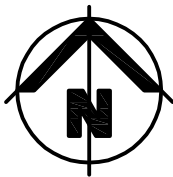
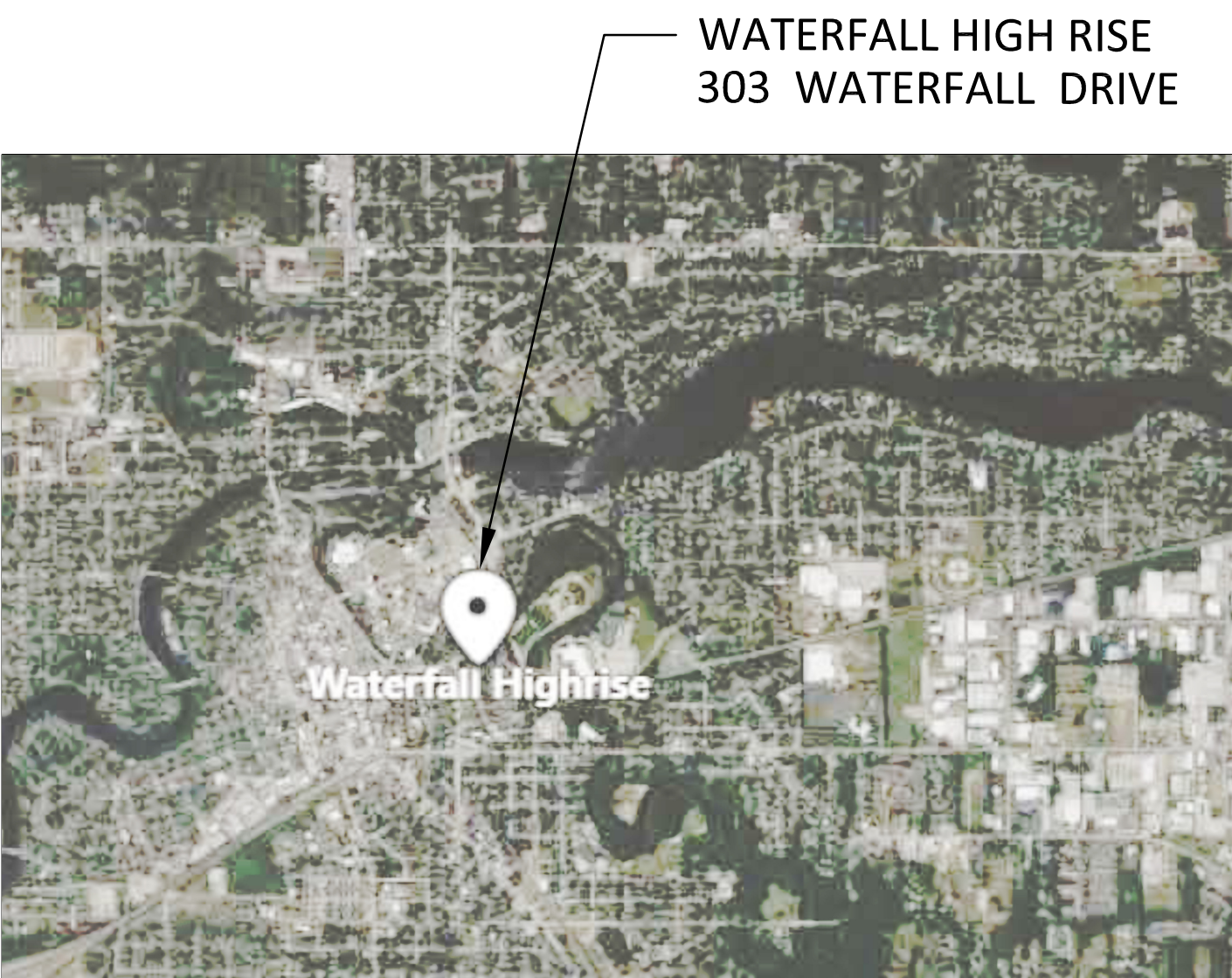


2022 HOUSING-RELATED HAZARDS CAPITAL FUND - FR-6600-N-68

FIRE SPRINKLER SYSTEM
WATERFALL HIGH RISE
IN0263-22-7

THE HOUSING AUTHORITY OF THE CITY OF ELKHART INDIANA
1396 Benham Avenue Elkhart, Indiana 46516

VICINITY MAP



GOVERNING CODES

INDIANA BUILDING CODE 2014 2012 IBC
INDIANA PLUMBING CODE 2012 2006 IPC
INDIANA MECHANICAL CODE 2014 2012 IMC
INDIANA ELECTRICAL CODE 2009 2008 NFPA 70
INDIANA FIRE CODE 2014 INDIANA ENERGY 2012 IFC
CONSERVATION CODE 2010 ASHRAE 90.1 2007

WITH ALL LOCAL AND STATE AMENDMENTS

SHEET INDEX

TITLE SHEET

- ME100 BASEMENT FIRE PROTECTION DEMOLITION PLAN
- ME101 1st - 10th FLOOR FIRE PROTECTION DEMOLITION PLANS
- ME102 ROOF FIRE PROTECTION DEMOLITION PLAN
- ME200 FIRE SPRINKLER SITE PLAN
- ME201 BASEMENT FIRE SPRINKLER PLAN S
- ME202 1st - 10th FLOOR FIRE SPRINKLER PLANS
- ME203 PENTHOUSE, MACHINE ROOM & ROOF FIRE SPRINKLER PLANS
- ME204 FIRE SPRINKLER ENLARGED PLANS
- ME300 MECHANICAL SPECIFICATIONS
- ME301 MECHANICAL SPECIFICATIONS
- ME302 MECHANICAL SPECIFICATIONS
- ME303 ELECTRICAL SPECIFICATIONS

BOARD OF COMMISSIONERS

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- Dan Boecher Commissioner
- Kristen Smole Commissioner
- Helenia Robinson Commissioner
- Cynthia Billings Commissioner
- Loria Mayes Commissioner

Angelia M. Washington Executive Director

ABBREVIATIONS

A/C	AIR CONDITIONING	FD	FLOOR DRAIN	PC	PLUMBING CONTRACTOR
AC	ACOUSTIC	FE	FIRE EXTINGUISHER	PERF	PERFORATED
ADJ	ADJUSTABLE	FEC	FIRE EXTINGUISHER CABINET	R	PLATE
AFF	ABOVE FINISHED FLOOR	FHC	FIRE HOSE CABINET	PLAS	PLASTIC
AL	ALUMINUM	FIN	FINISH	PLBG	PLUMBING
AP	ACCESS PANEL	FL	FLASHING	PREFAB	PREFABRICATED
Z	ANGLE	FLR	FLOOR	PSF	POUNDS PER SQUARE FOOT
APPX	APPROXIMATE	FLUOR	FLUORESCENT	PSI	POUNDS PER SQUARE INCH
ARCH	ARCHITECTURAL	FNDN	FOUNDATION	PT	PAINT
ASPH	ASPHALT	FRP	FIBERGLASS REINF. PANEL	QT	QUARRY TILE
		FT	FOOT (FEET)		
		FTG	FOOTING		
B MK	BENCH MARK				
BD	BOARD				
BIT	BITUMINOUS	GA	GAUGE	RA	RETURN AIR
BLDG	BUILDING	GALV	GALVANIZED	RD	ROOF DRAIN
BLK	BLOCK	GC	GENERAL CONTRACTOR	RE	REFER TO
BLKG	BLOCKING	GL	GLASS	REINF	REINFORCING (REINFORCED)
BM	BEAM	GPH	GALLONS PER HOUR	Ø	ROUND
BRG	BEARING	GPM	GALLONS PER MINUTE		
BTM	BOTTOM	GYP BD	GYPSON BOARD	S TO S	STUD TO STUD
				SAT	SUSPENDED ACOUSTICAL TILE
CAB	CABINET	HB	HOSE BIBB	SC	STAINED CONCRETE
CB	CONCRETE BLOCK	HC	HOLLOW CORE	SCHED	SCHEDULE
CC	CENTER TO CENTER	HDCP	HANDICAP	SCW	SOLID CORE WOOD
CF	CUBIC FEET	HDWR	HARDWARE	SECT	SECTION
CFM	CUBIC FEET PER MINUTE	HM	HOLLOW METAL	SF	SQUARE FOOT
CHB	CHALK BOARD	HR	HORIZONTAL	SGL	SINGLE
CI	CAST IRON	HORZ	HORIZONTAL	SGT	STRUCTURAL GLAZED TILE
CJ	CONTROL JOINT	HR	HOUR	SHT	SHEET
C	CENTER LINE	HT	HEIGHT	SI	SQUARE INCH
CLG	CEILING	HTR	HEATER	SIM	SIMILAR
CM	CONSTRUCTION MANAGER	HW	HOT WATER	SJ	STEEL JOIST
CMU	CONCRETE MASONRY UNIT			SPEC	SPECIFICATIONS
CO	CLEAN OUT	ID	INSIDE DIAMETER	SS	STAINLESS STEEL
COL	COLUMN	INSUL	INSULATION (INSULATED)	STL	STEEL
CONC	CONCRETE	INT	INTERIOR	STOR	STORAGE
CONT	CONTINUOUS	ISO JT	ISOLATION JOINT	SUSP	SUSPENDED
CONTR	CONTRACTOR			SV	STAINED AND VARNISHED
CPT	CARPET				
CT	CERAMIC TILE	JT	JOINT	T	TREAD
CTR	CENTER			T&G	TONGUE & GROOVE
CW	COLD WATER	LAV	LAVATORY	TB	TACK BOARD
CY	CUBIC YARD			TEL	TELEPHONE
				TERR	TERRAZZO
DBL	DOUBLE	MATL	MATERIAL	THK	THICK
DF	DRINKING FOUNTAIN	MC	MECHANICAL CONTRACTOR	TLT	TOILET
DI	DIAMETER	MECH	MECHANICAL	TOB	TOP OF BEARING
DIM	DIMENSION	MFR	MANUFACTURER	TYP	TYPICAL
DN	DOWN	MIN	MINIMUM		
DR	DOOR	MISC	MISCELLANEOUS	V	VINYL
DS	DOWN SPOUT	MINTG HT	MOUNTING HEIGHT	VAN	VANITY
DTL	DETAIL	MO	MASONRY OPENING	VCT	VINYL COMPOSITION TILE
DW	DRYWALL	MSRY	MASONRY	VERT	VERTICAL
DWG	DRAWING	MT	MOSAIC TILE	VEST	VESTIBULE
		MTD	MOUNTED	VF	VINYL FABRIC
		MTL	METAL	VT	VINYL TILE
EA	EACH			VTR	VENT THRU ROOF
EC	ELECTRICAL CONTRACTOR			VWC	WATER WALL COVERING
EL	ELEVATION	NIC	NOT IN CONTRACT		
ELEC	ELECTRIC (ELECTRICAL)	NO	NUMBER	WC	WATER CLOSET
EP	EPOXY PAINT			WD	WOOD
EPNL	ELECTRICAL PANEL	OAI	OUTSIDE AIR INTAKE	WDW	WINDOW
ER	EMERGENCY	OC	ON CENTER	WH	WATER HEATER
EWC	ELECTRIC WATER COOLER	OD	OUTSIDE DIAMETER	WP	WEATHER PROOF
EXST	EXISTING	OPNG	OPENING		
EXT	EXTERIOR				

ISSUED FOR: CONSTRUCTION DOCUMENTS
DATE: APRIL 19, 2024

FORUM ARCHITECTS, LLC
415 Lincolnway East Mishawaka, Indiana
Phone: 574-233-2119
email: Info@forumarchitectsllc.com



SET NUMBER

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FIRE SPRINKLER SYSTEM

ELKHART HOUSING AUTHORITY

WATERFALL HIGH RISE

303 WATERFALL DRIVE
ELKHART, INDIANA

BASEMENT
FIRE PROTECTION
DEMOLITION PLAN

ME100

- GENERAL MECHANICAL DEMOLITION NOTES
1.

ITEMS SHOWN ON THE DEMOLITION DRAWINGS IN BOLD LINE WEIGHT ARE TO BE EITHER REMOVED OR RELOCATED. ITEMS SHOWN LIGHT ARE TO REMAIN.
2.

DEMOLITION PLANS ARE INTENDED SOLELY TO INDICATE KEY EXISTING ITEMS TO REMAIN AND TO PROVIDE A GENERAL IDEA OF EXISTING SYSTEM TYPES. NOT ALL EQUIPMENT, PIPING AND DUCTWORK ARE SHOWN.
3.

THE SUBMISSION OF A PROPOSAL WILL BE CONSIDERED AS EVIDENCE THAT THE CONTRACTOR HAS FAMILIARIZED HIMSELF WITH THE PLANS AND BUILDING SITE. CLAIMS MADE SUBSEQUENT TO THE PROPOSAL FOR MATERIALS AND LABOR BECAUSE OF DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED IF THEY COULD HAVE BEEN FORESEEN HAD PROPER EXAMINATION BEEN MADE.
4.

THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR PROTECTION OF ALL EXISTING BUILDING COMPONENTS DURING DEMOLITION/CONSTRUCTION. ALL COSTS FOR LOCATING, REMOVING, REPLACING, OR RELOCATING SHALL BE INCIDENTAL TO DEMOLITION/CONSTRUCTION. ALL DAMAGES WHICH OCCUR DURING DEMOLITION/CONSTRUCTION SHALL BE REPAIRED WITH LIKE MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
5.

WHERE REMOVAL OF PIPING, EQUIPMENT, ETC. IS NOTED, IT SHALL INCLUDE REMOVAL OF ALL ASSOCIATED APPURTENANCES, HANGERS, INSULATION, ETC. REMOVAL OF PIPING SHALL BE COMPLETE BACK TO THE NEAREST ACTIVE MAIN OR RISER, WHERE THE BRANCH CONNECTION SHALL BE CAPPED OR PLUGGED. COORDINATE EXACT EXTENTS WITH NEW CONSTRUCTION.
6.

COORDINATE SCHEDULE OF DEMOLITION WORK WITH OTHER TRADES. COORDINATE SHUTDOWN OF MAIN SERVICES WITH OWNER. PROVIDE 48 HOUR NOTICE TO OWNER PRIOR TO SHUTDOWN.
7.

PIPING SHOWN ON DRAWINGS IS INTENDED TO INDICATE GENERAL PIPING EXTENT LAYOUT OF MAJOR COMPONENTS ONLY. FIELD VERIFY ACTUAL CONDITIONS, LOCATIONS, ARRANGEMENT, ETC.
8.

MECHANICAL CONTRACTOR SHALL PROVIDE ALL CUTTING AND/OR PATCHING OF EXISTING WALLS, AS REQUIRED FOR NEW AND/OR DEMOLITION WORK.
9.

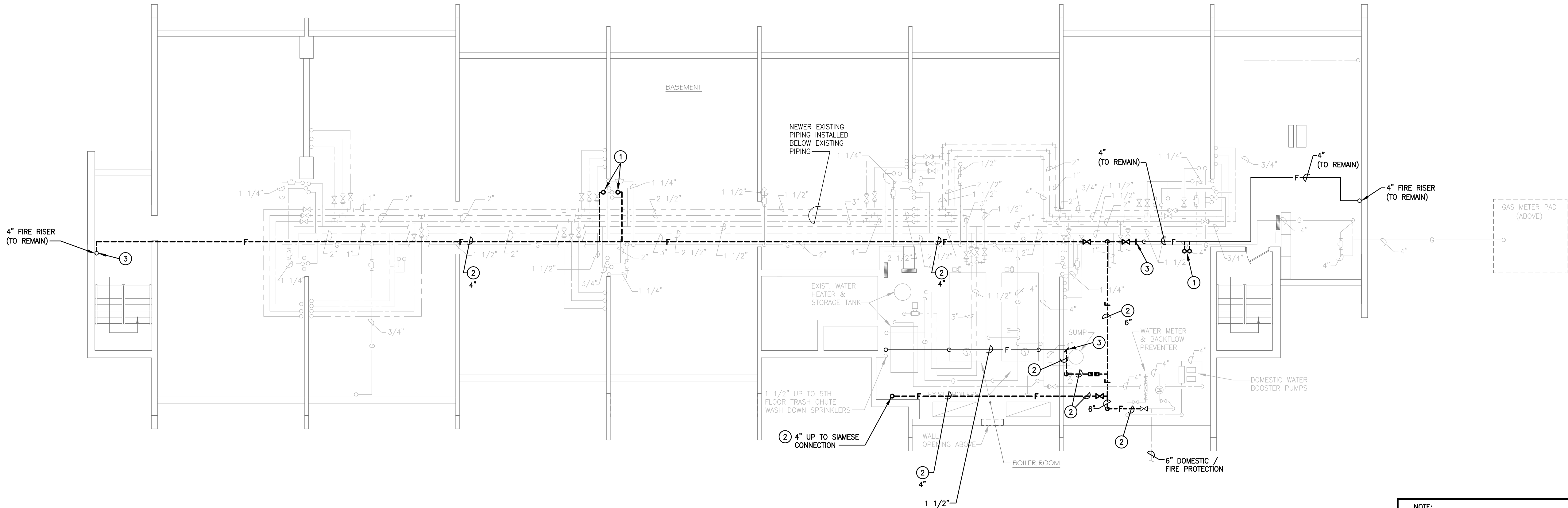
REMOVE AND REINSTALL LIGHTS AND CEILING TILES AS REQUIRED FOR MECHANICAL WORK.

- MECHANICAL DEMOLITION NOTES
- 1

DISCONNECT AND REMOVE FIRE PROTECTION PIPING FEED TO FIRE HOUSE CABINET ABOVE. CAP PIPING AS REQUIRED.
- 2

DISCONNECT AND REMOVE FIRE PROTECTION PIPING. COORDINATE EXTENTS AND REPLACEMENT WITH NEW CONSTRUCTION.
- 3

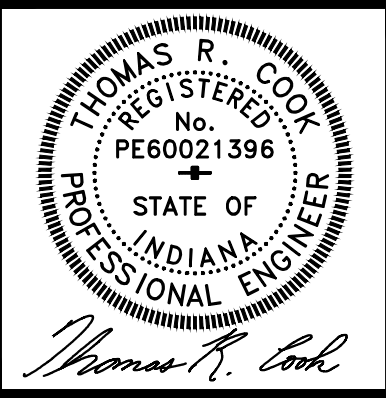
SEE NEW CONSTRUCTION PLAN ME201 FOR RECONNECTION TO EXISTING PIPING.



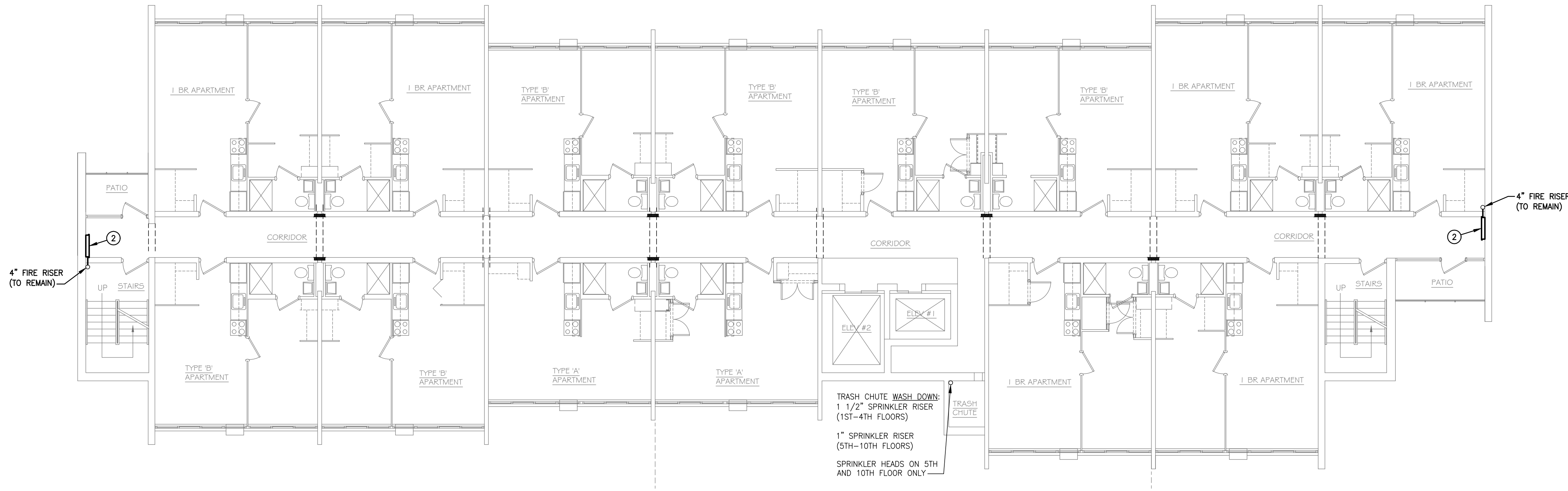
BASEMENT – FIRE PROTECTION DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

NOTE:
EXISTING FIRE PROTECTION LAYOUTS AND EQUIPMENT LOCATIONS ARE BASED ON EXISTING DRAWINGS AND ARE TO BE FIELD VERIFIED BY CONTRACTOR.

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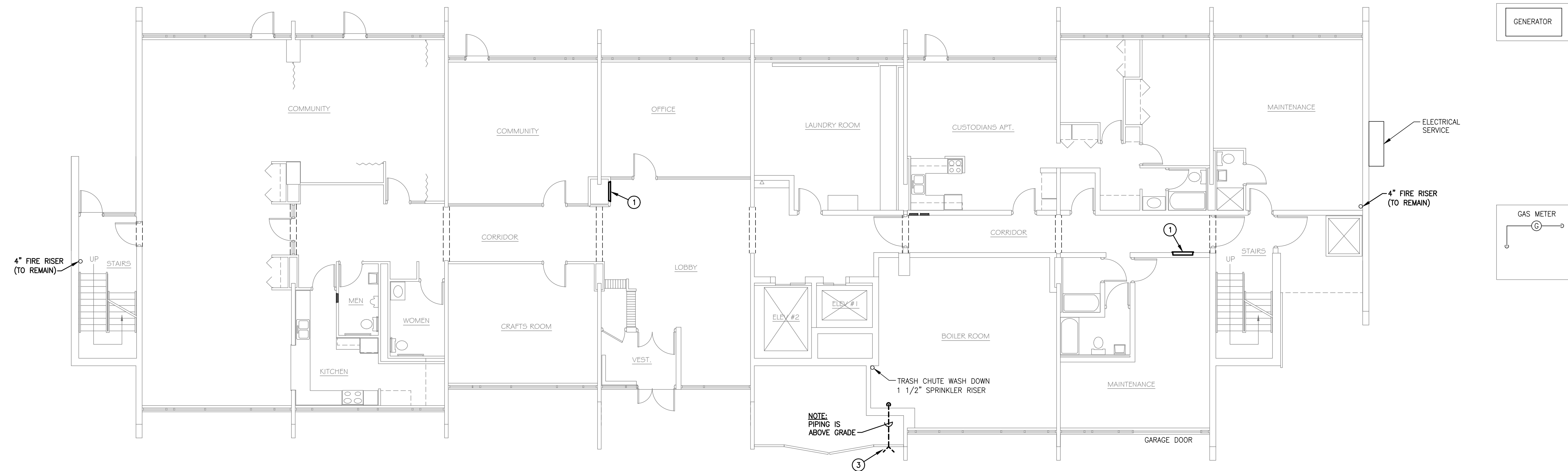
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415 Lincolnway East Mishawaka, Indiana
Phone: 574-233-2119
email: Info@forumarchitectsllc.com



2ND-10TH FLOOR - FIRE PROTECTION DEMOLITION PLANS
SCALE: 1/8" = 1'-0"

MECHANICAL DEMOLITION NOTES

- 1 RECESSED FIRE HOSE / FIRE EXTINGUISHER CABINET TO REMAIN. DISCONNECT AND REMOVE ASSOCIATED FIRE PROTECTION PIPING AND HOSE EQUIPMENT IN IT'S ENTIRETY. CAP PIPING AS REQUIRED. FIRE EXTINGUISHER TO REMAIN IN CABINET. COORDINATE WITH FIRE ALARM REPLACEMENT CONTRACTOR.
- 2 DISCONNECT AND REMOVE SURFACE MOUNTED FIRE HOSE / FIRE EXTINGUISHER CABINET AND ASSOCIATED FIRE PROTECTION PIPING AND HOSE EQUIPMENT IN IT'S ENTIRETY. CAP PIPING AS REQUIRED. PATCH/PAINT WALL TO MATCH EXISTING. PROVIDE AND INSTALL NEW FIRE EXTINGUISHER WALL MOUNTING BRACKET, LOCATE IN THE CENTER OF WALL AND MOUNT EXISTING FIRE EXTINGUISHER.
- 3 DISCONNECT AND REMOVE SIAMESE CONNECTION AND ASSOCIATED FIRE PROTECTION PIPING. PATCH/PAINT WALL TO MATCH EXISTING. COORDINATE REPLACEMENT WITH NEW CONSTRUCTION.



FIRST FLOOR - FIRE PROTECTION DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

NOTE:
THE ENTIRE FIRST FLOOR IS THE
ONLY FLOOR WITH LAY-IN CEILINGS

NOTE:
EXISTING FIRE PROTECTION LAYOUTS AND
EQUIPMENT LOCATIONS ARE BASED ON
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VERIFIED BY CONTRACTOR.

FIRE SPRINKLER SYSTEM
ELKHART HOUSING AUTHORITY
WATERFALL HIGH RISE
303 WATERFALL DRIVE
ELKHART, INDIANA

1ST - 10TH FLOOR
FIRE PROTECTION
DEMOLITION PLANS

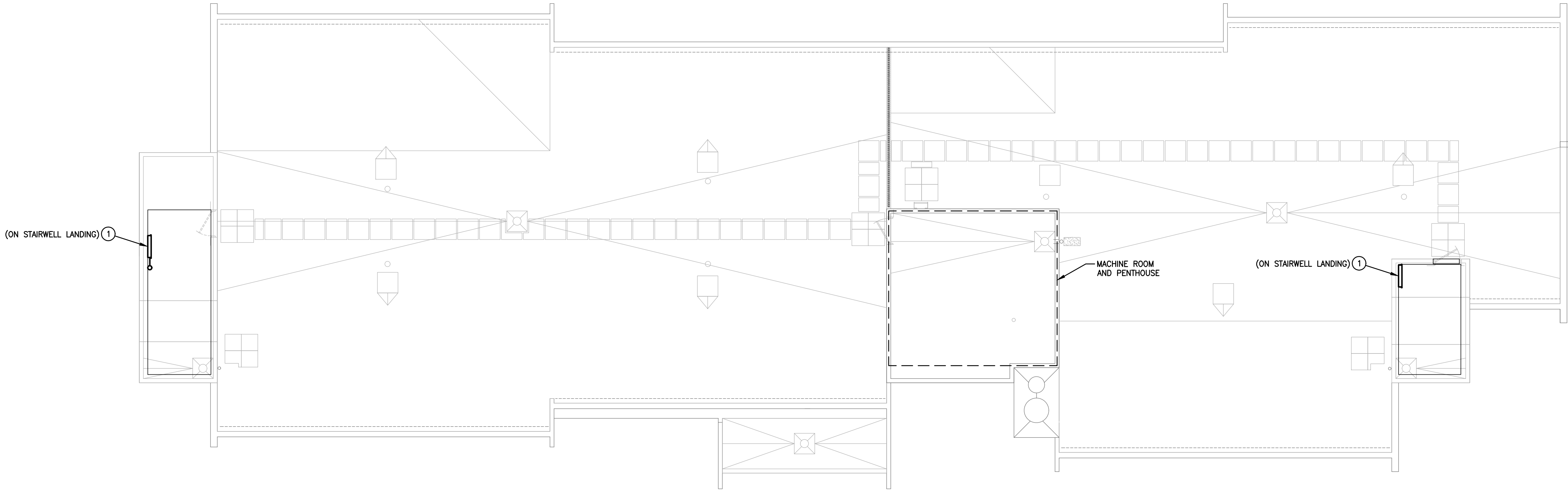
ME101



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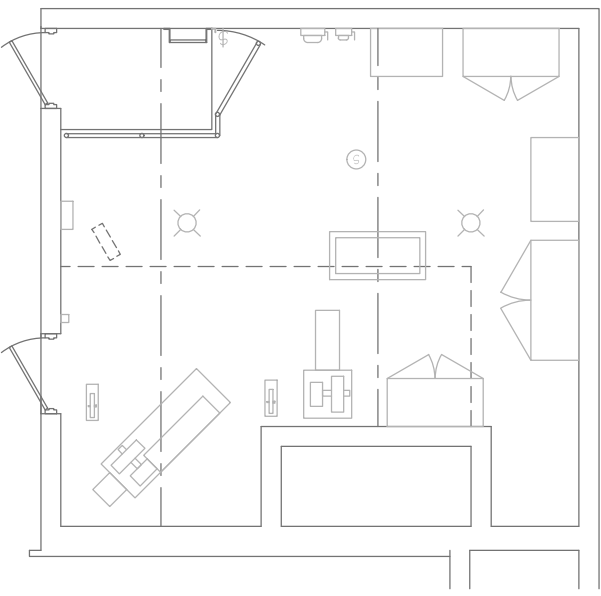
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415 Lincolnway East Mishawaka, Indiana
Phone: 574-233-2119
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ROOF — FIRE PROTECTION DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

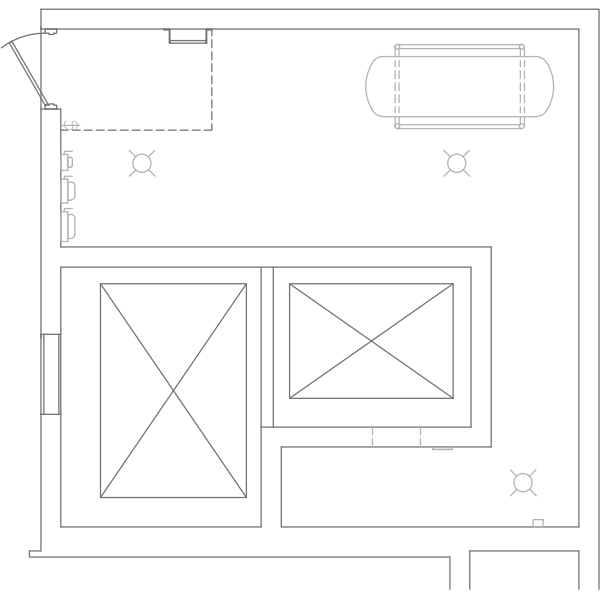
MECHANICAL DEMOLITION NOTES

- 1 DISCONNECT AND REMOVE FIRE HOSE CABINET AND ASSOCIATED FIRE PROTECTION PIPING IN IT'S ENTIRETY. CAP PIPING AS REQUIRED.



NOTE:
FIRE RATED CONSTRUCTION. NO
FIRE SPRINKLER IN THIS ROOM.

MACHINE ROOM — FIRE PROTECTION DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



PENTHOUSE — FIRE PROTECTION DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

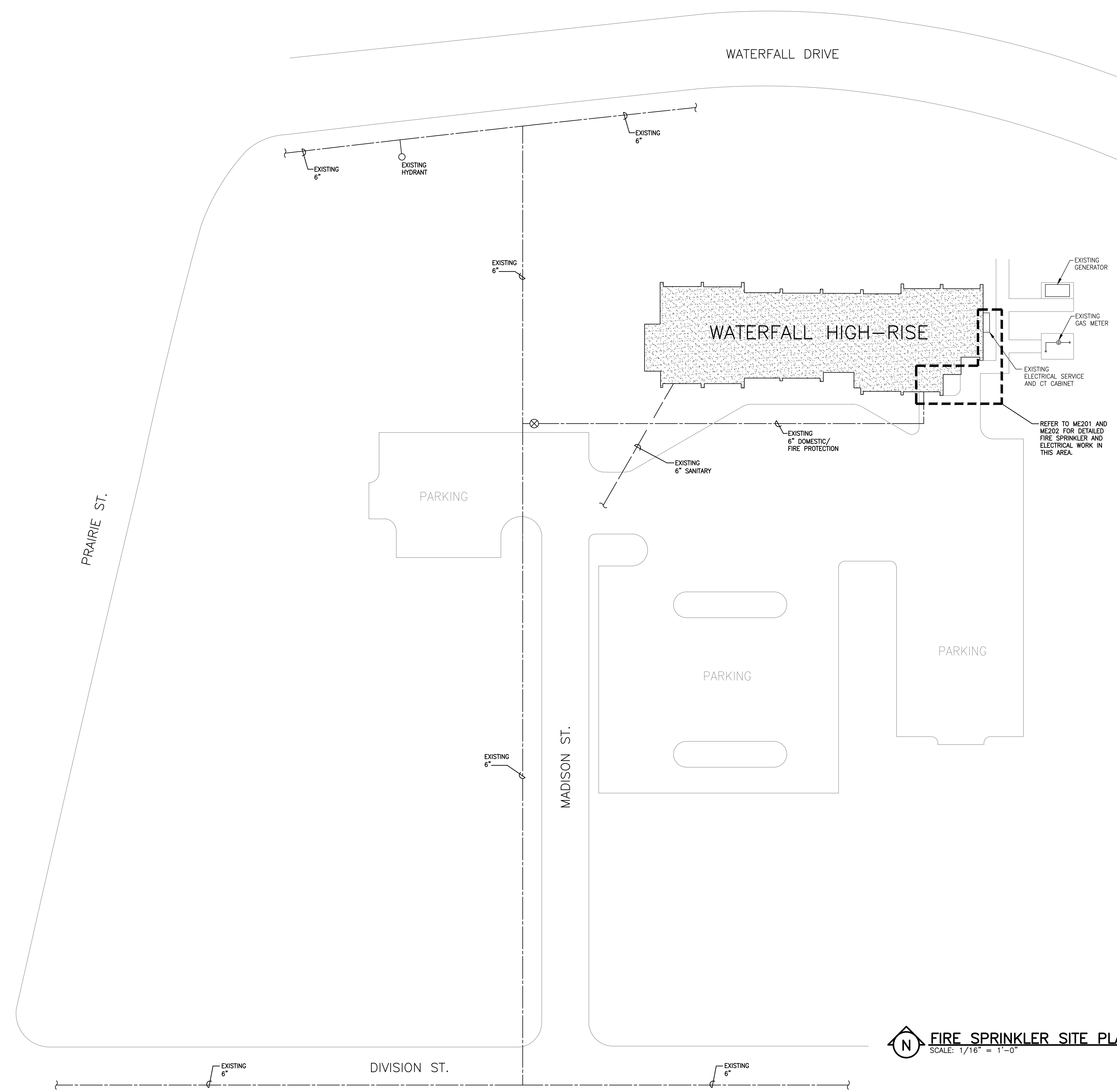
NOTE:
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FIRE SPRINKLER SYSTEM
ELKHART HOUSING AUTHORITY
WATERFALL HIGH RISE
303 WATERFALL DRIVE
ELKHART, INDIANA

ROOF
FIRE PROTECTION
DEMOLITION PLAN

ME102





GENERAL FIRE PROTECTION NOTES

- DRAWINGS ARE DIAGRAMMATIC AND GENERALLY INDICATIVE OF THE WORK. PIPING SHALL FOLLOW ARRANGEMENT AS MUCH AS POSSIBLE, HOWEVER ACTUAL FIELD CONDITIONS SHALL DICTATE. PROVIDE NECESSARY MODIFICATIONS TO MEET FIELD CONDITIONS AND AVOID CONFLICT WITH OTHER TRADES. IN CONFLICT AREAS, COMPLETE ONLY WORK NOT AFFECTED BY THE CONFLICT PRIOR TO RESOLUTION. OTHER ITEMS COMPLETED IN THESE AREAS ARE SOLELY AT THE CONTRACTORS RISK AND COST OF RESULTING CHANGES WILL BE BORN BY SAID CONTRACTOR.
- THE DRAWINGS DO NOT SHOW ALL VALVES, FITTINGS, APPURTENANCES, ACCESS PANELS, ELEVATION CHANGES, WHERE REQUIRED, THESE ITEMS SHALL BE PROVIDED WITHOUT ADDITIONAL COST FOR A COMPLETE AND OPERATING SYSTEM MEETING THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS.
- FIRE PROTECTION CONTRACTOR SHALL REMOVE AND REPLACE CEILING AS REQUIRED FOR INSTALLATION OF NEW WORK.
- CONNECTIONS TO EQUIPMENT SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS.
- ALL HANGER SYSTEMS FOR PIPING AND EQUIPMENT SHALL BE SECURED TO BUILDING STRUCTURAL SYSTEM. PROVIDE SEISMIC RESTRAINT AS REQUIRED.
- THE SUBMISSION OF A PROPOSAL WILL BE CONSIDERED AS EVIDENCE THAT THE CONTRACTOR HAS FAMILIARIZED HIMSELF WITH THE PLANS AND BUILDING SITE. CLAIMS MADE SUBSEQUENT TO THE PROPOSAL FOR MATERIALS AND LABOR BECAUSE OF DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED IF THEY COULD HAVE BEEN FORESEEN HAD PROPER EXAMINATION BEEN MADE.
- THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. ALL COSTS FOR LOCATING, REMOVING, REPLACING, OR RELOCATING THESE UTILITIES SHALL BE INCIDENTAL TO CONSTRUCTION. ALL UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED WITH LIKE MATERIAL AT NO ADDITIONAL COST TO THE OWNER. COORDINATE SHUT-DOWN OF MAIN SERVICES WITH OWNER (I.E. SPRINKLER, COLD WATER, ETC.). SHUT-DOWN OF THE FIRE SPRINKLER SYSTEM SHALL BE MINIMIZED. THE SYSTEM SHALL BE CAPPED OFF IN THE PARTICULAR WORK AREA TEMPORARILY, IN ORDER TO REACTIVATE THE SYSTEM BEFORE THE END OF THE WORKDAY, IF THE WORK CAN NOT BE COMPLETED IN ONE DAY.
- COORDINATE ALL SYSTEM REQUIREMENTS WITH OWNER'S INSURANCE CARRIER, STATE OF INDIANA REGULATIONS AND WITH EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- SYSTEM DESIGNED FOR NFPA 13.
- PIPE TO BE BLACK SCHEDULE 40 IN BASE BID WITH ALTERNATE PRICE FOR SCHEDULE 10 IN PIPE 2" AND LARGER. PIPING MAY BE THREADED OR MECHANICAL JOINT AS APPLICABLE.
- SPRINKLER HEADS TO BE OF QUICK RESPONSE TYPE AND TEMPERATURE RATING AS REQUIRED FOR APPLICATION. LAY-IN/POP BOARD CEILING HEADS TO BE RECESSED TYPE (WHITE FINISH). RELIABLE, VIKING OR EQUAL. SIDEWALL HEADS SHALL BE SEMI-RECESSED WHITE FINISH.
- HANGER ROD SIZES AND SPACING PER NFPA 13.
- DESIGN SHALL BE CERTIFIED BY AN AUTHORIZED AND CERTIFIED FIRE PROTECTION SYSTEM DESIGNER. DESIGNER SHALL BE NICET LEVEL III OR IV CERTIFIED. THE PROVIDED BID DOCUMENTS ARE INTENDED TO BE A PERFORMANCE SPECIFICATION OUTLINING BASIC EXPECTATIONS. THE RESPONSIBILITY FOR DESIGN APPROVAL AND STATE SUBMITTAL REMAINS WITH THE SPRINKLER CONTRACTOR AND DESIGNER, INCLUDING BUT NOT LIMITED TO VERIFICATION AND CALCULATIONS ASSOCIATED WITH AVAILABLE WATER PRESSURE AS COORDINATED WITH THE LOCAL WATER DEPARTMENT AND COMPLETE REVIEW AND COORDINATION OF ALL ARCHITECTURAL FLOOR PLANS TO ENSURE AND PROVIDE COMPLETE SYSTEM COVERAGE OF ALL AREAS AND FLOORS OF THE BUILDING.
- THESE DRAWINGS ARE PROVIDED TO CONVEY OWNERS GENERAL INTENT, AND POSSIBLE LAYOUT OPTIONS. FINAL DESIGN, INCLUDING LAYOUT, AND CALCULATIONS REMAIN WITH THE CONTRACTOR. FINAL LAYOUT SHOULD MINIMIZE BUILDING, DISRUPTION AND REMOVAL AND REPLACEMENT OF CEILINGS WHERE APPLICABLE.
- FIRE SPRINKLER SYSTEM COVERAGE TO INCLUDE VARIOUS OTHER AREAS OUTSIDE OF THE TYPICAL APARTMENT AND OFFICE SPACES, INCLUDING, BUT NOT LIMITED TO ELEVATOR SHAFTS, EXTERIOR CANOPIES, EXTERIOR PATIOS, TRASH CHUTE, ETC. SEE FLOOR PLANS FOR ADDITIONAL INFORMATION AND COORDINATION.
- PRIOR TO FABRICATION OF SYSTEM ON EACH FLOOR CONTRACTOR TO COMPLETE A SPACE-BY-SPACE WALK-THROUGH WITH OWNERS REPRESENTATIVE TO FULLY ADDRESS ANY VARIED CONDITIONS.
- OBTAIN AND SECURE ALL EQUIPMENT AND MATERIALS ON SITE PRIOR TO COMMENCING ANY NEW WORK, OTHER THAN DEMOLITION. COORDINATE ALL WEEKDAY (7:00 AM TO 5:00 PM) AND WEEKEND HOURS WITH THE OWNER AND PROVIDE TENANTS WITH APPROPRIATE NOTIFICATION (72 HOURS) PRIOR TO WORK WITHIN THE TENANT APARTMENTS.
- A BUILDING FIRE ALARM REPLACEMENT PROJECT WILL BE COMMENCING WITHIN THE WATERFALL BUILDING AT THE SAME TIME AS THE FIRE SPRINKLER PROJECT. COORDINATE WITH THE FIRE ALARM PROJECT MANAGER AS REQUIRED. IN THE EVENT A SEPARATE FIRE ALARM CONTRACTOR IS SELECTED FOR THIS FIRE SPRINKLER PROJECT, COORDINATION BETWEEN ALL INVOLVED PROJECT MANAGERS WILL BE REQUIRED.
- PRIOR TO RE-USE OF THE EXISTING FIRE SPRINKLER PIPING, CONTRACTOR TO REVIEW (AND PRESSURE TEST IF NECESSARY) TO ASSURE THAT EXISTING MAINS AND RISERS CAN BE REUSED TO MEET THE STANDARDS FOR THE NEW SYSTEM AND FIRE PUMP.
- A LIMITED NUMBER OF ORIGINAL BUILDING ARCHITECTURAL AND STRUCTURAL PLAN PDF'S ARE AVAILABLE UPON REQUEST.
- ALL SPRINKLER HEADS ON EXPOSED PIPING SHOULD BE ASSUMED TO BE EXPOSED TO MECHANICAL INJURY. PER NFPA 13, 16.2.6: SPRINKLERS SUBJECT TO MECHANICAL INJURY SHALL BE PROTECTED WITH LISTED GUARDS.

NOTE:
EXISTING FIRE SPRINKLER LAYOUTS AND
EQUIPMENT LOCATIONS ARE BASED ON
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VERIFIED BY CONTRACTOR.

M/E DESIGN SERVICES
MECHANICAL/ELECTRICAL CONSULTING ENGINEERS
120 South Hill Street
Mishawaka, Indiana 46544
(574) 256-1914

JOB NO. 5995.05

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FORUM ARCHITECTS, LLC
415 Lincolnway East Mishawaka, Indiana
Phone: 574-233-2119
email: info@forumarchitectsllc.com

FIRE SPRINKLER SYSTEM
ELKHART HOUSING AUTHORITY
WATERFALL HIGH RISE

FIRE SPRINKLER
SITE PLAN

ME200



EQUIPMENT SCHEDULE	
MARK NO.	DESCRIPTION
FP-1	FIRE PUMP AND CONTROLLER IN-LINE VERTICAL, MINIMUM 750 GPM, 100 PSI BOOST, 3550 NOMINAL RPM, 75 HP, 208V/3PH/60HZ, 1.15 SERVICE FACTOR. COMPLETE WITH GAUGE TAPS, CONDUIT BOX, BEARING GREASE FITTINGS (MOTOR AND SHAFT), AIR RELIEF VALVE AND VOLUTE DRAIN FITTING. ENTIRE ASSEMBLY TO MEET NFPA AND FM REQUIREMENTS. PEERLESS, AC, GRUNDFOFOS OR APPROVED EQUAL. (100 PSI SHUT-OFF + 62.5 PSI CITY = 162.5 PSI CHURN.) PEERLESS #6PV10 OR AC FIRE PUMP EQUAL. INCLUDE MATCHING VFD SOFT START CONTROLLER.
JP-1	JOCKEY PUMP AND CONTROLLER TURBINE OR MULTISTAGE CENTRIFUGAL SIZED TO MEET NFPA REQUIREMENTS AND OF AT LEAST THE SAME CAPACITY AS THE EXISTING PUMP. 1.5 HP MINIMUM, 208V/3PH/60HZ, COMPLETE WITH GAUGE TAPS, CONDUIT BOX, BEARING GREASE FITTINGS (MOTOR AND SHAFT) AND VOLUTE DRAIN FITTING. ENTIRE ASSEMBLY TO MEET NFPA AND FM REQUIREMENTS. PEERLESS, AC, GRUNDFOFOS OR APPROVED EQUAL. INCLUDE NEW JOCKEY PUMP CONTROLLER.

MECHANICAL NOTES

- 1 FIRE SPRINKLER PIPE ROUTING SHOWN PER OWNERS GENERAL INTENT. ACTUAL DESIGN, ROUTING AND COORDINATION RESPONSIBILITY REMAINS WITH THE FIRE SPRINKLER CONTRACTOR.
- 2 NEW SHUT-OFF VALVE WITH TAMPER SWITCH.
- 3 NEW FLOW SWITCH - BASEMENT ZONE
- 4 ELEVATION CHANGES, IF REQUIRED, ARE NOT SHOWN.
- 5 NEW FLOW SWITCH - TRASH CHUTE ZONE

MECHANICAL AND PLUMBING LEGEND

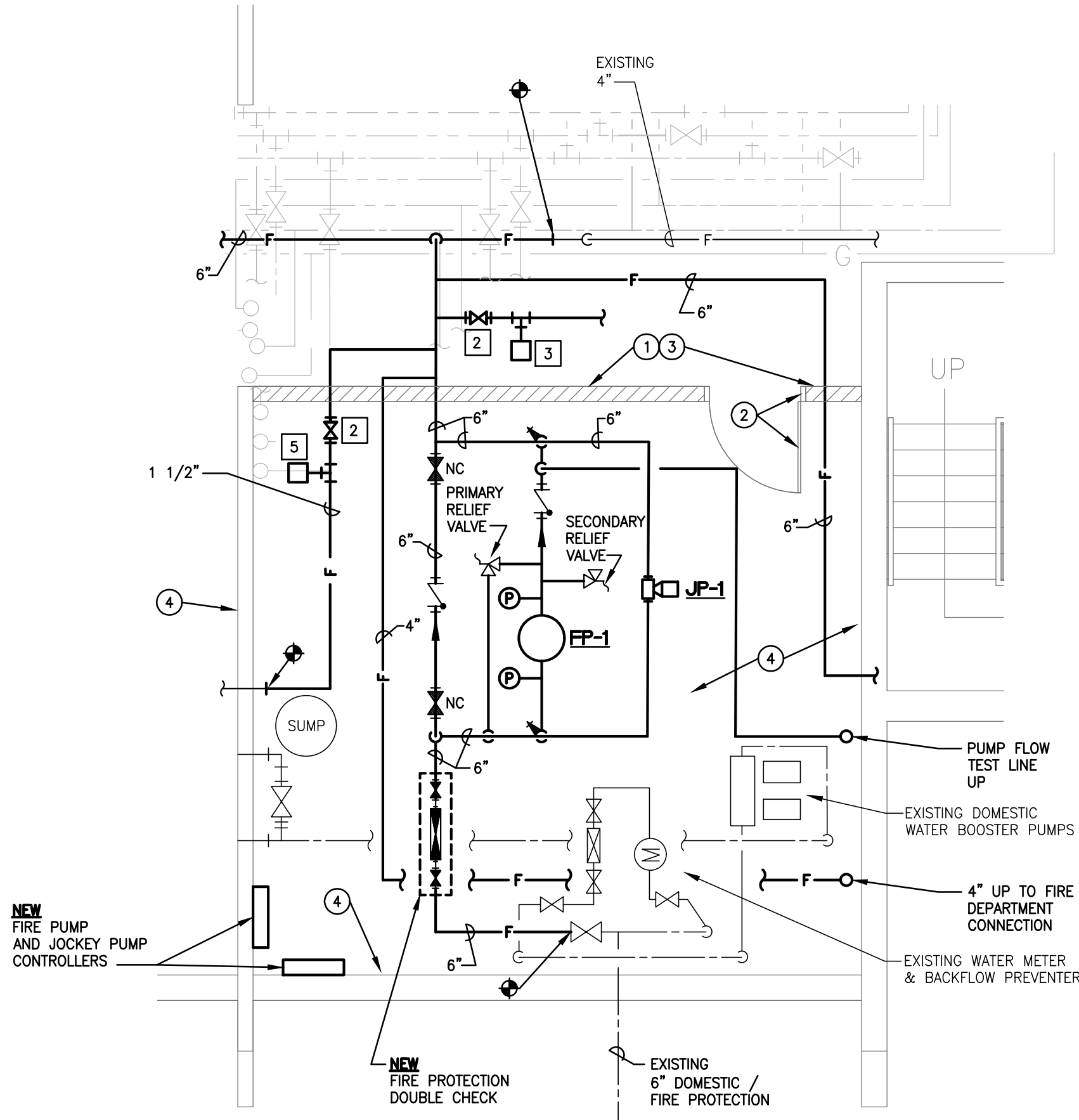
AFF	ABOVE FINISH FLOOR
BFP	BACKFLOW PREVENTER
OW	COLD WATER
FD	FLOOR DRAIN
HW	HOT WATER
HWR	HOT WATER RETURN (DOMESTIC/BOILER)
HWS	HOT WATER SUPPLY
TW	TEPID WATER
TWR	TEPID WATER RETURN
---	COLD WATER (HARD)
---	COLD WATER (SOFT)
---	HOT WATER (DOMESTIC)
---	HOT WATER RETURN (DOMESTIC)
---	FIRE SPRINKLER
---	TEPID WATER
---	TEPID WATER RETURN
---	HOT WATER RETURN
---	HOT WATER SUPPLY
---	EQUIPMENT DRAIN LINES
---	NATURAL GAS
---	CHECK VALVE
---	SHUT-OFF VALVE
---	SHUT-OFF VALVE ON RISER
---	PRESSURE RELIEF VALVE
---	BACKFLOW PREVENTER
---	FLOOR DRAIN OR AREA DRAIN
---	CONNECT TO EXISTING AT POINT INDICATED

ELECTRICAL NOTES

- 1 (3)350 KCMIL, #4 G, IN 2" C. FROM CT CABINET CONNECTION TO FIRE PUMP CONTROLLER, CONDUIT TO BE MINIMUM OF 24" BELOW FINISH GRADE. (3)350 KCMIL, #4 G, IN 2" C. FROM FIRE PUMP CONTROLLER TO FIRE PUMP. COORDINATE ROUTING OF CONDUIT WITH EXISTING CONDITIONS. PROVIDE CONDUIT FOR FEED TO FIRE PUMP FROM CONTROLLER AS REQUIRED BY NEC 695. COORDINATE CONNECTION REQUIREMENTS WITH UTILITY COMPANY AS REQUIRED. COORDINATE ANY POWER SHUTDOWNS WITH OWNER A MINIMUM OF 72 HOURS IN ADVANCE OF SHUTDOWN.
- 2 (4)#10, #10 G, IN 3/4" C
- 3 TAP FOR JOCKEY PUMP FEED CANNOT BE MADE INSIDE OF FIRE PUMP CONTROLLER PER NEC 695. PROVIDE JUNCTION BOX AS NEEDED FOR THIS CONNECTION.
- 4 FLOW AND TAMPER SWITCHES TO BE CONNECTED TO FIRE ALARM CONTROL PANEL. COORDINATE REQUIREMENTS WITH FIRE ALARM INSTALLER. NEW FIRE ALARM SYSTEM IS BEING PROVIDED UNDER A SEPARATE CONTRACT.
- 5 PROVIDE SWITCH AND REWIRE LIGHTS IN THIS SPACE SO THAT THEY ARE CONTROLLED BY THE NEW SWITCH.
- 6 PROVIDE AND INSTALL NEW SURFACE MOUNTED RECEPTACLE. CONNECT TO NEAREST EXISTING RECEPTACLE CIRCUIT.

ELECTRICAL LEGEND

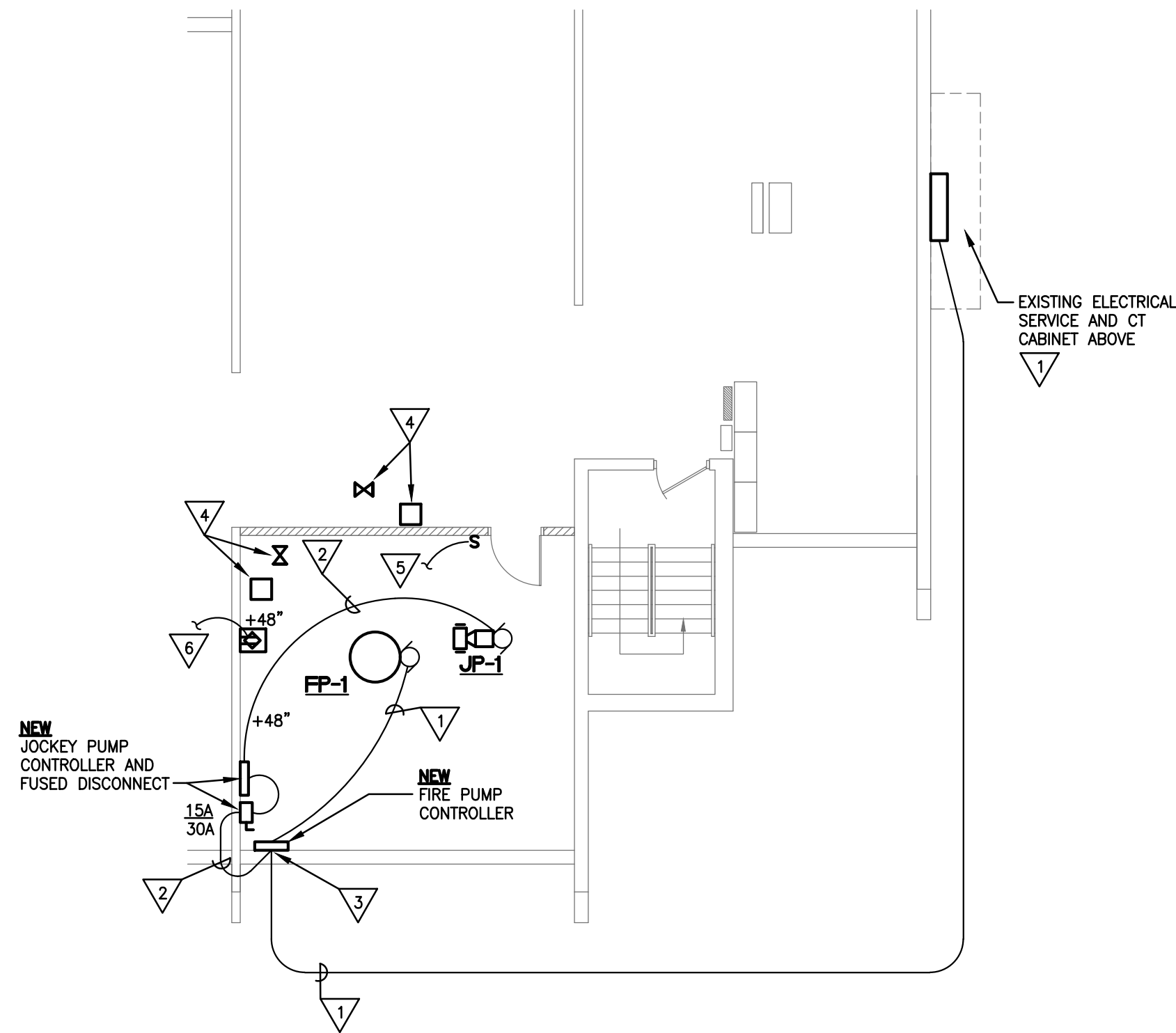
C	CONDUIT
C.B.	CIRCUIT BREAKER
COMB.	COMBINATION
DISC.	DISCONNECT
E.C.	ELECTRICAL CONTRACTOR/TRADE
EXT'G	EXISTING ITEM
G.C.	GENERAL CONTRACTOR/TRADE
O.L.	OVERLOAD
*	EXISTING BRANCH CIRCUIT
⬆	GFCI RECEPTACLE
⊙	MOTOR LOCATION
⊠	CONTROL CONNECTION
⊙	JUNCTION BOX
	POWER DISTRIBUTION PANELBOARD
■	SURFACE MOUNTED PANELBOARD
3/10 - 3/4"	WIRE AND CONDUIT SIZE OTHER THAN MINIMUM SPECIFIED.
---	CONDUIT SIZE
---	WIRE SIZE
---	NUMBER OF WIRES
---	CONDUIT AND WIRE



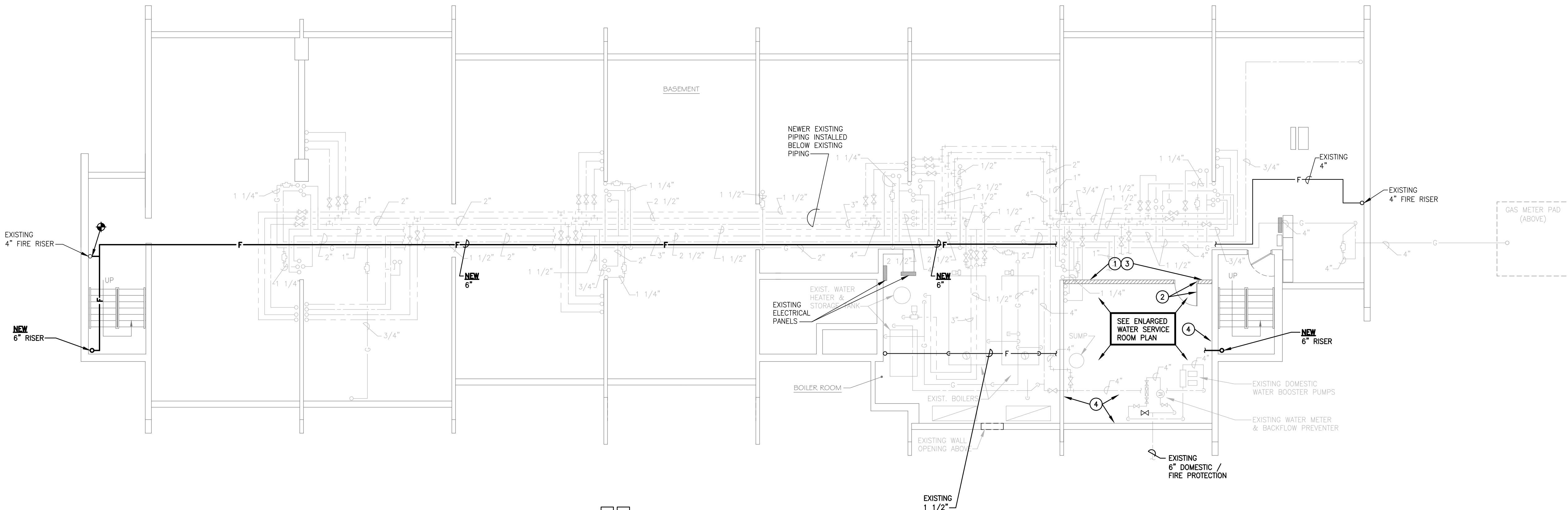
1
N
ENLARGED WATER SERVICE ROOM
SCALE: 1/4" = 1'-0"

ARCHITECTURAL KEY NOTES

- 1 INSTALL NEW TWO (2) HOUR RATED FIRE WALL. CONSTRUCT WALL WITH 3-5/8" METAL STUDS @ 24" O.C. AND TWO (2) LAYERS OF 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE (GA FILE NO. WP1522)
- 2 INSTALL NEW ONE AND A HALF (1 1/2) HOUR RATED HOLLOW METAL DOOR (3'-0" X 6'-8") AND FRAME. PROVIDE THREE (3) HINGES (TA2714 4 1/2" X 4 1/2"), ONE (1) LOCKSET (AL80PNEP), ONE (1) PRIMUS CORE (20-740) AND ONE (1) CLOSER (7500CPS).
- 3 SEAL ALL PENETRATIONS IN NEW WALL AS REQUIRED IN ORDER TO MAINTAIN TWO (2) HOUR FIRE WALL RATING.
- 4 SEAL ALL PENETRATIONS IN EXISTING WALLS/CEILING AS REQUIRED TO MAINTAIN TWO (2) HOUR FIRE WALL RATING.



N
ELECTRICAL PLAN
SCALE: 1/8" = 1'-0"



1 4
N
BASEMENT - FIRE SPRINKLER PLAN
SCALE: 1/8" = 1'-0"

M/E DESIGN SERVICES
MECHANICAL/ELECTRICAL CONSULTING ENGINEERS
120 South Hill Street
Mishawaka, Indiana 46544
(574) 256-1914
JOB NO. 5995.05

DATE:	APRIL 19, 2024
FILE:	
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CHECKED BY:	
REVISIONS:	



FORUM ARCHITECTS, LLC
415 Lincolnway East
Mishawaka, Indiana
Phone: 574-233-2119
email: info@forumarchitectsllc.com

FIRE SPRINKLER SYSTEM
ELKHART HOUSING AUTHORITY
WATERFALL HIGH RISE

BASEMENT
FIRE SPRINKLER PLANS

ME201





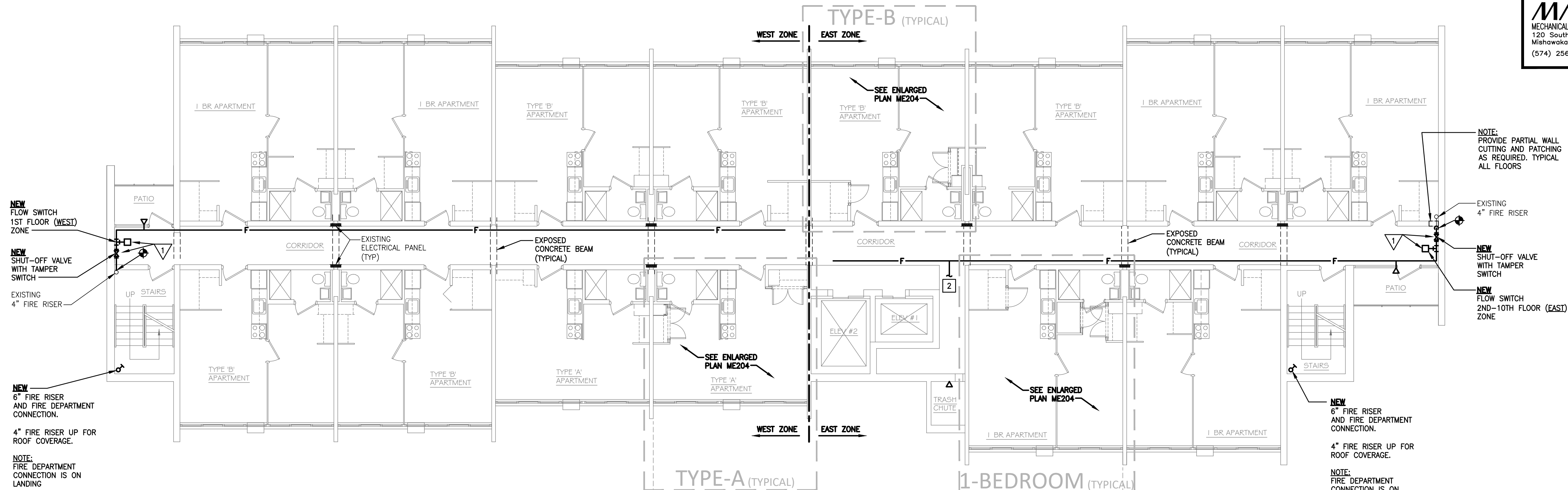
FORUM ARCHITECTS, LLC
415 Lincolnway East Mishawaka, Indiana
Phone: 574-233-2119
email: Info@forumarchitectsllc.com

FIRE SPRINKLER SYSTEM
ELKHART HOUSING AUTHORITY
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1ST - 10TH FLOOR
FIRE SPRINKLER PLANS

ME202

FORUM
ARCHITECTS



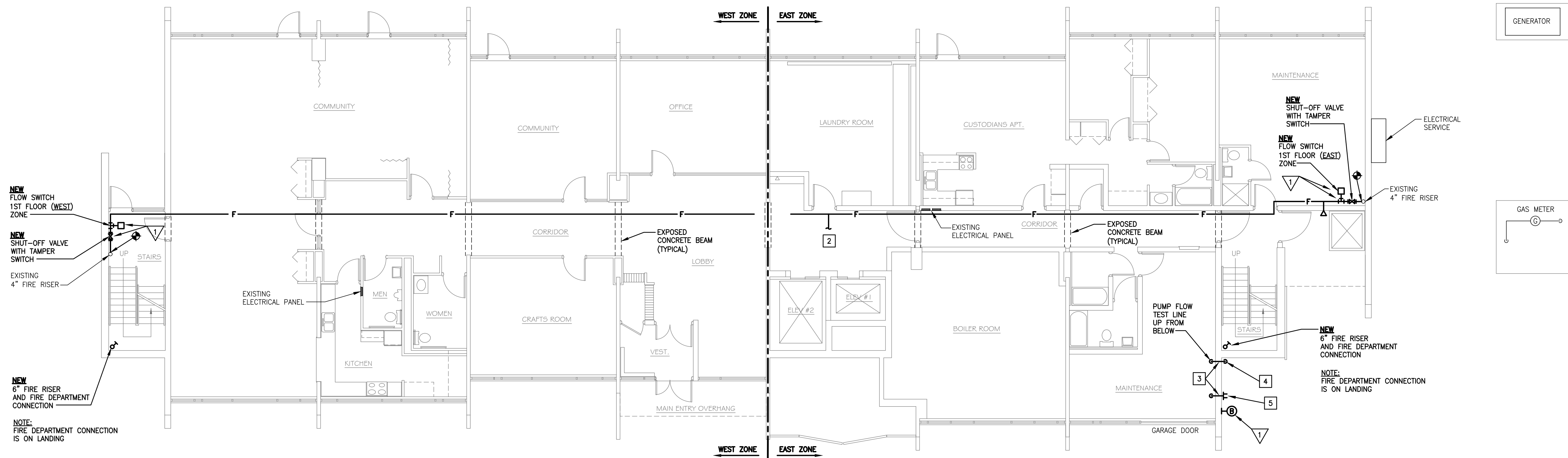
2ND-10TH FLOOR - FIRE SPRINKLER PLANS
SCALE: 1/8" = 1'-0"

MECHANICAL NOTES

- 1 FIRE SPRINKLER PIPE ROUTING SHOWN PER OWNERS GENERAL INTENT. ACTUAL DESIGN, ROUTING AND COORDINATION RESPONSIBILITY REMAINS WITH THE FIRE SPRINKLER CONTRACTOR.
- 2 EXTEND FIRE SPRINKLER SYSTEM TO ELEVATORS AND TRASH CHUTE AS REQUIRED.
- 3 PROVIDE WATER TIGHT LINK SEAL FOR WALL PENETRATION.
- 4 NEW PUMP FLOW TEST LINE DISCHARGE WITH THREADED PIPE FOR HOSE CONNECTION. PROVIDE INTEGRAL CODE COMPLIANT SIGN/LABELING AS REQUIRED.
- 5 NEW SIAMISE CONNECTION. PROVIDE INTEGRAL CODE COMPLIANT SIGN/LABELING AS REQUIRED.
- 6 ELEVATION CHANGES, IF REQUIRED, ARE NOT SHOWN.

ELECTRICAL NOTES

- 1 FLOW AND TAMPER SWITCHES TO BE CONNECTED TO FIRE ALARM CONTROL PANEL. COORDINATE REQUIREMENTS WITH FIRE ALARM INSTALLER. NEW FIRE ALARM SYSTEM IS BEING PROVIDED UNDER A SEPARATE CONTRACT.
- 2 FIRE SPRINKLER BELL. COORDINATE EXACT LOCATION WITH FIRE SPRINKLER CONTRACTOR PRIOR TO ROUGH-IN. PROVIDE POWER FROM NEAREST 120 VOLT RECEPTACLE CIRCUIT. CONNECT TO PRESSURE SWITCH LOCATED IN BASEMENT FIRE PUMP ROOM.

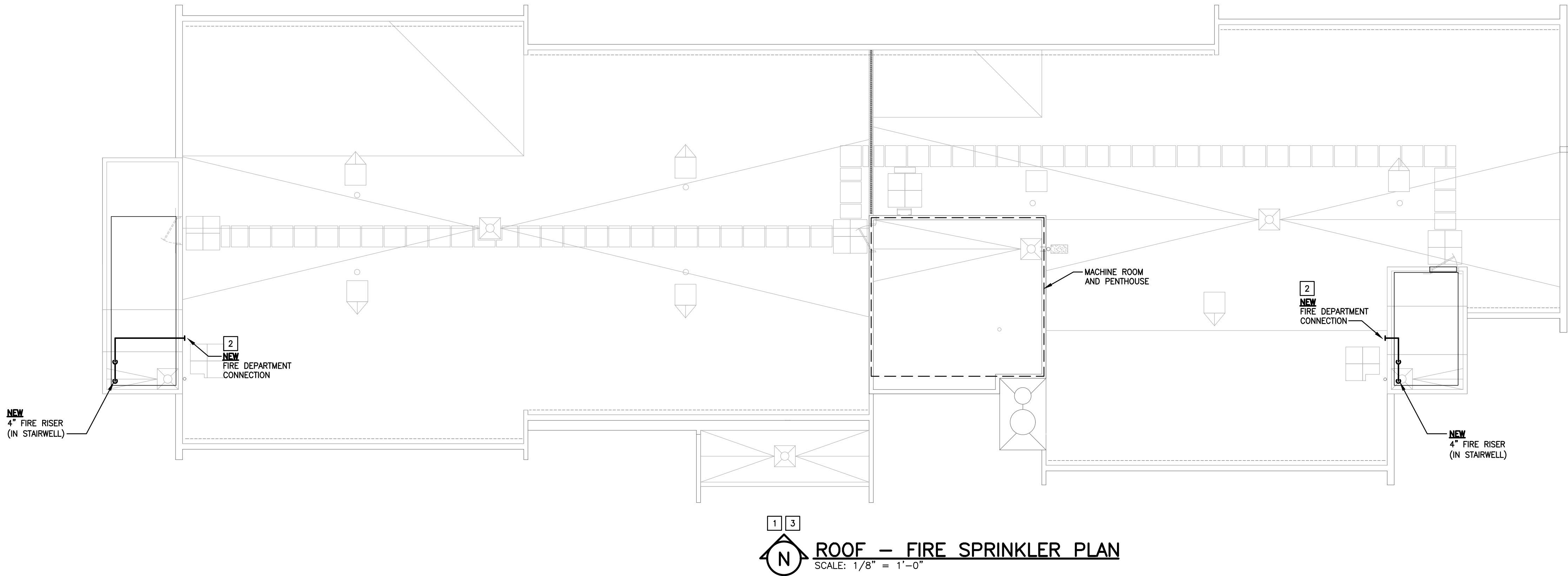


FIRST FLOOR - FIRE SPRINKLER PLAN
SCALE: 1/8" = 1'-0"

NOTE:
THE ENTIRE FIRST FLOOR IS THE
ONLY FLOOR WITH LAY-IN CEILINGS



FORUM ARCHITECTS, LLC
415 Lincolnway East
Mishawaka, Indiana
Phone: 574-233-2119
email: info@forumarchitectsllc.com



13

N

ROOF – FIRE SPRINKLER PLAN

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

- ELECTRICAL GENERAL NOTES
1.

ALL WORK SHALL BE IN ACCORDANCE WITH NATIONAL, STATE, AND LOCAL CODES IN FORCE AT THE TIME OF BIDDING, INCLUDING, BUT NOT LIMITED TO, THE INDIANA CONSTRUCTION RULES AND NATIONAL ELECTRICAL CODE.
2.

ALL CONDUITS SHALL BE CONCEALED WITHIN WALLS, CEILINGS OR FLOORS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS OR PRE-APPROVED BY THE ARCHITECT/ENGINEER.
3.

INSTALL A SEPARATE GROUNDING CONDUCTOR, INSULATED GREEN, IN ALL CONDUITS. WHERE WIRING COUNTS ARE INDICATED ON DRAWINGS, THESE WIRING COUNTS EXCLUDE THE GROUNDING CONDUCTOR. HOWEVER, GROUNDING CONDUCTOR IS REQUIRED. WHERE MC CABLE IS ALLOWED, PROVIDE WITH GREEN INSULATED GROUND CONDUCTOR. TYPE "MCAP" CABLE SHALL NOT BE USED.
4.

MAINTAIN ACCURATE RECORDS OF ALL CHANGES MADE DURING CONSTRUCTION. PROVIDE A NEATLY MARKED SET OF BLUEPRINTS TO THE ENGINEER/ARCHITECT AT COMPLETION OF THE PROJECT, INDICATING ALL FIELD CHANGES.
5.

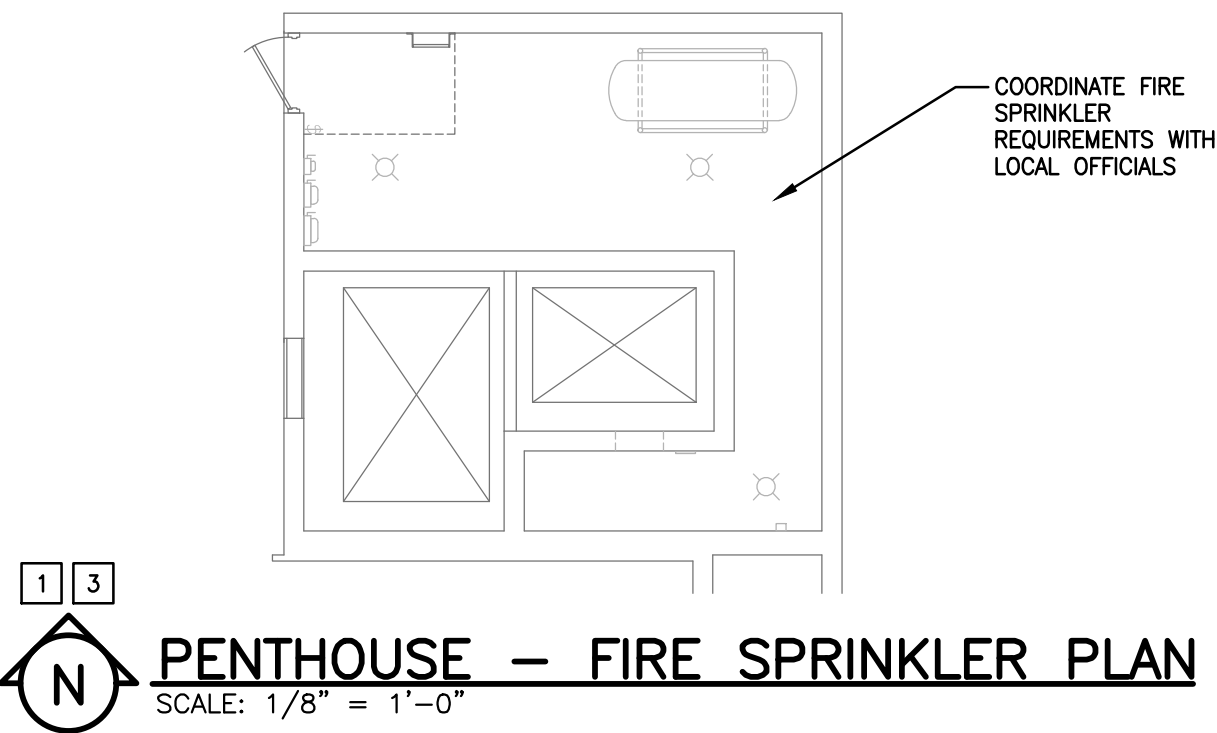
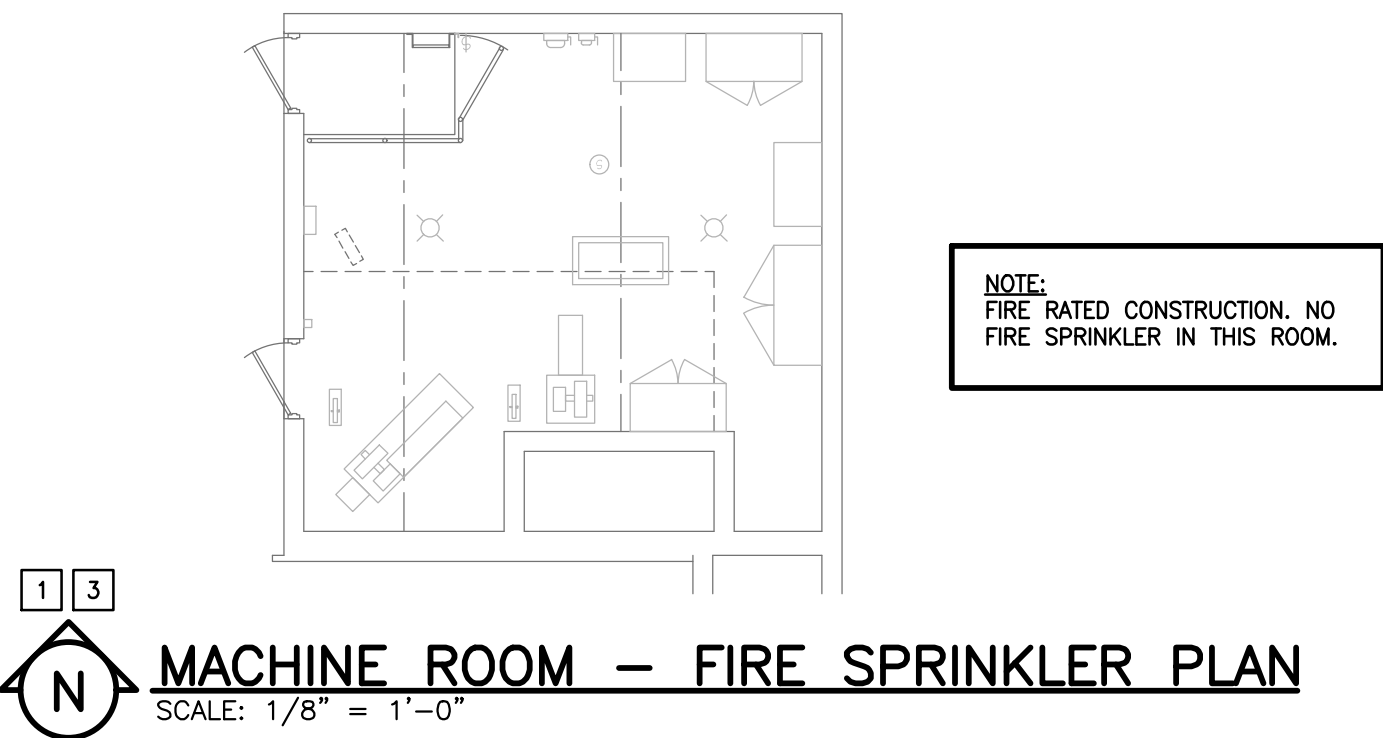
INCREASE BRANCH CIRCUIT CONDUCTORS TO ACCOMMODATE FOR VOLTAGE DROP. 120V CIRCUITS OVER 100' SHALL BE #10 AWG MINIMUM.
6.

ALL DEVICES, EQUIPMENT, FIXTURES, ETC., MUST BE GROUNDED BY USE OF A PROPERLY SIZED GROUNDING CONDUCTOR. MECHANICAL/ELECTRICAL BONDS OF THE METALLIC RACEWAY SYSTEM SHALL ALSO BE MAINTAINED.
7.

UNLESS OTHERWISE NOTED, ALL DEVICE ELEVATIONS REFER TO CENTER OF OUTLET BOX. (SEE SPECIFICATIONS.) THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL OUTLET LOCATIONS WITH OTHER TRADES.
8.

PROVIDE "SEAL-OFFS" WHEN PIPING PASSES THROUGH AREAS OF DIFFERENT AMBIENT TEMPERATURES AND/OR HAZARDOUS AREAS.
9.

THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CUTTING AND PATCHING REQUIRED FOR THE PROPER INSTALLATION, SUPPORT, OR ANCHORAGE OF ELECTRICAL EQUIPMENT. THE E.C. SHALL LAYOUT CAREFULLY IN ADVANCE WHERE CUTTING, CHANNELING OR DRILLING IS NECESSARY FOR THE PROPER COMPLETION OF ELECTRICAL WORK. COORDINATE WITH OTHER TRADES AS REQUIRED.



- MECHANICAL NOTES
- 1

FIRE SPRINKLER PIPE ROUTING SHOWN PER OWNERS GENERAL INTENT. ACTUAL DESIGN, ROUTING AND COORDINATION RESPONSIBILITY REMAINS WITH THE FIRE SPRINKLER CONTRACTOR.
- 2

PROVIDE INTEGRAL CODE COMPLIANT SIGN/LABELING AS REQUIRED.
- 3

ELEVATION CHANGES, IF REQUIRED, ARE NOT SHOWN.

FIRE SPRINKLER SYSTEM

ELKHART HOUSING AUTHORITY

WATERFALL HIGH RISE

ELKHART, INDIANA

303 WATERFALL DRIVE

PENTHOUSE,
MACHINE ROOM AND ROOF
FIRE SPRINKLER PLANS

ME203

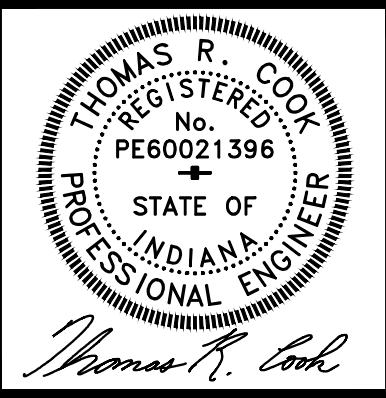


ME204



- ## MECHANICAL NOTES
- | | |
|---|---|
| 1 | FIRE SPRINKLER PIPE ROUTING SHOWN PER OWNERS GENERAL INTENT. ACTUAL DESIGN, ROUTING AND COORDINATION RESPONSIBILITY REMAINS WITH THE FIRE SPRINKLER CONTRACTOR. |
| 2 | ELEVATION CHANGES, IF REQUIRED, ARE NOT SHOWN. |

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REVISIONS:	



FORUM ARCHITECTS, LLC
415 Lincolnway East Mishawaka, Indiana
Phone: 574-233-2119
email: Info@forumarchitectsllc.com

FIRE SPRINKLER SYSTEM

ELKHART HOUSING AUTHORITY

WATERFALL HIGH RISE

MECHANICAL SPECIFICATIONS

ME300

ELKHART, INDIANA

303 WATERFALL DRIVE



SECTION 22000
MECHANICAL

PART 1- GENERAL

1.1 SCOPE

- PROVIDE A COMPLETE ZONED WET PIPE, AUTOMATIC SPRINKLER EQUIPMENT AND PIPING SYSTEM THROUGHOUT THE BUILDING, EXCEPT ROOMS SPECIFICALLY NOTED.
- PROVIDE ALL PIPES, FITTINGS, VALVES, PRESSURE GAUGES, RISER DRAINS, LOW POINT DRAINS, INSPECTOR'S TEST CONNECTIONS, HANGERS, ANCHORAGE, FIRE ALARM INTERCONNECTS AS REQUIRED, AND OTHER ITEMS NECESSARY AND/OR REQUIRED. ALL ITEMS SHALL BE FACTORY MUTUAL (FM) OR UNDERWRITER'S LABORATORIES (UL) APPROVED.
- SLEEVE ALL PIPING THROUGH WALLS AND FLOORS. PROVIDE FIRESTOPPING WHERE REQUIRED.
- PROVIDE SYSTEM DESIGN AND ALL ITEMS OF MATERIALS, FIXTURES AND WORKMANSHIP REQUIRED IN THE FULFILLMENT OF THE WORK.
- SLEEVES FOR PIPING THROUGH DRAFT STOPS AND FIRE RATED WALLS AND FLOORS.
- VERIFY CURRENT LISTINGS OF EQUIPMENT FOR EACH APPLICATION.
- DESIGN SHALL BE CERTIFIED BY AN AUTHORIZED AND CERTIFIED FIRE PROTECTION SYSTEM DESIGNER. DESIGNER SHALL BE NICET LEVEL III OR IV CERTIFIED. THE PROVIDED BID DOCUMENTS ARE INTENDED TO BE A PERFORMANCE SPECIFICATION OUTLINING BASIC EXPECTATIONS. THE RESPONSIBILITY FOR DESIGN AND APPROVAL REMAINS WITH THE SPRINKLER CONTRACTOR AND DESIGNER.
- THE WORK INDICATED IN THIS DIVISION AND ON THE MECHANICAL DRAWINGS IS SUBJECT TO THE REQUIREMENTS OF THE INSTRUCTIONS TO BIDDERS. THESE ARE HEREBY INCLUDED BY REFERENCE. THE CONTRACTOR IS DIRECTED TO EXAMINE ALL PORTIONS OF THE BID DOCUMENTS AS THEY PERTAIN TO THE WORK COVERED BY THIS DIVISION OF THE SPECIFICATIONS AND TO INCLUDE ALL COSTS IN BID FOR ALL MECHANICAL WORK AS CALLED FOR BY THE COMPLETE BID DOCUMENTS.
- PROVIDE ALL REQUIRED LABOR, MATERIALS, EQUIPMENT AND CONTRACTOR SERVICES NECESSARY FOR THE COMPLETE INSTALLATION OF EQUIPMENT INDICATED HEREIN AND ON THE DRAWINGS, COMPLETE WITH ALL RELATED SERVICES. REVIEW ALL EXISTING BUILDING CONDITIONS AS THEY RELATE TO MECHANICAL WORK AND INCLUDE COSTS IN BID. COORDINATE REQUIREMENTS WITH ELECTRICAL TRADES AS REQUIRED.
- ALL WORK SHALL BE PERFORMED BY EXPERIENCED PERSONNEL QUALIFIED TO CARRY OUT THE WORK IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, LOCAL CODES AND AS SPECIFIED HEREIN. THE CONTRACTOR SHALL PROVIDE APPROPRIATE QUALIFICATIONS AND RECORDS OF PAST EXPERIENCE FOR PERSONNEL AND SUBCONTRACTORS WHEN REQUESTED BY THE OWNER OR ENGINEER FOR REVIEW AND APPROVAL.
- SUBMIT SHOP DRAWINGS FOR ALL ITEMS OF MECHANICAL EQUIPMENT AND SPECIALTIES.

1.2 GENERAL

- THE CONTRACTOR SHALL FURNISH A WET PIPE, AUTOMATIC SPRINKLER SYSTEM OF FIRST QUALITY IN EVERY AND ALL RESPECTS, TOGETHER WITH THE NECESSARY PIPE, FITTINGS, HANGERS, AND OTHER APPARATUS, AS HEREINAFTER ENUMERATED AND/OR SHOWN ON DRAWINGS.
- ALL WORK SHALL CONFORM TO THE STANDARDS OF THE NFPA 13 AND THE OWNER'S INSURANCE CARRIER.
- SPRINKLERS SHALL BE APPROVED UPRIGHT BRASS, RECESSED, CONCEALED AND SIDEWALL AND SHALL BE DISTRIBUTED AS REQUIRED.
- ALL SPRINKLER PIPING MUST BE SUBSTANTIALLY SUPPORTED FROM BUILDING STRUCTURE, AND ONLY APPROVED TYPE HANGERS MAY BE USED. SPRINKLER LINES UNDER DUCTS CANNOT BE SUPPORTED FROM DUCTWORK OR OTHER PIPING SYSTEMS.
- COORDINATE WITH OTHER TRADES AS NECESSARY FOR CLEARANCE AROUND DUCTWORK, LIGHTING, ETC., WITHOUT AFFECTING CEILING HEIGHTS OR OTHER VISIBLE BUILDING ELEMENTS. MAKE NECESSARY OFFSETS AND ELEVATION CHANGES TO CLEAR DUCTWORK AND OTHER OBSTRUCTIONS. NOTE THAT LIMITED CEILING SPACE WILL REQUIRE COMPLETE COORDINATION BETWEEN TRADES IN ORDER TO FIT ALL PIPING, DUCTWORK, CONDUITS, ETC. IN AVAILABLE SPACE. IF CONTRACTOR FAILS TO PROVIDE NECESSARY COORDINATION, PIPING WILL BE REMOVED AND REINSTALLED AT CONTRACTOR EXPENSE. MAKE PRELIMINARY VERIFICATION AND COORDINATION PRIOR TO SUBMITTING SHOP DRAWINGS.
- COORDINATE SPRINKLER HEAD LOCATIONS WITH LIGHTING AND CEILING TILES. THE OBJECTIVE WILL BE TO LOCATE THE SPRINKLER HEAD IN THE CENTER OF AN ACOUSTICAL PANEL (CEILING TILE). WHEN A PATTERNED ACOUSTICAL PANEL IS USED, THE HEAD SHALL BE LOCATED IN THE CENTER OF A FLAT PORTION OF THE PATTERN AND NOT AT A REVEAL PORTION OF THE PATTERN. WHERE SPECIFIC PROBLEMS ARE ENCOUNTERED, RELATIONSHIP OF SPRINKLER HEADS TO CEILING PANELS SHALL BE ESTABLISHED WITH THE ENGINEER/ARCHITECT DURING THE CONSTRUCTION PHASE. EVEN IN PROBLEM AREAS, SPRINKLER HEAD PLACEMENT SHALL BE CONSISTENT THROUGHOUT ROOMS AND SHALL NOT BE LESS THAN 4 INCHES AWAY FROM LIGHTS, GRILLES, PANEL GRID, ETC.
- NOTE THAT LIMITED CEILING SPACE WILL REQUIRE COMPLETE COORDINATION OF SPRINKLER PIPE ROUTING AND FABRICATION IN THE FIELD IN ORDER TO FIT PIPING INTO THE AVAILABLE SPACES. THERE ARE MANY TIGHT SPACES WHERE SPRINKLER PIPING THE CONTRACTOR WILL NEED TO FABRICATE SPRINKLER PIPING AND FITTINGS IN THE FIELD. MAKE NECESSARY OFFSETS AND ELEVATION CHANGES IN THE FIELD WHERE REQUIRED WITHIN WALLS AND CEILINGS TO CLEAR STRUCTURE, MECHANICAL, ELECTRICAL AND OTHER OBSTRUCTIONS.

1.3 APPROVALS

- THE CONTRACTOR SHALL OBTAIN ALL NECESSARY STATE AND LOCAL APPROVALS, INCLUDING SUBMITTALS TO THE INDIANA DEPARTMENT OF HOMELAND SECURITY.
- THE OWNER WILL SUBMIT THE CONTRACTORS SPRINKLER DRAWINGS TO THE OWNER'S INSURANCE CARRIER. THE CONTRACTOR SHALL COMPLY WITH ALL INSURANCE COMPANY REQUIREMENTS.
- OBTAIN FLOW AND PRESSURE TEST DATA AS NEEDED FOR SYSTEM DESIGN AND APPROVALS. COORDINATE WITH LOCAL WATER DEPARTMENT.

1.4 CONTRACT DOCUMENTS

- THE MECHANICAL DRAWINGS LISTED IN THE DRAWING INDEX, TOGETHER WITH THESE SPECIFICATIONS, ARE AN INTEGRAL PART OF THE MECHANICAL CONTRACT. WHAT IS CALLED FOR IN ONE IS AS BINDING AS IF CALLED FOR IN BOTH. IN CASE OF CONFLICT, THE GREATER QUANTITY OR BETTER QUALITY IS TO PREVAIL, SUBJECT TO THE APPROVAL OF THE ENGINEER/ARCHITECT.
- THE MECHANICAL AND ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY, BUT ARE TO BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION OF THE PROJECT AND WORK OF OTHER TRADES WILL PERMIT. MINOR CHANGES FROM THESE DRAWINGS, NECESSARY TO COORDINATE WITH THE WORK OF OTHER TRADES AND TO MAKE THE WORK OF THIS CONTRACTOR CONFORM TO THE PROJECT AS CONSTRUCTED, ARE TO BE MADE AT NO ADDITIONAL COST TO THE OWNER.
- MECHANICAL AND ELECTRICAL DRAWINGS ARE NOT TO BE SCALED FOR THE PURPOSE OF EQUIPMENT INSTALLATION. ALL MEASUREMENTS TO BE DERIVED FROM ARCHITECTURAL AND SHOP DRAWINGS AND COORDINATED WITH FIELD CONDITIONS. ALL MEASUREMENTS MUST BE VERIFIED. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK FITTING INTO PLACE IN A SATISFACTORY AND WORKMANLIKE MANNER.
- INCREASED COST OF WIRING RESULTING FROM INCREASED ELECTRICAL RATINGS, OVER THAT SHOWN ON THE MECHANICAL DRAWINGS, IS TO BE BORNE BY THE CONTRACTOR FURNISHING THE EQUIPMENT.

1.5 ALTERNATES

- SEE BID FORM AND DIVISION 0 AND 1 OF SPECIFICATIONS AS APPLICABLE.

1.6 SUPERVISION

- HAVE A THOROUGHLY COMPETENT SUPERINTENDENT IN CHARGE OF THE WORK AT ALL TIMES, EXPERIENCED IN THE WORK TO BE DONE UNDER THIS CONTRACT. REPLACE ANYONE NOT DEEMED CAPABLE BY THE ENGINEER/ARCHITECT UPON REQUEST IMMEDIATELY, BY ONE WHO IS SATISFACTORY. A SATISFACTORY SUPERINTENDENT, ONCE ASSIGNED, IS NOT TO BE REMOVED WITHOUT THE CONSENT OF THE ENGINEER/ARCHITECT.

1.7 MATERIALS AND EQUIPMENT

- WHERE "OR APPROVED EQUAL" CLAUSE IS INDICATED, IT MEANS MATERIAL, APPARATUS, EQUIPMENT AND SUPPLIES HAVING RECOGNIZED STANDARDS OF QUALITY AND PERFORMANCE WHICH, IN THE JUDGMENT OF THE ENGINEER/ARCHITECT, WILL MEET THE DESIGN AND SPECIFICATION REQUIREMENTS. MATERIAL AND EQUIPMENT BY MANUFACTURERS, OTHER THAN THOSE LISTED IN THE PLANS OR SPECIFICATIONS, MUST BE SUBMITTED FOR APPROVAL AS OUTLINED IN THE INSTRUCTION TO BIDDERS.
- WHERE "OR EQUAL" CLAUSE IS INDICATED, IT MEANS MATERIAL AND EQUIPMENT OF EQUAL OR BETTER QUALITY AND PERFORMANCE THAN THAT LISTED IN THE PLANS AND SPECIFICATIONS, EXCEPT THAT NO APPROVAL PRIOR TO BIDDING IS REQUIRED.

SECTION 22000
MECHANICAL CONT.

1.8 UTILITIES

- REVISE PIPING SYSTEMS AS REQUIRE AND COORDINATE AND OBTAIN ANY NECESSARY SYSTEM CAPACITY/PRESSURE INFORMATION FROM LOCAL UTILITIES.

1.9 SHOP DRAWINGS AND SUBMITTALS

- PROVIDE ALL SUBMITTALS AS CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED BY THE ENGINEER, INCLUDING SHOP DRAWINGS, SAMPLES, MATERIAL LISTS, SCHEDULE OF VALUE, ETC. SHOP DRAWINGS SHALL BE COMPLETELY REVIEWED AND APPROVED BY THE CONTRACTOR AND TRADE FURNISHING THE EQUIPMENT (INDICATED BY THE CONTRACTORS APPROVAL STAMP) PRIOR TO SUBMITTING TO THE ENGINEER.
- WHERE SHOP DRAWING SUBMITTALS ARE ASSEMBLED IN A FOLDER OR BOUND SETS, ALL FOLDERS OR SETS ARE TO BE IDENTICAL AND EACH SET MUST CONTAIN AN INDEX OF THE ITEMS ENCLOSED IN THE SET OR FOLDER. QUANTITY OF ORIGINAL COLOR SAMPLES REQUIRED SHALL BE COORDINATED WITH THE ENGINEER.
- REVIEW AND APPROVAL OF SHOP DRAWINGS BY THE ENGINEER IS FOR GENERAL CONFORMITY TO DESIGN INTENT ONLY. THIS REVIEW DOES NOT AUTHORIZE CHANGES TO THE CONTRACT SUM OR RELIEVE THE CONTRACTOR IN ANY WAY OF HIS CONTRACT OBLIGATIONS.
- PROVIDE SUBMITTALS FOR THE FOLLOWING:
 - FIRE PUMP
 - FIRE PUMP CONTROLLER
 - JOCKEY PUMP
 - JOCKEY PUMP CONTROLLER
 - PUMP ACCESSORIES
 - DOUBLE CHECK VALVE BACKFLOW PREVENTER
 - FIRE SPRINKLER SYSTEM DRAWINGS AND MATERIALS

1.10 DEMOLITION

- PROVIDE ALL LABOR, MATERIALS AND NECESSARY COORDINATION FOR DEMOLITION WORK AS CALLED FOR BY THE CONTRACT DOCUMENTS. REMOVAL SHALL BE PARTIAL OR COMPLETE AS CALLED FOR AND SHALL BE COORDINATED WITH OTHER TRADES AND NEW CONSTRUCTION. WORK SHALL ALSO INCLUDE MISCELLANEOUS ITEMS RELATED TO WORK INDICATED WHERE NOT REUSED FOR NEW CONSTRUCTION.
- CONTRACTOR SHALL NOT CUT ANY BEAMS OR COLUMNS OR ANY PORTION OF STRUCTURAL SYSTEM WITHOUT SPECIFIC PERMISSION. CONTRACTOR SHALL COORDINATE WITH OWNER/ARCHITECT/ENGINEER.
- THE CONDITION OF THE SITE, BUILDINGS AND SURROUNDINGS SHALL BE ACCEPTED AS FOUND. RESPONSIBILITY FOR CONDITIONS ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
- VERIFY WORK TO BE PERFORMED BEFORE PROCEEDING. WORK TO REMAIN SHALL BE PROTECTED AND, IF DAMAGED, SHALL BE RESTORED TO LIKE NEW CONDITION. COORDINATE DEMOLITION WITH OTHER TRADES AS REQUIRED. ITEMS INDICATED FOR DEMOLITION SHALL BE COMPLETELY REMOVED, HAULED OFF-SITE AND DISPOSED OF PROPERLY AT NO ADDITIONAL COST TO THE OWNER.
- TURN OVER ANY PERSONAL PROPERTY DISCOVERED DURING THE DEMOLITION PROCESS TO THE OWNER.
- PROTECT AREAS TO REMAIN FROM WEATHER. WEATHER DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- DRAWINGS INDICATE ONLY MAJOR SYSTEM COMPONENTS AND EXTENDS. FIELD VERIFY EXISTING SYSTEMS AND CONDITIONS AND COORDINATE WITH NEW CONSTRUCTION. EQUIPMENT, PIPING, HANGERS, ETC. SHALL NOT BE ABANDONED IN PLACE UNLESS SPECIFICALLY APPROVED BY OWNER AND ENGINEER.
- MAINTAIN SAFE AND ORDERLY JOB CONDITIONS. PROTECT ANY AREAS TO REMAIN. BARRICADE AND SEAL DEMOLITION AREAS FROM OCCUPIED AREAS TO PREVENT INJURIES, SPREAD OF DUST AND DIRT AND UNAUTHORIZED ACCESS. MAINTAIN REQUIRED EXITS. PROVIDE FIRE EXTINGUISHERS IN THE WORK AREA. PROVIDE LIGHTING AND SIGNAGE AS REQUIRED.
- WORK PRACTICES AND JOB CONDITIONS SHALL MEET ALL STATE, FEDERAL AND LOCAL REQUIREMENTS TO PROTECT LIFE AND PROPERTY.
- COORDINATE REMOVAL OF SYSTEMS WITH EXISTING CONDITIONS, THE OWNER AND THE WORK OF OTHER TRADES.
- PLUG, CAP OR DISCONNECT ACTIVE LINES AND SERVICES AS APPLICABLE. WORK SHALL BE PERFORMED BY QUALIFIED, LICENSED PERSONNEL.
- DEBRIS SHALL BE REMOVED FROM THE SITE ON A REGULAR BASIS. IF DEBRIS REMAINS AFTER COMPLETION OF DEMOLITION OR IS ALLOWED TO OBSTRUCT OTHER OPERATIONS THE OWNER AND ENGINEER RESERVE THE RIGHT TO HAVE MATERIAL REMOVED. ALL COSTS OF SAID REMOVAL WILL BE BILLED TO THE CONTRACTOR OR CHARGED AGAINST CONTRACTOR PAY REQUESTS AT THE DISCRETION OF THE OWNER AND ENGINEER. LEAVE SITE IN A NEAT AND ORDERLY CONDITION.
- DAMPEN WORK IF NECESSARY TO CONTROL DUST.
- FOR SYSTEMS THAT WILL REMAIN ACTIVE DURING OR AFTER CONSTRUCTION, COORDINATE DEMOLITION TO MAINTAIN OR RECONNECT EXISTING SERVICES EFFECTED BY DEMOLITION WORK.

PART 2 - PRODUCTS

2.1 WATER SUPPLY

- CONNECT TO EXISTING WATER SERVICE IN ACCORDANCE WITH ALL STATE AND LOCAL REQUIREMENTS. COORDINATE WITH CITY OF ELKHART WATER DEPARTMENT AS REQUIRED.

2.2 DRAINS

- CONTRACTOR IS TO FURNISH ALL AUXILIARY DRAINS WHERE NECESSARY, RUN TO BUILDING DRAINAGE SYSTEM OR BUILDING EXTERIOR (WHERE ALLOWED) IN A LOCATION WHERE THE WATER DISCHARGE WILL NOT HARM LANDSCAPE, PEDESTRIANS, OR BUILDING ELEMENTS. PROVIDE ANY REQUIRED SUPPLEMENTAL DRAINS NEEDED TO ALLOW FOR OFFSET OF SPRINKLER PIPES TO CLEAR OBSTRUCTIONS AND THE WORK OF OTHER TRADES.

2.3 SUPPLY PIPING

- PIPE AND FITTINGS
 - PIPE:
 - BLACK STEEL, ASTM A53, SCHEDULE 40, FURNACE WELDED OR SEAMLESS.
 - FOR PIPING 2.5 INCHES AND LARGER, ASTM A135, SCHEDULE 10, ROLLED GROOVE WITH ANTIMICROBIAL INTERIOR COATING IS ALSO ACCEPTABLE.
 - FITTINGS:
 - CAST IRON FITTINGS: ASTM A126, CLASS 125, ANSI B16.4 SCREWED.
 - MALLEABLE IRON FITTINGS: ASTM A47, CLASS 150, ANSI B16.3.
 - ROLLED GROOVE PIPE AND FITTINGS MEETING FM REQUIREMENTS (VICTAULIC FIRELOCK OR SIMILAR), INCLUDING ROLLED GROOVE TO THREADED PIPE BRANCH FITTINGS ARE ACCEPTABLE FOR PIPING 1-1/2" AND LARGER.
 - FITTINGS FOR EACH TYPE OF PIPING SHALL BE APPROVED AND LISTED FOR SPRINKLER SERVICE IN CONJUNCTION WITH THE ASSOCIATED PIPING SYSTEM.

SECTION 22000
MECHANICAL CONT.

2.4 SPRINKLER HEADS:

- SPRINKLER TYPES AND THE TYPICAL AREA SERVED ARE INDICATED BELOW. HEADS SHALL OF RESPONSE TYPE AND TEMPERATURE RATING AS REQUIRED FOR APPLICATION.
 - FINISHED AREAS:
 - CONCEALED: QUICK RESPONSE TYPE WITH WHITE COVER. TEMPERATURE RATING AS REQUIRED FOR APPLICATION. FRANGIBLE BULB TYPE. RELIABLE OR VIKING EQUAL.
 - WHERE PERMITTED BY ARCHITECT/ENGINEER.
 - SIDEWALL, FRANGIBLE BULB, EXTENDED OR NORMAL COVERAGE, ADJUSTABLE, RECESSED ESCUTCHEON; TEMPERATURE RISE AND ORIFICE SIZE AS REQUIRED. WHITE FINISH.
 - UNFINISHED AREAS INCLUDING MECHANICAL ROOMS, JANITORS CLOSETS, CHASES, CEILING CAVITIES, ETC.
 - PENDANT, UPRIGHT OR SIDEWALL AS REQUIRED. FRANGIBLE BULB, TEMPERATURE RISE AND ORIFICE SIZE AS REQUIRED. CHROME FINISH.

2.5 VALVES

- DOUBLE CHECK VALVE BACKFLOW PREVENTER:

- TWO, TIGHT SEAL, CHECK VALVES WITH RESILIENT SEATED SHUT OFF VALVES AND TEST COCKS. DETECTOR TYPE WHEN USED WITH FIRE SPRINKLER SYSTEMS OR AS REQUIRED BY LOCAL AUTHORITIES. FOR USE WHERE ALLOWED BY CODE.
- WITH DETECTOR:
 - ACCEPTABLE MANUFACTURERS: WATTS 709 DCDA OR AMES, WILKINS OR FEBCO EQUAL.
- DEVICES SHALL BE UNIVERSITY OF SOUTHERN CALIFORNIA LISTED.
- DOUBLE DETECTOR CHECK VALVE SHALL COMPLY WITH THE INDIANA RULES FOR CROSS CONNECTION CONTROL (327 IAC 8-10), CITY OF ELKHART AND THE LOCAL FIRE DEPT.

- CONTROL AND ZONE VALVES:

- ALL VALVES SHALL BE OS&Y GATE TYPE OR BUTTERFLY TYPE (ZONE ONLY), FM LISTED AND APPROVED, UNLESS OTHERWISE INDICATED. BUTTERFLY VALVES SHALL BE PERMITTED TO HAVE INTEGRAL TAMPER SWITCH, GRINNELL "GRUVALOK 7700 SERIES" WITH FLAG INDICATOR AND EITHER INTERNAL OR EXTERNAL SUPERVISORY SWITCH OR EQUAL. OS&Y SHALL BE OUTFITTED WITH TAMPER SWITCH AS INDICATED BELOW. COORDINATE INTERCONNECTION WITH FIRE ALARM SYSTEM AS REQUIRED. ELECTRICAL CONTRACTOR WILL WIRE FROM SWITCH TO BUILDING ALARM SYSTEM.

2.6 CONTROL AND ALARM DEVICES

- FLOW SWITCHES:

- FURNISH SIMPLEX MODEL 2097 SERIES, OR EQUAL, WATERFLOW SWITCH WITH TWO (2) SETS OF CONTACTS. COORDINATE INTERCONNECTION WITH FIRE ALARM SYSTEM AS REQUIRED. ELECTRICAL CONTRACTOR WILL WIRE FROM SWITCH TO BUILDING ALARM SYSTEM. SECOND SET OF CONTACTS TO BE USED TO ACTIVATE FIRE ALARM BELL. PROVIDE BELL TRANSFORMER AS REQUIRED.

- VALVE TAMPER SWITCHES:

- FURNISH SIMPLEX MODEL 2097-9032 SERIES, OR EQUAL, VALVE TAMPER SWITCH WITH ONE (1) SET OF CONTACTS. COORDINATE INTERCONNECTION WITH FIRE ALARM SYSTEM AS REQUIRED. ELECTRICAL CONTRACTOR WILL WIRE FROM SWITCH TO BUILDING ALARM SYSTEM.
- ALARM BELL
 - PROVIDE 120V SPRINKLER ALARM BELL PER NFPA REQUIREMENTS. COORDINATE LOCATION WITH ENGINEER/ARCHITECT IN FIELD. COORDINATE WIRING WITH ELECTRICAL TRADE AND INCLUDE ALL COSTS IN BID.

2.7 SIAMESE CONNECTION - WALL MOUNTED

- 2-1/2" X 2-1/2" X 4" BRASS FLUSH TYPE, TWO (2) DROP CLAPPER VALVES, PLUGS AND CHAINS. STRAIGHT BODY, EXPOSED PARTS, POLISHED BRASS, THREADS TO LOCAL FIRE DEPARTMENT REQUIREMENTS. ELKHART BRASS MANUFACTURING COMPANY, NO. 160 SERIES OR EQUAL.

2.8 WALL HYDRANT

- 2-1/2" X 2-1/2" X 4" SINGLE WALL HYDRANT CONNECTION WITH CAPS AND CHAINS, LESS CLAPPER VALVES. FINISH SHALL BE POLISHED BRASS. COORDINATE THREAD WITH LOCAL FIRE DEPARTMENT. ELKHART BRASS MANUFACTURING COMPANY, NO. 140 OR 150 SERIES AS REQUIRED OR EQUAL. UNIT TO BE LABELED "WALL HYDRANT"

2.9 MISCELLANEOUS

- PROVIDE SPARE SPRINKLER HEADS AND SPRINKLER HEAD CABINET TO MEET REQUIREMENTS OF NFPA 13. LOCATE CABINET IN BASEMENT MECHANICAL ROOM AS DIRECTED BY ENGINEER/ARCHITECT. INCLUDE SPECIAL SPRINKLER WRENCHES OF EACH TYPE REQUIRED IN CABINET.

2.10 FIRE PUMPS

- SEE SPECIFICATION SECTION 22200 ELECTRIC DRIVEN FIRE PUMP SYSTEM.

DATE:	APRIL 19, 2024
FILE:	
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REVISIONS:	



FORUM ARCHITECTS, LLC
415 Lincolnway East Mishawaka, Indiana
Phone: 574-233-2119
email: Info@forumarchitectsllc.com

FIRE SPRINKLER SYSTEM
ELKHART HOUSING AUTHORITY
WATERFALL HIGH RISE
303 WATERFALL DRIVE
ELKHART, INDIANA

MECHANICAL
SPECIFICATIONS

ME301



SECTION 22000
MECHANICAL CONT.

PART 3 – EXECUTION

3.1 LEAK DAMAGE

- A. THIS CONTRACTOR SHALL BE RESPONSIBLE DURING THE INSTALLATION AND TESTING PERIODS OF THE SPRINKLER SYSTEM FOR ANY DAMAGE TO THE WORK OF OTHERS, TO THE BUILDING, ITS CONTENTS, ETC., CAUSED BY LEAKS IN ANY EQUIPMENT, BY UNPLUGGED OR DISCONNECTED PIPES, FITTINGS, ETC., OR BY OVERFLOW, AND SHALL PAY FOR NECESSARY REPLACEMENT OR REPAIRS TO WORK OF OTHERS, BUILDING, OR EQUIPMENT DAMAGED BY SUCH LEAKAGE.

3.2 HANGERS

- A. TO BE FACTORY MUTUAL APPROVED TYPE.

3.3 SIGNS

- A. CONTRACTOR SHALL FURNISH STANDARD METAL "SPRINKLER-DRAIN" SIGNS AT SPRINKLER DRAIN VALVES.

3.4 TESTS

- A. ALL NEW PIPING SHALL BE TESTED UNDER A HYDROSTATIC PRESSURE OF NOT LESS THAN 200 POUNDS. THIS TEST PRESSURE SHALL BE MAINTAINED FOR AT LEAST TWO (2) HOURS, AND ANY DEFECT, INCLUDING LEAKS, REMEDIED.
- B. CONDUCT OPERATIONAL TEST OF SPRINKLER SYSTEM AND SUBMIT CERTIFICATION LETTER AT COMPLETION OF PROJECT. SUBMIT COPY OF CERTIFICATION TO LOCAL BUILDING DEPARTMENT.

3.5 INSTALLATION

- A. INSTALL ALL EQUIPMENT, INCLUDING VALVES, SPRINKLER HEADS, ETC. IN ACCORDANCE WITH THEIR LISTING AND MANUFACTURER'S REQUIREMENTS.
- B. NOTIFY ENGINEER/ARCHITECT AND LOCAL FIRE DEPARTMENT IN ADVANCE OF ALL FINAL SYSTEM TESTS.
- C. ALL SYSTEMS MUST HAVE FINAL INSPECTION AND APPROVAL OF THE LOCAL FIRE DEPARTMENT BEFORE ACCEPTANCE BY THE OWNER.

3.6 CODES, RULES AND REGULATIONS

- A. ALL WORK SHALL BE IN ACCORDANCE WITH NATIONAL, STATE AND LOCAL CODES IN FORCE AT TIME OF BIDDING, INCLUDING BUT NOT LIMITED TO THE INDIANA CONSTRUCTION RULES. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND INSPECTION APPROVALS AS THE WORK PROGRESSES. ANY WORK WHICH IS COMPLETED WITHOUT THESE APPROVALS SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST OR INCONVENIENCE TO THE OWNER TO THE SATISFACTION OF THE BUILDING OFFICIALS AND OWNER'S REPRESENTATIVES.

3.7 COORDINATION

- A. COORDINATE ROUTING OF PIPING, ETC. PRIOR TO STARTING INSTALLATION. FIELD VERIFY EXISTING CONDITIONS BEFORE ORDERING OR SETTING EQUIPMENT OR PIPING.
- B. COORDINATE EXACT PLACEMENT OF SPRINKLER HEADS, ETC. WITH ARCHITECTURAL AND ELECTRICAL ITEMS BEFORE INSTALLATION.

3.8 INSTALLATION

- A. FIELD VERIFY EXISTING FRAMING, CEILING HEIGHTS, ETC. BEFORE ORDERING OR FABRICATING PIPING.
- B. FIELD VERIFY EXISTING CONDITIONS BEFORE ORDERING OR SETTING EQUIPMENT OR PIPING.
- C. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS. NOTIFY ENGINEER/ARCHITECT IF THIS INFORMATION APPEARS TO CONFLICT WITH THE DRAWINGS AND SPECIFICATIONS PRIOR TO INSTALLATION.

3.9 ACCESSIBILITY

- A. MAINTAIN ACCESSIBILITY TO ALL EQUIPMENT FOR OPERATION, MAINTENANCE AND REPAIR. REFER TO MANUFACTURER'S REQUIREMENTS.

3.10 CUTTING AND PATCHING

- A. LAY OUT WORK CAREFULLY IN ADVANCE, AND WHERE CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES IS NECESSARY FOR THE PROPER INSTALLATION, SUPPORT, OR ANCHORAGE OF MECHANICAL EQUIPMENT, THE WORK IS TO BE CAREFULLY DONE AND ANY DAMAGE TO THE BUILDING, PIPING, OR EQUIPMENT REPAIRED BY SKILLED MECHANICS OF THE TRADES INVOLVED, AT NO ADDITIONAL COST TO THE OWNER. THIS CONTRACTOR/TRADE SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING RELATED TO THE WORK OF THIS DIVISION OF THE SPECIFICATIONS.

3.11 RECORD DRAWINGS

- A. MAINTAIN ACCURATE RECORDS OF ALL CHANGES MADE DURING CONSTRUCTION. PROVIDE A NEATLY MARKED SET OF PRINTS TO THE ENGINEER/ARCHITECT AT COMPLETION OF THE PROJECT INDICATING ALL FIELD CHANGES.

3.12 WORKMANSHIP

- A. INSTALL ALL MATERIALS AND EQUIPMENT IN A NEAT AND WORKMANLIKE MANNER AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AS APPROVED BY THE ENGINEER/ARCHITECT TO CONFORM WITH THE CONTRACT DOCUMENTS.

3.13 OPERATING AND MAINTENANCE MANUALS AND INSTRUCTION

- A. PROVIDE ELECTRONIC COPIES, PER SPECIFICATION INSTRUCTIONS, OF COMPLETE INSTALLATION, OPERATING, AND MAINTENANCE INSTRUCTIONS. MANUALS SHALL ALSO INCLUDE COMPLETE PARTS LISTS, OPERATING INSTRUCTIONS, COPIES OF ORIGINAL SHOP DRAWINGS, SUBCONTRACTOR LISTS, WARRANTIES, WARNINGS, ETC. GENERIC INSTRUCTIONS SHALL HIGHLIGHT APPLICABLE SECTIONS WHEN NEEDED TO DIFFERENTIATE FROM NON-RELEVANT EQUIPMENT.
- B. UPON COMPLETION OF THE WORK AND AT A DESIGNATED TIME, PROVIDE INSTRUCTIONS TO THE OWNER'S REPRESENTATIVE ON OPERATION AND MAINTENANCE OF ALL MECHANICAL EQUIPMENT. NOTIFY ENGINEER OF SCHEDULED TIME AND PLACE.
- C. TURN OVER TO OWNER ALL TOOLS SUPPLIED WITH EQUIPMENT.

END OF SECTION

SECTION 22200
ELECTRIC-DRIVEN FIRE PUMP SYSTEM

PART 1: GENERAL

1.1 RELATED DOCUMENTS

- A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS, APPLY TO THIS SECTION.

1.2 GENERAL DESCRIPTION

- A. THIS SECTION INCLUDES ELECTRIC-DRIVE, CENTRIFUGAL FIRE PUMPS AND THE FOLLOWING:

- FIRE-PUMP ACCESSORIES AND SPECIALTIES.
 - PRESSURE-MAINTENANCE PUMP (JOCKEY PUMP), ACCESSORIES, AND SPECIALTIES.
 - FIRE PUMP CONTROLLER
 - JOCKEY PUMP CONTROLLER
- B. FIRE SPRINKLER AND STANDPIPE SYSTEM SHALL BE SUPPLIED FROM A NEW FIRE PUMP AND JOCKEY PUMP. CONTRACTOR SHALL PROVIDE A FIRE PUMP THAT IS DESIGNED TO PROVIDE ADEQUATE FLOW AND PRESSURE TO SATISFY THE SPRINKLER SYSTEM DEMAND. THE CONTRACTOR SHALL PROVIDE ALL DESIGN, MATERIALS, INSTALLATION, TESTING AND CERTIFICATION ASSOCIATED WITH THE FIRE PUMP INSTALLATION AND ASSOCIATED WATER SERVICE AND VALVING REVISIONS. WORK TO INCLUDE THE FIRE PUMP, FIRE PUMP CONTROLLER, JOCKEY PUMP, PUMP BASE, PIPING, VALVES, ELECTRICAL WORK AND ANY OTHER RELATED WORK, AND ACCESSORIES. CONTRACTOR TO SUBMIT FINAL DRAWINGS TO INDIANA DEPARTMENT OF HOMELAND SECURITY AS A PART OF THE OVERALL FIRE PROTECTION SUBMITTAL FOR APPROVAL.
- C. CONTRACTOR TO TEST AND ADJUST ALL PRESSURE SENSORS, PRESSURE SWITCHES, REGULATORS AND FLOW SWITCHES AS REQUIRED FOR THE NEW PUMP.
- D. THE WATER SUPPLY TO THE FIRE PUMP SHALL BE THE EXISTING SIX-INCH MUNICIPAL SUPPLY. CONTRACTOR SHALL VERIFY WATER SUPPLY INFORMATION BY CONDUCTING HYDRANT FLOW TESTS OR VERIFYING FLOW AND PRESSURE AT THE EXISTING PUMP.
- E. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS, NO MODIFICATIONS TO THESE SPECIFICATIONS WILL BE ACCEPTED WITHOUT THE EXPRESSED WRITTEN APPROVAL OF THE OWNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DOCUMENT OWNER'S APPROVAL OF ANY SUCH MODIFICATIONS PRIOR TO THE EXECUTION OF WORK.
- F. COORDINATE WORK WITH OTHER TRADES WORKING ON THE PROJECT. FIRE PUMP TO BE MONITORED BY THE NEW FIRE ALARM SYSTEM AND CONNECTED TO NEW PUMP CONTROLLER. COORDINATE CONNECTIONS TO FIRE ALARM SYSTEM WITH FIRE ALARM SYSTEM CONTRACTOR. REFER TO ELECTRICAL DRAWINGS FOR POWER CONNECTIONS.
- G. CONTRACTOR AND MANUFACTURER TO COMPLY WITH INDIANA US MADE STEEL AND FOUNDRY PRODUCTS REQUIREMENTS.

1.3 INTENT OF SPECIFICATIONS

- A. IT IS INTENDED THAT THE WORK PERFORMED PURSUANT TO THESE SPECIFICATIONS BE COMPLETE IN EVERY RESPECT, RESULTING IN A SYSTEM INSTALLED ENTIRELY IN ACCORDANCE WITH THE APPLICABLE CODES, STANDARDS, MANUFACTURER'S RECOMMENDATIONS AND UL AND FM LISTINGS.
- B. IT IS FURTHER INTENDED THAT UPON COMPLETION OF THIS WORK, THE OWNER BE PROVIDED WITH:
- COMPLETE INFORMATION AND DRAWINGS DESCRIBING AND PICTURING THE ENTIRE SYSTEM AS INSTALLED, INCLUDING ALL INFORMATION NECESSARY FOR MAINTAINING TROUBLESHOOTING AND/OR EXPANDING THE SYSTEMS AT A FUTURE DATE.
 - COMPLETE DOCUMENTATION OF SYSTEMS TESTING.
 - ADEQUATE OWNER PERSONNEL TRAINING IN SYSTEM OPERATION AND TESTING.

1.4 WORK INCLUDED

- A. PROVIDE ELECTRICALLY DRIVEN FIRE PUMP WITH RATED CAPACITY THAT IS DESIGNED TO SATISFY SPRINKLER SYSTEM DEMAND. FIRE PUMP ASSEMBLY TO INCLUDE PUMP, DRIVE, JOCKEY PUMP (PRESSURE MAINTENANCE PUMP), FIRE PUMP CONTROLLER AND ALL OTHER ASSOCIATED EQUIPMENT TO COMPLY WITH THE NFPA STANDARDS.
- B. WORK SHALL INCLUDE ALL REQUIRED INTERCONNECTING WIRING FOR A FULLY OPERATIONAL PUMP INSTALLATION.
- C. PROVIDE ANY NEW DRAINS NECESSARY TO DRAIN AND TEST THE FIRE PUMP.
- D. PREPARE AND SUBMIT SHOP DRAWINGS, RECORD DRAWINGS AND OTHER SUBMITTALS REQUIRED HEREIN.
- E. INSTALL FIRE PROTECTION SYSTEM IDENTIFICATION SIGNS IN ACCORDANCE WITH NFPA 13 AND 20.
- F. PERFORM AN ACCEPTANCE TEST OF THE NEW FIRE PUMP IN ACCORDANCE WITH INDIANA AND LOCAL FIRE DEPARTMENT REQUIREMENTS. THE MANUFACTURER'S REPRESENTATIVE SHALL ALSO ATTEND ALL FIRE PUMP TESTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT REQUIRED TESTS. SEPARATE TESTS MAY BE REQUIRED BY THE ENGINEER AND OWNER.
- G. GUARANTEE ALL NEW PUMP EQUIPMENT FOR A ONE YEAR PERIOD AFTER FINAL ACCEPTANCE.
- H. OBTAIN ALL APPROVALS REQUIRED FOR THE WORK OF THIS SECTION FROM THE PROJECT INSURER, ENGINEER, AND THE OWNER.
- I. PAY ALL FEES REQUIRED TO OBTAIN PERMITS OR APPROVAL OF THIS WORK.

1.5 QUALITY ASSURANCE

- A. SOURCE LIMITATIONS: OBTAIN FIRE PUMP, FIRE PUMP CONTROLLER AND PRESSURE-MAINTENANCE (JOCKEY) PUMP THROUGH ONE SOURCE FROM A SINGLE MANUFACTURER FOR EACH TYPE OF EQUIPMENT.
- B. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.
- C. IF THERE IS A CONFLICT BETWEEN THE REFERENCED NFPA STANDARDS, FEDERAL, STATE OR LOCAL CODES AND THIS SPECIFICATION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REVIEW WITH LOCAL OFFICIALS AND TO BRING THE CONFLICT TO THE ATTENTION OF THE ARCHITECT OR ENGINEER FOR RESOLUTION.
- D. WELDING MATERIALS AND LABOR TO CONFORM TO ASME CODE AND APPLICABLE STATE LABOR REGULATIONS.

1.6 REFERENCE STANDARDS

- A. NFPA: NATIONAL FIRE PROTECTION ASSOCIATION, BATTERY MARCH PARK, QUINCY, MASSACHUSETTS 02269, U.S.A.
- NFPA 20, 2007 EDITION – STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION.
 - NFPA 24, 2007 EDITION – STANDARD FOR THE INSTALLATION OF PRIVATE SERVICE MAINS AND THEIR APPURTENANCES.
 - NFPA 25, 2008 EDITION – STANDARD FOR THE INSPECTION, TESTING AND MAINTENANCE OF WATER BASED FIRE PROTECTION SYSTEMS.
 - NFPA 70, 2008 EDITION – NATIONAL ELECTRICAL CODE.
 - NFPA 72, 2008 EDITION – NATIONAL FIRE ALARM CODE.
- B. UNDERWRITERS LABORATORIES, INC., (UL) REQUIREMENTS APPLICABLE TO PRODUCT LISTING.
- C. FACTORY MUTUAL (FM) SYSTEMS APPROVAL GUIDE

1.7 CONTRACTOR REQUIREMENTS

- A. CONTRACTOR SHALL HAVE AT LEAST FIVE (5) YEARS OF EXPERIENCE IN INSTALLATION OF SYSTEMS OF THIS TYPE AND BE FAMILIAR WITH ALL APPLICABLE REGULATIONS.
- B. CONTRACTOR SHALL BE REGULARLY ENGAGED IN THE DESIGN, INSTALLATION, TESTING AND SERVICING OF FIRE PUMPS.
- C. SYSTEM LAYOUT AND INSTALLATION SHALL BE SUPERVISED BY A LICENSED NICET LEVEL III SPRINKLER SYSTEM TECHNICIAN OR FIRE PROTECTION ENGINEER WITH NOT LESS THAN FIVE (5) YEARS EXPERIENCE WITH SPRINKLER SYSTEM. SHOP DRAWINGS SHALL BE PREPARED AND ENGINEERED. THE SIGNATURE OF THE ENGINEER CONSTITUTES AN AFFIDAVIT THAT THE STATEMENTS, REPRESENTATIONS, AND INFORMATION PRESENTED IN THE SUBMITTAL CONSTITUTE A COMPLETE OPERATIONAL SYSTEM CONFORMING TO APPLICABLE STATE LAWS AND RECOGNIZED GOOD ENGINEERING PRACTICES. ALL FIELD INSTALLATION WORK SHALL BE CONTINUOUSLY SUPERVISED BY A NICET LEVEL II OR III SPRINKLER SYSTEM TECHNICIAN OR CERTIFIED MANUFACTURER REPRESENTATIVE.
- D. CONTRACTOR SHALL HAVE AN OFFICE AND PERSONNEL WITHIN 45 MILES OF THE PROJECT SITE.END OF SECTION 22200

SECTION 22200
MECHANICAL CONT.

1.8 SUBMITTALS

A. GENERAL

REFER TO INFORMATION REQUIRED IN CONTRACT GENERAL REQUIREMENTS.

- SUBMITTAL SHALL CONTAIN ALL NECESSARY INFORMATION FOR THE ENTIRE SYSTEM. PARTIAL SUBMITTALS WILL NOT BE ACCEPTED.
 - FOR EACH TYPE OF PRODUCT INDICATED. INCLUDE RATED CAPACITIES, CERTIFIED PUMP PERFORMANCE CURVES WITH EACH SELECTION POINT INDICATED, OPERATING CHARACTERISTICS, AND FURNISHED ACCESSORIES AND SPECIALTIES FOR EACH FIRE PUMP AND PRESSURE- MAINTENANCE PUMP.
 - WHEN A DATA SHEET SHOWS MORE THAN ONE PRODUCT, THE PROPOSED PRODUCT SHALL BE CLEARLY INDICATED BY ARROWS OR OTHER SUITABLE MEANS.
 - CATALOG DATA MUST HAVE THE ITEM OR MODEL NUMBER TO BE PROVIDED CLEARLY MARKED AND ALL ACCESSORIES INDICATED. SUBMIT LITERATURE SHOWING DETAILS OF EACH ITEM OF EQUIPMENT. MARK OUT ALL INAPPLICABLE ITEMS. PLAINLY INDICATE THE INTENDED USE OF EACH ITEM SHOWN. WHERE "MULTIPLE CHOICE" ITEMS ARE SHOWN WITH DELETIONS, ENGINEER WILL REQUIRE THE FURNISHING OF THE HIGHEST QUALITY OR MOST EXPENSIVE ITEMS.
 - INCLUDE PLANS, ELEVATIONS, SECTIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK.
 - WIRING DIAGRAMS: POWER, SIGNAL, AND CONTROL WIRING.
- B. OPERATION AND MAINTENANCE DATA: FOR FIRE PUMPS, CONTROLLERS AND DRIVERS, PRESSURE-MAINTENANCE PUMPS, ACCESSORIES AND SPECIALTIES, AND FLOW METER SYSTEMS TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS.

C. CONTRACTOR RECORD DRAWINGS

- THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ON THE SITE AN UP-TO-DATE RECORD SET OF APPROVED SHOP DRAWING PRINTS WHICH SHALL BE MARKED TO SHOW EACH AND EVERY CHANGE MADE TO THE AUTOMATIC SPRINKLER SYSTEMS FROM THE ORIGINAL APPROVED SHOP DRAWINGS. THIS SHALL NOT BE CONSTRUED AS AUTHORIZATION TO DEVIATE FROM OR MAKE CHANGES TO THE SHOP DRAWINGS APPROVED BY THE OWNER WITHOUT WRITTEN INSTRUCTION FROM THE OWNER IN EACH CASE. THIS SET OF DRAWINGS SHALL BE USED ONLY AS A RECORD SET.
- UPON COMPLETION OF THE WORK, THE RECORD SET OF PRINTS SHALL BE USED TO PREPARE COMPLETE, ACCURATE FINAL RECORD DRAWINGS REFLECTING ANY AND ALL CHANGES AND DEVIATIONS MADE TO THE FIRE PUMP.
- UPON COMPLETION OF THE WORK, RECORD DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER AND OWNER FOR REVIEW. THE NUMBER OF RECORD DRAWING SETS SHALL BE IN ACCORDANCE WITH THE CONTRACT AND OTHER SECTIONS OF THESE SPECIFICATIONS.

1.9 COORDINATION

- A. COORDINATE SIZE AND LOCATION OF CONCRETE BASES AND SUPPORTS. CAST ANCHOR-BOLT INSERTS INTO BASES AS REQUIRED.

1.10 WORKING CONDITIONS

- A. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE JOB SITE AND BECOME FAMILIAR WITH THE CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED. INSPECTION OF THE EXISTING BUILDING MAY BE MADE BY APPOINTMENT WITH THE OWNER THROUGH THE ARCHITECT/ENGINEER AND GENERAL CONTRACTOR.

1.11 WARRANTY

A. WARRANTY PERIOD

- THE CONTRACTOR SHALL WARRANTY ALL MATERIALS AND WORKMANSHIP DURING THE INSTALLATION PERIOD AND FOR A PERIOD OF ONE (1) YEAR, BEGINNING WITH THE DATE OF FINAL ACCEPTANCE BY THE OWNER AND ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE DURING THE DESIGN, INSTALLATION, TESTING AND WARRANTY PERIODS FOR ANY DAMAGE CAUSED BY HIM OR HIS SUBCONTRACTORS OR BY DEFECTS IN HIS OR HIS SUBCONTRACTORS' WORK, MATERIALS OR EQUIPMENT.
- DURING THE WARRANTY PERIOD, THE CONTRACTOR SHALL INSPECT AND TEST FIRE PUMP SYSTEMS IN CONFORMANCE WITH NFPA 20. PUMPS AND ACCESSORIES SHALL BE TESTED AT A MINIMUM INTERVAL OF 6 MONTHS APART, WITH A WRITTEN REPORT SUBMITTED TO OWNER AFTER EACH TEST.
- THE CONTRACTOR SHALL PROVIDE EMERGENCY REPAIR SERVICE FOR THE SYSTEMS, AT NO COST TO THE OWNER, WITHIN FOUR (4) HOURS OF A REQUEST FOR SUCH SERVICE BY THE OWNER DURING BOTH THE INSTALLATION AND THE WARRANTY PERIODS. THIS SERVICE SHALL BE PROVIDED ON A 24 HOUR PER DAY, SEVEN DAYS PER WEEK BASIS.

1.12 TRAINING

- A. AT A TIME MUTUALLY AGREED UPON, PROVIDE 4 HOURS OF INSTRUCTION TO THE OWNER'S DESIGNATED PERSONNEL ON THE OPERATION AND MAINTENANCE OF THE AUTOMATIC SPRINKLER SYSTEM AND ASSOCIATED EQUIPMENT. OWNER'S OPERATION AND MAINTENANCE MANUAL PREPARED FOR THIS PROJECT SHALL BE USED DURING THE INSTRUCTION.

PART 2: PRODUCTS

2.1 GENERAL

- A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, MANUFACTURERS SPECIFIED. AC, AURORA, PEERLESS OR GRUNDFOSS.

2.2 CENTRIFUGAL FIRE PUMPS

- A. DESCRIPTION, GENERAL: FM/UL LISTED, FACTORY-ASSEMBLED AND TESTED, ELECTRIC-DRIVE, CENTRIFUGAL IN-LINE FIRE PUMP, CAPABLE OF FURNISHING NOT LESS THAN 150 PERCENT OF RATED CAPACITY AT NOT LESS THAN 65 PERCENT OF TOTAL RATED HEAD AND WITH SHUTOFF HEAD LIMITED TO 140 PERCENT OF TOTAL RATED HEAD. NAMEPLATE: COMPLETE WITH CAPACITIES, CHARACTERISTICS, AND OTHER PERTINENT DATA.
- B. FABRICATE BASE AND ATTACHMENT TO FIRE PUMPS, PRESSURE-MAINTENANCE PUMPS, WITH REINFORCEMENT TO RESIST MOVEMENT OF PUMPS DURING A SEISMIC EVENT WHEN THEIR BASES ARE ANCHORED TO BUILDING STRUCTURE.
- C. SINGLE-STAGE FIRE PUMPS: PUMP AND DRIVER MOUNTED ON SAME BASE AND CONNECTED WITH COUPLING.

- PUMP:
 - CASING: CAST IRON WITH 250 LB. ANSI DISCHARGE FLANGE. FLANGES DRILLED AND TAPPED FOR PRESSURE GAUGES.
 - IMPELLER: CAST BRONZE OR SILICON BRASS, STATICALLY AND DYNAMICALLY BALANCED, AND KEYED TO SHAFT.
 - WEAR RINGS: REPLACEABLE, BRONZE.
 - SHAFT AND SLEEVE: STEEL SHAFT WITH BRONZE SLEEVE.
 - SHAFT BEARINGS: GREASE-LUBRICATED BALL BEARINGS IN CAST-IRON HOUSING.
 - SEALS: STUFFING BOX WITH MINIMUM OF FOUR RINGS OF GRAPHITE-IMPREGNATED BRAIDED YARN AND BRONZE PACKING LAND.
- MOTOR: UL-LISTED, NEMA MG 1, OPEN DRIP-PROOF, SQUIRREL-CAGE, HIGH EFFICIENCY, INDUCTION MOTOR COMPLYING WITH NFPA 20 AND NFPA 70. INCLUDE WIRING COMPATIBLE WITH CONTROLLER USED.



FORUM ARCHITECTS, LLC
415 Lincolnway East Mishawaka, Indiana
Phone: 574-233-2119
email: Info@forumarchitectsllc.com

FIRE SPRINKLER SYSTEM

ELKHART HOUSING AUTHORITY

WATERFALL HIGH RISE

ELKHART, INDIANA

303 WATERFALL DRIVE

MECHANICAL
SPECIFICATIONS

ME302

SECTION 22200
MECHANICAL CONT.

2.3 FIRE--PUMP CONTROLLERS

- A. SUMMARY
- SCOPE: PROVIDE COMPLETE FIRE PUMP CONTROLLER AND JOCKEY PUMP CONTROLLER, AND ASSOCIATED EQUIPMENT, READY FOR OPERATION.
 - DESCRIPTION OF WORK: REPLACE EXISTING FIRE PUMP CONTROL PANEL IN ACCORDANCE WITH ALL REQUIRED AND ADVISORY PROVISIONS OF NFPA 20. EACH SYSTEM SHALL INCLUDE MATERIALS, ACCESSORIES, AND EQUIPMENT, INSIDE AND OUTSIDE THE BUILDING, SO THAT THE SYSTEM IS COMPLETE AND READY FOR USE. WORK INCLUDES RECONNECTION OF EXISTING AIR PIPING AS REQUIRED.
 - COMPLIANCE: THE ENTIRE FIRE PUMP SYSTEM SHALL BE DESIGNED, INSTALLED, TESTED, AND MAINTAINED IN ACCORDANCE WITH NFPA 20 AND NFPA 70, EXCEPT AS MODIFIED HEREIN. ALL MATERIALS USED SHALL BE EITHER UL LISTED OR FM APPROVED.
- B. SEQUENCE OF OPERATION:
- THE FIRE PUMP SHALL BE CAPABLE OF BOTH MANUAL AND AUTOMATIC SHUT-OFF.
 - SPRINKLER CONTRACTOR TO PROVIDE AND COORDINATE SEQUENCE OF OPERATION AS A PART OF OVERALL SYSTEM SUBMITTAL.
- C. COORDINATION
- COORDINATE ALL ELECTRICAL CONNECTIONS AND FIRE ALARM INTERFACES.
- D. ACCEPTABLE MANUFACTURERS
- FIRE PUMP CONTROLLER: EATON, FIRETROL OR TORNATECH
- E. CONTROLLER
- GENERAL: CONTROLLER SHALL BE FURNISHED WITH DIGITAL TOUCH-SCREEN DISPLAY AND DATA ACQUISITION CONTROL PANEL FOR MONITORING PUMP STATUS, POWER SUPPLY STATUS, LEG VOLTAGE, LEG CURRENT, PHASE REVERSAL, FIRE PUMP SET POINTS AND JOCKEY PUMP SET POINTS. CONTROL PANEL SHALL PERMIT USER MODIFICATIONS OF SETTINGS THROUGH A PASSWORD-PROTECTED LOGIN. CONTROL PANEL SHALL INCLUDE A USB CONNECTION OR OTHER DIGITAL INTERFACE FOR RECORDING PUMP AND CONTROLLER STATUS ON A DAILY BASIS AND FOR RECORDING FIRE PUMP TEST DATA (20,000 EVENTS). CONTROL PANEL SHALL PROVIDE AN ALARM FOR DISK ERROR OR DISK FULL. PROVIDE WITH ETHERNET PORT AND EMBEDDED WEB PAGE TO ALLOW FOR USER TO VIEW CONTROLLERS' STATUS.
 - ELECTRIC MOTOR CONTROLLER: THE AUTOMATIC ELECTRIC MOTOR CONTROLLER SHALL BE UL LISTED AND FM APPROVED SPECIFICALLY FOR FIRE PUMP SERVICE. THE CONTROLLER SHALL BE ARRANGED FOR AUTOMATIC AND MANUAL PUSH-BUTTON PUMP STARTING AND AUTOMATIC AND MANUAL PUSH-BUTTON PUMP SHUTDOWN. INDICATOR LIGHTS SHALL BE PROVIDED FOR POWER ON AND OFF-NORMAL CONDITIONS. CONTROLLER SHALL BE COMPLETELY TERMINALLY WIRED, READY FOR FIELD CONNECTIONS, AND MOUNTED IN A NEMA 2 ENCLOSURE ARRANGED SO THAT CONTROLLER CURRENT CARRYING PARTS WILL NOT BE LESS THAN 12 INCHES (305 MM) ABOVE THE FLOOR. CONTROLLER SHALL BE VFD/SOFT-START TYPE WITH A FAULT CURRENT INTERRUPTING CAPACITY DETERMINED BY THE MANUFACTURER AS SUITABLE FOR THE PUMP. CONTROLLER SHALL BE SIZED AS SPECIFIED ABOVE. THE ELECTRICAL CONNECTION BETWEEN THE CONTROLLER AND THE MOTOR SHALL BE WIRED BY THE EQUIPMENT INSTALLER.
- F. FIRE ALARM SIGNALS:
- ALARM AND SUPERVISORY SIGNALS SHALL BE SENT TO THE FIRE ALARM SYSTEM TO INDICATE A PUMP RUNNING CONDITION ALARM, LOSS OF LINE POWER(SUPERVISORY), PHASE REVERSAL OF LINE POWER(SUPERVISORY), FAILURE TO START AND TROUBLE CONDITION ON THE CONTROLLERS(SUPERVISORY).

2.4 FIRE--PUMP ACCESSORIES AND SPECIALTIES

- A. MATCH FIRE--PUMP SUCTION AND DISCHARGE RATINGS AS REQUIRED FOR FIRE--PUMP CAPACITY RATING. INCLUDE THE FOLLOWING:
- AUTOMATIC AIR--RELEASE VALVE.
 - CIRCULATION RELIEF VALVE.
 - SUCTION AND DISCHARGE PRESSURE GAGES.
 - ECCENTRIC--TAPERED REDUCER AT SUCTION INLET.
 - CONCENTRIC--TAPERED REDUCER AT DISCHARGE OUTLET.
 - MAIN RELIEF VALVE: UL 1478
 - FINISH: MANUFACTURER'S STANDARD FACTORY--APPLIED RED PAINT UNLESS BRASS OR OTHER FINISH IS SPECIFIED.

2.5 PRESSURE--MAINTENANCE (JOCKEY) PUMPS

- A. PRESSURE--MAINTENANCE PUMPS, GENERAL: FACTORY--ASSEMBLED AND --TESTED PUMPS WITH ELECTRIC-- MOTOR DRIVER, AND ACCESSORIES AND SPECIALTIES. INCLUDE CAST-IRON OR STAINLESS--STEEL CASING AND BRONZE OR STAINLESS--STEEL IMPELLERS, MECHANICAL SEALS, SUCTION AND DISCHARGE FLANGES MACHINED TO ASME B16.1, CLASS 125 DIMENSIONS UNLESS CLASS 250 FLANGES ARE INDICATED AND EXCEPT THAT CONNECTIONS MAY BE THREADED IN SIZES WHERE FLANGES ARE NOT AVAILABLE.
- FINISH: MANUFACTURER'S STANDARD COLOR PAINT APPLIED TO FACTORY--ASSEMBLED AND --TESTED UNIT BEFORE SHIPPING.
 - NAMEPLATE: COMPLETE WITH CAPACITY, CHARACTERISTICS, AND OTHER PERTINENT DATA.
- B. MOTOR: NEMA MG 1, OPEN--DRIP--PROOF, SQUIRREL--CAGE, INDUCTION MOTOR COMPLYING WITH NFPA 20 AND NFPA 70. INCLUDE WIRING COMPATIBLE WITH CONTROLLER USED.
- C. ACCESSORIES AND SPECIALTIES: MATCH PRESSURE--MAINTENANCE--PUMP SUCTION AND DISCHARGE RATINGS AS REQUIRED FOR PUMP CAPACITY RATINGS. INCLUDE THE FOLLOWING:
- CIRCULATION RELIEF VALVE.
 - SUCTION AND DISCHARGE PRESSURE GAGES.
- D. PRESSURE--MAINTENANCE--PUMP CHARACTERISTICS AND SPECIALTY

2.6 PRESSURE GAGES

- A. DESCRIPTION: UL 393, 3--1/2-- TO 4--1/2--INCH-- DIAMETER DIAL WITH RANGE OF 0-- TO 300--PSIG MINIMUM.

2.7 GROUT

- A. DESCRIPTION: ASTM C 1107, FACTORY--MIXED AND --PACKAGED, DRY, HYDRAULIC--CEMENT, NON--SHRINK AND NONMETALLIC GROUT; SUITABLE FOR INTERIOR AND EXTERIOR APPLICATIONS.
- PROPERTIES: NON--STAINING, NON--CORROSIVE, AND NONGASEOUS.
 - DESIGN MIX: 5,000 PSI, 28--DAY COMPRESSIVE STRENGTH.

2.8 SOURCE QUALITY CONTROL

- A. TEST AND INSPECT FIRE PUMPS WITH THEIR CONTROLLERS ACCORDING TO NFPA 20 FOR CERTIFIED SHOP TESTS.
- B. VERIFICATION OF PERFORMANCE: RATE FIRE PUMPS ACCORDING TO REQUIREMENTS INDICATED.

PART 3: EXECUTION

3.1 EXAMINATION

- A. EXAMINE AREAS, CONCRETE BASES, AND CONDITIONS, WITH INSTALLER PRESENT, FOR COMPLIANCE WITH REQUIREMENTS AND OTHER CONDITIONS AFFECTING PERFORMANCE OF FIRE PUMPS.
- B. EXAMINE ROUGHING--IN FOR FIRE--SUPPRESSION PIPING TO VERIFY ACTUAL LOCATIONS OF PIPING CONNECTIONS BEFORE FIRE--PUMP INSTALLATION.
- C. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

SECTION 22200
MECHANICAL CONT.

3.2 CONCRETE BASES

- A. IF REQUIRED, INSTALL CONCRETE BASES OF DIMENSIONS INDICATED FOR FIRE PUMPS, PRESSURE--MAINTENANCE PUMPS, AND CONTROLLERS.
- FOR SUPPORTED EQUIPMENT, INSTALL EPOXY--COATED ANCHOR BOLTS THAT EXTEND THROUGH CONCRETE BASE AND ANCHOR INTO STRUCTURAL CONCRETE FLOOR.
 - PLACE AND SECURE ANCHORAGE DEVICES. USE SETTING DRAWINGS, TEMPLATES, DIAGRAMS, INSTRUCTIONS, AND DIRECTIONS FURNISHED WITH ITEMS TO BE EMBEDDED.
 - INSTALL ANCHOR BOLTS TO ELEVATIONS REQUIRED FOR PROPER ATTACHMENT TO SUPPORTED EQUIPMENT.
- B. IF EXISTING BASE IS USED, PROVIDE ADAPTER BOLT PLATES, AS REQUIRED.

3.3 INSTALLATION

- A. INSTALL PUMPS TO PROVIDE ACCESS FOR PERIODIC MAINTENANCE INCLUDING REMOVAL OF MOTORS, IMPELLERS, COUPLINGS, AND ACCESSORIES.
- B. INSTALL SUCTION AND DISCHARGE PIPING EQUAL TO OR GREATER THAN DIAMETER OF FIRE--PUMP NOZZLES.
- C. INSTALL PRESSURE GAGES ON FIRE--PUMP SUCTION AND DISCHARGE AT PRESSURE--GAGE TAPPINGS.
- D. SUPPORT PUMPS AND PIPING SEPARATELY SO WEIGHT OF PIPING DOES NOT REST ON PUMPS.
- E. INSTALL PIPING ACCESSORIES, HANGERS AND SUPPORTS, ANCHORS, VALVES, METERS AND GAGES, AND EQUIPMENT SUPPORTS.
- F. ELECTRICAL WIRING: INSTALL ELECTRICAL DEVICES FURNISHED BY EQUIPMENT MANUFACTURERS BUT NOT SPECIFIED TO BE FACTORY MOUNTED. FURNISH COPIES OF MANUFACTURERS' WIRING DIAGRAM SUBMITTALS TO ELECTRICAL INSTALLER.

3.4 ALIGNMENT

- A. ALIGN SPLIT--CASE FIRE--PUMP AND DRIVER SHAFTS AFTER COMPLETE UNIT HAS BEEN LEVELED ON CONCRETE BASE, GROUT HAS SET, AND ANCHOR BOLTS HAVE BEEN TIGHTENED.
- B. AFTER ALIGNMENT IS CORRECT, TIGHTEN ANCHOR BOLTS EVENLY. FILL BASEPLATE COMPLETELY WITH GROUT, WITH METAL BLOCKS AND SHIMS OR WEDGES IN PLACE. TIGHTEN ANCHOR BOLTS AFTER GROUT HAS HARDENED. CHECK ALIGNMENT AND MAKE REQUIRED CORRECTIONS.
- C. ALIGN PIPING CONNECTIONS.
- D. ALIGN PUMP AND DRIVER SHAFTS FOR ANGULAR AND PARALLEL ALIGNMENT ACCORDING TO HI 1.4 AND TO TOLERANCES SPECIFIED BY MANUFACTURER.
- E. ALIGN VERTICALLY MOUNTED, SPLIT--CASE PUMP AND DRIVER SHAFTS AFTER COMPLETE UNIT HAS BEEN MADE PLUMB ON CONCRETE BASE, GROUT HAS SET, AND ANCHOR BOLTS HAVE BEEN TIGHTENED.

3.5 CONNECTIONS

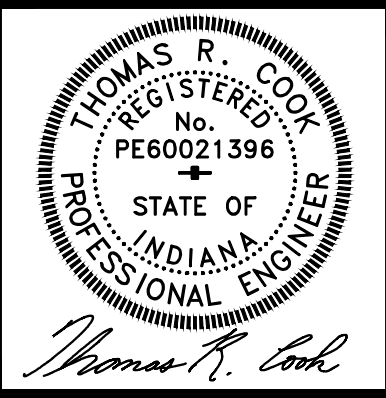
- A. INSTALL PIPING ADJACENT TO PUMPS AND EQUIPMENT TO ALLOW SERVICE AND MAINTENANCE.
- B. CONNECT WATER SUPPLY AND DISCHARGE PIPING TO FIRE PUMPS. CONNECT WATER SUPPLY AND DISCHARGE PIPING TO PRESSURE--MAINTENANCE PUMPS.
- C. CONNECT RELIEF--VALVE DISCHARGE TO POINT OF DISPOSAL.
- D. CONNECT EXISTING CONTROLLERS TO PUMPS.
- E. GROUND EQUIPMENT ACCORDING TO GROUNDING AND BONDING REQUIREMENTS.
- F. CONNECT WIRING ACCORDING TO CONDUCTORS AND CABLES REQUIREMENTS.

3.6 FIELD QUALITY CONTROL

- A. MANUFACTURER'S FIELD SERVICE: ENGAGE A FACTORY--AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT, TEST, AND ADJUST FIELD--ASSEMBLED COMPONENTS AND EQUIPMENT INSTALLATION, INCLUDING CONNECTIONS, AND TO ASSIST IN ALL FIELD TESTING. REPORT RESULTS IN WRITING.
- B. PERFORM FIELD TESTS FOR EACH FIRE PUMP WHEN INSTALLATION IS COMPLETE. COMPLY WITH OPERATING INSTRUCTIONS AND PROCEDURES IN NFPA 20 TO DEMONSTRATE COMPLIANCE WITH REQUIREMENTS. WHERE POSSIBLE, FIELD CORRECT MALFUNCTIONING EQUIPMENT, AND THEN RETEST TO DEMONSTRATE COMPLIANCE. REPLACE EQUIPMENT THAT CANNOT BE SATISFACTORILY CORRECTED OR THAT DOES NOT PERFORM AS INDICATED, AND THEN RETEST TO DEMONSTRATE COMPLIANCE. VERIFY THAT EACH FIRE PUMP PERFORMS AS INDICATED.
- C. PERFORM THE FOLLOWING FIELD TESTS AND INSPECTIONS AND PREPARE TEST REPORTS:
- LEAK TEST: AFTER INSTALLATION, CHARGE SYSTEM AND TEST FOR LEAKS. REPAIR LEAKS AND RETEST UNTIL NO LEAKS EXIST.
 - FINAL CHECKS BEFORE STARTUP: PERFORM THE FOLLOWING PREVENTIVE--MAINTENANCE OPERATIONS AND CHECKS:
 - LUBRICATE OIL--LUBRICATION--TYPE BEARINGS.
 - REMOVE GREASE--LUBRICATION--TYPE BEARING COVERS, FLUSH BEARINGS WITH KEROSENE, AND CLEAN THOROUGHLY. FILL WITH NEW LUBRICANT ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
 - DISCONNECT COUPLING AND CHECK ELECTRIC MOTOR FOR PROPER ROTATION. ROTATION SHALL MATCH DIRECTION OF ROTATION MARKED ON PUMP CASING.
 - VERIFY THAT PUMP IS FREE TO ROTATE BY HAND. IF PUMP IS BOUND OR IF IT DRAGS EVEN SLIGHTLY, DO NOT OPERATE UNTIL CAUSE OF TROUBLE IS DETERMINED AND CORRECTED.
 - STARTING PROCEDURE FOR PUMPS IS AS FOLLOWS:
 - PRIME PUMP BY OPENING SUCTION VALVE AND CLOSING DRAINS, AND PREPARE PUMP FOR OPERATION.
 - OPEN SEALING--LIQUID SUPPLY VALVES IF PUMP IS SO FITTED.
 - START MOTOR.
 - OPEN DISCHARGE VALVE SLOWLY.
 - OBSERVE LEAKAGE FROM STUFFING BOXES AND ADJUST SEALING--LIQUID VALVE FOR PROPER FLOW TO ENSURE LUBRICATION OF PACKING. DO NOT TIGHTEN GLAND IMMEDIATELY, BUT LET PACKING RUN IN BEFORE REDUCING LEAKAGE THROUGH STUFFING BOXES.
 - CHECK GENERAL MECHANICAL OPERATION OF PUMP AND MOTOR.
 - TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT.
 - FURNISH FIRE HOSES IN NUMBER, SIZE, AND LENGTH REQUIRED TO REACH STORM DRAIN OR OTHER ACCEPTABLE LOCATION TO DISPOSE OF FIRE--PUMP TEST WATER. FIRE HOSES ARE FOR FIELD--ACCEPTANCE TESTS ONLY AND ARE NOT PROPERTY OF OWNER.

END OF SECTION 22200

DATE:	APRIL 19, 2024
FILE:	
DRAWN BY:	
CHECKED BY:	
REVISIONS:	



FORUM ARCHITECTS, LLC
415 Lincolnway East Mishawaka, Indiana
Phone: 574-233-2119
email: Info@forumarchitectsllc.com

FIRE SPRINKLER SYSTEM

ELKHART HOUSING AUTHORITY

WATERFALL HIGH RISE

ELECTRICAL SPECIFICATIONS

ME303

FORUM ARCHITECTS

SECTION 260000
ELECTRICAL

PART 1: GENERAL

1.1 GENERAL

- THE WORK INDICATED IN THIS DIVISION AND ON THE ELECTRICAL DRAWINGS IS SUBJECT TO THE REQUIREMENTS OF THE INSTRUCTIONS TO BIDDERS (DIVISION 0) AND GENERAL CONDITIONS (DIVISION 1). THESE ARE HEREBY INCLUDED BY REFERENCE. THE CONTRACTOR IS DIRECTED TO EXAMINE ALL PORTIONS OF THE BID DOCUMENTS AS THEY PERTAIN TO THE WORK COVERED BY THIS DIVISION OF THE SPECIFICATIONS AND TO INCLUDE ALL COSTS IN BID FOR ALL ELECTRICAL WORK AS CALLED FOR BY THE COMPLETE BID DOCUMENTS.
- PROVIDE ALL REQUIRED LABOR, MATERIALS, EQUIPMENT AND CONTRACTOR SERVICES NECESSARY FOR THE COMPLETE INSTALLATION OF EQUIPMENT INDICATED HEREIN AND ON THE DRAWINGS, COMPLETE WITH ALL RELATED SERVICES. REVIEW ALL EXISTING BUILDING CONDITIONS AS THEY RELATE TO ELECTRICAL WORK AND INCLUDE COSTS IN BID. COORDINATE REQUIREMENTS WITH OTHER TRADES AS REQUIRED.
- ALL WORK SHALL BE PERFORMED BY EXPERIENCED PERSONNEL QUALIFIED TO CARRY OUT THE WORK IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, LOCAL CODES AND AS SPECIFIED HEREIN. THE CONTRACTOR SHALL PROVIDE APPROPRIATE QUALIFICATIONS AND RECORDS OF PAST EXPERIENCE FOR PERSONNEL AND SUBCONTRACTORS WHEN REQUESTED BY THE ENGINEER/ARCHITECT FOR REVIEW AND APPROVAL.
- THE ELECTRICAL CONTRACTOR/TRADE SHALL BE RESPONSIBLE FOR COORDINATION AND DISTRIBUTION OF WORK TO HIS SUBCONTRACTORS AND SHALL VERIFY COMPLETENESS OF SUBMITTALS AND WORK.
- CONTRACTOR SHALL NOT CUT ANY BEAM OR COLUMNS OR ANY PORTION OF STRUCTURAL SYSTEM WITHOUT SPECIFIC PERMISSION. CONTRACTOR SHALL COORDINATE WITH OWNER/ARCHITECT/ENGINEER.
- DIVISION OF RESPONSIBILITY FOR VARIOUS ASPECTS OF THE WORK SHALL BE AS OUTLINED IN DIVISIONS 0 AND 10F THE SPECIFICATIONS. RESPONSIBILITY FOR COORDINATION WITH OTHER TRADES IS THE RESPONSIBILITY OF ALL TRADES.

1.2 CONTRACT DOCUMENTS

- THE ELECTRICAL DRAWINGS LISTED IN THE DRAWING INDEX, TOGETHER WITH THESE SPECIFICATIONS, ARE AN INTEGRAL PART OF THE ELECTRICAL CONTRACT. WHAT IS CALLED FOR IN ONE IS AS BINDING AS IF CALLED FOR IN BOTH. IN CASE OF CONFLICT, THE GREATER QUANTITY OR BETTER QUALITY IS TO PREVAIL, SUBJECT TO THE APPROVAL OF THE ENGINEER/ARCHITECT.
- THE ELECTRICAL AND MECHANICAL DRAWINGS ARE DIAGRAMMATIC ONLY, BUT ARE TO BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION OF THE PROJECT AND WORK OF OTHER TRADES WILL PERMIT. MINOR CHANGES FROM THESE DRAWINGS, NECESSARY TO COORDINATE WITH THE WORK OF OTHER TRADES AND TO MAKE THE WORK OF THIS CONTRACTOR CONFORM TO THE PROJECT AS CONSTRUCTED, ARE TO BE MADE AT NO ADDITIONAL COST TO THE OWNER.
- ELECTRICAL AND MECHANICAL DRAWINGS ARE NOT TO BE SCALED FOR THE PURPOSE OF EQUIPMENT INSTALLATION. ALL MEASUREMENTS TO BE DERIVED FROM ARCHITECTURAL AND SHOP DRAWINGS AND COORDINATED WITH FIELD CONDITIONS. ALL MEASUREMENTS MUST BE VERIFIED. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORK FITTING INTO PLACE IN A SATISFACTORY AND WORKMANLIKE MANNER.
- INCREASED COST OF WIRING RESULTING FROM INCREASED ELECTRICAL RATINGS OVER THAT SHOWN ON THE ELECTRICAL DRAWINGS IS TO BE BORNE BY THE CONTRACTOR FURNISHING THE EQUIPMENT.
- INCLUDE CONTROL WIRING, AS CALLED FOR ON THE DRAWINGS AND SPECIFICATIONS (AND INDICATED AS BEING BY THE ELECTRICAL CONTRACTOR OR TRADE), AS ELECTRICAL WORK AND COORDINATE WITH THE MECHANICAL CONTRACTOR.
- ARRANGE WORK FOR MAXIMUM CLEARANCE AND ACCESSIBILITY TO ALL WORK OF THIS TRADE AS WELL AS OTHER TRADES. COORDINATE WITH EXISTING CONDITIONS.

1.3 ALLOWANCES

- SEE DIVISION 1 OF THE SPECIFICATIONS.

1.4 CODES, STANDARDS AND PERMITS

- ALL WORK SHALL BE IN ACCORDANCE WITH NATIONAL, STATE AND LOCAL CODES IN FORCE AT TIME OF BIDDING, INCLUDING BUT NOT LIMITED TO THE NATIONAL ELECTRICAL CODE. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND INSPECTION APPROVALS AS THE WORK PROGRESSES. ANY WORK WHICH IS COMPLETED WITHOUT THESE APPROVALS AND FOUND TO BE UNACCEPTABLE SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF ALL FEES ASSOCIATED WITH INSPECTIONS, PERMITS AND UTILITY CONNECTIONS UNLESS OTHERWISE INDICATED.
- ALL STANDARDS REFERENCED IN THIS DIVISION OR ON THE DRAWINGS SHALL COMPLY WITH THE LATEST EDITION IN FORCE. MATERIAL AND EQUIPMENT FURNISHED AND INSTALLED UNDER THESE SPECIFICATIONS WHICH, IN THE OPINION OF THE ENGINEER/ARCHITECT, DO NOT COMPLY WITH THE STANDARDS OF THE ORGANIZATIONS LISTED, ARE TO BE REPLACED WITHOUT ADDITIONAL COST TO THE OWNER. STANDARDS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
UL	UNDERWRITERS' LABORATORIES
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
ICEA	INSULATED CABLE ENGINEERS ASSOCIATIONS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS

1.5 DEFINITIONS

- CONCEALED: EMBEDDED IN WALLS, CEILINGS, FLOORS OR OTHER SPACES. NOT EXPOSED TO VIEW.
- EXPOSED: NOT CONCEALED OR INSTALLED UNDERGROUND.
- FURNISH, PROVIDE: TO SUPPLY, INSTALL, CONNECT AND PUT INTO OPERATION.
- WORK: WIRING, EQUIPMENT, RACEWAYS, COORDINATION, ETC. AS REQUIRED BY THE CONTRACT DOCUMENTS FOR A COMPLETE AND OPERATING SYSTEM.

1.6 MATERIALS AND EQUIPMENT

- WHERE "APPROVED EQUAL" CLAUSE IS INDICATED, IT MEANS MATERIAL, APPARATUS, EQUIPMENT AND SUPPLIES HAVING RECOGNIZED STANDARDS OF QUALITY AND PERFORMANCE WHICH, IN THE JUDGEMENT OF THE ENGINEER/ARCHITECT, WILL MEET THE DESIGN AND SPECIFICATION REQUIREMENTS. MATERIAL AND EQUIPMENT BY MANUFACTURERS OTHER THAN THOSE LISTED IN THE PLANS OR SPECIFICATIONS MUST BE SUBMITTED TO THE ENGINEER/ARCHITECT FOR APPROVAL NOT LATER THAN TEN (10) WORKING DAYS PRIOR TO THE DUE DATE FOR BIDS.
- WHERE "OR EQUAL" CLAUSE IS INDICATED, IT MEANS MATERIAL AND EQUIPMENT OF EQUAL OR BETTER QUALITY AND PERFORMANCE THAN THAT LISTED IN THE PLANS AND SPECIFICATIONS, EXCEPT THAT NO APPROVAL PRIOR TO BIDDING IS REQUIRED.

1.7 SHOP DRAWINGS AND SUBMITTALS

- PROVIDE ALL SUBMITTALS AS CALLED FOR IN DIVISION 10F THE SPECIFICATIONS, INCLUDING SHOP DRAWINGS, SAMPLES, MATERIAL LISTS, SCHEDULE OF VALUE, ETC. SHOP DRAWINGS SHALL BE COMPLETELY REVIEWED AND APPROVED BY THE CONTRACTOR AND TRADE, FURNISHING THE EQUIPMENT (INDICATED BY THE CONTRACTOR'S APPROVAL STAMP) PRIOR TO SUBMITTING TO THE ENGINEER/ARCHITECT.
- WHERE SHOP DRAWING SUBMITTALS ARE ASSEMBLED IN A FOLDER OR BOUND SETS, ALL FOLDERS OR SETS ARE TO BE IDENTICAL AND EACH SET MUST CONTAIN AN INDEX OF THE ITEMS ENCLOSED IN THE SET OR FOLDER. QUANTITY OF ORIGINAL COLOR SAMPLES REQUIRED SHALL BE COORDINATED WITH THE ARCHITECT.
- REVIEW AND APPROVAL OF SHOP DRAWINGS BY THE ENGINEER/ARCHITECT IS FOR GENERAL CONFORMITY TO DESIGN INTENT ONLY. THIS REVIEW DOES NOT AUTHORIZE CHANGES TO THE CONTRACT SUM OR RELIEVE THE CONTRACTOR IN ANY WAY OF HIS CONTRACT OBLIGATIONS.

1.8 ELECTRICAL

- COORDINATE ALL WORK REQUIRING ELECTRICAL CONNECTION WITH THE CONTRACTOR PROVIDING THE EQUIPMENT. EXCEPT AS OTHERWISE INDICATED, ADDITIONAL INTERNAL WIRING, AUTOMATIC CONTROL WIRING, PROTECTIVE DEVICES, ETC. ASSOCIATED WITH WORK FURNISHED BY THE OTHER TRADES SHALL BE FURNISHED BY THE TRADE SUPPLYING THE EQUIPMENT.
- VERIFY VOLTAGE AND PHASE CHARACTERISTICS OF THE ELECTRICAL SERVICE AND COORDINATE WITH MECHANICAL EQUIPMENT AS REQUIRED.
- WHERE ELECTRICAL RATINGS OF EQUIPMENT INCREASE OVER THOSE INDICATED ON THE APPROVED CONSTRUCTION DOCUMENTS, THE CONTRACTOR PROVIDING THE EQUIPMENT SHALL PAY ADDITIONAL COSTS OF WIRING AND ELECTRICAL EQUIPMENT FOR PROPER ELECTRICAL SERVICE TO THE EQUIPMENT.
- PROVIDE SUBMITTALS FOR THE FOLLOWING:
 - RACEWAYS
 - CONDUCTORS
 - OVERCURRENT PROTECTION
 - FIRESTOPPING
- PROVIDE ARC FLASH WARNING LABELS ON ELECTRICAL EQUIPMENT AS REQUIRED BY THE NATIONAL ELECTRICAL CODE. ELECTRICAL EQUIPMENT SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING:
 - SWITCHBOARDS
 - PANELBOARDS
 - DISCONNECT SWITCHES
 - MOTOR STARTERS
 - MOTOR CONTROL CENTERS
 - VARIABLE FREQUENCY DRIVES

1.9 RECORD DRAWING

- PROVIDE ELECTRICAL RECORD DRAWINGS AS CALLED FOR IN DIVISION 1 AND INCLUDE ALL PERTINENT INFORMATION NOT SHOWN AND ALL CHANGES FROM THE ORIGINAL PLANS: ROUTE OF ALL UNDERGROUND AND OVERHEAD FEED CONDUITS FOR THE FIRE AND JOCKEY PUMPS.

1.10 CHANGES, CONTRACT DOCUMENTS

- THE CONTRACT DOCUMENT MAY BE SUPERSEDED BY LATER REVISED DRAWINGS OR SPECIFICATION ADDENDA PREPARED BY THE ENGINEER/ARCHITECT, AND ALL REASONABLE CHANGES (UP TO 3 FEET) IN LOCATION OF EQUIPMENT PRIOR TO ITS INSTALLATION, SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER.

1.11 OPERATING AND MAINTENANCE MANUALS AND INSTRUCTION

- PROVIDE TWO (2) BOUND SETS OF COMPLETE INSTALLATION, OPERATING, AND MAINTENANCE INSTRUCTIONS OR AS OUTLINED IN DIVISION 10F THESE SPECIFICATIONS. MANUALS SHALL ALSO INCLUDE SUBMITTAL DATA STATING EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT, COMPLETE PARTS LISTS, A COMPLETE NARRATIVE EXPLAINING HOW EACH SYSTEM IS INTENDED TO OPERATE, COPIES OF ORIGINAL SHOP DRAWINGS, ELECTRICAL CONTRACTORS NAME AND ADDRESS WITH SUBCONTRACTOR LISTS OF NAMES AND ADDRESSES, WARRANTIES, WARNINGS, ETC. GENERIC INSTRUCTIONS SHALL HIGHLIGHT APPLICABLE SECTIONS, WHEN NEEDED, TO DIFFERENTIATE FROM NON-RELEVANT EQUIPMENT.
- UPON COMPLETION OF THE WORK, AND AT A DESIGNATED TIME, PROVIDE INSTRUCTIONS TO THE OWNER'S REPRESENTATIVE IN OPERATION AND MAINTENANCE OF ALL MECHANICAL EQUIPMENT. NOTIFY ENGINEER/ARCHITECT OF SCHEDULED TIME AND PLACE.
- TURN OVER TO OWNER ALL TOOLS SUPPLIED WITH EQUIPMENT.

1.12 WORKMANSHIP

- INSTALL ALL MATERIALS AND EQUIPMENT IN A NEAT AND WORKMANLIKE MANNER AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AS APPROVED BY THE ENGINEER/ARCHITECT TO CONFORM WITH THE CONTRACT DOCUMENTS.

- PROVIDE TESTING AND START-UP FOR ALL EQUIPMENT AS RECOMMENDED BY MANUFACTURER UNLESS DIRECTED OTHERWISE.

1.13 SUPERVISION

- HAVE A THOROUGHLY COMPETENT SUPERINTENDENT IN CHARGE OF THE WORK AT ALL TIMES, EXPERIENCED IN THE WORK TO BE DONE UNDER THIS CONTRACT. REPLACE ANYONE NOT DEEMED CAPABLE BY THE ENGINEER/ARCHITECT UPON REQUEST IMMEDIATELY, BY ONE WHO IS SATISFACTORY. A SATISFACTORY SUPERINTENDENT, ONCE ASSIGNED, IS NOT TO BE REMOVED WITHOUT THE CONSENT OF THE ENGINEER/ARCHITECT.

1.14 TESTS

- AFTER THE INSTALLATION IS COMPLETED, AND AT SUCH TIME AS THE ENGINEER/ARCHITECT MAY DIRECT, THE CONTRACTOR IS TO CONDUCT AN OPERATING TEST FOR APPROVAL. DEMONSTRATE EQUIPMENT TO OPERATE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION. PERFORM TESTS IN THE PRESENCE OF THE ENGINEER/ARCHITECT OR HIS AUTHORIZED REPRESENTATIVE. THE CONTRACTOR IS TO FURNISH ALL INSTRUMENTS AND PERSONNEL REQUIRED FOR THE TESTS.

1.15 GUARANTEES AND WARRANTIES

- ALL LABOR, MATERIALS AND EQUIPMENT SHALL BE GUARANTEED BY THE CONTRACTOR AND WARRANTED BY THE MANUFACTURER FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER, UNLESS LONGER PERIOD IS SPECIFIED FOR SPECIFIC EQUIPMENT. LAMP GUARANTEE IS LIMITED TO REPLACING ALL DEFECTIVE OR NON-OPERATING LAMPS INSTALLED UNDER THIS CONTRACT AT TIME OF SUBSTANTIAL COMPLETION.
- THE CONTRACTOR SHALL MAKE ALL NECESSARY REPAIRS AND ALTERATIONS DURING THE GUARANTEE PERIOD AS MAY BE REQUIRED BY THE OWNER OR ARCHITECT FOR CORRECT SYSTEM OPERATION AND TO COMPLY WITH THE DRAWINGS AND SPECIFICATIONS. THESE REPAIRS AND ALTERATIONS SHALL BE AT NO ADDITIONAL COST TO THE OWNER.
- THE OWNER RESERVES THE RIGHT TO MAKE EMERGENCY SYSTEM REPAIRS WITHOUT VOIDING THE CONTRACTOR'S GUARANTEE.

1.16 UTILITY COORDINATION

- THE TERM UTILITY SHALL APPLY TO ELECTRICAL, TELEPHONE, NATURAL GAS OR CABLE TELEVISION UTILITIES, AS REQUIRED BY WORK OF THIS CONTRACT.
- COORDINATE ANY ELECTRIC UTILITY OUTAGE WITH THE OWNER A MINIMUM OF 72 HOURS PRIOR TO OUTAGE. FURNISH TEMPORARY POWER CONNECTIONS AS REQUIRED TO MAINTAIN OWNER OPERATIONS FOR EXTENDED OUTAGES EXCEEDING 8 HOURS. CONTRACTOR SHALL INCLUDE IN BASE BID COST ALL EXPENSES TO PERFORM AFTER-HOURS PRE-ARRANGED OUTAGES.

PART 2: PRODUCTS

2.1 RACEWAYS

- PROVIDE AND INSTALL RACEWAYS AS REQUIRED FOR THE NEW WORK. RACEWAYS WILL BE RIGID METAL CONDUIT (RMC) OR INTERMEDIATE METALLIC CONDUIT (IMC) AS ALLOWED BY THE NEC. MINIMUM RACEWAY SIZE WILL BE THREE-QUARTER (3/4) INCH.
- HEAVY WALL PVC CONDUIT MAY BE USED BELOW GRADE, IN CONCRETE SLABS OR WHERE NOT EXPOSED TO PHYSICAL DAMAGE. PROVIDE RIGID METAL CONDUIT (RMC) WHERE INSTALLED ABOVE GRADE AND EXPOSED TO ELEMENTS.

2.2 CONDUCTORS

- CONDUCTORS WILL BE THHN, THWN, OR XHHW, SIZED AS INDICATED AND INSTALLED IN ACCORDANCE WITH THE NEC. NO. 12 AWG WILL BE THE MINIMUM CONDUCTOR SIZE ALLOWED FOR BRANCH CIRCUIT WIRING. BRANCH CIRCUIT LENGTHS EXCEEDING ONE HUNDRED FEET (100') FOR 120-VOLT CIRCUITS FROM PANEL TO LOAD CENTER, TO BE NO. 10 AWG MINIMUM.
- CLASS 1 REMOTE-CONTROL AND SIGNAL CIRCUIT CONDUCTORS WILL NOT BE LESS THAN NO. 14 AWG. CLASS 2 LOW-ENERGY REMOTE-CONTROL AND SIGNAL CIRCUIT CONDUCTORS WILL NOT BE LESS THAN NO. 16 AWG.
- PROVIDE IDENTIFYING WIRE COLORS AS FOLLOWS:

COLOR CODE WIRE FOR 120/208 VOLT, THREE PHASE, FOUR WIRE SYSTEMS AS FOLLOWS:	
1. A-PHASE:	BLACK
2. B-PHASE:	RED
3. C-PHASE:	BLUE
4. NEUTRAL:	WHITE
5. GROUND:	GREEN

2.3 DISCONNECTING MEANS

- PROVIDE HEAVY-DUTY TYPE SAFETY SWITCHES OR MOTOR-RATED TOGGLE SWITCHES AS INDICATED ON THE DRAWINGS AND AS REQUIRED BY THE NEC.
- DISCONNECT SWITCHES ARE TO BE INSTALLED WITHIN SIGHT OF ALL EQUIPMENT REQUIRING A MEANS OF DISCONNECT. OUTDOOR ENCLOSURES WILL BE NEMA 3R.

2.5 MOTOR PROTECTION

- OVERLOAD DEVICES WILL BE OF THE MANUALLY RESET TYPE UNLESS OTHERWISE NOTED. SIZES FOR THERMAL OVERLOADS WILL BE DETERMINED FOR THE ACTUAL MOTOR PROVIDED WITH EACH PIECE OF EQUIPMENT IN THE FIELD. PHASE-LOSS RELAYS ARE REQUIRED FOR ALL THREE-PHASE MOTORS. SIZE AND INSTALL OVERLOAD DEVICES IN ACCORDANCE WITH MANUFACTURER'S AND NATIONAL ELECTRICAL CODE REQUIREMENTS.
- PROVIDE THERMAL OVERLOAD PROTECTION FOR ALL MOTORS. WHERE MOTORS ARE NOT PROVIDED WITH INTERNAL THERMAL OVERLOAD PROTECTION, PROVIDE PROTECTION AS A PART OF CONTROLLER OR DISCONNECT.
- ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR DIRECTION OF MOTOR ROTATION. DAMAGE TO MOTORS, EQUIPMENT OR SYSTEMS, DUE TO IMPROPER ROTATION, WILL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO OWNER.

PART 3: EXECUTION

3.1 GENERAL

- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, UL LISTING REQUIREMENTS AND ACCEPTED PRACTICES.
- PROVIDE APPROPRIATE FIRESTOPPING MATERIAL AROUND ALL PENETRATIONS THROUGH FIRE-RATED WALLS.

3.2 COORDINATION

- TO AVOID CONFLICTS, COORDINATE EXACT PLACEMENT OF ELECTRICAL ITEMS AND ELEVATION OF CONDUIT ROUTES WITH OTHER TRADES PRIOR TO INSTALLATION. ANY CONFLICTS THAT CANNOT BE RESOLVED BETWEEN TRADES MUST BE BROUGHT TO THE ATTENTION OF THE ENGINEER/ARCHITECT IN WRITING AND RESOLVED BEFORE PROCEEDING.
- TEMPERATURE CONTROL WIRING AS CALLED FOR OR REFERENCED BY THE ELECTRICAL DRAWINGS AND SPECIFICATIONS WILL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ALL ADDITIONAL WIRING REQUIRED TO PROVIDE A COMPLETE SYSTEM OF TEMPERATURE REGULATION IS TO BE PROVIDED BY THE TEMPERATURE CONTROL TRADE. THE TEMPERATURE CONTROL TRADE WILL PROVIDE ALL NECESSARY DRAWINGS AND COORDINATION TO THE ELECTRICAL CONTRACTOR FOR DETERMINING PANEL LOCATIONS, CONNECTION POINTS, WIRE COUNTS, ETC.

3.3 ACCESSIBILITY

- MAINTAIN ACCESSIBILITY TO ALL EQUIPMENT FOR OPERATION, MAINTENANCE AND REPAIR.

3.4 CUTTING AND PATCHING

- LAY OUT WORK CAREFULLY IN ADVANCE. WHERE CUTTING CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES IS NECESSARY, THE WORK IS TO BE CAREFULLY DONE. ANY DAMAGE TO THE BUILDING, PIPING OR OTHER EQUIPMENT IS TO BE REPAIRED BY SKILLED MECHANICS OF THE TRADES INVOLVED AT NO ADDITIONAL COST TO THE OWNER. THIS CONTRACTOR/TRADE WILL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING RELATED TO THE WORK OF THIS DIVISION OF THE SPECIFICATIONS.
- UNLESS OTHERWISE INDICATED IN OTHER DIVISIONS OF THE SPECIFICATIONS, AT NO ADDITIONAL COST TO THE OWNER, REPAINT ALL PATCHED AREAS TO MATCH ORIGINAL FINISH WHERE HOLES OR CHASES HAVE BEEN CUT TO RECEIVE ELECTRICAL WORK. REPAINT PATCHED AREAS WITH TWO (2) COATS OF PAINT TO MATCH SURROUNDING AREAS; BLEND AS REQUIRED.
- GIVE ALL FABRICATED STEEL SUPPORTS, HANGERS, BRACKETS, EXPOSED CONDUITS, AND PLATFORMS INSTALLED UNDER THIS CONTRACT, TWO (2) COATS OF HIGH GRADE ENAMEL.

END OF SECTION