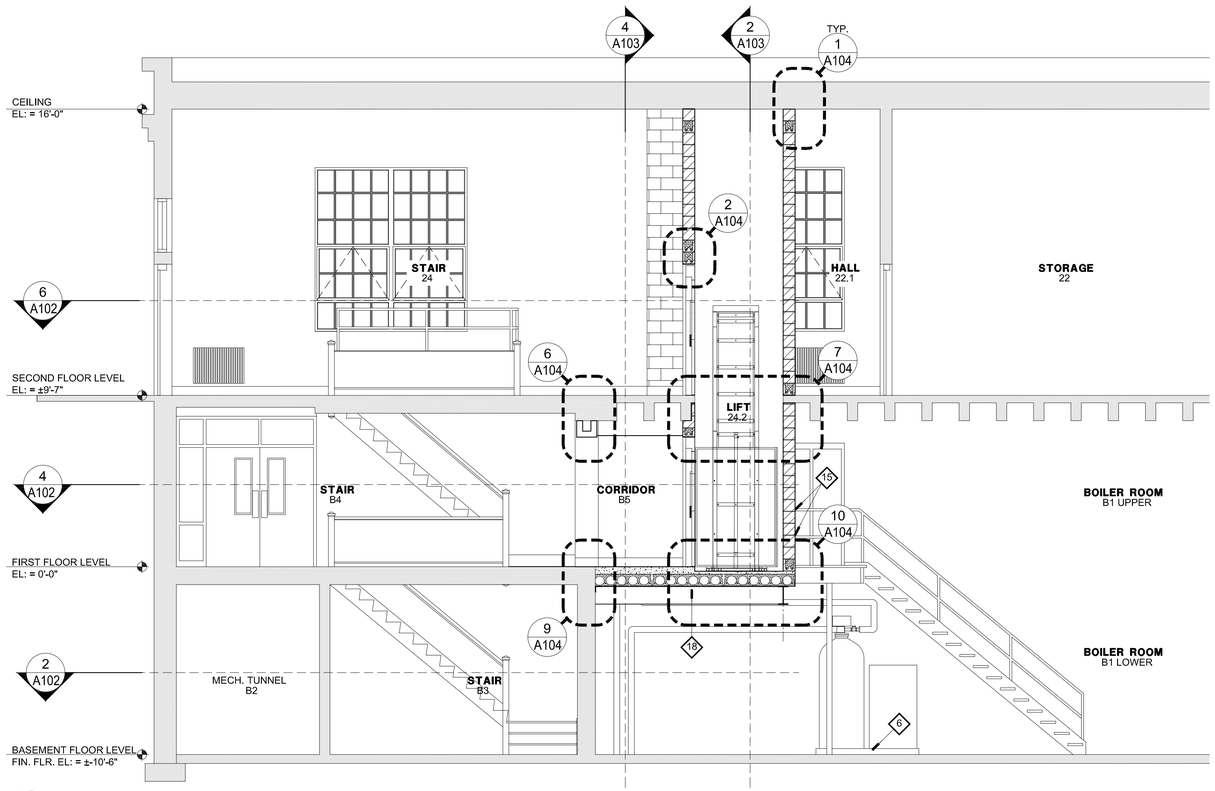

3 BUILDING SECTION

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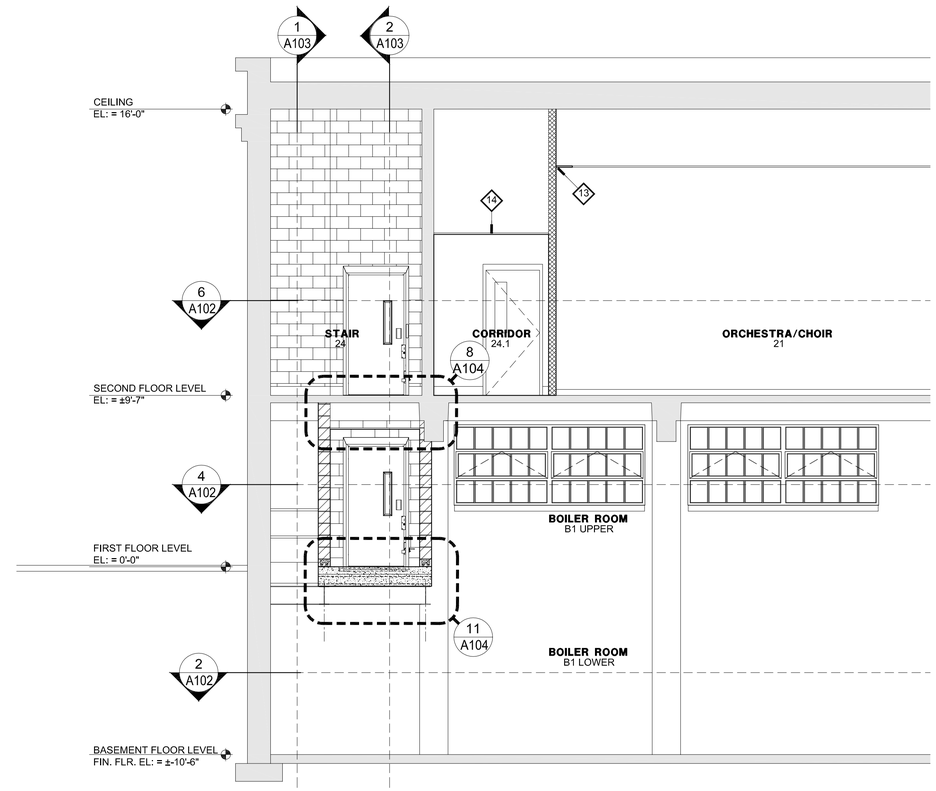

4 BUILDING SECTION

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

INTERIOR VERTICAL PLATFORM LIFT FOR

LINCOLN MIDDLE SCHOOL

ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION

BUILDING SECTION

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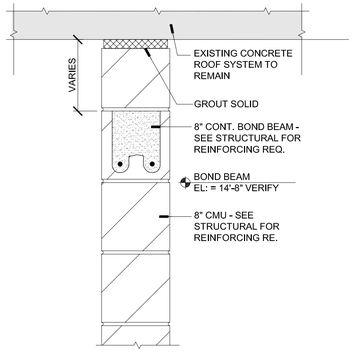
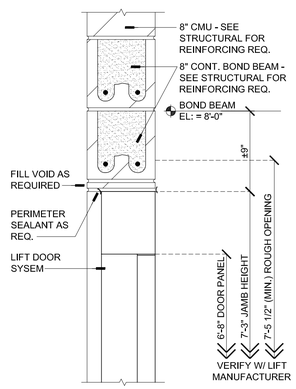


1 DETAIL
SCALE: 1 1/2"=1'-0"



2 DETAIL
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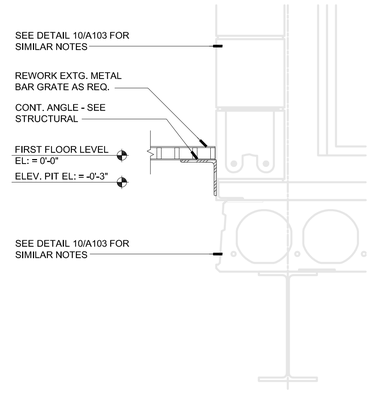

3 DETAIL
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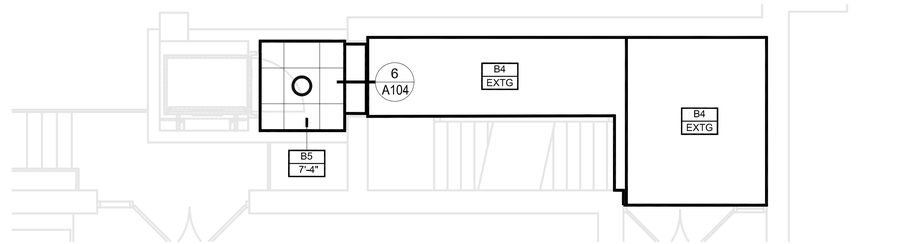
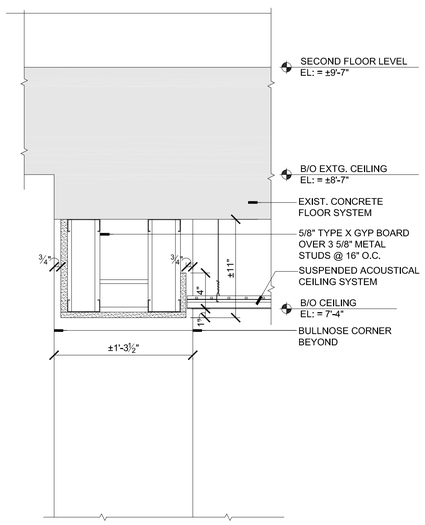


4 FIRST FLOOR LEVEL - CEILING PLAN
SCALE: 1/4"=1'-0"

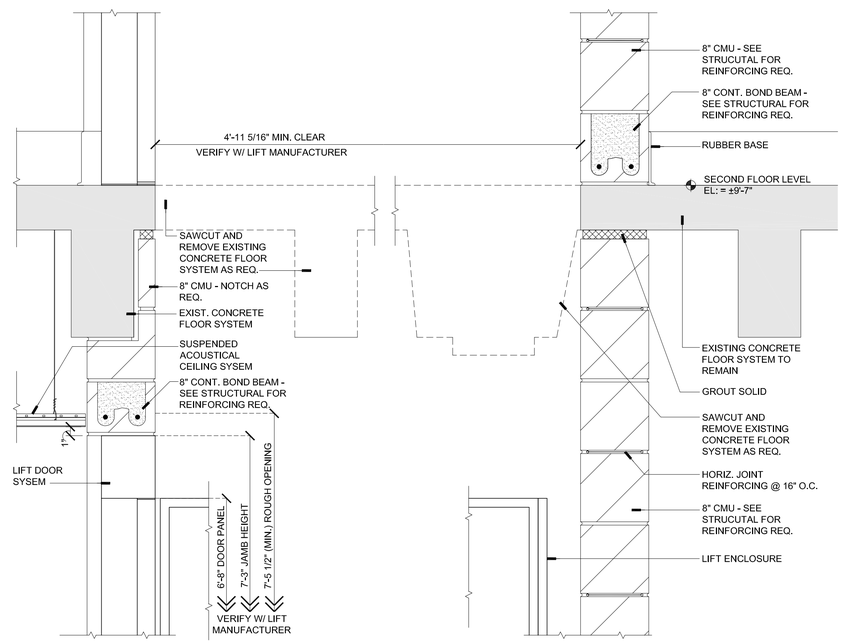
- SEE SHEET G101 FOR CEILING NOTES

5 SECOND FLOOR LEVEL - CEILING PLAN
SCALE: 1/4"=1'-0"

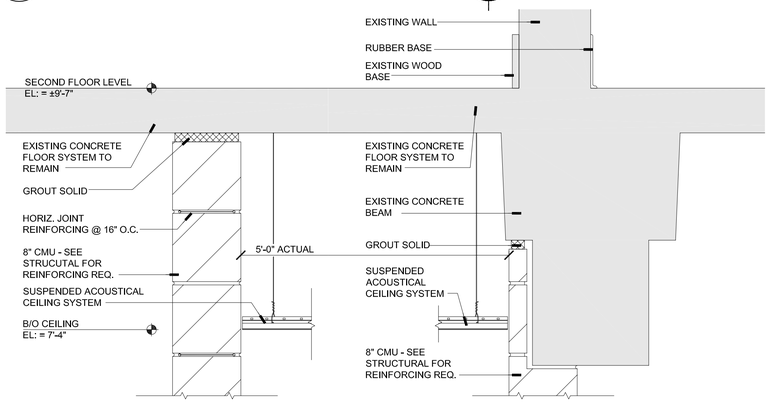
- SEE SHEET G101 FOR CEILING NOTES



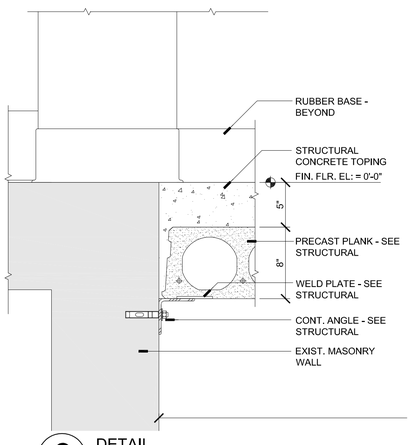
6 DETAIL
SCALE: 1 1/2"=1'-0"



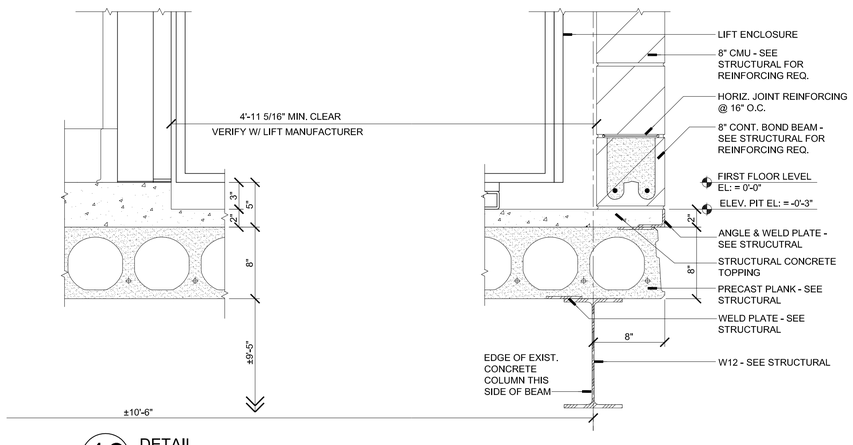
7 DETAIL
SCALE: 1 1/2"=1'-0"



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



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



10 DETAIL
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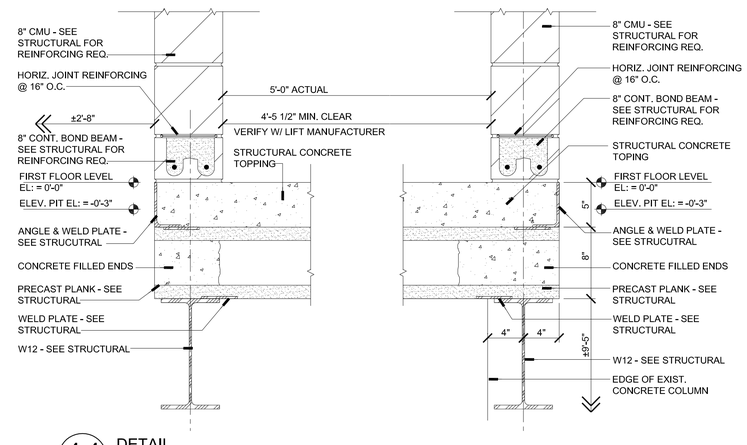

11 DETAIL
SCALE: 1 1/2"=1'-0"

INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
DETAILS & CEILING PLANS

PROJECT INFORMATION

Date	FEBRUARY 14, 2018
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STRUCTURAL NOTES

DESIGN DATA

CODES AND STANDARDS

"INTERNATIONAL BUILDING CODE", 2015 EDITION W/AMENDMENTS
"ACI 318, BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", LATEST EDITION, AMERICAN CONCRETE INSTITUTE
"ACI 301, SPECIFICATION FOR STRUCTURAL CONCRETE FOR BUILDINGS", LATEST EDITION, AMERICAN CONCRETE INSTITUTE
"ACI 530.1, SPECIFICATIONS FOR MASONRY STRUCTURES", LATEST EDITION
"BUILDING CODE REQUIREMENTS FOR ENGINEERED BRICK MASONRY", LATEST EDITION, BRICK INSTITUTE OF AMERICA
"AMERICAN STANDARD BUILDING CODE REQUIREMENTS FOR MASONRY", LATEST EDITION
"SPECIFICATIONS FOR THE DESIGN OF LOAD BEARING CONCRETE MASONRY", LATEST EDITION, NATIONAL CONCRETE MASONRY ASSOCIATION
"ASCE 7, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES", LATEST EDITION, AMERICAN SOCIETY OF CIVIL ENGINEERS
"MANUAL OF STEEL CONSTRUCTION", 13th EDITION AMERICAN INSTITUTE OF STEEL CONSTRUCTION
"AWS D1.1, STRUCTURAL WELDING CODE, STEEL", LATEST EDITION, AMERICAN WELDING SOCIETY

DESIGN LOADS

LIVE LOADS

FLOOR	100 PSF

WIND LOADS

INTERIOR WORK ONLY – NO WIND

EARTHQUAKE LOADS

SEISMIC RISK CATEGORY	II
SEISMIC DESIGN CATEGORY	B
SEISMIC LOAD IMPORTANCE FACTOR	1.25
SPECTRAL RESPONSE COEFFICIENT (SDS)	0.130g
SPECTRAL RESPONSE COEFFICIENT (SD1)	0.091g
SITE CLASS	D
SESIMIC FORCE RESISTING SYSTEM	EXIST. BLDG.
LATERAL FORCE PROCEDURE	EQUIVALENT
SEISMIC BASE SHEAR – NS & EW	1 K

MATERIALS

CONCRETE

NORMAL WEIGHT CONCRETE (145 PCF) 28 DAY COMPRESSIVE STRENGTH AS FOLLOWS:

APPLICATION

COMPOSITE FLOORS	4000 PSI

PROVIDE CONCRETE W/5% ± 1 ½% AIR ENTRAINED BY VOLUME IN CONCRETE PERMANENTLY EXPOSED TO WEATHER.

AIR ENTRAINING ADMIXTURE	ASTM C260
CEMENT (TYPE I, II, OR III)	ASTM C150

REINFORCING STEEL

DEFORMED REINFORCING BARS	ASTM A615, 60 KSI
WELDED WIRE FABRIC	ASTM A1064

STRUCTURAL STEEL

STRUCTURAL SHAPES	ASTM A992 GR. 50
MISCELLANEOUS SHAPES & PLATES	ASTM A36
ANCHOR BOLTS	ASTM A307 OR ASTM F1554 GR36
STRUCTURAL BOLTS	ASTM A325 N (U.N.O.)
WELDING ELECTRODES	E-70XX
HEADED STUDS (11.5 K)	1/2" x 4"
EXPANSION ANCHORS, STUD TYPE	HILTI OR EQUAL

MASONRY

MASONRY PRISM MIN. COMPRESSIVE STRENGTH	F'm = 1500 PSI
LOAD BEARING/REINFORCED CMU 28 DAY COMPRESSIVE STRENGTH (3 UNIT)	ASTM C90, TYPE 1 1900 PSI MINIMUM
MORTAR 28 DAY COMPRESSIVE STRENGTH	ASTM C270, TYPE S 1500 PSI MINIMUM
GROUT 28 DAY COMPRESSIVE STRENGTH	ASTM C476 3000 PSI MINIMUM
MASONRY REINFORCEMENT, GALVANIZED	ASTM A951

CONSTRUCTION

GENERAL

REPRODUCTION OF ALL OR PART OF THE STRUCTURAL CONTRACT PLANS OR DETAIL DRAWINGS FOR RESUBMITTAL AS SHOP OR ERECTION DRAWINGS IS PROHIBITED. SHOP DRAWING SUBMITTALS PRODUCED IN SUCH A MANNER SHALL BE REJECTED AND RETURNED WITHOUT FURTHER REVIEW.

THE STRUCTURAL CONTRACT PLANS AND DETAIL DRAWINGS ARE ONLY COMPLETE WHEN USED IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND CIVIL DRAWINGS. CONTRACTOR(S) SHALL REFER TO THE COMPLETE SET OF DRAWINGS WHEN PREPARING SUBMITTAL PACKAGES.

IN CASE OF CONFLICT BETWEEN NOTES, DETAILS AND SPECIFICATIONS, THE MOST STRINGENT REQUIREMENT WILL GOVERN.

THE CONTRACTOR(S) SHALL COORDINATE THE DIMENSIONS ON THE STRUCTURAL DRAWINGS WITH THOSE ON THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND CIVIL SITE DRAWINGS. THE CONTRACTOR(S) SHALL IMMEDIATELY REPORT ANY DISCREPANCIES TO THE ARCHITECT.

REFER TO PROJECT SPECIFICATIONS FOR REQUIRED INSPECTIONS AND ASSOCIATED COSTS.

MANUFACTURED ITEMS SHALL COMPLY WITH CODES AND SPECIFICATIONS, INDUSTRY STANDARDS, LOCAL JURISDICTIONS AND SPECIFIC CRITERIA NOTED HEREIN. COMPLIANCE SHALL INCLUDE, BUT NOT LIMITED TO, DESIGN MANUFACTURING AND INSTALLATION AND SHALL REST SOLELY ON THE MANUFACTURER.

THESE DRAWINGS DESCRIBE THE COMPLETED PROJECT. THEY DO NOT INDICATE ELEMENTS WHICH MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE CONTRACTOR(S) IS RESPONSIBLE FOR THE SAFETY IN AND ABOUT THE JOB SITE. OBSERVATION VISITS BY FIELD REPRESENTATIVE (ARCHITECT/ENGINEER) SHALL NOT INCLUDE OBSERVATIONS OF THE CONTRACTORS SAFETY PROVISIONS.

THIS PROJECT HAS BEEN DESIGNED FOR THE WEIGHTS AND MATERIALS INDICATED ON THE DRAWINGS AND FOR THE LIVE LOAD INDICATED IN THE DESIGN DATA. IT IS THE CONTRACTOR(S) RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING, SHEETING AND SHORING, ETC.

HIGHLAND ENGINEERING, P.C. PROHIBITS THE USE OF OR THE SUITABILITY OF THESE DOCUMENTS ON EXTENSIONS OF THIS PROJECT OR OTHER PROJECTS. ANY RE-USE WITHOUT WRITTEN PERMISSION OF HIGHLAND ENGINEERING, P.C. IS AT THE SOLE RISK OF OTHERS AND WITHOUT LEGAL EXPOSURE TO OR LIABILITY TO HIGHLAND ENGINEERING, P.C.

HIGHLAND ENGINEERING, P.C. IS NOT RESPONSIBLE FOR SUPERVISING, DIRECTING, OR HAVING CONTROL OVER THE CONSTRUCTION WORK. HIGHLAND ENGINEERING, P.C. DOES NOT HAVE THE AUTHORITY OR RESPONSIBILITY FOR THE CONTRACTORS CHOSEN MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION.

THE CONTRACTOR(S) IS RESPONSIBLE FOR MEETING THE SAFETY REQUIREMENTS OF ALL GOVERNING AUTHORITIES.

CONCRETE

THE COMPRESSIVE STRENGTH OF GROUT USED TO CONSTRUCT LEVEL BEAM BEARING PLATES SHALL MATCH THE COMPRESSIVE STRENGTH OF THE SUPPORTING CONCRETE.

CONCRETE CONTAINING CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL NOT BE PERMITTED IN ANY CONCRETE.

CONCRETE SHALL BE ADEQUATELY CONSOLIDATED DURING PLACEMENT. NEITHER OVERCONSOLIDATING NOR TRANSPORTING CONCRETE WITH VIBRATORS SHALL BE PERMITTED.

PREPARE AND TEST CONCRETE CYLINDERS AS OUTLINED IN CHAPTER 16 OF ACI-301 OR IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS.

COLD WEATHER CONCRETE SHALL BE IN ACCORDANCE WITH ACI-306. HOT WEATHER CONCRETE SHALL BE IN ACCORDANCE WITH ACI-305.

ALL REINFORCING BARS AND ACCESSORIES SHALL BE DETAILED AND PLACED IN ACCORDANCE WITH ACI STANDARDS 315 AND 315R.

WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED UNLESS SHOWN ON THE DRAWINGS. WHEN WELDING IS SHOWN, WELDS MUST COMPLY WITH "RECOMMENDED PRACTICE FOR WELDING REINFORCEMENT STEEL, METAL INSERTS AND CONNECTIONS IN REINFORCED CONCRETE CONSTRUCTION", AWS D12.1. IN NO CASE SHALL WELDING BE PERMITTED AT BAR BENDS, NOR TACK WELDING OF CROSSING BARS.

GENERAL CONTRACTOR SHALL COORDINATE AND CHECK WITH TRADE CONTRACTORS, ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR OPENINGS, SLEEVES, ANCHORS, HANGERS, INSERTS, SLAB DEPRESSIONS AND OTHER ITEMS RELATED TO CONCRETE WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY BEFORE PERMITTING CONCRETE PLACEMENT. CONCRETE SHALL BE PITCHED AS SHOWN OR REQUIRED.

ALUMINUM, OR MATERIALS CONTAINING ALUMINUM, SHALL NOT BE PERMITTED IN THE CONCRETE UNLESS AN ADEQUATE COATING TO PREVENT ALUMINUM-CONCRETE REACTION IS PROVIDED. THIS INCLUDES PUMPING CONCRETE THROUGH ALUMINUM PIPE.

STRUCTURAL STEEL

STRUCTURAL STEEL SHALL COMPLY WITH THE REFERENCED CODES AND STANDARDS NOTED ABOVE.

HORIZONTAL ELEMENTS SHALL BE DETAILED, MANUFACTURED AND INSTALLED WITH THE NATURAL CAMBER UP.

TYPICAL BEAM CONNECTIONS SHALL BE DESIGNED FOR 50% OF THE 'ALLOWABLE UNIFORM LOAD IN KIPS' AS FOUND IN THE MANUAL OF STEEL CONSTRUCTION, UNLESS NOTED OTHERWISE ON DRAWINGS. THE STEEL CONTRACTOR HAS THE OPTION OF BOLTED OR WELDED CONNECTIONS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

GOVERNMENT ANCHORS SHALL BE PROVIDED TO ANCHOR STEEL TO MASONRY WHEN ANCHOR BOLTS, BEARING PLATES OR OTHER ANCHORAGE IS NOT SPECIFIED.

STEEL BEAMS SHALL BEAR A MINIMUM OF 8" ON CONCRETE OR MASONRY, UNLESS NOTED OTHERWISE IN DRAWINGS. MINIMUM ANCHORAGE TO CONCRETE OR MASONRY SHALL BE (2) 1/2" DIAMETER HOOKED ANCHOR BOLTS OR HEADED STUDS WITH 4" EMBEDMENT.

STRUCTURAL STEEL SHALL RECEIVE ONE COAT OF APPROVED SHOP PAINT UNLESS NOTED OTHERWISE IN DRAWINGS OR ARCHITECTURAL SPECIFICATIONS. REFER TO ARCHITECTURAL SPECIFICATIONS FOR ADDITIONAL PAINTING REQUIREMENTS FOR EXPOSED STRUCTURAL STEEL.

MASONRY

THE OWNER SHALL RECEIVE AFFIDAVITS FROM AN APPROVED TESTING LABORATORY CERTIFYING ALL MASONRY UNITS CONFORM TO THEIR RESPECTIVE ASTM REQUIREMENTS PRIOR TO THEIR DELIVERY TO THE JOB SITE.

GROUT ALL CAVITIES AND/OR BOND BEAMS CONTAINING REINFORCEMENT SOLID. CAVITIES SHALL BE GROUTED IN LIFTS NOT EXCEEDING 5'-0". DO NOT DISPLACE THE REINFORCEMENT WHILE PLACING THE GROUT.

THE REINFORCEMENT PLACEMENT SHALL BE CHECKED PRIOR TO GROUTING THE FIRST LIFT OF WALL ABOVE THE SLAB AND PRIOR TO GROUTING THE TOP LIFT OF THE WALL. AT EACH REINFORCEMENT CHECK, (3) THREE GROUT AND MORTAR SPECIMENS SHALL BE TAKEN FOR EACH 500 SQUARE FEET OF MASONRY BEING ERECTED. TEST SPECIMENS AT SEVEN (7) DAYS, AT TWENTY-EIGHT (28) DAYS, AND HOLD THE THIRD SPECIMEN FOR FURTHER TESTING, AS REQUIRED.

SPLICED REINFORCEMENT SHALL BE LAPPED 24" OR 48 BAR DIAMETERS, WHICHEVER IS GREATER.

PROVIDE HORIZONTAL REINFORCING, MINIMUM 9 GAGE WIRE DIAMETER, AT EVERY SECOND BLOCK COURSE, 16" O.C. VERTICALLY IN ALL WALLS. INSTALL JOINT REINFORCEMENT IN THE FIRST AND SECOND BED JOINTS, EIGHT INCHES (8") O.C. IMMEDIATELY ABOVE AND BELOW MASONRY OPENINGS. THE JOINT REINFORCEMENT SHALL BE EXTENDED A MINIMUM OF 24" BEYOND JAMBS.

VERTICAL REINFORCEMENT SHALL BE AS NOTED ON THE PLAN. PROVIDE TWO (2) BARS, ONE (1) EACH FACE, SAME SIZE AS VERTICAL REINFORCEMENT, EACH SIDE OF OPENING AND AT BUILDING CORNERS, FULL HEIGHT. PROVIDE TWO (2) BARS UNDER ALL GRILLAGE BEAMS AND BEAM BEARING PLATES, UNLESS NOTE OTHERWISE.

CONTROL JOINTS ARE REQUIRED IN ALL WYTHES OF MASONRY AT A MAXIMUM HORIZONTAL SPACING OF 40'-0" O.C. REFER TO THE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF CONTROL JOINTS. NO PLATES SHALL BE LOCATED WITHIN TWO (2) FEET OF BEAM BEARING. NO RIGID ELEMENTS SHALL BE INSTALLED ACROSS JOINT THAT WILL HINDER THE PERFORMANCE OF THE JOINT.

BOND BEAMS SHALL BE LAPPED A MINIMUM OF 4'-0" IN STEPPED BOND BEAM COURSES.

CALCIUM CHLORIDE AND/OR ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL NOT BE USED IN MORTAR OR GROUT MIXES. NO ANTI-FREEZE CHEMICALS SHALL BE USED TO LOWER THE FREEZING POINT OF EITHER MORTAR OR GROUT.

MASONRY SHALL NOT BE LAID IN HOT WEATHER OR COLD WEATHER UNLESS THE RECOMMENDATIONS IN ACI 530.1 ARE STRICTLY ADHERED TO.

MASONRY WALLS SHALL BE BRACED TO WITHSTAND THE CODE SPECIFIED HORIZONTAL LOADS DURING THEIR ERECTION, AND UNTIL THEIR DESIGN SUPPORTS ARE IN PLACE. BRACING SYSTEMS SHALL BE DESIGNED BY A QUALIFIED STRUCTURAL ENGINEER. SHORES AND/OR FORMS SHALL NOT BE REMOVED, NOR CONCENTRATED LOADS APPLIED, UNTIL MASONRY HAS SET ADEQUATELY ENOUGH TO CARRY ITS OWN WEIGHT AND ANY APPLIED LOADS.

MASONRY WALLS THAT ARE NON-LOADBEARING SHALL BE ANCHORED TO THE STRUCTURE ABOVE PER THE STRUCTURAL DETAILS. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE LOCATION AND EXTENT OF ALL MASONRY WALLS.

QUALITY ASSURANCE AND INSPECTION OF WORK, AS DEFINED IN THE CODES AND STANDARDS ABOVE, THE ARCHITECTURAL SPECIFICATIONS AND LOCAL AUTHORITIES SHALL BE STRICTLY ADHERED TO.

LINTELS SHALL BEAR ON 1'-4" x 1'-4" SOLID, OR GROUTED SOLID MASONRY EACH END, UNLESS NOTED OTHERWISE. PROVIDE BEARING PLATES OR MASONRY ANCHORS, AS NOTED ON THE DRAWINGS. STEEL LINTELS TO BE WELDED TO BEARING PLATES.

EMBEDDED STEEL SHALL HAVE ADJUSTABLE MASONRY ANCHORS SPACED NOT GREATER THAN 16" VERTICALLY, 32" HORIZONTALLY, UNLESS NOTED OTHERWISE.

INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

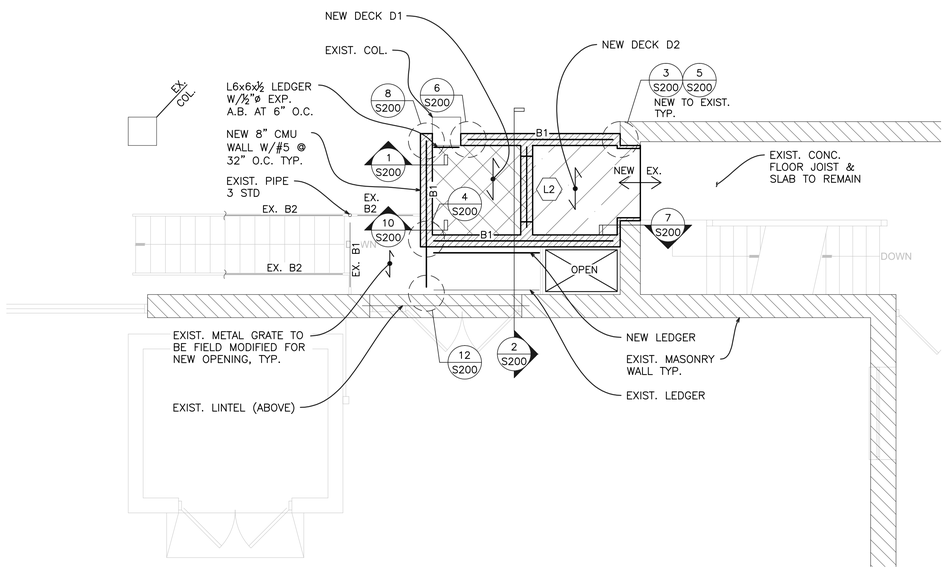
RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
STRUCTURAL NOTES

PROJECT INFORMATION

Date	FEBRUARY 14, 2018
Rev. Date	
RLJA Proj	2016-034

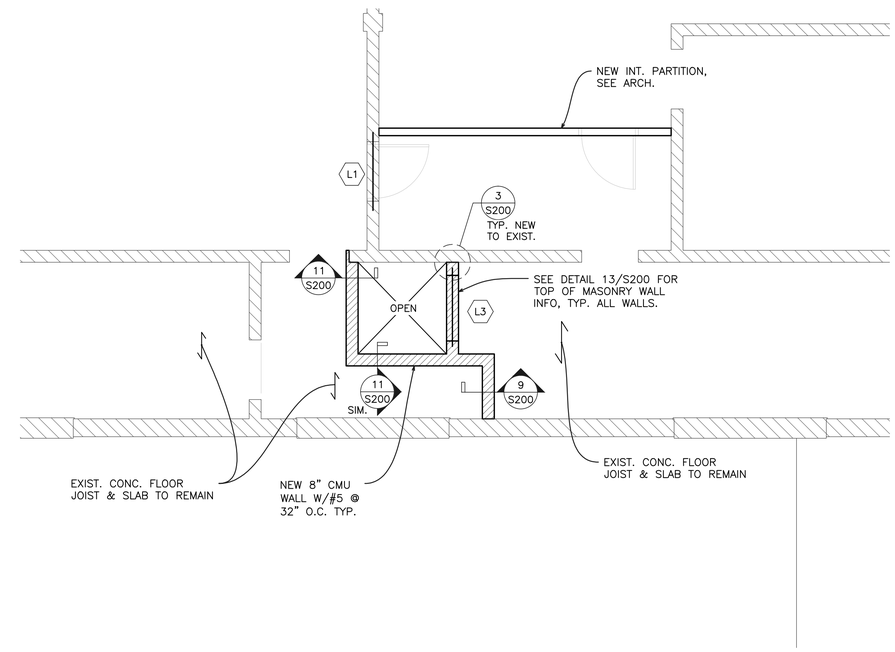
SHEET NUMBER
S000
OF
3



1 FIRST FLOOR FRAMING PLAN

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

NOTES:
1. TOP OF STEEL BEAMS (NEW)
2. VERIFY ALL EXIST. FRAMING, DIMENSIONS, NEW OPENING SIZES AND LOCATIONS WITH THE ARCHITECTURAL AND MECHANICAL DRAWINGS.
3. COORDINATE LOCATION, DIMENSIONS, AND LIFT SIZE W/ARCHITECTURAL DRAWINGS. G.C. TO COORDINATE LIFT REQUIREMENTS W/ LIFT MANUFACTURERS RECOMMENDATIONS
4. EX. B1 = EXIST. C6x10.5
5. EX. B2 = EXIST. C12x20.7
6. B1 = NEW W12x26
7. NEW DECK D1: 8" P.C. PLANK + 2" CONC. TOPPING W/6x6-W1.4xW1.4 WWR.
8. NEW DECK D2: 8" P.C. PLANK + 5" CONC. TOPPING W/6x6-W1.4xW1.4 WWR.
9. TOTAL LOAD OF LIFT (INCLUDING OCCUPANT/OPERATIONAL LOADS) NOT TO EXCEED 5,000 LBS
10. P.C. PLANKS SHALL BE DESIGNED FOR LOADING OF PLATFORM LIFT AND FLOOR LOADING PER THE GENERAL NOTES
11. (#) = LINTEL, SEE SCHEDULE ON S200



2 SECOND FLOOR FRAMING PLAN

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

NOTES:
1. TOP OF STEEL BEAMS (NEW)
2. VERIFY ALL EXIST. FRAMING, DIMENSIONS, NEW OPENING SIZES AND LOCATIONS WITH THE ARCHITECTURAL AND MECHANICAL DRAWINGS.
3. COORDINATE LOCATION, DIMENSIONS, AND LIFT SIZE W/ARCHITECTURAL DRAWINGS. G.C. TO COORDINATE LIFT REQUIREMENTS W/ LIFT MANUFACTURERS RECOMMENDATIONS.
4. (#) = LINTEL, SEE SCHEDULE ON S200.

INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

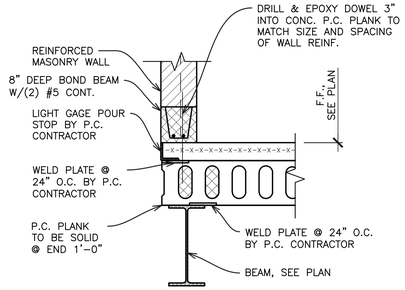
RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
FIRST & SECOND FLOOR FRAMING PLAN

PROJECT INFORMATION

Date	FEBRUARY 14, 2018
Rev. Date	
RLJA Proj	2016-034

SHEET NUMBER
S100
OF
3



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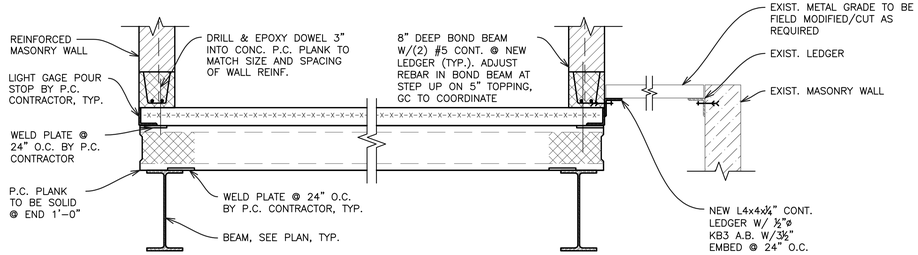

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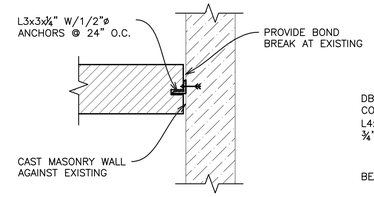

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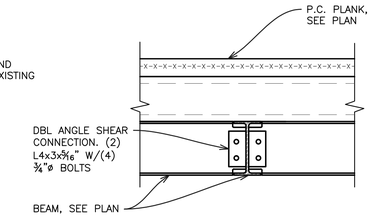

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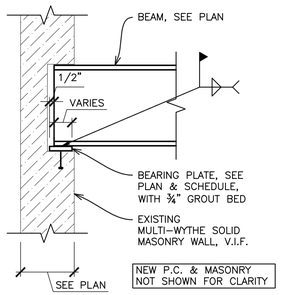

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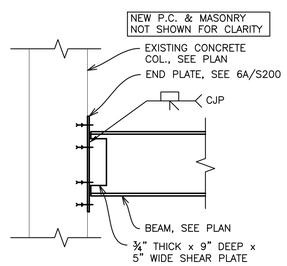

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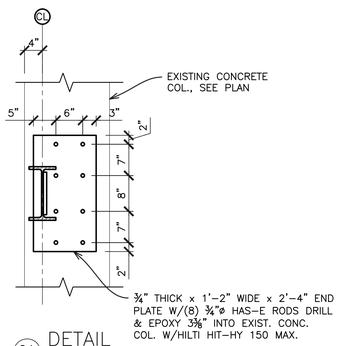

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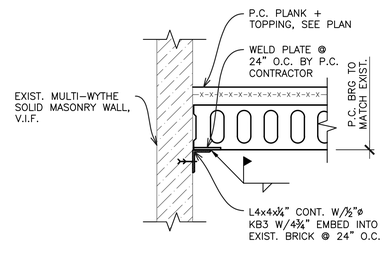

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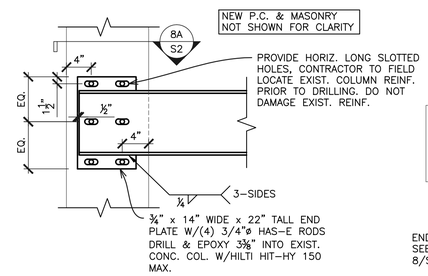

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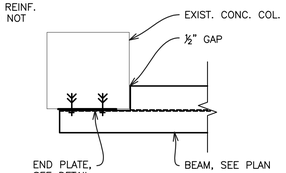

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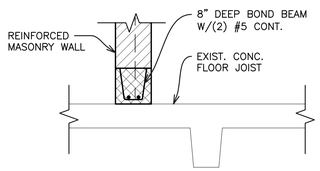

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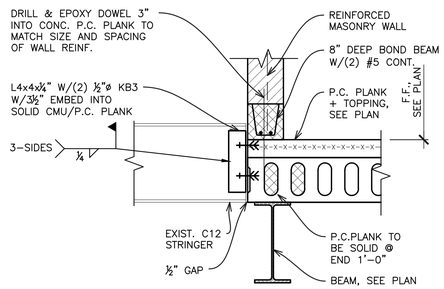

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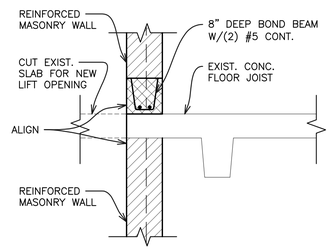

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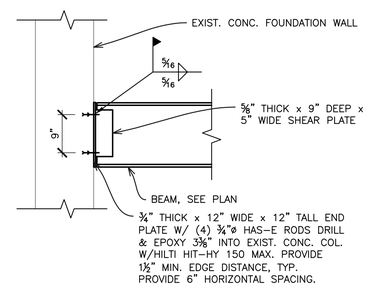

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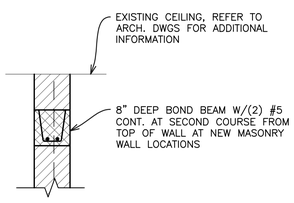

13 DETAIL
Scale: N.T.S.

BEARING PLATE SCHEDULE

MK	MEMBERS	REMARKS
BPL 1	PL 3/4" x 7" x 0'-8" W/(2) 3/4" DIA. x 4" HEADED STUDS	SEE DETAIL 5/S200

LINTEL SCHEDULE

MARK	MEMBERS	SHP.	BRG.	REMARKS
L1	W8x10 + 5/16 BOT. PL	I	8"	PROVIDE BPL1 E.E.
L2	8" DEEP CMU BOND BEAM W/(2) #5 BARS CONT. GROUT SOLID	⊔	8" BRG	--
L3	8" DEEP CMU BOND BEAM W/(2) #5 BARS CONT. GROUT SOLID	⊔	8" BRG	PROVIDE (1) LINTEL FOR R.O. FOR INSTALLATION & (1) LINTEL AT FINAL LINTEL LOCATION, G.C. TO COORD. W/ARCH. & LIFT MANUFACTURER

INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
SCHEDULES & DETAILS

PROJECT INFORMATION
Date: FEBRUARY 14, 2018
Rev. Date:
RLJA Proj: 2016-034

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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.

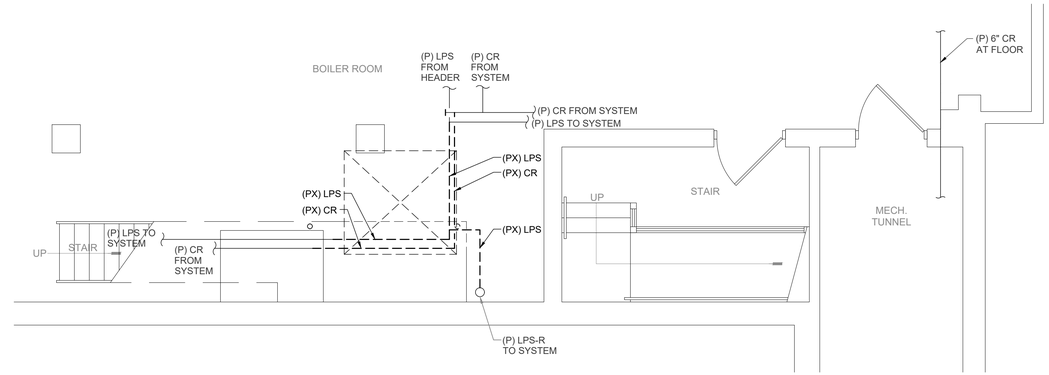
PX-DO — SAME AS "PX", EXCEPT REMOVED, CLEANED AND RESTORED INTACT, AS FAR AS PRACTICAL, MATCHED MARKED, AND OTHERWISE IDENTIFIED AS REQUIRED AND DELIVERED TO OWNER OUTSIDE OF BUILDING AS DIRECTED BY ENGINEER.

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.

BASIC ABBREVIATIONS

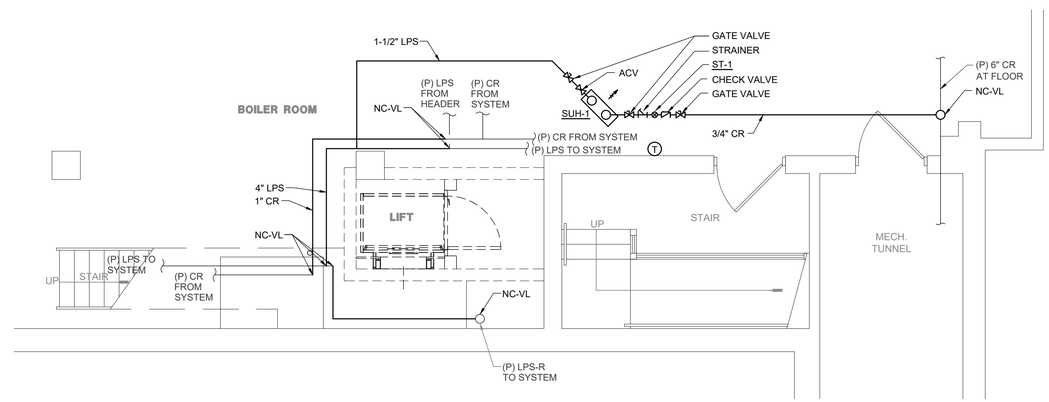
MARK	DESCRIPTION	MARK	DESCRIPTION
AAD	AUTOMATIC ALUMINUM DAMPERS	MC	MECHANICAL CONTRACTOR
ACCU	AIR COOLED CONDENSING UNIT	MTD	MOUNTED
AD	ACCESS DOOR	NC	NEW CONNECTION
AFC	ADJUSTABLE FLEXIBLE CONNECTION	OA	OUTDOOR AIR
AFF	ABOVE FINISH FLOOR	OAD	OUTDOOR AIR DAMPER
ALUM	ALUMINUM	OAI	OUTDOOR AIR INTAKE
AP	ACCESS PANEL	OU.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
CTF	CLOSE TO FLOOR	RTU	ROOFTOP UNIT
CTW	CLOSE TO WALL (EXPOSED)	SCD	SUPPLY CEILING DIFFUSER
CR	CONDENSATE RETURN	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
FBF	FROM BELOW FLOOR	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.



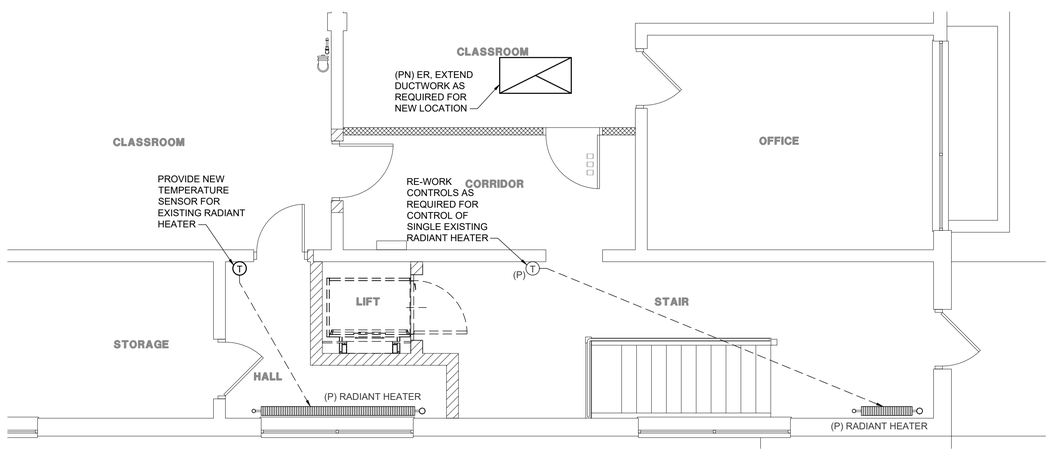
BASEMENT DEMOLITION PLAN - MECHANICAL

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



BASEMENT NEW WORK PLAN - MECHANICAL

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



2ND FLOOR NEW WORK PLAN - MECHANICAL

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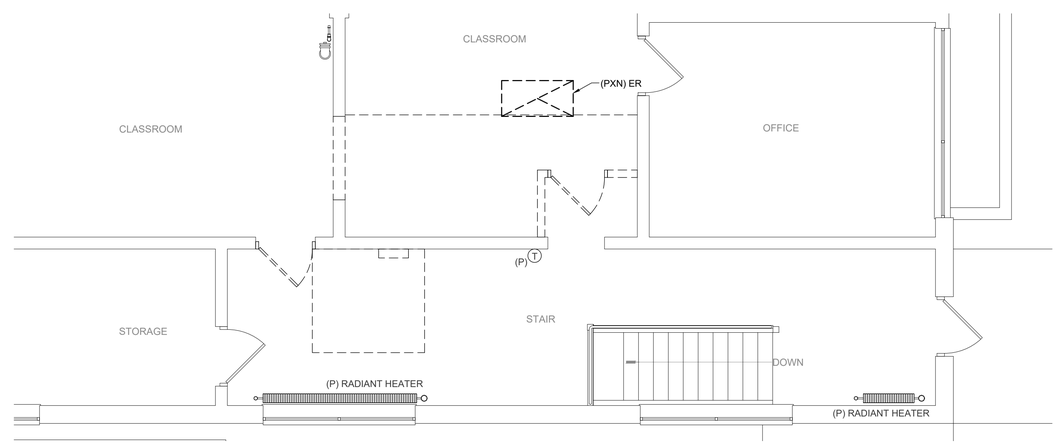

2ND FLOOR DEMOLITION PLAN - MECHANICAL

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

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

INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
DEMOLITION & NEW WORK PLANS - MECHANICAL

PROJECT INFORMATION

Date	FEBRUARY 14, 2018
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SUSPENDED UNIT HEATER (SUH) SCHEDULE:

PLAN NO.	SUH-1
MFGR.	MODINE
MODEL	HSB-121
HEAT	STEAM
BTU/HR	121,000
CFM	1,775
MOTOR HP	1/5
VOLTAGE	120-1-60
UNIT MCA	2.8
CONDENSATE (LB/HR)	125
LPS/CR CONN.	3/4"
APPROX. WT. IN LBS.	76
MOUNTING	10'-0" AFF-VERIFY
NOTES	1,2,3

NOTES: SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1. MANUFACTURER LISTED IN THIS SCHEDULE IS THE BASIS OF DESIGN FOR THE PROJECT. CONTRACTOR MAY SUBMIT EQUAL FOR DISTRICT APPROVAL DURING BIDDING.
2. UNIT TO BE CONTROLLED BY WALL MOUNTED SPACE THERMOSTAT AS SHOWN. MOUNT USING MINIMUM 3/8" OR 1/2" THREADED ROD.
3. PROVIDE STEAM TRAP, VALVES, ETC. AS SHOWN ON SUH DETAIL.

STEAM TRAP (ST) SCHEDULE:

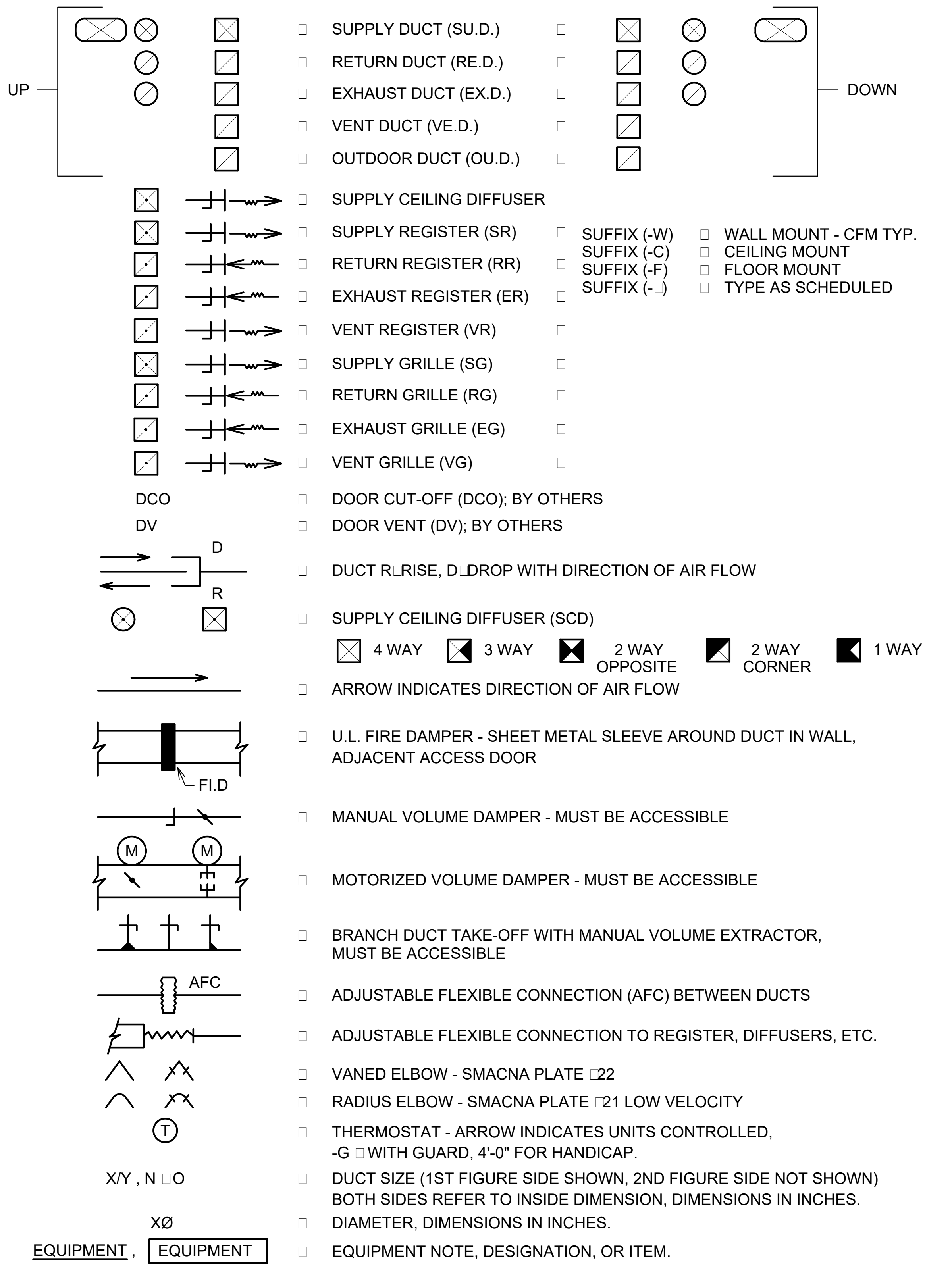
PLAN NO.	ST-1
SERVICE	SUH-1
MFR	B & G (HOFFMAN)
MODEL	FT015H-3
TYPE	F&T
CONN. SIZE	3/4"
CAPACITY (□/HR)	390
DIFFERENTIAL PRESSURE (PSI)	0.25
NOTES	1

NOTES: SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1. MANUFACTURER LISTED IN THIS SCHEDULE IS THE BASIS OF DESIGN FOR THE PROJECT. CONTRACTOR MAY SUBMIT EQUAL FOR DISTRICT APPROVAL DURING BIDDING.

HVAC SHEET METAL SYMBOLS:

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



□ SUPPLY DUCT (SU.D.) □
□ RETURN DUCT (RE.D.) □
□ EXHAUST DUCT (EX.D.) □
□ VENT DUCT (VE.D.) □
□ OUTDOOR DUCT (OU.D.) □
□ SUPPLY CEILING DIFFUSER
□ SUPPLY REGISTER (SR) □
□ RETURN REGISTER (RR) □
□ EXHAUST REGISTER (ER) □
□ VENT REGISTER (VR) □
□ SUPPLY GRILLE (SG) □
□ RETURN GRILLE (RG) □
□ EXHAUST GRILLE (EG) □
□ VENT GRILLE (VG) □

SUFFIX (-W) □ WALL MOUNT - CFM TYP.
SUFFIX (-C) □ CEILING MOUNT
SUFFIX (-F) □ FLOOR MOUNT
SUFFIX (-□) □ TYPE AS SCHEDULED

□ DOOR CUT-OFF (DCO); BY OTHERS
□ DOOR VENT (DV); BY OTHERS
□ DUCT R□RISE, D□DROP WITH DIRECTION OF AIR FLOW
□ SUPPLY CEILING DIFFUSER (SCD)
4 WAY 3 WAY 2 WAY OPPOSITE 2 WAY CORNER 1 WAY
□ ARROW INDICATES DIRECTION OF AIR FLOW
□ U.L. FIRE DAMPER - SHEET METAL SLEEVE AROUND DUCT IN WALL, ADJACENT ACCESS DOOR
□ MANUAL VOLUME DAMPER - MUST BE ACCESSIBLE
□ MOTORIZED VOLUME DAMPER - MUST BE ACCESSIBLE
□ BRANCH DUCT TAKE-OFF WITH MANUAL VOLUME EXTRACTOR, MUST BE ACCESSIBLE
□ ADJUSTABLE FLEXIBLE CONNECTION (AFC) BETWEEN DUCTS
□ ADJUSTABLE FLEXIBLE CONNECTION TO REGISTER, DIFFUSERS, ETC.
□ VANED ELBOW - SMACNA PLATE □22
□ RADIUS ELBOW - SMACNA PLATE □21 LOW VELOCITY
□ THERMOSTAT - ARROW INDICATES UNITS CONTROLLED, -G □ WITH GUARD, 4'-0" FOR HANDICAP.
□ DUCT SIZE (1ST FIGURE SIDE SHOWN, 2ND FIGURE SIDE NOT SHOWN) BOTH SIDES REFER TO INSIDE DIMENSION, DIMENSIONS IN INCHES.
□ DIAMETER, DIMENSIONS IN INCHES.
□ EQUIPMENT NOTE, DESIGNATION, OR ITEM.

DIVISION 23 - MECHANICAL

SECTION 230100 - 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. PLUMBING WASTE LINES, DOWN SPOUTS AND VENTS.
B. PLUMBING WATER LINES.
C. ELECTRICAL CONDUITS.
D. 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. 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.

11. 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.

12. INDENTIFICATION:

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.

13. PAINTING:

COORDINATE PAINTING REQUIREMENTS WITH GENERAL CONTRACTOR PRIOR TO BIDDING.

14. 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.

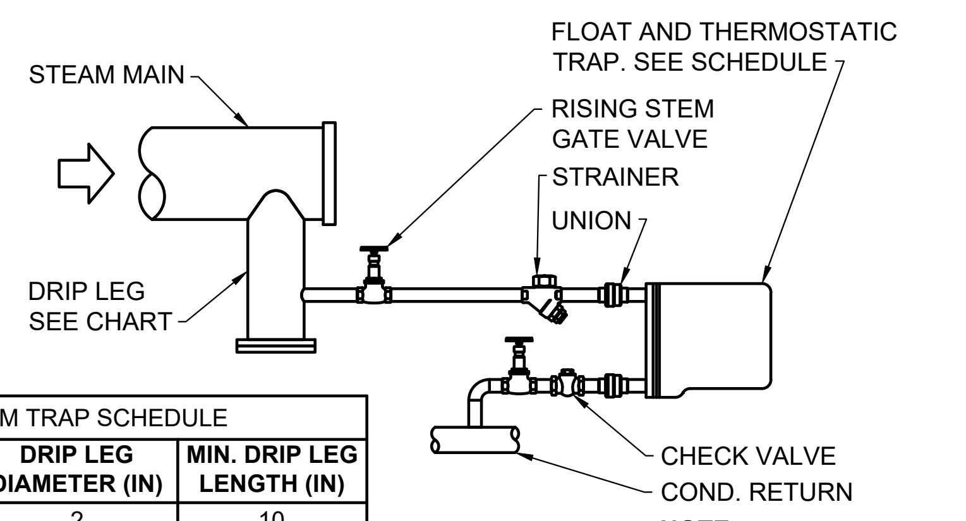
15. GUARANTEE:

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.

16. 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 230100



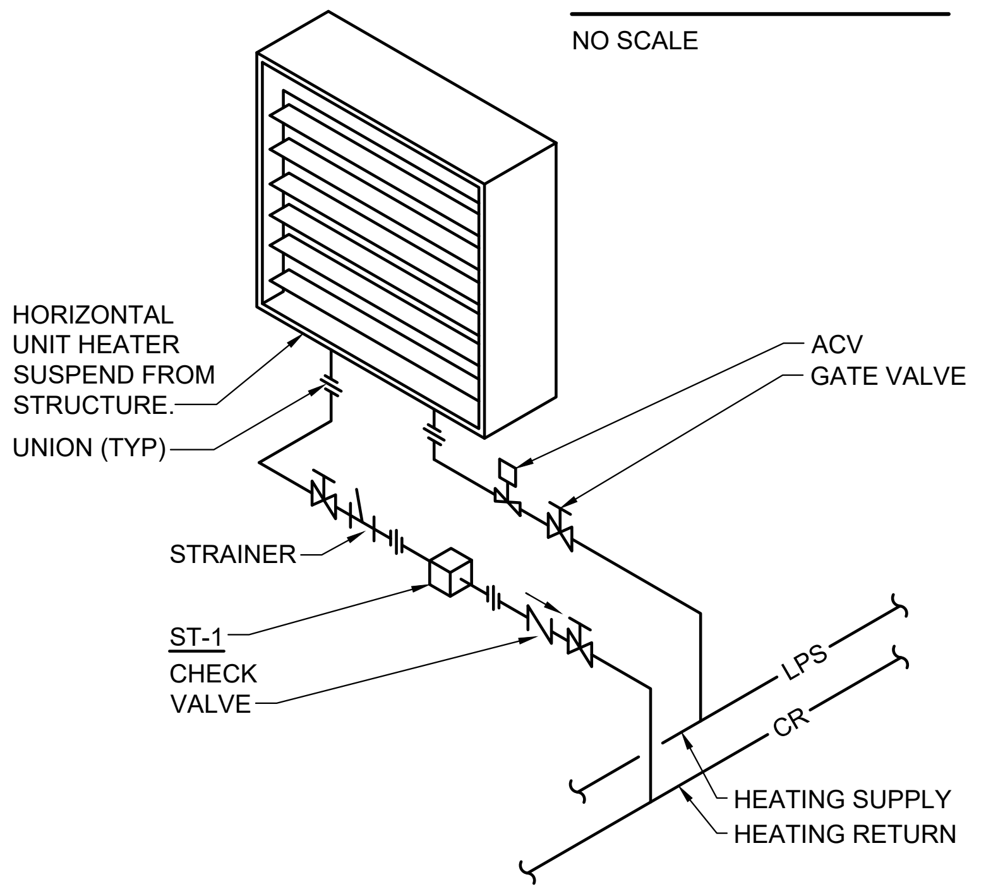
NOTE:
OFFSET NEW DRIP AROUND PIPING TO ACCOMODATE NEW DRIP LEG HEIGHT.

STEAM TRAP SCHEDULE

STEAM MAIN SIZE (IN)	DRIP LEG DIAMETER (IN)	MIN. DRIP LEG LENGTH (IN)
2	2	10
3	3	10
4	4	10
6	4	10
8	4	12
10	6	15
12	6	18
14	8	18

STEAM TRAP DETAIL

NO SCALE



UNIT HEATER PIPING DETAIL

NO SCALE (DIAGRAMMATIC)

DIVISION 23 - MECHANICAL

SECTION 235000 - 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 230100 - 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, STEAM SUSPENDED UNIT HEATER.

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" 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. 1/2" ARMAFLEX INSULATION MAY BE USED IN LIEU OF THE ABOVE, IN CONCEALED AREAS WITH SPACE LIMITATIONS. PROVIDE AS DIRECTED BY OWNER OR DEVELOPER. IN FINISHED AND EXPOSED AREAS, SECURE INSULATION TO WITHSTAND ABOVE NORMAL ABUSE.

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. STEAM SUSPENDED UNIT HEATER:

ACCEPTABLE MANUFACTURERS SHALL INCLUDE MODINE, REZNOR, OR OTHER MANUFACTURER SUBMITTED FOR APPROVAL BY DISTRICT DURING BIDDING.

CONTRACTOR SHALL FURNISH AND INSTALL STEAM UNIT HEATER. PERFORMANCE SHALL BE AS INDICATED ON THE EQUIPMENT SCHEDULE ON THE PLANS. UNITS SHALL BE LISTED BY CSA AS CERTIFIED TO CAN/CSA-C22.2 NO. 236-05 “HEATING AND COOLING EQUIPMENT” AND UL STD. NO. 1995 “HEATING AND COOLING EQUIPMENT.”

CASINGS SHALL BE 18 GAUGE STEEL AND CONSIST OF FRONT AND BACK HALVES. BOTH HALVES ARE JOINED TOGETHER AT THE TOP AND BOTTOM UTILIZING THE CONDENSER MOUNTING SCREWS. CASING TOP IS PROVIDED WITH THREADED HANGER CONNECTIONS FOR UNIT SUSPENSION. FAN VENTURI IS FORMED IN CASING BACK HALF.

CONDENSER COILS ARE OF THE EXTENDED SURFACE TYPE, UTILIZING ALUMINUM FINS AND DLP-TYPE COPPER TUBES WITH MALLEABLE IRON SUPPLY AND RETURN CONNECTIONS FOR HSB UNITS, CAST BRONZE CONNECTIONS FOR HC MODELS. TUBES ARE MECHANICALLY BONDED TO THE COLLARS OF THE FINS. THE CONDENSERS ARE WARRANTED FOR OPERATION AT STEAM PRESSURES AND TEMPERATURES UP TO 150 PSIG AND 375°F FOR COPPER COILS AND 250 PSIG AND 400°F FOR 90/10 CUPRO-NICKEL COILS. FINS ARE CONTINUOUS ACROSS THE WIDTH AND DEPTH OF THE CONDENSER AND ARE VERTICALLY ORIENTED TO MINIMIZE THE COLLECTION OF DIRT AND DUST. ALL COILS ARE LEAK TESTED AT 165 TO 200 PSIG, AIR UNDER WATER.

COILS ARE OF SERPENTINE DESIGN WITH HORIZONTAL TUBES, VERTICAL FINS AND CENTER SUPPLY AND RETURN CONNECTIONS ON BOTTOM OF UNIT. ALL TUBE BENDS ARE BRAZED. ALL TUBES HAVE INDIVIDUAL EXPANSION BENDS. COPPER TUBES ARE 1" O.D. WITH 0.030" WALL THICKNESS.

MOTORS ARE DESIGNED FOR CONTINUOUS DUTY AND CAN OPERATE IN A MAXIMUM AMBIENT TEMPERATURE OF 104°F(40°C).

FANS ARE ALUMINUM ON ALL UNITS AND ARE SECURED TO A STEEL HUB. EACH FAN IS BALANCED AND IS DESIGNED SPECIFICALLY FOR THE UNIT HEATER ON WHICH IT IS INSTALLED. HORIZONTAL UNITS ARE EQUIPPED WITH A COMBINATION FAN GUARD/MOTOR-MOUNTING BRACKET. THE GUARD IS CONSTRUCTED OF STEEL ROD.

HORIZONTAL UNITS ARE FURNISHED WITH HORIZONTAL AIR DEFLECTORS AS STANDARD. THE DEFLECTORS ARE ADJUSTABLE TO ALMOST ANY DESIRED POSITION FOR DOWNWARD, STRAIGHT OR UPWARD AIRFLOW. VERTICAL DEFLECTORS ARE AVAILABLE AS AN ACCESSORY.

END OF SECTION 235000

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INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON
ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
MECHANICAL SCHEDULES, DETAILS, AND SPECIFIACTIONS

PROJECT INFORMATION

Date	FEBRUARY 14, 2018
Rev. Date	
RLJA Proj	2016-034

SHEET NUMBER
M102
OF
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BASIC ABBREVIATIONS

MARK	DESCRIPTION	MARK	DESCRIPTION
AFF	ABOVE FINISH FLOOR	IWS	IN WALL SPACE
AP	ACCESS PANEL	L	LAVATORY
ASC	ABOVE SUSPENDED CEILING	LT	LAUNDRY TRAY
BBA	BETWEEN BEAMS ABOVE	MB	MOP BASIN
BF	BALANCED FITTING	NC	NEW CONNECTION
BFP	BACKFLOW PREVENTER	P	PRESENT TO REMAIN
BJA	BETWEEN JOISTS ABOVE	PL	PLUG VALVE
BOFE	BOTTOM OF FOOTING ELEVATION	PRV	PRESSURE REDUCING VALVE
BV	BALL VALVE	R	RISE
CA	COMPRESSED AIR	SA	SANITARY SEWER
CKV	CHECK VALVE	SA-G	SANITARY SEWER - GREASE
CTB	CLOSE TO BEAM	SC	SILL COCK
CTC	CLOSE TO CEILING	SCW	SOFT COLD WATER
CTF	CLOSE TO FLOOR	SK	SINK
CTW	CLOSE TO WALL	SMH	SANITARY MANHOLE
CW	COLD WATER	SS	SERVICE SINK
D	DROP	ST	STORM SEWER
DWV	DROP W/ WASTE, RISE W/ VENT	STMH	STORM MANHOLE
EWC	ELECTRIC WATER COOLER	TAF	TO ABOVE FLOOR
FAF	FROM ABOVE FLOOR	TBF	TO BELOW FLOOR
FBF	FROM BELOW FLOOR	TFA	TO FLOOR ABOVE
FBO	FURNISHED BY OTHERS	TFB	TO FLOOR BELOW
FCO	FLOOR CLEANOUT	TMV	THERMOSTATIC MIXING VALVE
FD	FLOOR DRAIN	TW	TEMPERED WATER
FFA	FROM FLOOR ABOVE	UF	UNDER FLOOR
FFB	FROM FLOOR BELOW	UG	UNDER GROUND
FFE	FINISHED FLOOR ELEVATION	UR	URINAL
FGE	FINISH GRADE ELEVATION	UV	UNDERFLOOR VENT
FV	FIELD VERIFY	V	VENT PIPING
G	GAS PIPING	VL	VERIFY LOCATION
GPR	GAS PRESSURE REGULATOR	VB	VACUUM BREAKER
GT	GREASE TRAP	VTR	VENT THRU ROOF
GV	GATE VALVE	W	WASTE PIPING
GWH	GAS WATER HEATER	WC	WATER CLOSET
HD	HUB DRAIN	WCO	WALL CLEANOUT
HW	HOT WATER	WH	WALL HYDRANT
HS	HAND SINK	WM	WATER METER
HV	HOSE VALVE	WT	WATER THERMOMETER
INV	INVERT	YCO	YARD CLEANOUT

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

PLUMBING SYMBOLS:

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

——CW——	=	COLD WATER
——HW——	=	HOT WATER
– – –HWC– – –	=	HOT WATER CIRCULATING
——CA——	=	COMPRESSED AIR
——G——	=	GAS
	=	DIRECTION OF SYSTEM FLOW
	=	PITCH TO DRAIN AT LOW POINT WITH HV
BV	=	BALL VALVE
PV	=	PLUG VALVE
GV	=	GATE VALVE
BLV	=	BALANCING VALVE
CKV	=	CHECK VALVE
GPR	=	GAS PRESSURE REGULATOR
UN	=	UNION
——CD——	=	CONDENSATE DRAIN
— — V — —	=	VENT
WCO	=	WALL CLEANOUT - EXPOSED
FCO	=	FLOOR CLEANOUT
——SA——	=	SANITARY SEWER - UNDERGROUND
——SAO——	=	SANITARY SEWER - OVERHEAD
——ST——	=	STORM SEWER
YCO	=	YARD CLEANOUT
FD	=	FLOOR DRAIN
HD	=	HUB DRAIN (FOR SANITARY SEWER SYSTEM)
	=	HOSE VALVE
WH	=	WALL HYDRANT
	=	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.

VALVES MUST BE ACCESSIBLE THRU ACCESS DOOR (AD) AND/OR ACCESS PANEL (AP) AS REQUIRED WITH ADJACENT UNIONS FOR REMOVAL OF BODIES.

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

PRESENT EQUIPMENT AND DEMOLITION NOTES:

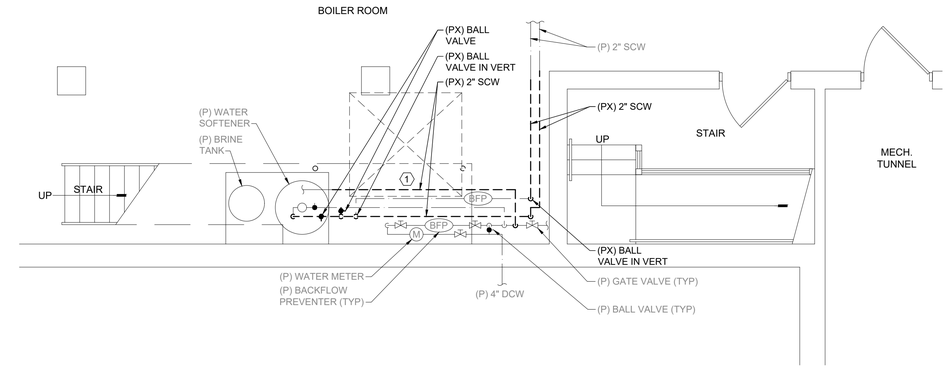
A. THE FOLLOWING REMOVED PRESENT EQUIPMENT AND MATERIALS WHICH ARE IN GOOD OPERATING CONDITION (OR ARE PLACED IN GOOD CONDITION), SUITABLE, MEETING THE REQUIREMENTS OF THESE SPECIFICATIONS, AND ARE APPROVED IN WRITING BY ENGINEER, OR CALLED FOR MAY BE REUSED (PXR, PXN, AND PN).
B. REMOVED PIPING MUST 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:
      - HIS WORK
      - ADMISSION OF NEW EQUIPMENT
      - 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.
      - UNUSED OPENINGS IN EQUIPMENT, WALLS, CEILING, FLOOR, ETC. SHALL BE FILLED.
      - 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.

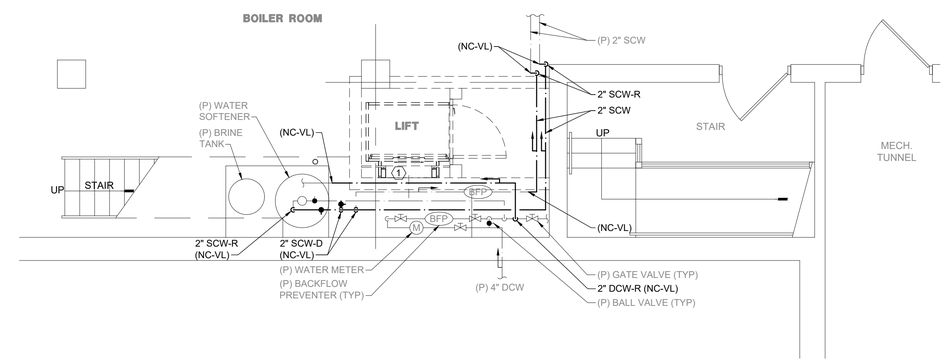


BASEMENT DEMOLITION PLAN - PLUMBING

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

DRAWING NOTES:

1. PIPING OFFSET FOR CLARITY. SEE ISOMETRIC DIAGRAM ON THIS SHEET FOR MORE INFORMATION.

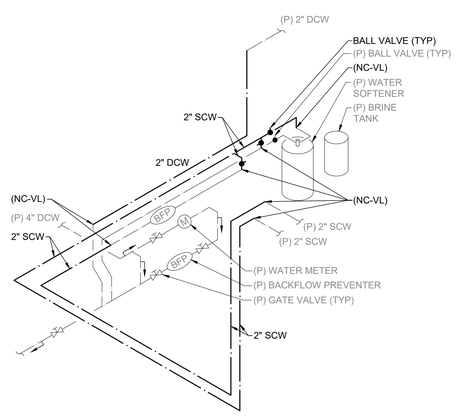


BASEMENT NEW WORK PLAN - PLUMBING

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

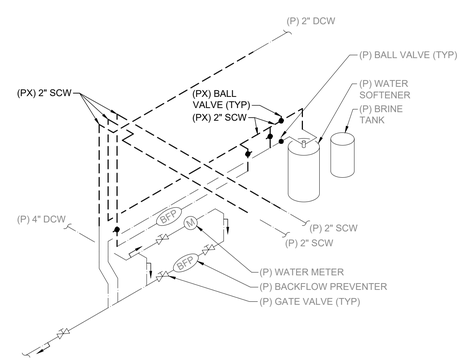
DRAWING NOTES:

1. PIPING OFFSET FOR CLARITY. SEE ISOMETRIC DIAGRAM ON THIS SHEET FOR MORE INFORMATION.



DOMESTIC WATER SERVICE ISOMETRIC DIAGRAM (NEW)

NO SCALE



DOMESTIC WATER SERVICE ISOMETRIC DIAGRAM (DEMO)

NO SCALE

INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
PLUMBING DEMO & NEW WORK PLANS, ABBREVS., SYMBOLS, & DEMO NOTES

PROJECT INFORMATION

Date	FEBRUARY 14, 2018
Rev. Date	
RLJA Proj	2016-034

SHEET NUMBER
P101
OF
2

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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 BUT SAME SHALL BE DONE BY A GENERAL CONTRACTOR. IT SHALL BE THE RESPONSIBILITY OF THE APPROPRIATE PLUMBING CONTRACTOR TO GIVE QUANTITIES OF PATCHING REQUIREMENTS TO A GENERAL CONTRACTOR. SEE SPECIFICATIONS FOR ADDITIONAL 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 PLUMBING 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 PLUMBING CONTRACTOR TO GIVE QUANTITIES OF REMOVAL/REPLACEMENT REQUIREMENTS TO A GENERAL CONTRACTOR.

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. UNUSED OPENINGS IN PIPING SHALL BE CAPPED OR PLUGGED. STRUCTURAL MEMBRANES AND SUPPORTS SHALL NOT BE CUT UNLESS AUTHORIZED BY ARCHITECT, IN WRITING.

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

6. 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.

7. 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.

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

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, EQUIVALENT MAKE EQUIPMENT, SHOP DRAWINGS.
C. VERIFICATION, IDENTIFICATION, PAINTING, 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 NATURAL GAS, WATER, SANITARY, STORM, 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. STEAM AND CONDENSATE RETURN LINES.
B. REFRIGERATION LINES.
C. PLUMBING WATER LINES.
D. ELECTRICAL CONDUITS.
E. 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. 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.

10. 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.

11. 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.

12. IDENTIFICATION:

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. NEAR EACH VALVE AND CONTROL DEVICE.
C. NEAR EACH BRANCH CONNECTION.
D. NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGINATION AND TERMINATION.
E. 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.

13. PAINTING:

COORDINATE PAINTING REQUIREMENTS WITH GENERAL CONTRACTOR PRIOR TO BIDDING.

14. 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.

15. 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.

16. 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.

3. PIPING:

INTERIOR ABOVE GROUND CW PIPING SHALL BE TYPE "L" COPPER TUBING PER ASTM B 88. FITTINGS SHALL BE WROUGHT COPPER SOLDER JOINT TYPE, PER ANSI B16.22. JOINTS SHALL BE SOLDERED PER ASTM B 32 OR SOLDERED WITH 95-5 SOLDER OR BRAZED AS ALLOWED BY STATE AND LOCAL CODES. SLOPE ABOVE GROUND WATER PIPING 1" IN 40 FT. WITH DRAINS AT LOW POINTS, PROVIDE MANUAL AIR VENTS AT HIGH POINTS IN CLOSED LOOP SYSTEMS. HYDROSTATIC WATER TEST SHALL BE PERFORMED ON ALL WATER PIPING AT 175 PSI FOR TWO HOURS, WITH A MAXIMUM PRESSURE LOSS OF 2 PSI. TESTING SHALL COMPLY WITH ILLINOIS PLUMBING CODE 890.1910. CROSS LINKED POLYETHYLENE TUBING IS NOT PERMITTED.

TEST FOR LEAKS AND DEFECTS ALL NEW WATER DISTRIBUTION PIPING SYSTEMS AND PARTS OF EXISTING SYSTEMS THAT HAVE BEEN ALTERED, EXTENDED OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT A SEPARATE REPORT FOR EACH TEST, COMPLETE WITH A DIAGRAM OF THE PORTION OF THE SYSTEM TESTED. REPAIR ALL LEAKS AND DEFECTS WITH NEW MATERIALS AND RE-TEST SYSTEM OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED. PURGE ALL NEW WATER DISTRIBUTION PIPING SYSTEMS AND PARTS OF EXISTING SYSTEMS THAT HAVE BEEN ALTERED, EXTENDED OR REPAIRED PRIOR TO USE. USE THE PURGING AND DISINFECTING PROCEDURE PRESCRIBED BY THE AUTHORITY HAVING JURISDICTION, OR IN CASE A METHOD IS NOT PRESCRIBED BY THAT AUTHORITY, USE THE PROCEDURE DESCRIBED IN EITHER AWWA C651 OR AWWA C652.

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.

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.

4. PIPING INSULATION:

CW 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. CW 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. 1/2" ARMAFLEX INSULATION MAY BE USED IN LIEU OF THE ABOVE, IN CONCEALED AREAS WITH SPACE LIMITATIONS.

5. VALVES:

VALVES SHALL BE APOLLO, B & G, CRANE, GRISWALD, HAMMOND, ILLINOIS, JENKINS, NIBCO, POWELL, STOCKHAM, TOUR & ANDERSSON, WALWORTH, WATTS OR EQUIVALENT, WITH METAL HANDLES AND BUILT FOR 125 PSI WORKING PRESSURE FOR ALL USES. VALVES PROVIDED SHALL BE SUITABLE FOR INTENDED SERVICE. SHUT-OFF TYPE SHALL BE GATE PATTERN OR BALL TYPE. USE OF THREADED ENDS OR FLANGED ENDS OR SOLDERED ENDS IS THE CONTRACTOR'S OPTION WITHIN THE SIZE LISTED. VALVES AND COCKS MUST BE ACCESSIBLE FOR SERVICING. BALL VALVES ON INSULATED PIPING SYSTEMS SHALL BE PROVIDED WITH EXTENDED HANDLES.

END OF SECTION 22400

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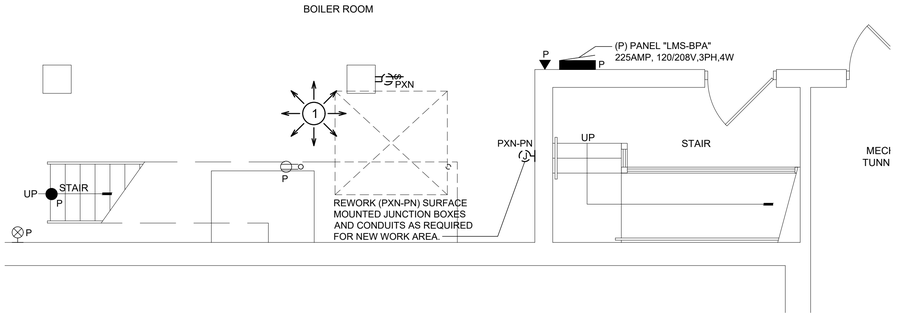
SHEET IDENTIFICATION
PLUMBING SPECIFICATIONS & GENERAL NOTES

PROJECT INFORMATION

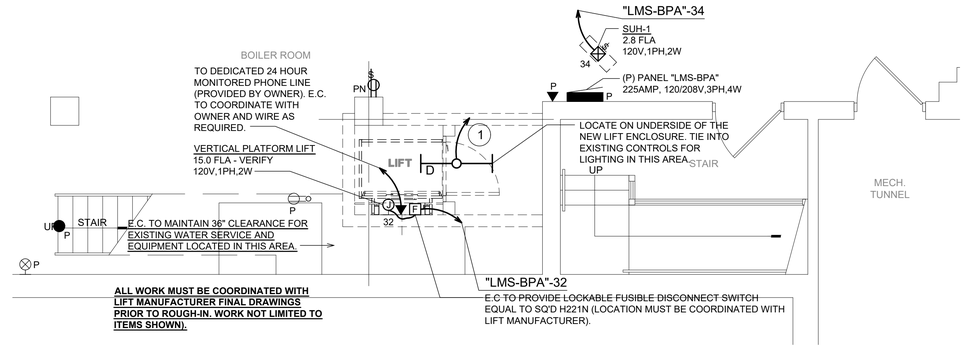
Date	FEBRUARY 14, 2018
Rev. Date	
RLJA Proj	2016-034

SHEET NUMBER



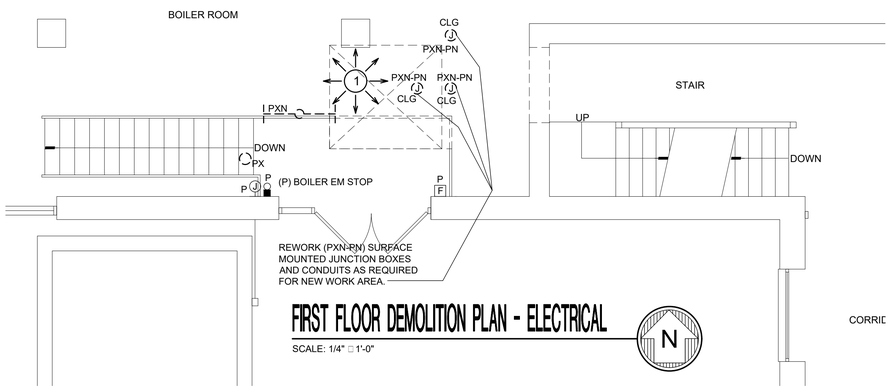
BASEMENT DEMOLITION PLAN - ELECTRICAL

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



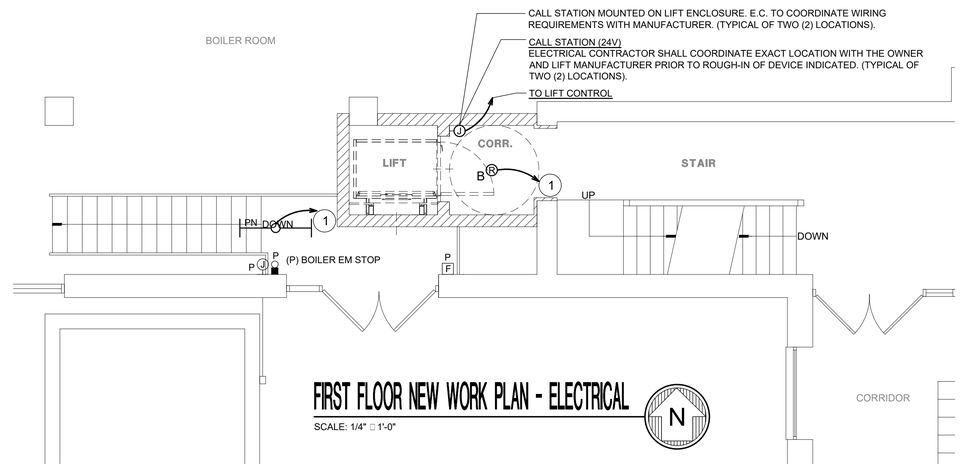
BASEMENT NEW WORK PLAN - ELECTRICAL

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



FIRST FLOOR DEMOLITION PLAN - ELECTRICAL

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

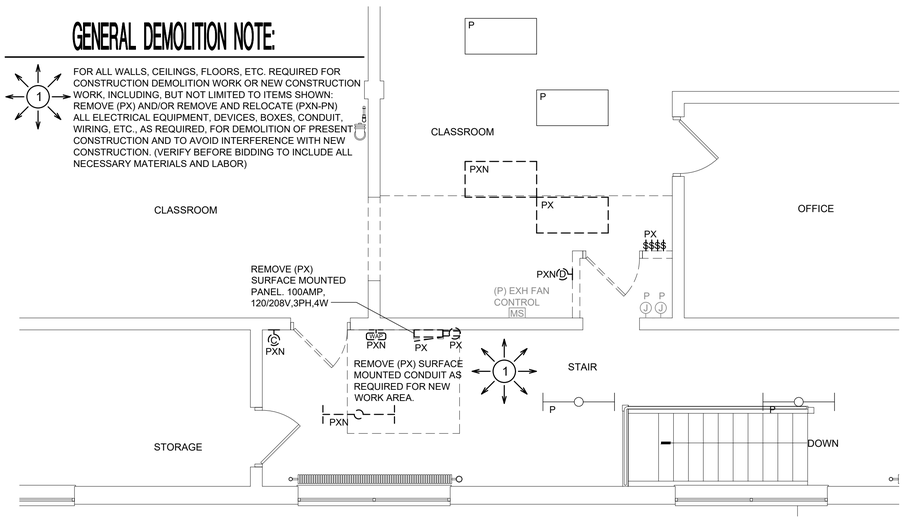


FIRST FLOOR NEW WORK PLAN - ELECTRICAL

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

GENERAL DEMOLITION NOTE:

1 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)

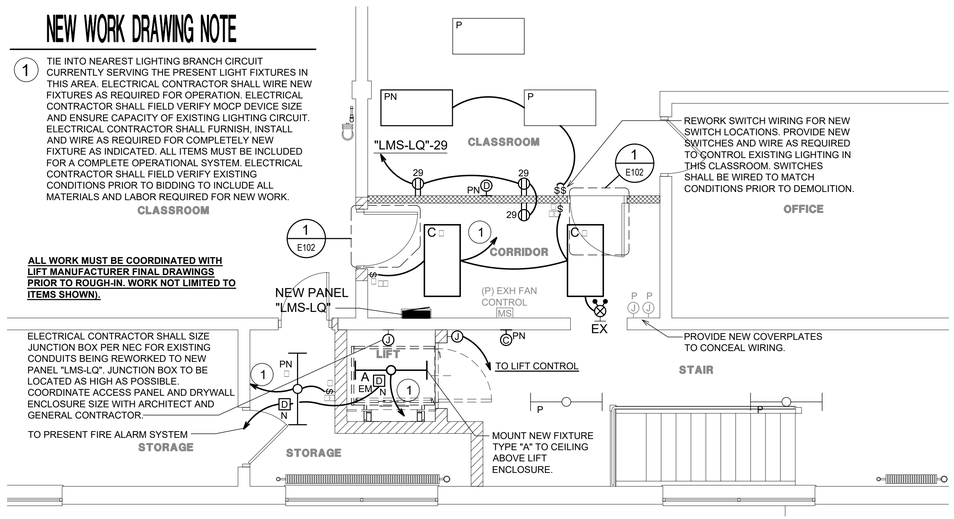


SECOND FLOOR DEMOLITION PLAN - ELECTRICAL

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

NEW WORK DRAWING NOTE

1 TIE INTO NEAREST LIGHTING BRANCH CIRCUIT CURRENTLY SERVING THE PRESENT LIGHT FIXTURES IN THIS AREA. ELECTRICAL CONTRACTOR SHALL WIRE NEW FIXTURES AS REQUIRED FOR OPERATION. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY MOCP DEVICE SIZE AND ENSURE CAPACITY OF EXISTING LIGHTING CIRCUIT. ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND WIRE AS REQUIRED FOR COMPLETELY NEW FIXTURE AS INDICATED. ALL ITEMS MUST BE INCLUDED FOR A COMPLETE OPERATIONAL SYSTEM. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING TO INCLUDE ALL MATERIALS AND LABOR REQUIRED FOR NEW WORK.



SECOND FLOOR NEW WORK PLAN - ELECTRICAL

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

ELECTRICAL SYMBOLS

Symbol	Description
F1	RECESSED CEILING FIXTURE (◇ □:WALL WASHER)
	SURFACE OR PENDANT CEILING FIXTURE
	BRACKET FIXTURE
	RECESSED FLUORESCENT FIXTURE
	SURFACE OR PENDANT FLUORESCENT FIXTURE
	WALL FLUORESCENT FIXTURE (VERIFY HEIGHT)
	BRACKET EXIT LIGHT } DIRECTIONAL ARROW
	CEILING EXIT LIGHT } DIRECTIONAL ARROW
	LIGHT TRACK
	EXTERIOR POLE FIXTURE
	BOLLARD FIXTURE
E	BATTERY EMERGENCY FIXTURE (R:REMOTE HEAD)
	SINGLE POLE SWITCH
3	THREE WAY SWITCH
4	FOUR WAY SWITCH
P	SWITCH WITH PILOT LIGHT
K	KEY OPERATED SWITCH
OS	OCCUPANCY SENSOR SWITCH (EQUAL TO LEVITON DECORA INFRARED ODS15-ID,UNO)
	DIMMER CONTROL SWITCH
	SWITCH WITH GROUNDED DUPLEX RECEPTACLE
	REMOTE CONTROL SWITCH
	GROUNDED DUPLEX RECEPTACLE
	GROUNDED SINGLE 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 } WITH FLUSH COVER
J	WALL JUNCTION BOX } WITH FLUSH COVER
F	SAFETY SWITCH (F:FUSED)
	SURFACE ELECTRICAL PANELBOARD
	RECESSED ELECTRICAL PANELBOARD
M	MOTOR STARTER (VFD:VARIBLE FREQUENCY DRIVE)
R	CONTROL RELAY (LETTER:FLOOR, NUMBER:NO. OF RELAY)
T	TRANSFORMER
	CONDUIT RUN CONCEALED (OR PARTIALLY CONCEALED) IN CEILINGS OR WALLS } CHARACTER MARKS: NUMBER OF WIRES, IF NONE ARE SHOWN TWO ARE REQUIRED
	CONDUIT RUN CONCEALED IN OR UNDER FLOORS } CHARACTER MARKS: NUMBER OF WIRES, IF NONE ARE SHOWN TWO ARE REQUIRED
X	CONDUIT RUN EXPOSED, IN STRAIGHT LINES } CHARACTER MARKS: NUMBER OF WIRES, IF NONE ARE SHOWN TWO ARE REQUIRED
U	CONDUIT RUN UNDERGROUND } CHARACTER MARKS: NUMBER OF WIRES, IF NONE ARE SHOWN TWO ARE REQUIRED
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 } EMPTY CONDUIT, CONCEALED
T	TELEPHONE CONDUIT RUN IN OR UNDER FLOORS } EMPTY CONDUIT, CONCEALED
D	TELEPHONE/DATA OUTLET BOX SEE TELECOMM DETAILS FOR ADDITIONAL REQUIREMENTS. } WITH COVERPLATE AND 1" CONDUIT TO ABOVE SUSPENDED CEILING - BRUSHED END

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	GFI	GROUND FAULT INTERRUPTER
AFF	ABOVE FINISHED FLOOR	HP	HORSEPOWER
ASC	ABOVE SUSPENDED CEILING	INC	INCANDESCENT
C	CONDUIT	IWS	IN WALL SPACE
CF	CARPET FLANGE	JB	JUNCTION BOX
CTC	CLOSE TO CEILING	KW	KILOWATTS
CTF	CLOSE TO FLOOR	LTG	LIGHTING
CTW	CLOSE TO WALL	MAX	MAXIMUM
DSB	DIMMER SWITCH BOARD	MFG	MANUFACTURER
E	EMERGENCY	MIN	MINIMUM
EBBC	ELECTRIC BASEBOARD CONVECTOR	MOB	MOTOR OUTLET BOX
		MTD	MOUNTED
EDH	ELECTRIC DUCT HEATER	MV	MERCURY VAPOR
EMC	ELECTRIC MOTORIZED CONVECTOR	NEC	NATIONAL ELECTRICAL CODE
		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
FL	FLUORESCENT	UNO	UNLESS NOTED OTHERWISE
FFA	FROM FLOOR ABOVE	V	VOLTS
FFB	FROM FLOOR BELOW	W	WIRE
FLA	FULL LOAD AMPS	WP	WEATHER PROOF

INTERIOR VERTICAL PLATFORM LIFT FOR

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SHEET IDENTIFICATION

DEMOLITION & NEW WORK PLANS - ELECTRICAL

PROJECT INFORMATION

Date	FEBRUARY 14, 2018
Rev. Date	
RLJA Proj	2016-034

SHEET NUMBER

E101 OF 3

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FIRE ALARM SYSTEM LEGEND

F — FIRE ALARM SYSTEM WIRING IN CONDUIT, CONCEALED WHERE POSSIBLE

D — CEILING MOUNTED SMOKE DETECTOR

FIRE ALARM SYSTEM NOTES:

FIRE ALARM SYSTEM SHALL BE INSTALLED AND WIRED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WIRING DIAGRAMS. CONTRACTOR SHALL PROVIDE IN SHOP DRAWINGS THE FINAL WIRING SCHEMATIC & ZONE SCHEDULE & BATTERY CALC'S AS REQUIRED.

E.C. TO VERIFY ALL LOCAL REQUIREMENTS WITH LOCAL AUTHORITY PRIOR TO SUBMITTING FINAL BID TO INCLUDE ALL NECESSARY MATERIALS REQUIRED FOR A COMPLETE SYSTEM. ELECTRICAL CONTRACTOR TO INCLUDE ALL NECESSARY LABOR AND MATERIALS REQUIRED FOR FIRE ALARM SYSTEM EXPANSION. ALL LABOR AND MATERIALS SHALL BE INCLUDED IN FINAL BID. COORDINATE WITH THE LOCAL AUTHORITY PRIOR TO SUBMITTING FINAL BIDS TO INCLUDE ALL MATERIAL AND LABOR.

ALL CANDELA INTENSITIES SHALL BE FIELD ADJUSTED PER NFPA 72 SECTION 7.5. (TYPICAL).

ALL NEW ALARM DEVICES SHALL MEET ALL NFPA AND A.D.A OPERATION AND MOUNTING REQUIREMENTS.

ELECTRICAL CONTRACTOR SHALL INCLUDE IN HIS FINAL BID ANY ADDITIONAL COMPONENTS REQUIRED FOR NEW DEVICES TO BE TIED INTO THE EXISTING SYSTEM AS REQUIRED. ALL FIRE ALARM SYSTEM EXPANSION WORK SHALL BE FIELD VERIFIED AND ALL LABOR AND MATERIALS SHALL BE INCLUDED IN THE FINAL SUBMITTED BID.

ALL NEW FIRE ALARM SYSTEM WORK SHALL BE APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION. FINAL SHOP DRAWING SUBMITTAL SHALL BE PROVIDED TO STERLING FIRE PREVENTION FOR FINAL REVIEW AND APPROVAL PRIOR TO ORDERING AND INSTALLATION OF NEW DEVICES TO PRESENT SYSTEM.

FIRE ALARM SYSTEM SPECIFICATIONS

GENERAL

A. CONTRACTOR SHALL FIELD VERIFY EXISTING FACP AND PROVIDE A FULLY FUNCTIONAL ALARM SYSTEM WITH NEW DEVICES AS INDICATED ON PLAN.

B. THE CONTRACTOR SHALL PROVIDE ALL WIRING AND SYSTEM EXPANSION AS REQUIRED TO COMPLETE WORK, INCLUDING, BUT NOT LIMITED TO: INSTALLATION AND RE-WIRING OF ANY SMOKE AND HEAT DETECTORS, INSTALLATION AND WIRING OF ALL VISUAL AND AUDIBLE NOTIFICATION APPLIANCES, ADDITIONAL NAC POWER DEVICES FOR NAC CIRCUITS AS REQUIRED, ADDITIONAL EXPANSION CARDS OR SOFTWARE PROGRAMMING FOR THE EXISTING FACP TO PROVIDE THE ADDITIONAL ZONING FOR THE ALTERATIONS, AND SYSTEM TESTING/VERIFICATION.

C. THE INSTALLATION SHALL CONFORM TO NFPA 72, STATE AND LOCAL CODES AS WELL AS THOSE AUTHORITIES HAVING JURISDICTION.

PRODUCTS

A. EXISTING FIRE ALARM SYSTEM CONTROL PANEL
   1. EXISTING FACP MANUFACTURER/MODEL: SIMPLEX
   2. ANNUNCIATION: OPERATION OF ALARM INITIATING DEVICES SHALL BE ANNUNCIATED AT THE FACP, THE FAAP, AND ALL REMOTE ANNUNCIATORS, INDICATING THE LOCATION AND TYPE OF DEVICE AT THE FACP.

B. SMOKE AND HEAT DETECTORS
   1. DETECTORS SHALL MEET THE REQUIREMENTS OF THE ADA (AMERICANS WITH DISABILITIES ACT) AS WELL AS UL STANDARD 1971.

EXECUTION

A. ELECTRICAL CONTRACTOR TO COMPLETELY WIRE AND RE-PROGRAM SYSTEM AS REQUIRED.

B. GENERAL ALARM: A SYSTEM GENERAL ALARM SHALL INCLUDE:
   1. INDICATION OF ALARM CONDITION AT THE FACP AND ANY REQUIRED REMOTE ANNUNCIATOR(S).
   2. IDENTIFICATION OF THE DEVICE THAT IS THE SOURCE OF THE ALARM AT THE FACP AND ANY REQUIRE REMOTE ANNUNCIATOR(S).
   3. OPERATION OF AUDIBLE AND VISIBLE NOTIFICATION APPLIANCES THROUGHOUT THE BUILDING UNTIL SILENCED AT FACP. AUDIBLE AND VISUAL ALARM NOTIFICATION SHALL OPERATE UNDER SYNCHRONIZE TEMPORAL CODE.
   4. UNLOCKING DESIGNATED DOORS.
   5. SHUTTING DOWN SUPPLY AND RETURN FANS SERVING ZONE WHERE ALARM IS INITIATED.
   6. INITIATION OF SMOKE CONTROL SEQUENCE.
   7. NOTIFYING THE LOCAL FIRE DEPARTMENT.
   8. ALL CIRCUITS REQUIRING SYSTEM-OPERATING POWER SHALL BE 24 VDC AND SHALL BE INDIVIDUALLY FUSED AT THE CONTROL PANEL.

C. AN UPDATED, TYPED DEVICE DIRECTORY, IDENTIFYING EACH INDIVIDUAL SLC/NAC CIRCUIT, ZONES AND DEVICE CODES SHALL BE PROVIDED FOR THE FACP.

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 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.

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, CHAMBERS, CLOAK 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.

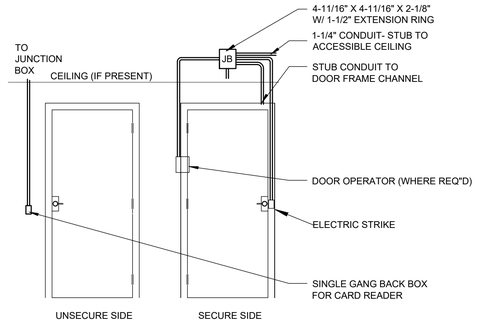
L. WHERE DEVICES ARE OMITTED FROM PRESENT BRANCH CIRCUITS, THE REMAINING DEVICES, ON THE SAME CIRCUIT AND/OR CONDUIT RUN, SHALL BE REWIRED, IF NEEDED AND AS REQUIRED, TO REMAIN ON THEIR RESPECTIVE CIRCUITS AND IN OPERATING CONDITION.

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.

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)



NOTE:
1. ALL CONDUITS SHALL BE 3/4" UNLESS NOTED OTHERWISE.
2. REFER TO PLANS FOR EXACT DOOR SWING.

CARD READER ROUGH-IN DETAIL (1)

NO SCALE

NEW PANEL SCHEDULE

PANEL: "LMS-LQ" (NEW) VOLTAGE: 120/208V, 3PH, 4WIRE MOUNTING: SURFACE
BUS: 225 AMP CU LOCATION: SECOND FLOOR LEVEL- BAND CHOIR RM MAIN: BREAKER
A.I.C.: COORDINATE FEEDER: 3: 3/0 THWN, 1: 250 □□□ □ 6GRD, 3"C RATING: 200A/3P

CIR NO.	AMPS/ POLES	DESCRIPTION-AMPS	PHASE "A"	PHASE "B"	PHASE "C"	DESCRIPTION-AMPS	AMPS/ POLES	CIR NO.
1	20/2	EXISTING-10.0	15.0			EXISTING-5.0	20/1	2
3		EXISTING-10.0		15.0		EXISTING-5.0	20/1	4
5	20/2	EXISTING-10.0			15.0	EXISTING-5.0	20/1	6
7		EXISTING-10.0	15.0			EXISTING-5.0	20/1	8
9	20/2	EXISTING-10.0		15.0		EXISTING-5.0	20/1	10
11		EXISTING-10.0			15.0	EXISTING-5.0	20/1	12
13	20/1	EXISTING-5.0	10.0			EXISTING-5.0	20/1	14
15	20/1	EXISTING-5.0		10.0		EXISTING-5.0	20/1	16
17	20/1	EXISTING-5.0			10.0	EXISTING-5.0	20/1	18
19	20/1	EXISTING-5.0	10.0			EXISTING-5.0	20/1	20
21	20/1	EXISTING-5.0		10.0		EXISTING-5.0	20/1	22
23	20/1	EXISTING-5.0			10.0	EXISTING-5.0	20/1	24
25	20/1	EXISTING-5.0	10.0			EXISTING-5.0	20/1	26
27	20/1	EXISTING-5.0		10.0		EXISTING-5.0	20/1	28
29	20/1	NEW RECEPT-4.5			4.5	SPARE	20/1	30
31	20/1	SPARE				SPARE	20/1	32
33	20/1	SPARE				SPARE	20/1	34
35	20/1	SPARE				SPARE	20/1	36
37		FUTURE SUB PNL SPACE				SPARE	20/1	38
39		" " " "				SPARE	20/1	40
41		" " " "				SPARE	20/1	42

TOTAL PHASE "A" AMPS: (60.0) REMARKS: PROVIDE LOCK-ON DEVICE FOR BREAKERS AS NEEDED.
TOTAL PHASE "B" AMPS: (60.0)
TOTAL PHASE "C" AMPS: (54.5) 4-#3/0 THWN MAX AMP @ 75° = 200 A
HIGH PHASE: "A" AMPS: (60.0) ØA: CL X 1.25 + NCL = (0)(1.25) + 60.0 = 60.0 A

EXISTING PANEL SCHEDULE - REVISED FOR NEW WORK

PANEL: "LMS-BPA" (EXIST'G) VOLTAGE: 120/208V, 3PH, 4WIRE MOUNTING: SURFACE
BUS: 225 AMP CU LOCATION: BASEMENT BOILER ROOM MAIN: BREAKER
A.I.C.: COORDINATE FEEDER: 4: 4/0THWN, 3"C RATING: 225A/3P

CIR NO.	AMPS/ POLES	DESCRIPTION-AMPS	PHASE "A"	PHASE "B"	PHASE "C"	DESCRIPTION-AMPS	AMPS/ POLES	CIR NO.	
1		BF 1-15.0	45.0			B 1-30.0		2	
3	30/3	" -15.0		45.0		" -30.0	60/3	4	
5		" -15.0			45.0	" -30.0		6	
7		VP 1-30.0	60.0			B 2-30.0		8	
9	60/3	" -30.0		60.0		" -30.0	60/3	10	
11		" -30.0			60.0	" -30.0		12	
13		CP 1-10.0	40.0			B 3-30.0		14	
15	20/3	" -10.0		40.0		" -30.0	60/3	16	
17		" -10.0			40.0	" -30.0		18	
19		SPARE				SPARE		20	
21	20/3	"				"	20/3	22	
23		"				"		24	
25	20/1	CONDUCT. SENSORS-5.0	5.0			SPARE		26	
27	20/1	SPARE				"	30/3	28	
29		SPARE				"		30	
31	20/3	"	15.0			WHEEL CHAIR LIFT-15.0	20/1	32	REVISED
33		"		2.8		SUH 1-2.8	20/1	34	REVISED
35		SPARE				SPARE	20/1	36	
37	20/3	"				SPARE	20/1	38	
39		"		10.0		FILTER/CHEM PUMPS-10.0	20/1	40	
41	20/1	BOILER CONTROLLER-5.0			5.0	SPARE	20/1	42	
43	20/1	SPARE	5.0			DAMPER RELAY'S-5.0	20/1	44	
45	20/1	SPARE				SPARE	20/1	46	
47	20/1	WAT. HTR CONTROL-5.0			5.0	SPARE	20/1	48	
49		WATER HEATER-10.0	10.0			SPARE	20/1	50	
51	20/3	" -10.0		10.0		SPARE	20/1	52	
53		" -10.0			10.0	SPARE	20/1	54	
55	20/1	SPARE				SPARE	20/1	56	
57	20/1	SPARE				SPARE	20/1	58	
59	20/1	SPARE				SPARE	20/1	60	
61		SPACE ONLY				SPACE ONLY		62	
63		SPACE ONLY				SPACE ONLY		64	
65		SPACE ONLY				SPACE ONLY		66	
67		SPACE ONLY				SPACE ONLY		68	
69		SPACE ONLY				SPACE ONLY		70	
71		SPACE ONLY				SPACE ONLY		72	

TOTAL PHASE "A" AMPS: (180.0) REMARKS:
TOTAL PHASE "B" AMPS: (167.8)
TOTAL PHASE "C" AMPS: (165.0) 4-#4/0 THWN MAX AMP @ 75° = 225 A
HIGH PHASE: "A" AMPS: (180.0) ØA: CL X 1.25 + NCL = (0)(1.25) + 180.0 = 180.0 A

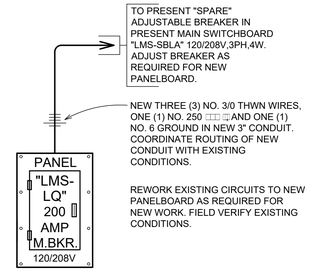


DIAGRAM SHOWING ELECTRICAL SERVICE AND DISTRIBUTION SYSTEM

NO SCALE PURELY DIAGRAMMATIC

REFER TO FLOOR PLANS, PANEL SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION. COORDINATE AVAILABLE FAULT CURRENT WITH THE LOCAL UTILITY COMPANY. (VERIFY PRIOR TO SUBMITTING FINAL BID). ADJUST A.I.C. RATINGS FOR ALL OVERCURRENT PROTECTION DEVICES AS REQUIRED. (VERIFY). COORDINATE EXACT EQUIPMENT LOCATIONS WITH ALL OTHER TRADE CONTRACTORS ASSOCIATED WITH THIS PROJECT PRIOR TO ROUGH-IN OF ANY ELECTRICAL EQUIPMENT. ALL EQUIPMENT SHALL BE PROVIDED WITH 90° CENTIGRADE LUGS FOR THWN WIRING. ALL ELECTRICAL EQUIPMENT ENCLOSURES (SWITCHBOARDS, PANELBOARDS, SAFETY SWITCHES, MOTOR STARTERS, CONTACTORS, ETC) LOCATED IN SPRINKLED AREAS SHALL BE NEMA 3R.

ELECTRICAL CONTRACTOR SHALL PROVIDE ARC FLASH CALCULATIONS AND LABELS FOR ALL NEW DISTRIBUTION EQUIPMENT ASSOCIATED WITH THIS PROJECT, INCLUDE ONLY NEW EQUIPMENT.

LIGHTING FIXTURE SCHEDULE

FIXTURE TYPE	LAMP SIZE AND TYPE	MOUNTING	MANUFACTURER'S NUMBER	REMARKS
A	82 CRI L.E.D., 4000K LP840, 6000 LUMENS (53 WATTS)	SURFACE TO CEILING (COORD. WITH LIFT MANUF.)	LITHONIA NO. STL4-60L-EZ1-LP840-EL14L-LSXRHL-MVOLT OR EQUAL	10-1/8"W X 46-3/8"L SURFACE MOUNTED LED FIXTURE WITH ACRYLIC DIFFUSER LENS INTEGRAL OCCUPANCY SENSOR AND EMERGENCY BATTERY PACK
B	80 CRI L.E.D., 4000K LP840, 2000 LUMENS (28 WATTS)	RECESSED IN CEILING (VERIFY)	LITHONIA NO. EVO-40/20-6AR-LS-MD-EZ1-EL-MVOLT PROVIDE BAR HANGER IF REQUIRED FOR INSTALLATION.	6" RECESSED ROUND L.E.D. DOWNLIGHT FIXTURE WITH SPECULAR FINISH, ELECTRONIC LED DRIVER, INTEGRAL EMERGENCY BATTERY PACK, MVOLT
C	82 CRI L.E.D., 4000K LP840, 4800 LUMENS (46 WATTS)	RECESSED IN GRID CEILING (VERIFY)	LITHONIA NO. 2GTL-4-48L-A19-EZ1-LP840-MVOLT OR EQUAL	2' X 4' L.E.D. RECESSED TROFFER WITH CLEAR ACRYLIC PRISMATIC LENS, MULTI-VOLT, LED □d□ DRIVER
D	80 CRI L.E.D., 5000K LP850, 6000 LUMENS (45 WATTS)	SURFACE TO UNDER-SIDE OF LIFT SHAFT. (COORD).	LITHONIA NO. FEML48-6000LMLPACL-MD-GZ10-50K-80CRI-MVOLT OR EQUAL	6.8"W X 51.75"L SURFACE MOUNTED LED ENCLOSED AND GASKETED FIXTURE WITH ACRYLIC, LOW PROFILE LENS, MULTI-VOLT, LED DRIVER.
EX	L.E.D. LAMPS FURNISHED WITH FIXTURE - VERIFY	CEILING OR WALL AS REQUIRED (VERIFY)	LITHONIA NO. LHQM-LED-W-R-M12-120/277 VOLT	UNIVERSAL SELF-POWERED EMERGENCY L.E.D. "EXIT" SIGN WITH 6" HIGH RED LETTERS, WHITE HOUSING AND SIDE-MOUNTED LAMPS, 120-277 VOLT AC INPUT

NOTES:
ALL FIXTURE SELECTIONS AND FINISHES MUST BE APPROVED BY THE OWNER PRIOR TO ORDERING FIXTURES SPECIFIED ON THIS SCHEDULE.
PROVIDE UL APPROVED LUMINAIRE DISCONNECT FOR EACH LIGHT FIXTURE PER NEC REQUIREMENTS EFFECTIVE JANUARY 1, 2008. E.C. TO COMPLY AS REQUIRED.
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.

INTERIOR VERTICAL PLATFORM LIFT FOR
LINCOLN MIDDLE SCHOOL
ROCKFORD, ILLINOIS

RICHARD L. JOHNSON ASSOCIATES | ARCHITECTS

SHEET IDENTIFICATION
ELECTRICAL DISTRIBUTION, PANEL SCHEDULE, NOTES & CARD ACCESS DETAILS

PROJECT INFORMATION
Date FEBRUARY 14, 2018
Rev. Date
RLJA Proj 2016-034

SHEET NUMBER
E102 OF 3

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DIVISION 26 ELECTRICAL SPECIFICATIONS

SECTION 262000 INTERIOR DISTRIBUTION SYSTEM

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	(2001; R 2007) 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) AMERICAN NATIONAL STANDARD FOR SAFETY--COLOR CODE
ANSI/NEMA FB 1	(2007; AMD 2010) STANDARD FOR FITTINGS, CAST METAL BOXES, AND CONDUIT BODIES FOR CONDUIT, ELECTRICAL METALLIC TUBING, AND CABLE
ANSI/NEMA OS 1	(2008; AMD 2010) SHEET-STEEL OUTLET BOXES, DEVICE BOXES, COVERS, AND BOX SUPPORTS
ANSI/NEMA OS 2	(2008; AMD 2010) NONMETALLIC OUTLET BOXES, DEVICE BOXES, COVERS, AND BOX SUPPORTS
NEMA 250	(2008) ENCLOSURES FOR ELECTRICAL EQUIPMENT (1000 VOLTS MAXIMUM)
NEMA KS 1	(2001; R 2006) ENCLOSED AND MISCELLANEOUS DISTRIBUTION EQUIPMENT SWITCHES (600 V MAXIMUM)
NEMA PB 1	(2006; ERRATA 2008) PANELBOARDS
NEMA RN 1	(2005) POLYVINYL-CHLORIDE (PVC) EXTERNALLY COATED GALVANIZED RIGID STEEL CONDUIT AND INTERMEDIATE METAL CONDUIT
NEMA TC 2	(2003) STANDARD FOR ELECTRICAL POLYVINYL CHLORIDE (PVC) CONDUIT
NEMA TC 3	(2004) STANDARD FOR POLYVINYL CHLORIDE (PVC) FITTINGS FOR USE WITH RIGID PVC CONDUIT AND TUBING
NEMA WD 1	(1999; R 2005; R 2010) STANDARD FOR GENERAL COLOR REQUIREMENTS FOR WIRING DEVICES
NEMA WD 6	(2002; R 2008) WIRING DEVICES DIMENSIONS SPECIFICATIONS
NFPA 70	(2008; TIA 11-1; ERRATA 2008) 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 JUL 2007) STANDARD FOR ELECTRICAL INTERMEDIATE METAL CONDUIT -- STEEL
UL 489	(2009; REPRINT JUN 2011) MOLDED-CASE CIRCUIT BREAKERS, MOLDED-CASE SWITCHES, AND CIRCUIT-BREAKER ENCLOSURES
UL 6	(2007; REPRINT NOV 2010) ELECTRICAL RIGID METAL CONDUIT-STEEL
UL 797	(2007) ELECTRICAL METALLIC TUBING -- STEEL
UL 870	(2008) 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: PRECONSTRUCTION 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. COORDINATE COLOR OF DEVICES AND COVERPLATES WITH ARCHITECT/OWNER PRIOR SUBMITTING SHOP DRAWING SUBMITTALS FOR APPROVAL. 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 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 EC 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 MANUFACTURERS 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.

2.2 WIRE AND CABLE

CONDUCTORS INSTALLED IN CONDUIT ABOVE GROUND SHALL BE COPPER 600-VOLT TYPE THWN-2, 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, NONINTERCHANGEABLE FLUSH-TYPE. TOGGLE SWITCHES SHALL BE COMMERCIAL GRADE TOGGLE TYPE, SINGLE, DOUBLE-POLE, THREE/FOUR-WAY TWO-POSITION DEVICES RATED 20 AMPERES AT 120 OR 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 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 BREAKERSSHALL BE THE COMMON-TRIP TYPE WITH A SINGLE HANDLE. MOLDED CASE CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE CONFORMING TO UL 489. PROVIDE GFCI TYPE BREAKERS FOR ALL 15A AND 20A, 120 VOLT KITCHEN RECEPTACLES.

2.8 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 BY 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

PROVIDE A COMPLETE RACEWAY AND WIRING INSTALLATION, PERMANENTLY AND EFFECTIVELY GROUNDED IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE AND LOCAL CODES. 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. WIRING OF EVERY KIND MUST BE INSTALLED IN CONDUIT, UNLESS NOTED OTHERWISE OR AS APPROVED BY THE ARCHITECT. RACEWAYS SHALL BE GALVANIZED STEEL, UNLESS REQUIRED OTHERWISE OR AS NOTED AND SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, UNLESS NOTED OTHERWISE. ALL RACEWAYS SHALL BE APPROVED FOR THE INSTALLATION. DO NOT INSTALL CRUSHED OR DEFORMED CONDUIT. AVOID TRAPPED CONDUIT RUNS WHERE POSSIBLE. PULL OR JUNCTION BOXES SHALL BE PROVIDED AS REQUIRED TO FACILITATE INSTALLATION OF RACEWAYS AND WIRING. 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 SHALL BE ELECTRICAL METALLIC TUBING (EMT). WIRE INSTALLED IN A PLENUM RATED CEILING SHALL BE INSTALLED IN CONDUIT OR SHALL BE TEFLON COATED PLENUM RATED AS REQUIRED TO COMPLY WITH THE NATIONAL ELECTRICAL CODE AND LOCAL CODE REQUIREMENTS.

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, TRANSFORMERS, AND OTHER APPROVED ASSEMBLIES. BONDING WIRES SHALL BE USED IN FLEXIBLE CONDUIT AS SPECIFIED IN NFPA 70, FOR ALL CIRCUITS. FLEXIBLE CONDUIT SHALL NOT BE CONSIDERED A GROUND CONDUCTOR. ELECTRICAL CONNECTIONS TO VIBRATION-ISOLATED EQUIPMENT SHALL BE MADE WITH FLEXIBLE METALLIC CONDUIT. LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED IN WET AND OILY LOCATIONS AND TO COMPLETE THE CONNECTION 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.

3.2 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
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 AXIS OF STRUCTURES.

3.7 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.

3.8 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 PANEL BOARDS, 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.

3.9 DEVICE COORDINATION STUDY

THIS SECTION INCLUDES COMPUTER-BASED, ARC FLASH, FAULT-CURRENT AND OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDIES. PROTECTIVE DEVICES SHALL BE SET BASED ON RESULTS OF THE PROTECTIVE DEVICE COORDINATION STUDY. A SYSTEM STUDY WILL BE COMPLETED ON THE ELECTRICAL DISTRIBUTION SYSTEM THAT PERTAINS TO THIS INSTALLATION, BOTH NEW PANELBOARDS, EXISTING SWITCHBOARDS, AND SERVICE FEEDING THE PANELS.

STUDIES SHALL USE COMPUTER PROGRAMS THAT ARE DISTRIBUTED NATIONALLY AND ARE IN WIDE USE. SOFTWARE ALGORITHMS SHALL COMPLY WITH REQUIREMENTS OF STANDARDS AND GUIDES SPECIFIED IN THIS SECTION. MANUAL CALCULATIONS ARE NOT ACCEPTABLE.

COORDINATION-STUDY SPECIALIST QUALIFICATIONS: AN ENTITY EXPERIENCED IN THE APPLICATION OF COMPUTER SOFTWARE USED FOR STUDIES, HAVING PERFORMED SUCCESSFUL STUDIES OF SIMILAR MAGNITUDE ON ELECTRICAL DISTRIBUTION SYSTEMS USING SIMILAR DEVICES.

COMPLY WITH IEEE 242 FOR SHORT-CIRCUIT CURRENTS AND COORDINATION TIME INTERVALS. AN INITIAL SHORT-CIRCUITS CURRENT STUDY SHALL BE SUBMITTED ALONG WITH ELECTRICAL EQUIPMENT SUBMITTALS.

COMPLY WITH IEEE 399 FOR GENERAL STUDY PROCEDURES.

COMPUTER SOFTWARE DEVELOPERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

1. ESA INC.
2. SKM SYSTEMS ANALYSIS, INC.

COMPUTER SOFTWARE PROGRAM REQUIREMENTS SHALL COMPLY WITH IEEE 399.

ANALYTICAL FEATURES OF FAULT-CURRENT-STUDY COMPUTER SOFTWARE PROGRAM SHALL INCLUDE "MANDATORY," "VERY DESIRABLE," AND "DESIRABLE" FEATURES AS LISTED IN IEEE 399.

COMPUTER SOFTWARE PROGRAM SHALL BE CAPABLE OF PLOTTING AND DIAGRAMMING TIME-CURRENT-CHARACTERISTIC CURVES AS PART OF ITS OUTPUT. COMPUTER SOFTWARE PROGRAM SHALL REPORT DEVICE SETTINGS AND RATINGS OF ALL OVERCURRENT PROTECTIVE DEVICES AND SHALL DEMONSTRATE SELECTIVE COORDINATION BY COMPUTER-GENERATED, TIME-CURRENT COORDINATION PLOTS.

EXAMINE PROJECT OVERCURRENT PROTECTIVE DEVICE SUBMITTALS FOR COMPLIANCE WITH ELECTRICAL DISTRIBUTION SYSTEM COORDINATION REQUIREMENTS AND OTHER CONDITIONS AFFECTING PERFORMANCE. PROCEED WITH COORDINATION STUDY ONLY AFTER RELEVANT EQUIPMENT SUBMITTALS HAVE BEEN ASSEMBLED. OVERCURRENT PROTECTIVE DEVICES THAT HAVE NOT BEEN SUBMITTED AND APPROVED PRIOR TO COORDINATION STUDY MAY NOT BE USED IN STUDY.

POWER SYSTEM DATA SHALL BE GATHERED AND TABULATED FOR THE FOLLOWING INPUT DATA TO SUPPORT THE COORDINATION STUDY: PRODUCT DATA FOR OVERCURRENT PROTECTIVE DEVICES SPECIFIED IN OTHER DIVISION 26 SECTIONS AND INVOLVED IN OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDIES. USE EQUIPMENT DESIGNATION TAGS THAT ARE CONSISTENT WITH ELECTRICAL DISTRIBUTION SYSTEM DIAGRAMS, OVERCURRENT PROTECTIVE DEVICE SUBMITTALS, INPUT AND OUTPUT DATA, AND RECOMMENDED DEVICE SETTINGS.

IMPEDANCE OF UTILITY SERVICE ENTRANCE.

ELECTRICAL DISTRIBUTION SYSTEM DIAGRAM: IN HARD-COPY AND ELECTRONIC-COPY FORMATS, SHOWING THE FOLLOWING: CIRCUIT-BREAKER AND FUSE-CURRENT RATINGS AND TYPES, RELAYS AND ASSOCIATED POWER AND CURRENT TRANSFORMER RATINGS AND RATIOS, TRANSFORMER KILOVOLT AMPERES, PRIMARY AND SECONDARY VOLTAGES, CONNECTION TYPE, IMPEDANCE, AND X/R RATIOS, GENERATOR KILOVOLT AMPERES, SIZE, VOLTAGE, AND SOURCE IMPEDANCE.

CABLES: INDICATE CONDUIT MATERIAL, SIZES OF CONDUCTORS, CONDUCTOR MATERIAL, INSULATION, AND LENGTH.

BUSWAY AMPACITY AND IMPEDANCE.

MOTOR HORSEPOWER AND CODE LETTER DESIGNATION ACCORDING TO NEMA MG 1.

DATA SHEETS TO SUPPLEMENT ELECTRICAL DISTRIBUTION SYSTEM DIAGRAM, CROSS-REFERENCED WITH TAG NUMBERS ON DIAGRAM, SHOWING THE FOLLOWING:

SPECIAL LOAD CONSIDERATIONS, INCLUDING STARTING INRUSH CURRENTS AND FREQUENT STARTING AND STOPPING.

TRANSFORMER CHARACTERISTICS, INCLUDING PRIMARY PROTECTIVE DEVICE, MAGNETIC INRUSH CURRENT, AND OVERLOAD CAPABILITY.

MOTOR FULL-LOAD CURRENT, LOCKED ROTOR CURRENT, SERVICE FACTOR, STARTING TIME, TYPE OF START, AND THERMAL-DAMAGE CURVE.

GENERATOR THERMAL-DAMAGE CURVE.

RATINGS, TYPES, AND SETTINGS OF UTILITY COMPANY'S OVERCURRENT PROTECTIVE DEVICES.

SPECIAL OVERCURRENT PROTECTIVE DEVICE SETTINGS OR TYPES STIPULATED BY UTILITY COMPANY.

TIME-CURRENT-CHARACTERISTIC CURVES OF DEVICES INDICATED TO BE COORDINATED.

MANUFACTURER, FRAME SIZE, INTERRUPTING RATING IN AMPERES RMS SYMMETRICAL, AMPERE OR CURRENT SENSOR RATING, LONG-TIME ADJUSTMENT RANGE, SHORT-TIME ADJUSTMENT RANGE, AND INSTANTANEOUS ADJUSTMENT RANGE FOR CIRCUIT BREAKERS.

MANUFACTURER AND TYPE, AMPERE-TAP ADJUSTMENT RANGE, TIME-DELAY ADJUSTMENT RANGE, INSTANTANEOUS ATTACHMENT ADJUSTMENT RANGE, AND CURRENT TRANSFORMER RATIO FOR OVERCURRENT RELAYS.

PANELBOARDS, SWITCHBOARDS, MOTOR-CONTROL CENTER AMPACITY, AND INTERRUPTING RATING IN AMPERES RMS SYMMETRICAL.

3.9.1 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 AT EACH OF THE FOLLOWING: SWITCHGEAR AND SWITCHBOARD BUS, DISTRIBUTION PANELBOARD, AND BRANCH CIRCUIT PANELBOARD.

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.

CALCULATE MOMENTARY AND INTERRUPTING DUTIES ON THE BASIS OF MAXIMUM AVAILABLE FAULT CURRENT.

CALCULATIONS TO VERIFY INTERRUPTING RATINGS OF OVERCURRENT PROTECTIVE DEVICES AND SHALL COMPLY WITH IEEE 242. LOW-VOLTAGE CIRCUIT BREAKERS: IEEE 1015 AND IEEE C37.20.1. AND LOW-VOLTAGE FUSES: IEEE C37.46.

STUDY REPORT SHALL INDICATE CALCULATED X/R RATIOS AND EQUIPMENT INTERRUPTING RATING (1/2-CYCLE) FAULT CURRENTS ON ELECTRICAL DISTRIBUTION SYSTEM DIAGRAM.

EQUIPMENT EVALUATION REPORT:

FOR 600-V OVERCURRENT PROTECTIVE DEVICES, ENSURE THAT INTERRUPTING RATINGS ARE EQUAL TO OR HIGHER THAN CALCULATED 1/2-CYCLE SYMMETRICAL FAULT CURRENT.

FOR DEVICES AND EQUIPMENT RATED FOR ASYMMETRICAL FAULT CURRENT, APPLY MULTIPLICATION FACTORS LISTED IN THE STANDARDS TO 1/2-CYCLE SYMMETRICAL FAULT CURRENT.

VERIFY ADEQUACY OF PHASE CONDUCTORS AT MAXIMUM THREE-PHASE BOLTED FAULT CURRENTS; VERIFY ADEQUACY OF EQUIPMENT GROUNDING CONDUCTORS AND GROUNDING ELECTRODE CONDUCTORS AT MAXIMUM GROUND-FAULT CURRENTS. ENSURE THAT SHORT-CIRCUIT WITHSTAND RATINGS ARE EQUAL TO OR HIGHER THAN CALCULATED FAULT CURRENT.

3.9.2 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 AND GROUND FAULT CURRENTS.

COMPLY WITH IEEE 242 RECOMMENDATIONS FOR FAULT CURRENTS AND TIME INTERVALS.

TRANSFORMER PRIMARY OVERCURRENT PROTECTIVE DEVICES:

DEVICE SHALL NOT OPERATE IN RESPONSE TO THE FOLLOWING:

INRUSH CURRENT WHEN FIRST ENERGIZED.

SELF-COOLED, FULL-LOAD CURRENT OR FORCED-AIR-COOLED, FULL-LOAD CURRENT, WHICHEVER IS SPECIFIED FOR THAT TRANSFORMER.

PERMISSIBLE TRANSFORMER OVERLOADS ACCORDING TO IEEE C57.96 IF REQUIRED BY UNUSUAL LOADING OR EMERGENCY CONDITIONS.

DEVICE SETTINGS SHALL PROTECT TRANSFORMERS ACCORDING TO IEEE C57.12.00, FOR FAULT CURRENTS.

CONDUCTOR PROTECTION: PROTECT CABLES AGAINST DAMAGE FROM FAULT CURRENTS ACCORDING TO ICEA P-32-382, ICEA P-45-482, AND CONDUCTOR MELTING CURVES IN IEEE 242. DEMONSTRATE THAT EQUIPMENT WITHSTANDS THE MAXIMUM SHORT-CIRCUIT CURRENT FOR A TIME EQUIVALENT TO THE TRIPPING TIME OF THE PRIMARY RELAY PROTECTION OR TOTAL CLEARING TIME OF THE FUSE. TO DETERMINE TEMPERATURES THAT DAMAGE INSULATION, USE CURVES FROM CABLE MANUFACTURERS OR FROM LISTED STANDARDS INDICATING CONDUCTOR SIZE AND SHORT-CIRCUIT CURRENT.

PREPARE A WRITTEN REPORT INDICATING THE FOLLOWING RESULTS OF COORDINATION STUDY:

TABULAR FORMAT OF SETTINGS SELECTED FOR OVERCURRENT PROTECTIVE DEVICES:

DEVICE TAG, RELAY-CURRENT TRANSFORMER RATIOS; AND TAP, TIME-DIAL, AND INSTANTANEOUS-PICKUP VALVES.

CIRCUIT-BREAKER SENSOR RATING; AND LONG-TIME, SHORT-TIME, AND INSTANTANEOUS SETTINGS.

FUSE-CURRENT RATING AND TYPE.

GROUND-FAULT RELAY-PICKUP AND TIME-DELAY SETTINGS.

COORDINATION CURVES: PREPARED TO DETERMINE SETTINGS OF OVERCURRENT PROTECTIVE DEVICES TO ACHIEVE SELECTIVE COORDINATION. GRAPHICALLY ILLUSTRATE THAT ADEQUATE TIME SEPARATION EXISTS BETWEEN DEVICES INSTALLED IN SERIES, INCLUDING POWER UTILITY COMPANY'S UPSTREAM DEVICES. PREPARE SEPARATE SETS OF CURVES FOR THE SWITCHING SCHEMES AND FOR EMERGENCY PERIODS WHERE THE POWER SOURCE IS LOCAL GENERATION. SHOW THE FOLLOWING INFORMATION:

DEVICE TAG, VOLTAGE AND CURRENT RATIO FOR CURVES, THREE-PHASE AND SINGLE-PHASE DAMAGE POINTS FOR EACH TRANSFORMER, NO DAMAGE, MELTING, AND CLEARING CURVES FOR FUSES, CABLE DAMAGE CURVES, TRANSFORMER INRUSH POINTS, MAXIMUM FAULT-CURRENT CUTOFF POINT, AND COMPLETED DATA SHEETS FOR SETTING OF OVERCURRENT PROTECTIVE DEVICES.

3.9.3 ARC FAULT STUDY: AN ARC FLASH HAZARD ANALYSIS ON THE ELECTRICAL DISTRIBUTION SYSTEM SHALL BE PERFORMED AS 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 WOULD 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/CM², 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.

4.0 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.

END OF SECTION 262000

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ROCKFORD, ILLINOIS

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SHEET IDENTIFICATION
ELECTRICAL SPECIFICATIONS & NOTES

PROJECT INFORMATION

Date	FEBRUARY 14, 2018
Rev. Date	
RLJA Proj	2016-034

SHEET NUMBER
E103
OF
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