

# CITY OF PHILADELPHIA DEPARTMENT OF PUBLIC PROPERTY

MAYOR – JAMES F. KENNEY

MANAGING DIRECTOR — TUMAR AEXANDER

COMMISSIONER - DEPARTMENT OF PUBLIC PROPERTY - BRIDGET COLLINS-GREENWALD FIRE COMMISSIONER - ADAM K. THIEL

DECONTAMINATION SUITE

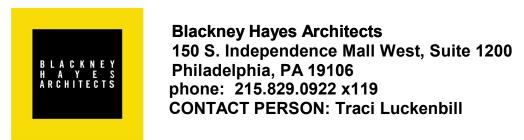
ENGINE 72

1127 W. LOUDON ST. PHILA., PA 19141 PROJECT No. 13-21-4643-01

LOCATION PLAN

BID DOCUMENTS DATE SEPTEMBER 9, 2021

### **ARCHITECT**



### MEPFP ENGINEER

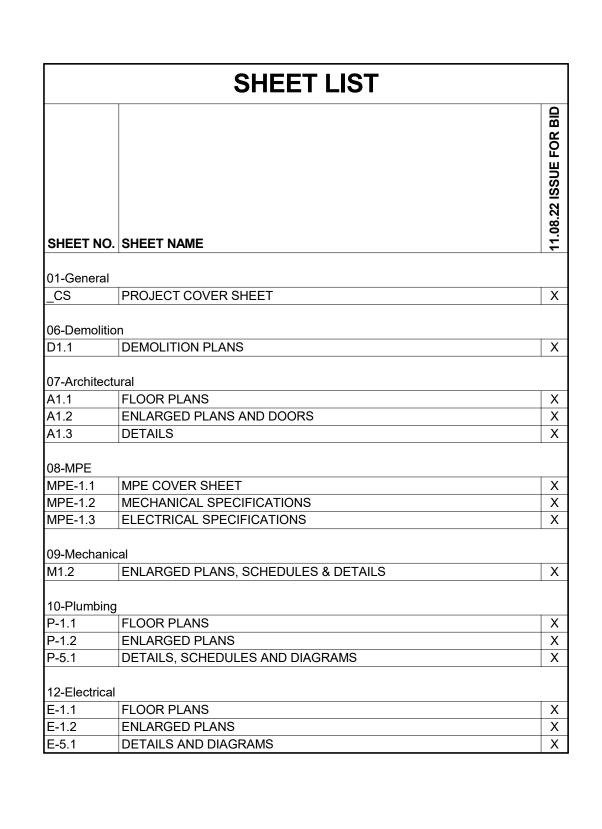
Wick Fisher White 100 N. Independence Mall West, Suite 5 SE, Philadelphia, PA, 19106-1521 phone: 215.627.0200 **CONTACT PERSON: Charles Deal** 

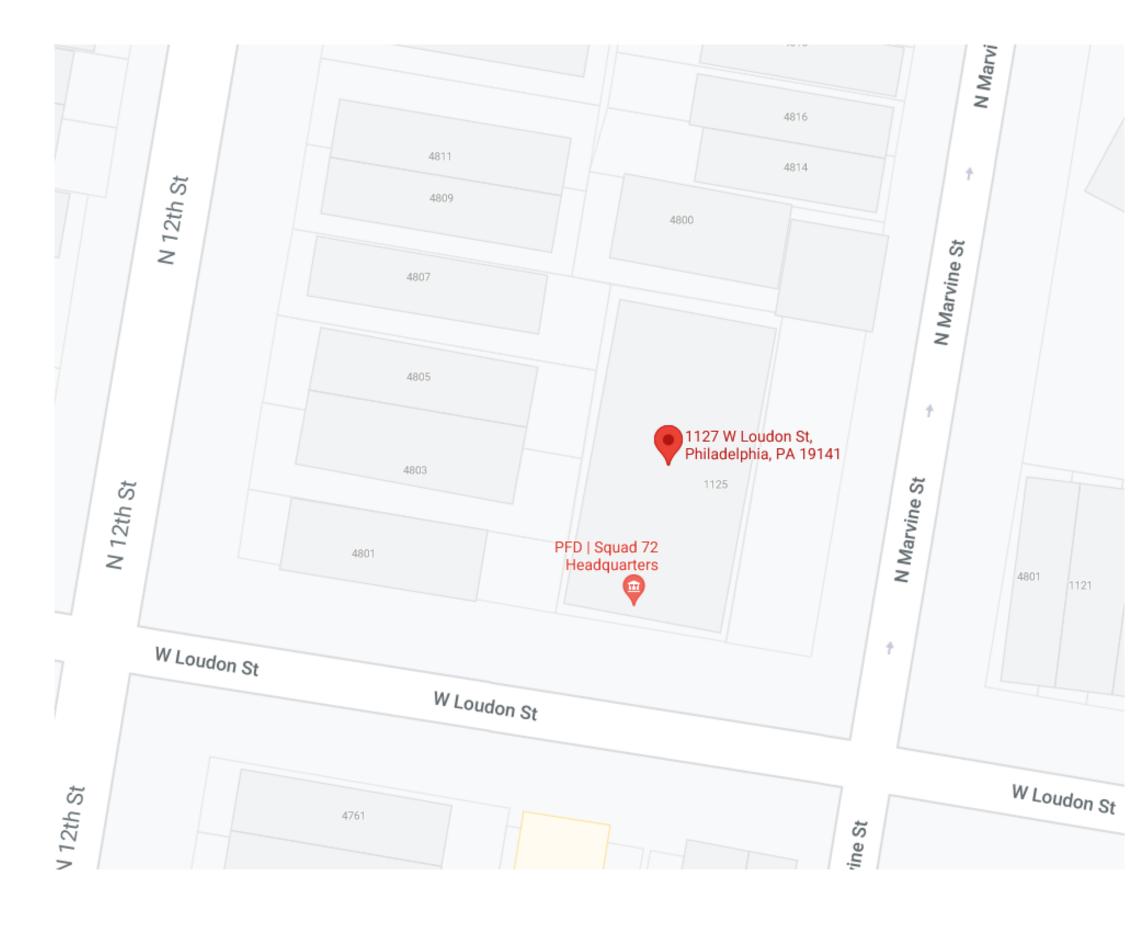
CODE SUMMARY

	<b>CODE DATA</b>	
Applicable Codes		
IBC 2018 IEBC 2018 IMC 2018 IPC 2018 PHILADELPHIA FIRE CO IFGC 2018 IECC 2018 ADAAG 2010	DE 2018	
SUMMARY		REFERENCE
Use Group	B, S-1, R	302.1
Construction Type	IIB	Table 601
Fire Protection System	Sprinklered (per NFPA 13)	
IEBC 2018		REFERENCE
Classification of Work	Level 2 Alteration	Chapter 6

- Scope of work does not include an area of primary function

DRAWING LIST





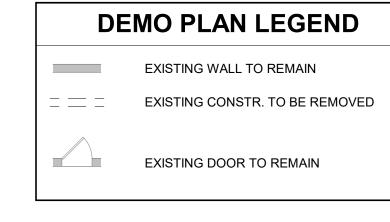
COMMISSIONER/DEPARTMENT OF PUBLIC PROPERTY DEPUTY COMMISSIONER/DEPARTMENT OF PUBLIC PROPERTY PROJECT DIRECTOR/DPP-CAPITAL PROJECTS DIVISION ART COMMISSION HISTORICAL COMMISSION

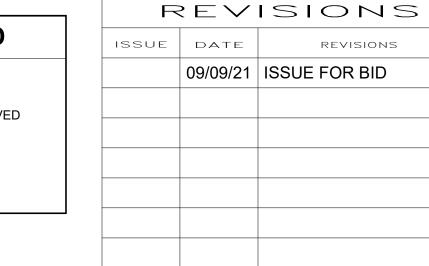
PROJECT APPROVED

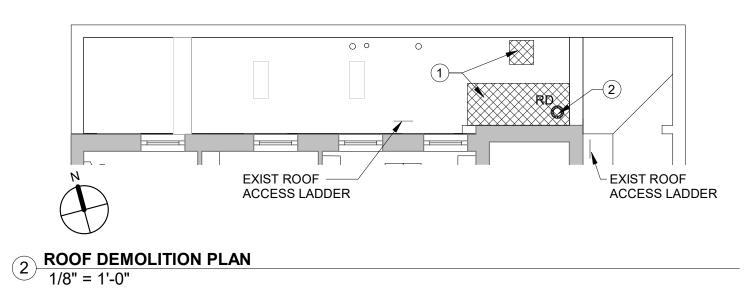
CITY OF PHILADELPHIA DEPARTMENT OF PUBLIC PROPERTY 1400 JFK BOULEVARD 7TH FLOOR, CITY HALL

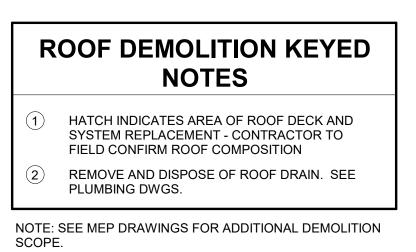
13-21-4643-01 11/08/22

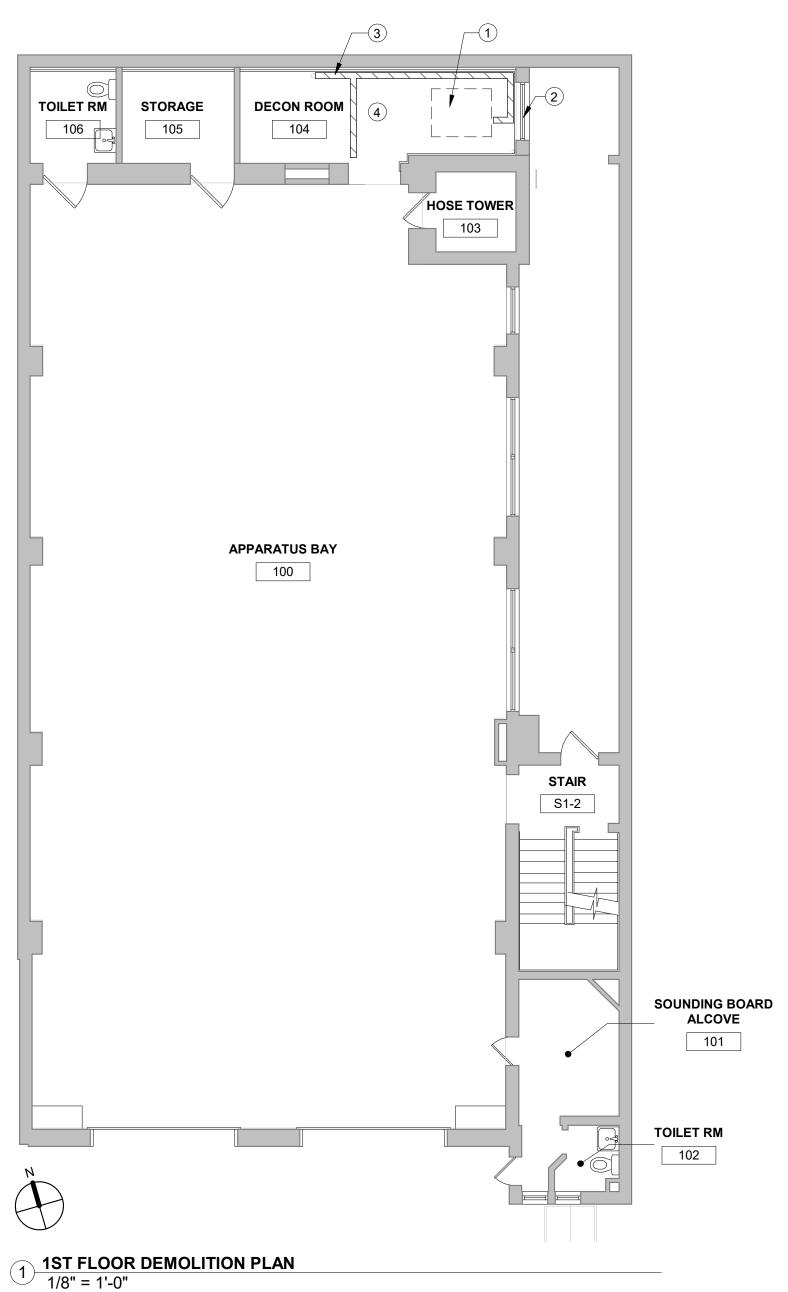
BHA No.: 20-105











### DEMOLITION KEYED NOTES

- REMOVE AND DISPOSE OF CAST-IN-PLACE EQUIPMENT PAD DOWN TO LEVEL OF SURROUNDING SLAB
- REMOVE AND DISPOSE OF WINDOW
- 3 CUT CONCRETE SLAB FOR THE INSTALLATION OF UNDERSLAB PIPING SEE PLUMBING DWGs
- REMOVE PORTION OF DETERIORATED ROOF DECK AND ROOF ASSEMBLY ABOVE COORDINATE EXTENT AND LOCATION WITH ENLARGED ROOF PLAN

NOTE: SEE MEP DRAWINGS FOR ADDITIONAL DEMOLITION SCOPE.



KYLE O'CONNOR, PROJECT MANAGER

SPACE FOR CONSULTANT RECOGNITION

phone: 215.829.0922 x119 CONTACT PERSON: Traci Luckenbill

CITY OF PHILADELPHIA

DEPARTMENT OF PUBLIC PROPERTY

1400 JFK BOULEVARD

7TH FLOOR, CITY HALL

PHILADELPHIA PENNSYLVANIA

ENGINE 72
DECONTAMINATION SUITE

DRAWING TITLE

DEMOLITION PLANS

13-21-4643-01
DATE 11/08/22
SCALE NOTED
DRAWN BY

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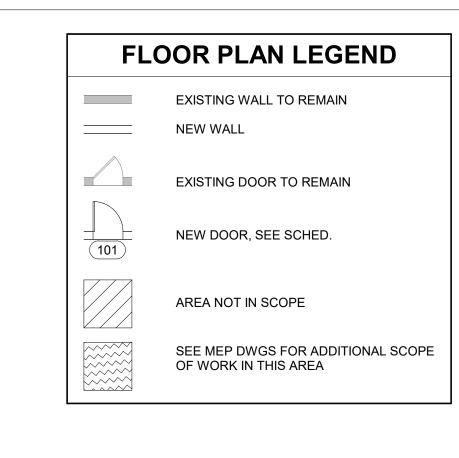
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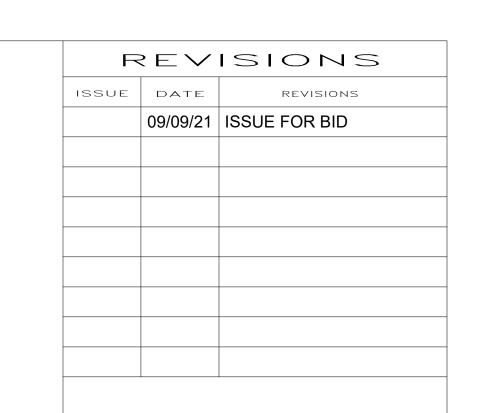
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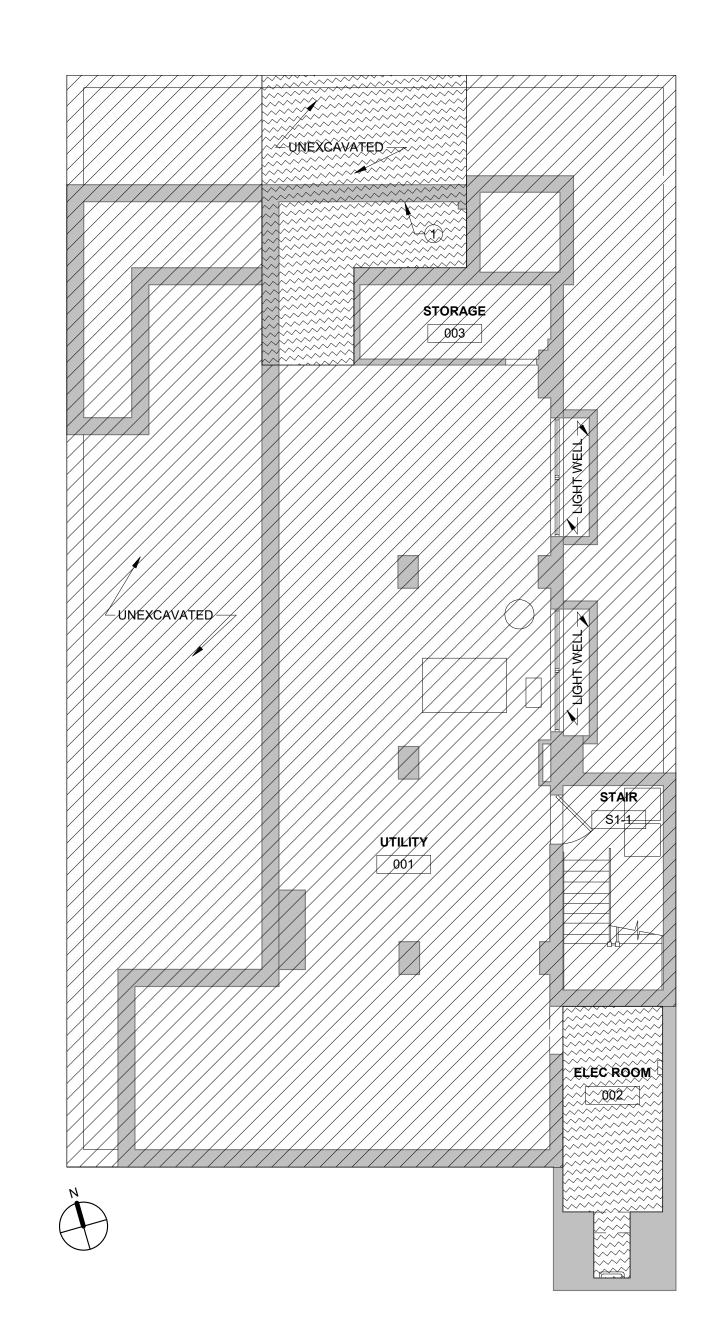
BHA No.: 20-105

ALL DIMENSIONS AND CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR AT THE SITE BEFORE PROCEEDING WITH THE WORK.



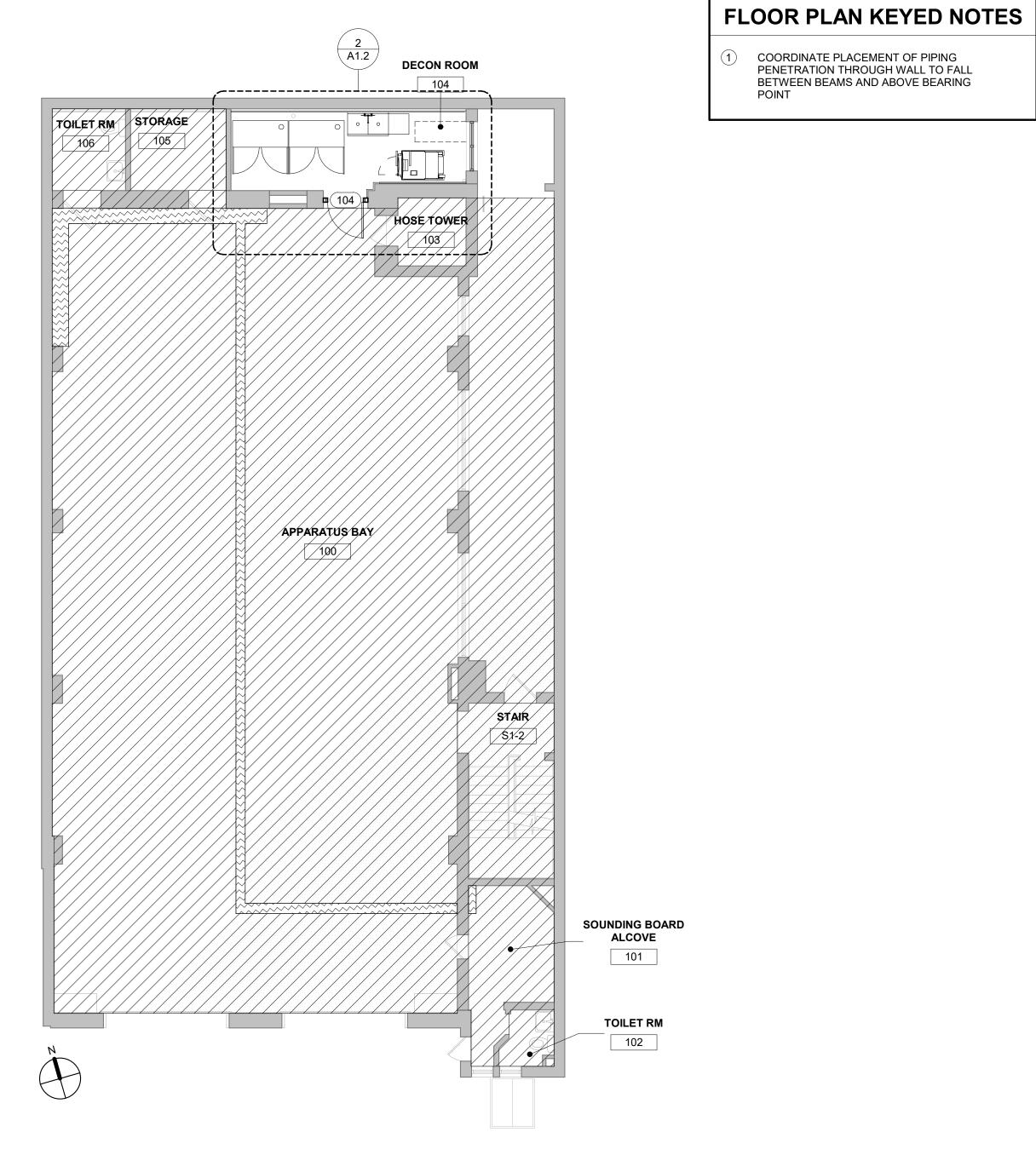
COORDINATE PLACEMENT OF PIPING PENETRATION THROUGH WALL TO FALL BETWEEN BEAMS AND ABOVE BEARING





2 BASEMENT PLAN 1/8" = 1'-0"

1ST FLOOR PLAN
1/8" = 1'-0"





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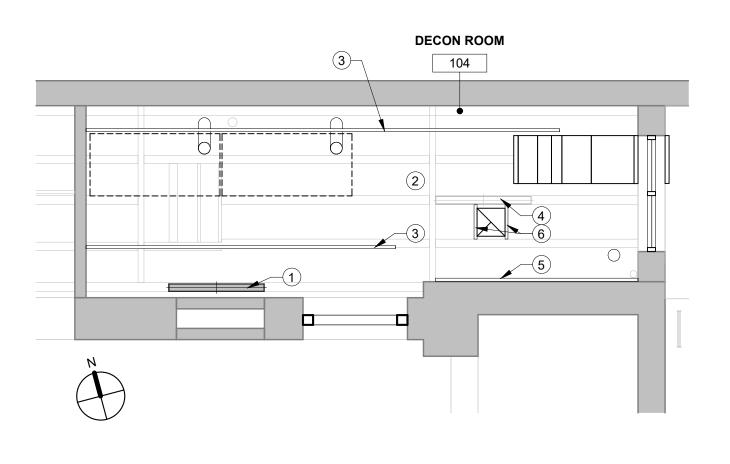
CITY OF PHILADELPHIA DEPARTMENT OF PUBLIC PROPERTY 1400 JFK BOULEVARD 7TH FLOOR, CITY HALL PHILADELPHIA PROJECT TITLE

ENGINE 72 DECONTAMINATION SUITE

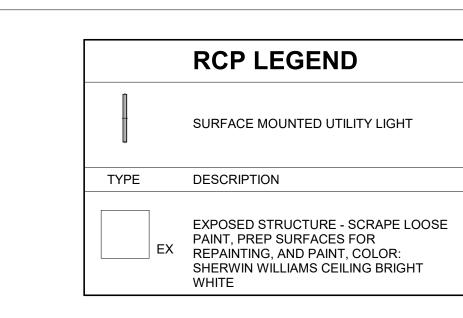
FLOOR PLANS

13-21-4643-01
11/08/22

ALL DIMENSIONS AND CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR AT THE SITE BEFORE PROCEEDING WITH THE WORK.



3 ENLARGED DECON ROOM RCP 1/4" = 1'-0"



### RCP KEYED NOTES

- RELOCATE EXISTING FIXTURE TO NEW LOCATION AS SHOWN
- SCRAPE, PREP, AND PAINT EXPOSED STRUCTURE AND ROOF DECK PT-1
- PAINT EXPOSED SPRINKLER PIPE SAFETY
- (4) EXISTING FIXTURE TO REMAIN
- NEW 2X8 JOIST ANCHORED TO EXISTING MASONRY
- NEW SUPPPLEMENTAL 2X8 WD FRAMING AT **NEW ROOF OPENING**



REVISIONS

09/09/21 | ISSUE FOR BID

REVISIONS

ISSUE DATE

### **ROOF PLAN KEYED NOTES**

- 1 HATCH INDICATES AREA OF ROOF DECK AND SYSTEM REPLACEMENT CONTRACTOR TO FIELD CONFIRM ROOF COMPOSITION
- (2) EXISTING CONDENSING UNIT TO REMAIN
- (3) EXISTING VENT TO REMAIN
- (4) NEW EXHAUST FAN SEE MECH DWGS
- 5 DRYER CABINET EXHAUST NEW PENETRATION IN EXISTING ROOF SYSTEM

6 CRICKET AT NEW ROOF PENETRATION

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CITY OF PHILADELPHIA DEPARTMENT OF PUBLIC PROPERTY 1400 JFK BOULEVARD 7TH FLOOR, CITY HALL PHILADELPHIA

ENGINE 72 DECONTAMINATION SUITE

ENLARGED PLANS AND DOORS

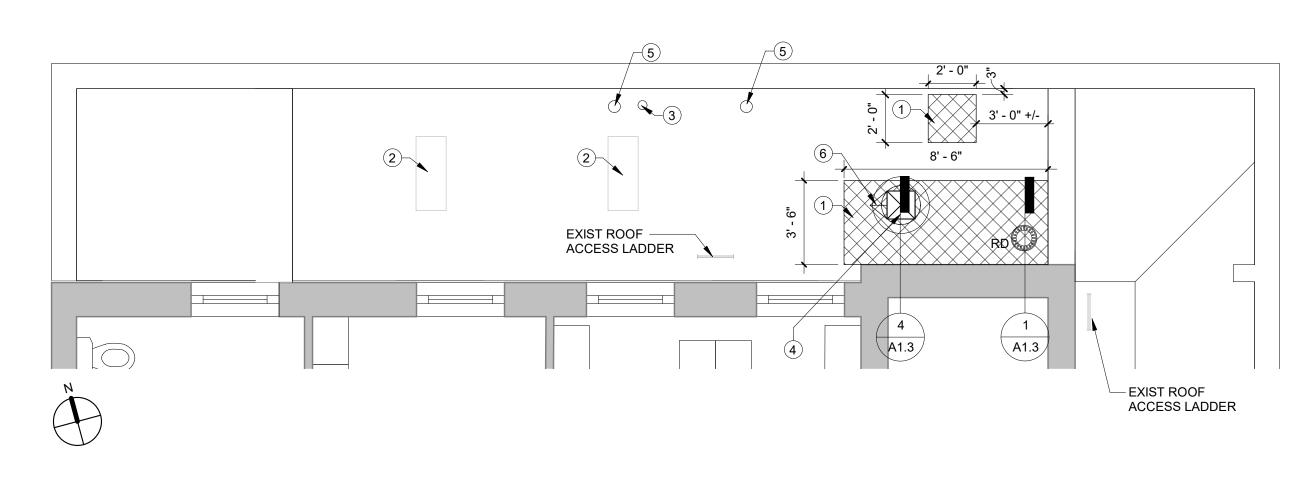
13-21-4643-01

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5' - 5" 5' - 5" A1.3

### **FLOOR PLAN KEYED NOTES**

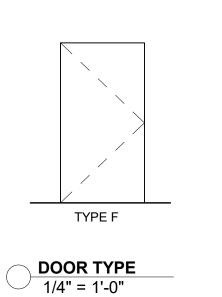
- 1) DRYING CABINET: ADC ECODRY ADFG-6 OF/CI 2 UTILITY SINK: REGENCY 600S22424B WITH REMOVABLE 24" DRAINBOARD - CF/CI
- WASHER EXTRACTOR: MILNOR 30022VRJ CF/CI MOUNT TO EXISTING CONCRETE SLAB PER MANUFACTURER'S RECOMMENDATIONS
- 4 PATCH CONCRETE SLAB IN HATCHED AREA
- 5 APPLY FLOOR LEVELING COMPOUND OVER EXISTING SLAB TO ESTABLISH SLOPE TO DRAIN AND PREP FLOOR FOR EPOXY INSTALLATION SCRAPE LOOSE PAINT FROM EXISTING MASONRY
- WALLS, PREP, PRIME, AND PAINT, COLOR: SHERWIN WILLIAMS CEILING BRIGHT WHITE
- NEW LOUVER IN EXISTING OPENING FIELD VERIFY SIZE OF EXIST OPN'G SEE MECH DWGs
- EPOXY FLOOR FINISH, COLOR: TO BE SELECTED FROM STANDARD RANGE
- 9 LINE OF DUCTWORK ABOVE

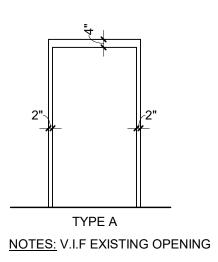


2 ENLARGED DECONTAMINATION ROOM PLAN 1/4" = 1'-0"

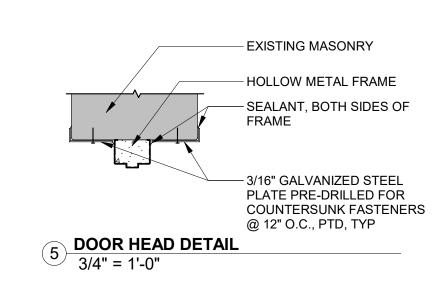
1 ENLARGED LOW ROOF PLAN 1/4" = 1'-0"

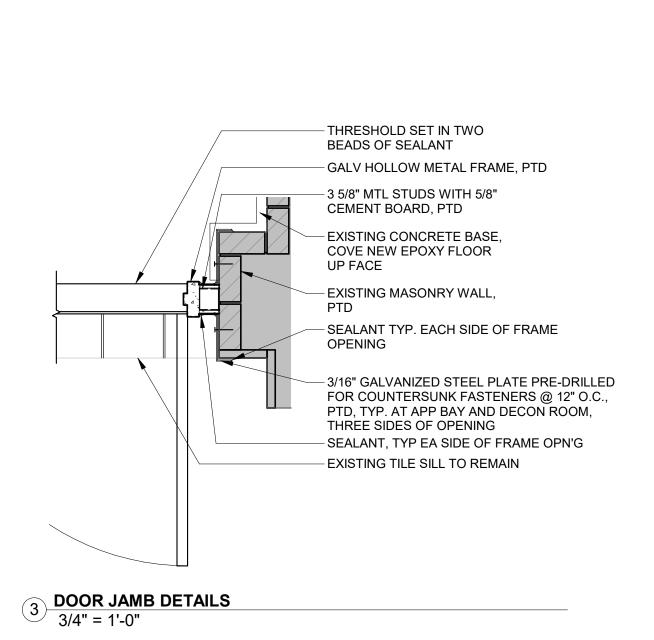
						DC	OOR SO	CHEDULE					
		ROOM LOCATION	ROOM LOCATION		DO	OOR				FRAME			
DOOR NO.	DOOR TYPE	NUMBER	NAME	WIDTH	HEIGHT	MATERIAL	FINISH	FIRE RATING	TYPE	MATERIAL	FINISH	HARDWARE	COMMENTS
1ST FLOOR													
104	F	104	DECON ROOM	3' - 6"	6' - 8"	HM	PTD		Α	HM	PTD	SET 1	

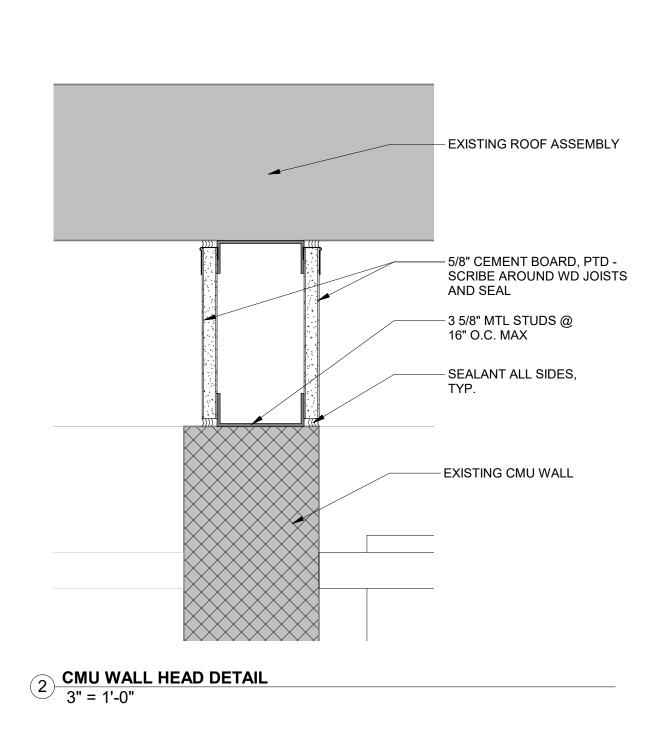


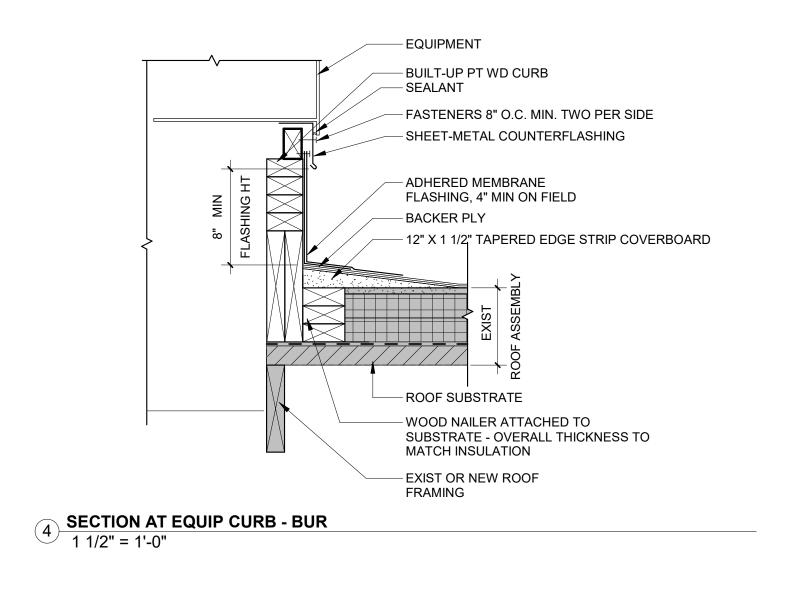


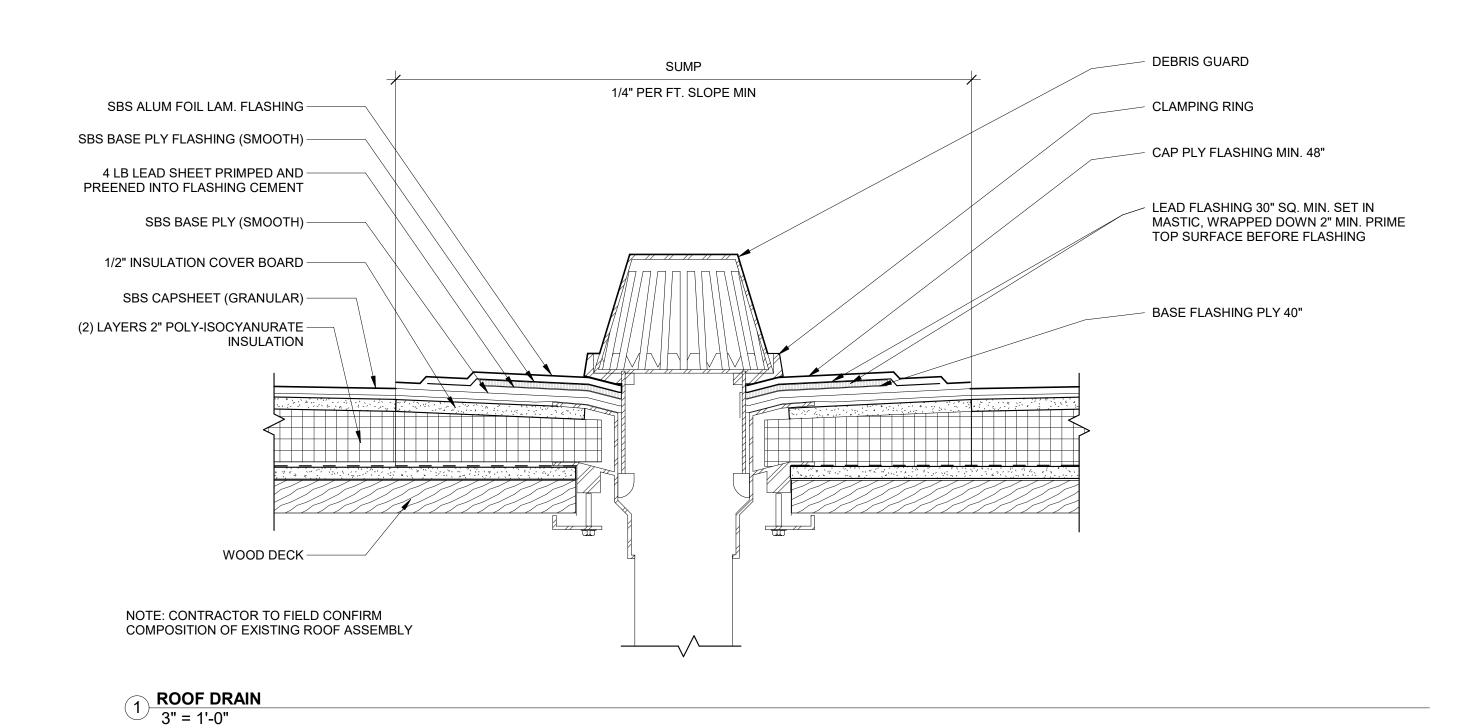
**DOOR FRAME TYPE**1/4" = 1'-0"













REVISIONS

09/09/21 | ISSUE FOR BID

ISSUE DATE REVISIONS

KYLE O'CONNOR, PROJECT MANAGER

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CITY OF PHILADELPHIA

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7TH FLOOR, CITY HALL

PHILADELPHIA

PENNSYLVANIA

ENGINE 72 DECONTAMINATION SUITE

DETAILS

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13-21-4643-01

11/08/22

NOTED

BY
BH

ED BY
CS

BHA No.: 20-105

ALL DIMENSIONS AND CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR AT THE SITE BEFORE PROCEEDING WITH THE WORK.

## CITY OF PHILADELPHIA - DEPARTMENT OF PUBLIC PROPERTY DECONTAMINATION SUITE ENGINE 72

	LEGENDS		GENERAL NOTES	DRAWING LIST
HVAC  THEMOSTAT  HIMMISTAT  THO APPRIES ONGRAMMAND  FINE DAMPER WINGCESS PRANEL  YOUNG BARREN  HETURY ARY CONTREGISTER  EXPAUST ARY CONTREGISTER  SIDEWALL REGISTER  BETURN ARE FLOW ARROW  BURN YAR ARROW  SURPY YAR ARROW  BURN TO ARROW  SURPY TO ARROW  FOR CONTREGISTER  BURN ARE FLOW ARROW  FOR CONTREGISTER  BURN ARE FLOW ARROW  FOR CONTREGISTER  BURN ARE FLOW ARROW  BURN YAR ARROW  SURPY YAR ARROW  FOR CONTREGISTER  BURN ARE FLOW ARROW  BURN YAR ARROW  FOR CONTREGISTER  BURN ARE FLOW ARROW  BURN YAR ARROW  BURN YAR ARROW  FOR CONTREGISTER  BURN ARE FLOW ARROW  BURN YAR ARROW  BURN YAR ARROW  BURN YAR ARROW  FOR CONTREGISTER  FRANSITION  FLEXIBLE DUCTTORIES  BURN AND BURN ON PROOF  YAMED FLOW  YAMED FLOW  YAMED FLOW  YAMED FLOW	HVAC  AO ACCESS DOOR AO AND ENVISED TOOR AFT AND ENVISED TOOR APP ACCESS PARIEL AFT AND ENVISED TOOR APP ACCESS PARIEL AFT AND ENVISED TOOR APP ACCESS PARIEL ACCESS	ELECTRICAL  LIGHTING  SINGLE POLE SWITCH  SINGLE POLE SWITCH  OTHER HIGH IT JERISCH AND RIDCANTED)  NOTE SWITCHES TO BE MULLIFED AT 45 APT TO CENTERLINE. SWITCHES  LOCATED AND RECOMMENDED AT 45 APT TO CENTERLINE. SWITCHES  LOCATED AND RECOMMENDED  LOCATED AND RECOMMENDED  NOTE ASSENCE MOUNTED  NOTE PROCEEDINGS SWITCH  NOTE PROCEDURE MOUNTED AS ABOUNTED  NOTE RECOMMENDED  NOTE RECOMMENDED  NOTE RECOMMENDED  SYSTEMS  SMOKE DETECTOR. HOUNTED ON SLAB  HEAT DETECTOR'S ALB MOUNTED  TO MOUNTED HEBBIT MEASURED TO THE BOTTOM OF THE APPLIANCE WHERE MOUNTING HEBB	1. EACH CONTINUETOR SHALL REVEW ALL PROJECT DOCUMENTS SHALL BE REPORTED AT THE THAT OF BIT. 2. VERRY ALL PELL CONDITIONS, ADESS WAYS DURHOLOSS, AND DELAS IN THE FELL PRIOR TO BID AND PRIOR TO PARICATION, AND DE HALL AND PRIOR TO PARICATION, AND DE HALL AND PRIOR TO PARICATION, AND DE HALL AND PRIOR TO PARICATION, AND THE HALL PROJECT AND THE PARICATION OF THE PARICATION OF THE WARR.  3. ALL NORS SHALL ES CONDITIONED AND CONCENTRES THAT HAS DESCRIBED AND DESCRIBED BY MANUFACH, COUNTY THAT HAS DESCRIBED AND THE PARICATION OF THE WARR.  4. ALL NORS SHALL ES CONDITIONED AND CONCENTRES THAT HAS DEAD TO THE TOPIC TO THE PARICATION OF THE WARR.  5. IN ADDITION TO SECRIBED AND AND SCHOOLES THAT THE PROJECT OF THE PARICATION OF TH	GENERAL GRAPHIC SYMBOLS  PLAN NUMBER  DRAWING NOTE DESIGNATION  DENOLITION NOTE DESIGNATION  DENOLITION NOTE OBSIGNATION  POINT OF DEMOLITION BETWEEN NEW WORK &  ENSITTING WORK  POINT OF DEMOLITION  REVISION CLOUD AND NUMBER  SQUARE FOOT
	ABBREVIATIONS		DEMOLITION NOTES	€ CENTER LINE  Δ. ANGLE  P PLATE
COLD WATER PIPING  HOT WATER PIPING  HOT WATER RETURN PIPING  SANITARY PIPING BOVE FLOOR  SANITARY PIPING BOVE FLOOR  SANITARY PIPING BELOW FLOOR  WENT PIPING  FILOOR ORAN  RIN WATER PIPING PIPING  FILOOR ORAN  RIN WATER PIPING BELOW FLOOR  RIN WATER PIPING BELOW FLOOR  RIN WATER PIPING BELOW FLOOR  FILOOR SINK  FRUM  RAIN WATER PIPING BELOW FLOOR  FILOOR SINK  FUNNEL FLOOR DRAIN  HUB DRAIN  CO FLOOR CLEANOUT  CO FLOOR CLEANOUT  CO FLOOR CLEANOUT  CO FILOOR CLEANOUT  CO FILOOR SIDE CLEANOUT	ABBREVIATIONS  PLUMBING / FIRE PROTECTION  ATV ATMOSPHERIC VENT BPP BACK FLOW PREVENTOR BWY BACK LOW PREVENTOR BWY BACK LOW PREVENTOR BWY BACK LOW PREVENTOR BWY BACK LOW PREVENTOR CHARLES BACKWATER VALVE CHARLES BACKWATER BACKWATER BACKWATER BACKWATER DO DOMESTIC DR DRING BANN DR DRING DR D	ELECTRICAL  A AMPERE AC ALTERNATING CURRENT ANN ANUNCATOR PASE. ANT ANUNCATOR PASE. BATT BATTEXY AND AMERICAN WIRE GAUGE BATT BATTEXY	DEMOLITION NOTES  1. DEMOLITIONRELOCATIONS EACH TRADE CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION AND RELOCATIONS OF SERVICES, EQUIPMENT AND MATERIAL RELATING TO THEIR RESPECTIVE TRADE.  2. WHERE EMSTING WALLS, TLOORS OR CELLINOS ARE REMOVED OR PENETRATED, AND WHERE EDSTING END WALLS OF THE BULDING ARE POINTS OF CONNECTION OF ADDITIONS ALL SERVICES, PHONG, CONDUT, CONTROL OR SWITCH DEVICES, LIJOHTS, OR OTHER HAVE, PLUMBENG, FIRE PROTECTION OR ELECTRICAL EQUIPMENT SHALL BE REMOVED (OR RELOCATED WHERE THEY MUST REMAIN IN SERVICE, OR SERVE, AREAS SEYOND THE IMMEDIATE WORK) CONTRACTOR SHALL FIELD VERIFY CONDITIONS AT THE SITE.  3. PRIOR TO DEMOLITION CONTRACTOR SHALL REVIEW WITH OWNER ALL MATERIALS TO BE REMOVED. SHOULD THE OWNER OF TO KEEP ANY MATERIALS THE CONTRACTOR SHALL REMOVE AND DELIVER THE PARTS TO THE OWNER ON THE SITE WHERE SO DIRECTED. OTHERWISE ALL DEMOLISED OR REMOVE MATERIALS SHE CONTRACTOR SHALL REMOVE AND DELIVER THE PARTS TO THE OWNER ON THE SITE WHERE SO DIRECTED. OTHERWISE ALL DEMOLISED OR REMOVE DOT FIN ANTERIALS THE CONTRACTOR SHALL REMOVE AND DELIVER THE PARTS TO THE OWNER ON THE SITE WHERE SO DIRECTED. OTHERWISE ALL DEMOLISED OR REMOVE DOT FROM THE SITE WHERE SO DIRECTED. OTHER POINT OF SOURCE.  4. DEMOLITION SHALL INCLIDE REMOVAL OF ALL PARTS AND PIECES IN THEIR PRINTETY BACK TO POINTS INDICATED OR IN TOT INDICATED BACK TO THEIR POINT OF SOURCE.  5. WHERE CONDITIONS PROHIBIT TOTAL REMOVAL OF THE WORK, THE REMAINING PORTION SHALL BE CUT FLUSH WITH THE SURROUNDING SURFACE SHALL BE REFINISHED IN AN APPROVED MANIER.  5. MAINTAIN EXISTING UTILITIES INDICATED OR REQUIRED TO REALIE AND THE SURROUNDING SURFACE SHALL BE REPROSED IN AN APPROVED MANIER.  6. MAINTAIN EXISTING UTILITIES INDICATED OR REPORT OF REMAIN, KEEP IN SERVICE, AND PROTECT AGAINST DAMAGE DURING DEMOLITION OF PRETATIONS. THE ACCEPT WERE SOURCE AND PROTECTION OF PROFESSION OF RESOURCE SHALL BE REPORTED BY CONTRACTORY SHALL BE REMOVED.  6. DO NOT REMOVE EXISTING STRUCTURE WORK OF DEPERCENTINT HE AND MEDIA PROFESSION OF RESOURCE THE	## PLATE  ## PLA

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KYLE O'CONNO	R, PROJECT MANA	AGER		
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REVISIONS

1400 JFK BOULEVARD 7TH FLOOR, CITY HALL

ENGINE 72 DECONTAMINATION SUITE

MPE COVER SHEET PROJECT NO.

1	3-21-4643-01
ATE	11/00/00

### DRAWING SPECIFICATIONS - MECHANICAL (DIVISION 15) SECTION 15001 - SUMMARY OF THE WORK

WORK UNDER DIVISION 15 SHALL INCLUDE, BUT NOT BE LIMITED TO, THE

HEATING, VENTILATING, PIPING AND FURNISHING A NEW GEAR WASHING UNOCCUPIED LAUNDRY ROOM, M.C. AND P.C. WILL BE RESPONSIBLE FOR INSTALLING ALL OWNER SELECTED EQUIPMENT AS WELL AS PROVIDING HEAT DRAINAGE AND WATER FOR ALL EQUIPMENT, WORK ALSO INCLUDE MINOR MODIFICATIONS TO EXISTING FIRE PROTECTION SYSTEM OF THE WORKING AREA ADDITIONALLY, THE WORK WILL INCLUDE CONTROL WIRING OF AN ABOVE AVERAGE

### SECTION 15010 - BASIC MECHANICAL REQUIREMENTS

SERVICES FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL PLUMBING AND FIRE PROTECTION WORK AS INDICATED ON THE DRAWINGS

THE CONTRACTOR SHALL PROVIDE ALL LABOR. MATERIAL. EQUIPMENT AND

- THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT AND SERVICES NECESSARY FOR REMOVAL OR RELOCATION OF EXISTING MECHANICAL EQUIPMENT AS REQUIRED BY THE PROJECT.
- TEST AND OPERATE ALL SYSTEMS TO DEMONSTRATE TO THE OWNER, OR HIS DESIGNATED REPRESENTATIVE, THAT THE INSTALLATION OF THESE SYSTEMS CONFORM TO DESIGN INTENT.
- . THE CONTRACTOR SHALL COMPLY WITH ALL RULES AND REGULATIONS OF THE OWNER, LOCAL, STATE AND FEDERAL LAWS, ORDINANCES, RULES AND REGULATIONS APPLICABLE TO THE WORK SHOWN OR SPECIFIED, AND WITH THE RULES OF THE NATIONAL FIRE PROTECTION ASSOCIATION, THE OWNER'S UNDERWRITER, AND ALL PUBLIC UTILITIES HAVING CONNECTION WITH ANY OF THE VARIOUS SYSTEMS HEREIN SPECIFIED. WHERE APPLICABLE. ALL EQUIPMENT SHALL CARRY THE LABEL OF THE UNDERWRITERS LABORATORIES, INC.
- THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN, PAY FOR AND DELIVER ALL PERMITS. CERTIFICATES OF INSPECTION. AND PAY ALL COSTS. REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. DELIVER ALL PERMITS CERTIFICATES AND APPROVALS TO THE OWNERS AGENT PRIOR TO FINAL ACCEPTANCE OF THE WORK. THE CONTRACTOR MUST FILE NECESSARY DRAWINGS. PREPARE DOCUMENTS AND MAKE APPLICATION FOR EACH REQUIRED PERMIT AND INSPECTION, PRIOR TO COMMENCING WORK TO AVOID DELAYS DURING CONSTRUCTION.
- BEFORE SUBMITTING HIS BID, THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD. FAILURE TO DO SO WILL NOT RELIEVE THE CONTRACTOR OF HIS OBLIGATION TO PAY FOR ALL COSTS THAT MAY BE INCURRED DUE TO THE RELOCATION REMOVAL OR MODIFICATION OF ANY PART OF THE EXISTING MECHANICAL, PLUMBING AND FIRE PROTECTION WORK THAT MAY BE REQUIRED, OR ANY CONDITION THAT MAY AFFECT THE COST OF INSTALLING THE NEW WORK.
- IT IS THE INTENTION OF THE DRAWINGS AND SPECIFICATIONS TO CALL FOR CLEAR FINISHED WORK, TESTED AND READY FOR OPERATION, ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE AND PERFECT IN ALL RESPECTS AND READY FOR OPERATION, EVEN IF NOT PARTICULARLY SPECIFIED OR SHOWN. SHALL BE PROVIDED WITHOUT ADDITIONAL EXPENSE. MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT MANIFESTLY NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE VARIOUS SYSTEMS, SHALL BE INCLUDED IN THE WORK, THE SAME AS IF SPECIFIED OR SHOWN ON THE DRAWINGS.
- SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS. SHOP DRAWINGS SHALL INCLUDE PLANS, ELEVATIONS, SECTIONS, MOUNTING DETAILS OF COMPONENT PARTS, PIPING AS-BUILTS, DIAGRAMS, CONTROL WIRING AND ANY OTHER DRAWINGS NECESSARY TO SHOW THE FABRICATION AND CONNECTION OF THE COMPLETE ITEM OR SYSTEM. SHOP DRAWINGS SHALL BE CLEARLY MARKED, INDICATING THE MODEL NUMBER OF THE ITEM SUBMITTED, AND ANY AND ALL OPTIONS THAT ARE INCLUDED. THE FOLLOWING SHOP DRAWINGS SHALL BE SUBMITTED FOR ENGINEERING REVIEW AND APPROVAL:
- A. FIRE PROTECTION SYSTEMS
- B. SHEET METAL WORK
- MECHANICAL EQUIPMENT ROOMS PAD AND EQUIPMENT LAYOUTS (SHOWING ELECTRICAL PANELS AND GEAR OR SIMILAR LARGE COMPONENTS IN THE AREA PROVIDED UNDER OTHER TRADES)
- D. AUTOMATIC TEMPERATURE CONTROLS
- E. INSULATION
- F. HVAC SYSTEMS AND COMPONENTS
- G. PLUMBING FIXTURES, PIPING, VALVES AND APPURTENANCES
- H. GRILLES, REGISTERS AND DIFFUSERS
- SPECIALTIES J. VALVES
- K. SUPPORTS AND ANCHORS
- L. FIRESTOPPING
- M. FILTERS N. CONTROL WIRING DIAGRAMS
- O. LINTEL DETAILS
- P. STEEL SUPPORTS AND PLATFORMS
- Q. CONCRETE FOUNDATIONS
- R. PLUMBING SUPPLY AND DRAINAGE PIPING AS-BUILT DRAWINGS.
- S. OTHER ITEMS AS MAY BE REQUESTED BY THE OWNER'S AGENT
- RECORD DRAWINGS SHALL BE KEPT IN THE CONTRACTOR'S JOB SITE OFFICE FROM THE BEGINNING OF THE WORK, SHALL BE MAINTAINED DAILY AND SHALL BE PRODUCED FOR INSPECTION BY THE OWNER OR HIS AGENTS UPON DEMAND. AT THE COMPLETION OF THE PROJECT, BIND THE PRINTS INTO A SET AND FORWARD THEM TO THE OWNER'S AGENT. THE RECORD DRAWINGS SHALL CONSIST OF A SEPARATE SET OF WHITE PRINTS OF THE CONTRACT DRAWINGS ON WHICH SHALL BE RECORDED IN INK OR COLORED PENCIL THE FOLLOWING:
- A. PIPING RUNS THAT VARY FROM DESIGN.
- B. VALVE LOCATIONS.
- C. DEVICE LOCATIONS
- ADDENDUM OR CHANGE ORDER. E. CONTROL WIRING DIAGRAMS.

D. ALL WORK ADDED TO THE CONTRACT BY LAYOUT DRAWINGS, FIELD SKETCHES,

- BEFORE COMPLETION OF THE INSTALLATION, THE CONTRACTOR SHALL FURNISH
- THREE COPIES OF MANUALS COVERING IN DETAIL ALL REQUIRED INSTRUCTIONS FOR THE OPERATION OF THE SYSTEMS PROVIDED.
- FURNISH ALL LABOR REQUIRED BY THE OWNER'S AGENT, AND OR INSPECTION AGENCIES IN MAKING EXAMINATION OF WORK, DURING THE COURSE OF
- THE CONTRACTOR SHALL FURNISH A WRITTEN WARRANTY FOR THIS INSTALLATION, SUBSTANTIALLY STATING THAT ALL MATERIALS, EQUIPMENT, FIXTURES AND APPURTENANCES AND THE SYSTEMS WHICH THEY COMPRISE ARE FREE FROM INHERENT DEFECTS OR FLAWS IN WORKMANSHIP OR OPERATION, AND ARE FUNCTIONING PROPERLY AND CAPABLE OF PROVIDING SATISFACTORY OPERATION IN ACCORDANCE WITH DESIGN CONDITIONS. ANY DEFECTS IN WORKMANSHIP DEFECTIVE MATERIALS. MALFUNCTION OF EQUIPMENT OR UNSATISFACTORY PERFORMANCE AND ALL OTHER WORK DAMAGED THEREBY SHALL BE REPAIRED REPLACED OR OTHERWISE REMEDIED WITHOUT EXPENSE TO THE OWNER. SUCH REPAIRS OR REPLACEMENTS SHALL BE MADE WITHIN REASONABLE TIME AND AT THE CONVENIENCE OF THE OWNER. SUCH WARRANTY SHALL BE IN EFFECT FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF THE SYSTEMS AS A WHOLE.
- MATERIAL OR EQUIPMENT SPECIFIED BY MANUFACTURER, BRAND NAME, TYPE OR CATALOG NUMBER ARE DESIGNED TO ESTABLISH STANDARDS OF DESIRED QUALITY, STYLE, PERFORMANCE, ELECTRICAL, MECHANICAL AND PHYSICAL CHARACTERISTICS, AND DIMENSIONS. SUBSTITUTION OF ANY ITEMS SO SPECIFIED WILL NOT BE PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE OWNER'S AGENT. WHERE THE SUBSTITUTION REQUIRES ANY REDESIGN OR RELOCATION OF THE STRUCTURES, FOUNDATIONS, PARTITIONS, PIPING, RACEWAYS, WIRING OR ANY OTHER PART OF THE MECHANICAL, ELECTRICAL, STRUCTURAL OR ARCHITECTURAL WORK, ALL SUCH REDESIGN AND ALL THE NEW DRAWINGS AND DETAILS REQUIRED SHALL BE PREPARED BY THE CONTRACTOR AT HIS OWN EXPENSE AND SUBMITTED FOR THE APPROVAL OF THE OWNER'S AGENT. ALL SUCH ADDITIONAL WORK AND ANY ADDITIONAL EQUIPMENT FOR THESE SYSTEMS SHALL BE PROVIDED AT THE EXPENSE OF THE CONTRACTOR.
- 14 THE CONTRACTOR SHALL PROVIDE UPON REQUEST, COPIES OF MATERIAL SAFETY DATA SHEETS FOR ANY MATERIAL OR PRODUCT USED IN THE WORK AND NOT SUPPLIED BY THE OWNER. MSDS SHEETS SHALL BE PROVIDED PRIOR TO DELIVERY OF MATERIALS TO THE JOB SITE.
- 15. WORKMANSHIP SHALL BE FIRST CLASS IN EVERY RESPECT AND SHALL BE PERFORMED BY TRADESMAN SKILLED IN THE PARTICULAR AREA OF THE WORK AND IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE OR PUBLIC UTILITY
- 16. THE CONTRACTOR SHALL EFFECTIVELY PROTECT THE EXISTING BUILDING, ITS CONTENTS AND ALL HIS NEW WORK AGAINST DAMAGE FROM ANY SOURCE RELATED TO THIS CONTRACT UNTIL FINAL COMPLETION AND ACCEPTANCE BY THE OWNER. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY DAMAGED WORK AT HIS EXPENSE AND TO THE SATISFACTION OF THE OWNER'S AGENT
- 17. AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL AND RUBBISH CAUSED BY AGENTS AND EMPLOYEES OF THE CONTRACTOR.

LAWS. ORDINANCES OR REGULATIONS.

18. THE CONTRACTOR SHALL NOT PERFORM ANY FUNCTIONS WHICH WILL INTERRUPT MECHANICAL OR ELECTRICAL SERVICES WITHOUT PRIOR APPROVAL OF THE OWNER. NECESSARY INTERRUPTIONS SHALL BE REVIEWED, SCHEDULED AND APPROVED BY THE OWNER. DURING PARTIAL OR FULL OCCUPANCY OF THE FACILITY, ALL WORK SHALL BE SCHEDULED AND COORDINATED WITH THE OWNER SO THAT DISRUPTION TO THE AREAS INVOLVED IS KEPT TO A MINIMUM. THE CONTRACTOR SHALL GIVE THE OWNER A MINIMUM OF FIVE WORKING DAYS NOTICE OF ANY AND ALL WORK THAT WILL INTERFERE WITH THE OWNER'S OPERATION SO A SCHEDULE SUITABLE TO THE OWNER CAN BE ARRANGED. ANY ACCIDENTAL INTERRUPTIONS TO SERVICES SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.

- 19. PROVIDE SCAFFOLDING, LADDERS, RIGGING, HOISTING AND ALL OTHER EQUIPMENT REQUIRED FOR THE INSTALLATION OF THE WORK.
- 20. ESTABLISH PASSAGE CLEARANCES REQUIRED TO DELIVER, INSTALL AND ERECT ALL REQUIRED EQUIPMENT. IF STRUCTURES, EQUIPMENT AND SYSTEMS MUST BE ALTERED TO PROVIDE PASSAGE OF FOUIPMENT. THE CONTRACTOR SHALL RESTORE STRUCTURES, EQUIPMENT AND SYSTEMS TO THEIR ORIGINAL CONDITION, AT THE CONTRACTOR'S EXPENSE.
- 21. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL MAKE A THOROUGH INSPECTION OF ALL THE MECHANICAL, PLUMBING AND FIRE PROTECTION WORK, AT THE FINAL INSPECTION, ALL SYSTEMS MUST BE 100 PERCENT COMPLETE AND TESTS SHALL BE PERFORMED IN STRICT COMPLIANCE WITH EACH EQUIPMENT MANUFACTURER'S STANDARD TEST PROCEDURES ALL INSTRUMENTS, METERS, WIRING, PERSONNEL, ETC., REQUIRED FOR TESTING SHALL BE INCLUDED UNDER THIS CONTRACT.
- 22. PROVIDE SERVICES OF MANUFACTURER'S FACTORY ENGINEERS TO SUPERVISE INSTALLATION, FINAL CONNECTIONS AND TESTING, PROVIDE SERVICES OF FACTORY ENGINEERS OR REPRESENTATIVES WHO WILL GIVE FULL INSTRUCTIONS AND DEMONSTRATIONS IN THE OPERATION AND MAINTENANCE OF ALL THE MECHANICAL SYSTEMS AND EQUIPMENT INSTALLED TO THE DESIGNATED REPRESENTATIVE OF THE OWNER.

### SECTION 15015 - CUTTING AND PATCHING

NEW OPENINGS THROUGH MASONRY WALLS SHALL BE SUPPORTED, FRONT AND BACK, BY ANGLE IRON LINTELS, PROVIDE NEW LINTELS IF EXISTING OPENINGS TO BE UTILIZED ARE NOT SUITABLY SUPPORTED.

- OPENINGS THROUGH FLOORS FOR PIPING SHALL BE CORE BORED.
- . AT ALL PENETRATIONS OF WALLS, PARTITIONS, CEILING OR FLOOR CONSTRUCTION, COMPLETE SEAL VOIDS WITH U.L. FIRE-RATED MATERIAL TO FULL THICKNESS OF THE PENETRATED ELEMENTS, RESTORING THE AREA TO MAINTAIN THE SPECIFIED LEVEL OF INTEGRITY OF THE AREA PENETRATED.
- WHERE NEW OPENINGS ARE CREATED BY THE DEMOLITION OF DUCTWORK, PIPING. ETC., COMPLETELY SEAL VOIDS WITH U.L. FIRE-RATED MATERIAL TO FULL THICKNESS OF THE OPENING IN FLEMENTS. RESTORING THE AREA TO MAINTAIN. THE SPECIFIED LEVEL OF INTEGRITY OF THE AREA PENETRATED.

PROVIDE DUST CONTAINMENT PARTITIONS AND TEMPORARY EXHAUST SYSTEMS

- REFINISH CUT SURFACES TO MATCH ADJACENT FINISH.
- TO MAINTAIN A NEGATIVE PRESSURE WITHIN THE WORK AREA. SECTION 15020 - EXCAVATION
- EACH CONTRACTOR SHALL PROVIDE ALL EXCAVATIONS, LABOR, MATERIAL, SHORING, SHEETS, BRACING, BACKFILL, DISPOSAL AND RESTORATION OF SERVICES
- RELATING TO THEIR RESPECTIVE TRADE. 2. INSTALL AND OPERATE TEMPORARY PUMPS TO KEEP THE EXCAVATION DRY.
- BACKFILL SHALL BE CLEAN EARTH, FREE OF ROCK, STONES AND DEBRIS. SURPLUS EARTH SHALL BE REMOVED FROM THE SITE.
- . EXCAVATE TO PROVIDE MINIMUM PRACTICAL, BUT ADEQUATE, WORKING
- DO NOT EXCAVATE BEYOND REQUIRED DEPTHS, AND HAND-EXCAVATE BOTTOM
- 6. DO NOT BACKFILL UNTIL INSTALLED WORK HAS BEEN TESTED AND ACCEPTED.
- 8. SCHEDULE EXCAVATION TO AVOID DISRUPTION OF ACCESS TO THE SITE, PROVIDING SUITABLE COVERPLATES FOR VEHICULAR ACCESS AND/OR PEDESTRIAN ACCESS AS REQUIRED

UNLESS NOTED OTHERWISE, THE CONTRACT SHALL BE BASED ON UNCLASSIFIED

- . SHOULD EXCAVATION PROCESS UNCOVER CONTAMINATED SOIL, HAZARDOUS MATERIAL, OR UNSTABLE SOIL, THIS CONTRACTOR SHALL STOP WORK AND NOTIFY THE OWNER'S AGENT FOR DIRECTION.
- 10. ALL SURFACES, DRIVEWAYS, LAWNS, SIDEWALKS, AND SO ON, DAMAGED BY EXCAVATION WORK UNDER THIS CONTRACTOR'S WORK SHALL BE RESTORED IN A MANNER APPROVED BY THE OWNER AND/OR THEIR AGENT.
- SECTION 15040 MECHANICAL RELATED WORK

CUT TO ACCURATE ELEVATIONS.

- MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL CONTRACTORS SHALL FURNISH ACCESS DOORS AND REMOVABLE COVERPLATES, FOR ACCESS TO THEIR WORK IN WALLS, CEILINGS AND FLOORS, FOR INSTALLATION BY THE GENERAL CONTRACTOR.
- OPENINGS THROUGH MASONRY WALLS FOR INSTALLATION OF EQUIPMENT PASSAGE OF RACKS, PIPING, DUCTWORK AND THE LIKE SHALL BE SUPPORTED BY ANGLE IRON LINTELS FRONT AND BACK. LINTEL DETAILS SHALL BE SUBMITTED FOR REVIEW PRIOR TO MAKING MASONRY OPENING.
- PROVIDE SLEEVES FOR ALL OPENINGS THROUGH FLOORS, WALLS, ROOFS AND SO ON. IRON PIPE SIZE STEEL SLEEVES SHALL BE TWO PIPE SIZES LARGER THAN THE PIPE AND SHALL FINISH FLUSH WITH THE FINISHED WALL AND CEILING AND PROJECT 1-INCH ABOVE FLOOR. SLEEVES THROUGH MECHANICAL ROOM FLOORS OR POTENTIALLY WET AREA SHALL EXTEND 2-INCHES ABOVE THE FINISHED FLOOR. ANY WORK DAMAGED IN THIS PROCESS SHALL BE IMMEDIATELY RESTORED PROVIDE ESCUTCHEONS ON ALL PIPING IN UNFINISHED AREAS, OR WHERE PIPING
- 4. THE CONTRACTOR FURNISHING THE EQUIPMENT SHALL PROVIDE ALL NECESSARY STRUCTURAL STEEL SUPPORTS, SUPPLEMENTAL STEEL FOR HANGERS AND PLATFORMS AS REQUIRED BY FOUIPMENT FURNISHED UNDER HIS CONTRACT SUBMIT DETAILS FOR REVIEW AS A SHOP DRAWING.
- 5. CONCRETE FOUNDATIONS, CURBS AND OTHER CONCRETE WORK REQUIRED FOR MECHANICAL EQUIPMENT SHALL BE VALUED FOR BY THE RESPECTIVE CONTRACTORS AND INSTALLED BY WORKMEN EXPERIENCED IN THE CONCRETE TRADE PREPARE AND FURNISH DIMENSIONED LAYOUT DRAWINGS AND TEMPLATES TO CONCRETE TRADE CONTRACTOR FOR ALL FOUNDATIONS REQUIRED FOR EQUIPMENT TO BE FURNISHED UNDER THESE CONTRACTS. UNLESS NOTED OTHERWISE, CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSION STRENGTH OF 2500 LBS. PER SQUARE INCH AND SHALL BE REINFORCED. SUBMIT SHOP DRAWINGS ON FOUNDATIONS FOR REVIEW.
- . WHERE NOT PROVIDED AS OR WITH A FACTORY FABRICATED GUARD, PROVIDE AT ALL ROTATING OR RECIPROCATING EQUIPMENT EASILY REMOVABLE GUARD TO ENCLOSE ALL BELTS, PULLEYS, SHEAVES AND COUPLINGS. CONFORM TO OSHA
- 7. ALL FLASHINGS WILL BE PROVIDED BY THE BUILDING CONTRACTOR. COUNTERFLASHINGS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR HVAC CONTRACTOR SHALL PROVIDE 16-OUNCE LEAD COATED COPPER COUNTERFLASHING WHERE DUCTS. PIPES OR CONDUITS PASS THROUGH ROOF OF WALLS. COUNTERFLASHING OF SOIL AND VENT STACK SHALL BE FURNISHED AND NSTALLED BY THE PLUMBING CONTRACTOR.
- MECHANICAL WORK, REQUIRING ACCESSIBILITY FOR OPERATION AND MAINTENANCE. ACCESS DOORS SHALL BE STEEL. MINIMUM SIZE SHALL BE 24" X 24". AND RATED EQUAL TO THE SURFACE IN WHICH THE PANEL IS INSTALLED. 9. ALL EQUIPMENT SHALL HAVE SECURELY ATTACHED A MANUFACTURER'S

8. FURNISH ALL ACCESS DOORS AND PANELS FOR CONCEALED PORTIONS OF

- NAMEPLATE GIVING COMPLETE DATA AS TO DESIGN AND OPERATING CHARACTERISTICS. NAMEPLATES SHALL NOT BE COVERED OR OTHERWISE OBSCURED.
- 10. PROVIDE TAGS FOR VALVES, FIRE DAMPERS, AUTOMATIC DAMPERS AND SIMILAR FOUIPMENT, PROVIDE CHARTS FOR FACH INDICATING THE TYPE, SERVICE FUNCTION AND LOCATION OF EACH DEVICE. THESE [THIS] CHART[S] SHALL BE NEATLY FRAMED IN A HARDWOOD FRAME WITH PLASTIC COVER AND HUNG IN A LOCATION SELECTED BY THE OWNER.
- 1. ALL NEW PIPING INSTALLED UNDER THIS SPECIFICATION SHALL BE IDENTIFIED BY STENCILED LEGENDS OR SELF-ADHERING BRIGHTLY COLORED LABELS SUCH AS "BRADY MARKERS" NOT LESS THAN 1-1/2-INCHES HIGH WHICH SHALL INCLUDE A DIRECTIONAL ARROW FOR WATER LINES. THESE SHALL BE PLACED ON LINES; AT INTERVALS AS DIRECTED NOT EXCEEDING TWENTY-FIVE FEET, AT THE BEGINNING AND TERMINATION OF EACH RUN AND AT EACH SIDE OF A WALL OR PARTITION THROUGH WHICH THE PIPE PASSES. COLORS OF LABELS AND LETTERING SHALL BE AS SELECTED BY THE OWNER.
- SECTION 15060 PIPE AND PIPE FITTINGS
- ALL STEEL PIPE SHALL BE WELDED CARBON STEEL, MANUFACTURED IN ACCORDANCE WITH ASTM SPECIFICATIONS. ALL PIPE SHALL CONFORM TO DIMENSIONAL STANDARDS OF ANSI STANDARD B36.10. STEEL PIPE SHALL BE USED FOR THE FOLLOWING SERVICES IN WEIGHTS AND TYPES LISTED:
- FIRE PROTECTION WET SCHEDULE 40 BLACK THREADED FITTINGS FOR STEEL PIPE SHALL BE CLASS 150 MALLEABLE IRON
- 3. WELDING FITTINGS FOR STEEL PIPING GENERALLY WILL BE FORGED STEEL
- FLANGES FOR STEEL LINES SHALL BE GENERALLY 150-POUND CLASS FORGED WELDING NECK TYPE.
- . UNIONS FOR STEEL LINES 1-1/2-INCHES IN SIZE AND SMALLER SHALL BE CLASS 150
- MALLEABLE IRON BRASS TO IRON SEAT GROUND JOINT UNIONS, OR A PAIR OF FLANGES FOR STEEL LINES 2-INCHES IN SIZE AND LARGER. 6. AT THE CONTRACTOR'S OPTION, FIRE PROTECTION STEEL PIPING MAY BE

ASSEMBLED BY VICTALLIC COLIPLINGS AND FITTINGS COLIPLINGS SHALL BE

VICTAULIC STYLE 77 WITH GRADE "E" MOLDED SYNTHETIC RUBBER GASKET

COUPLING BOLTS SHALL BE OVAL NECK TRACK HEAD TYPE WITH HEXAGONAL

HEAVY NUTS, ALL PIPE FITTINGS USED WITH VICTAULIC PIPE COUPLINGS SHALL BE

- MALLEABLE IRON CASTINGS. PIPE GROOVING SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. ALLTHREAD ROD.
  - PROTECTION SADDLE FOR INSULATION SHALL BE FABRICATED FROM STEEL PLATE. SADDLES SHALL BE 12-INCHES LONG AND SHALL BE DESIGNED FOR THE INSULATION THICKNESS USED.

- COPPER TUBING SHALL BE HARD DRAWN TYPE "L" OR "K" AS NOTED, CONFORMING TO ASTM SPECIFICATIONS, AND JOINED BY METHOD NOTED. COPPER PIPE SHALL BE USED FOR THE FOLLOWING:
- NO-LEAD SOLDER DOMESTIC HOT AND COLD WATER PIPING DRAINAGE, WASTE AND VENT PIPING TYPE DWV NO-LEAD SOLDER ABOVE-GRADE SOLDER JOINT FITTINGS SHALL BE SEAMLESS WROUGHT COPPER FITTINGS.
- BRASS COMPANION FLANGES WITH TUNE SHOULDER FOR SOLDER JOINTING. UNIONS FOR COPPER TUBING SHALL BE 250-POUND PATTERN ALL BRONZE GROUND JOINT UNIONS WITH ENDS FOR SOLDERED JOINTS.

FLANGES FOR COPPER TUBING LINES SHALL BE 150-POUND PATTERN CAST RED

- 10. WHERE COPPER TUBING JOINS FERROUS PIPE OR EQUIPMENT PROVIDE AN INSULATED UNION OR FITTING FOR THE PREVENTION OF ELECTROLYSIS.
- BELOW GRADE CAST IRON DRAINAGE PIPE SHALL BE SERVICE WEIGHT BELL AND SPIGOT SOIL PIPE IN ACCORDANCE WITH LOCAL REGULATIONS. FITTINGS SHALL BE OF THE SAME WEIGHT CLASSIFICATION AS THE PIPE, AND EXCEPT AS OTHERWISE INDICATED ON THE DRAWINGS. SHALL BE OF THE "Y" OR LONG RUN PATTERN. JOINTS SHALL BE FABRICATED USING NEOPRENE COMPRESSION GASKETS ADHERING TO ASTM C564. NO LEAD & OAKUM JOINTS SHALL BE UTILIZED. CHARLOTTE PIPE WAS USED TO DEVELOP THIS STANDARD, HOWEVER MANUFACTURER CHOICE IS AT CONTRACTOR'S DISCRETION.
- ABOVE GRADE SOIL AND WASTE PIPING AND FITTINGS SHALL BE CAST IRON SERVICE WEIGHT HUBLESS AND SHALL COMPLY WITH CISPI301, HUBLESS COUPLING SHALL COMPLY WITH CISPI 310 OR ASTM C 1540. NEOPRENE GASKETS SHALL COMPLY WITH ASTM C 564 CHARLOTTE PIPING WAS USED AS DESIGN STANDARD MANUFACTURER'S CHOICE IS AT CONTRACTOR'S DISCRETION. ALL PIPING IS TO BE INSTALLED PER MANUFACTURERS INSTRUCTIONS AND STANDARDS.
- UNDER NO CIRCUMSTANCES SHALL NO-HUB INSTALLATION BE PERMITTED BELOW GRADE OR BURIED IN SLABS.

### SECTION 15080 - PIPING SPECIALTIES

- THERMOMETERS SHALL BE ADJUSTABLE ANGLE TYPE WHICH WILL ALLOW ADJUSTMENT OF FINAL VIEWING ANGLE TO ANY POSITION THERMOMETER SHALL BE I-INCHES LONG AND CONSIST OF DIF CAST ALUMINUM CASE. CLEAR ACRYLIC PLASTIC WINDOW RED MERCURY FILLED TUBE AND ALLIMINUM STEM WITH SCALE READING IN DEGREES FAHRENHEIT PROVIDE AN INDUSTRIAL TEST WELL IN 304 STAINLESS STEEL WITH 3/4-INCH NPT FOR MOUNTING IN PIPE. COORDINATED REQUIRED VOLTAGE, COUPLING AND CONTACT NUMBER W. DRAWINGS PRIOR TO ORDERING.
- PROVIDE A PORTABLE METER CAPABLE OF INDICATING PRESSURE DIFFERENTIAL ACROSS THE CIRCUIT SETTER. UNIT TO BE COMPLETE WITH ALL REQUIRED HOSES, SHUT-OFF AND VENT VALVES AND CARRYING CASE.
- EXPANSION JOINTS IN HOT WATER PIPING SHALL CONSIST OF STAINLESS STEEL BELLOWS WITH ENDS OF THE PROPER CONFIGURATION TO SUIT THE PIPING SYSTEM (WELDED, FLANGED, THREADED OR UNION), MAXIMUM OPERATING TEMPERATURE OF JOINTS SHALL BE 750 DEGREES F AND MAXIMUM WORKING PRESSURE SHALL BE 150 POUNDS. UNIT SHALL BE ALL STAINLESS STEEL AND SHALL HAVE 1-3/4-INCH COMPRESSION, EQUAL TO ADSCO "FCSS".
- EXPANSION COMPENSATORS SHALL CONSIST OF CARBON STEEL PIPES WITH THREADED OR FLANGED ENDS, STAINLESS STEEL BELLOWS, AND CARBON STEEL HOUSING FOR BELLOWS. EXPANSION COMPENSATORS SHALL BE EQUAL TO HYSPAN SERIES 8500, WITH 2-INCH TRAVEL FOR HOT WATER RADIATION, AND SHALL BE EQUAL TO HYSPAN SERIES 3500 DUAL JOINT WITH ANCHOR BASE, EXTERNALLY PRESSURIZED GUIDED JOINT FOR STEAM AND STEAM CONDENSATE, WITH 4-INCH TRAVEL. PROVIDE PIPE EXPANSION GUIDES AND ANCHORS.
- PIPE ALIGNMENT GUIDES FOR STEEL PIPE SHALL BE HEAVY DUTY, STEEL CONSTRUCTION WITH SPLIT GUIDING CYLINDER. ANCHOR BASE AND TWO PIECE SPIDER, SIZE GUIDE FOR INSULATION THICKNESS SPECIFIED, ANCHORS SHALI CONSIST OF STEEL CHANNELS OR ANGLES SECURELY FASTENED TO THE BUILDING STRUCTURE AND WELDED TO THE PIPE. SUBMIT DETAILS OF CONSTRUCTION FOR **APPROVAL**
- AT EACH CONNECTION OF FERROUS PIPING TO NON-FERROUS PIPING, PROVIDE A DIELECTRIC FITTING, EQUAL TO EPCO MANUFACTURE.
- SECTION 15100 VALVES VALVES SHALL BE OF THE TYPES AND RATINGS SPECIFIED. FIGURE NUMBERS USED HEREIN ARE THOSE OF NIBCO AS STANDARD. VALVES SHALL BE CRANE, MILWAUKEE, NIBCO, JENKINS, OR STOCKHAM.
- 3-INCH & SMALLER BRONZE, SOLDER-ENI GLOBE S-235-S CHECK S-433-B

F-718-R

GLOBE

- GLOBE T-256-A T-413-B CHECK <u> 1/2-INCH AND LARGER IRON BODY, FLANGED, O.S. & Y</u>
- CHECK F-918-B IRON BODY VALVES SHALL BE BRONZE MOUNTED. ALL GATE AND GLOBE VALVES
- SHALL BE CAPABLE OF BEING REPACKED WHILE UNDER FULL FLOW AND PRESSURE. SPRING LOADED CHECK VALVES SHALL BE USED AT THE DISCHARAGE OF ALL PUMPS. SPRING LOADED CHECK VALVES SHALL HAVE IRON BODY, BRONZE TRIM, SPLIT PLATE, HINGED WITH STAINLESS STEEL SPRING, RESILIENT SEAL BONDED TO
- BODY, WAFER OR THREADED LUG ENDS, EQUAL TO NIBCO FIGURE W-920-W. BALL VALVES EQUAL TO APOLLO BRONZE BALL VALVE SERIES 70-100 MAY BE USED IN ALL CHILLED WATER AND HEATING HOT WATER PIPING 2-INCHES AND SMALLER. ABOVE 2-INCHES, GATE VALVES SHALL BE USED, EXCEPT WHERE GLOBE VALVES ARE REQUIRED FOR THROTTLING, OR WHERE OTHERWISE INDICATED.
- PROVIDE BALL VALVE FOR USE AS MANUAL AIR VENT AT HEAT TRANSFER COILS. DRAIN VALVES FOR ALL LINES SHALL BE 3/4-INCH SIZE 125 POUND BRONZE GLOBE

VALVES, WITH THREADED ENDS AND BRONZE HOSE THREAD ADAPTER.

- WHERE PLUG VALVES OR BALANCING COCKS ARE INDICATED AS BALANCING VALVES, SUCH VALVES SHALL BE 100 PERCENT PIPE AREA STRAIGHTWAY PASSAGE, HOMESTEAD LUBRICATED PLUG VALVE FIGURE 601.
- BRONZE BODY, BRASS BALL, ADJUSTMENT DIAL, MEMORY STOP, READ-OUT PORTS AND THREADED ENDS. BUTTERFLY VALVES SHALL BE EQUAL TO JENKINS OR KEYSTONE TIGHT CLOSING LUG TYPE VALVES WITH GRAY IRON BODY, BRONZE DISC, STEEL SHAFT WITH NYLON BEARINGS, BUNA N RESILIENT SEATS AND INDEXED POSITIVE POSITIONING HANDLE. VALVES SHALL BE SUITABLE FOR 200 POUND SERVICE AND SHALL CLOSE BUBBLE-TIGHT AGAINST THE PRESSURE OF THE INSTALLATION. [PROVIDE GEAR

IN [CHILLED WATER] [AND HEATING HOT WATER] SYSTEMS, PROVIDE CALIBRATED

BALANCING VALVES EQUAL TO ITT BELL AND GOSSETT "CIRCUIT SETTER PLUS",

- OPERATOR FOR ALL BUTTERFLY VALVES 5-INCHES IN SIZE AND LARGER.] CHECK VALVES IN VERTICAL PUMP DISCHARGE LINES SHALL BE SEMI-STEEL BODY BRONZE-TO-BRONZE SEATING NOISELESS CHECK VALVES. FOUAL TO METRAFLEX CHECK VALVES FOR HORIZONTAL APPLICATION SHALL BE IRON OR BRONZE BODY,
- TRIPLE-DUTY VALVES IN PUMP DISCHARGE LINES SHALL BE IRON BODY WITH FLANGED ENDS, STAINLESS STEEL SPRING, AND SPRING-LOADED EXTERNALLY-GUIDED SOFT-SEATED IRON DISC. VALVE SHALL BE COMBINATION BALANCING, SHUT-OFF AND CHECK VALVE, EQUAL TO MUELLER MODEL 721, CPV, OR ITT BELL & GOSSETT.
- 2. RADIATOR VALVES SHALL BE SELF-CONTAINED TAMPER-RESISTANT STRAIGHT-THROUGH BRONZE BODY VALVE WITH STAINLESS STEEL STEM AND SPRING, COPPER OR BRONZE BELLOWS, ADJUSTABLE TEMPERATURE SELECTION RING, AND TAMPER-RESISTANT COLLAR WITH LOCKING OPERATOR/VALVE CONNECTION. VALVES SHALL BE EQUAL TO DANFOSS RA 2000 SERIES.
- PROVIDE BABBITT ADJUSTABLE SPROCKET RIM WHEEL OPERATOR WITH DUCTILE IRON RIM AND RUSTPROOF CHAIN FOR ALL VALVE 4-INCHES IN SIZE AND LARGER THAT ARE INSTALLED HIGHER THAN 8-FEET ABOVE THE FLOOR TO THE CENTERLINE SECTION - 15140 SUPPORTS AND ANCHORS
- PIPING" SO AS TO MAINTAIN REQUIRED PITCH OF LINES, PREVENT VIBRATION AND PROVIDE FOR EXPANSION AND CONTRACTION MOVEMENT HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE: 1-INCH AND SMALLER 1-1/4-INCH TO 2-INCHES 3/8-INCH 9-FEET 0-INCHES 2-1/2-INCHES TO 5-INCHES 1/2-INCH 10-FEET 0-INCHES

PIPING SYSTEMS SHALL BE SUPPORTED IN ACCORDANCE WITH ANSI B31.1 "POWER

- 5/8-INCH 6-INCHES AND LARGER 12-FEET 0-INCHES ADJUSTABLE SWIVEL SPLIT RING HANGER SHALL BE FABRICATED OF BLACK MALLEABLE IRON AND BE APPROVED BY FACTORY MUTUAL AND BE ULLISTED HANGER SHALL BE EQUAL TO GRINNELL FIGURE 104.
- 3. ADJUSTABLE CLEVIS TYPE HANGER SHALL BE BLACK CARBON STEEL AND BE APPROVED BY FACTORY MUTUAL AND BE UL LISTED. HANGER SHALL BE EQUAL TO
- GRINNELL FIGURE 260. LIGHT DUTY CLEVIS HANGER SHALL BE FABRICATED FROM COPPER PLATED CARBON STEEL, EQUAL TO GRINNELL FIGURE CT-65.
- EXTENSION SPLIT TUBING CLAMP HANGER SHALL CONSIST OF COPPER PLATED MALLEABLE IRON CLAMP AND FLANGE, EQUAL TO GRINNELL FIGURE CT-130R.
- WHERE SEVERAL HORIZONTAL RUNS OF SIMILAR PIPING RUN TOGETHER. CONTRACTOR SHALL RUN THEM TOGETHER ON A UNISTRUT TRAPEZE STYLE PIPE SUPPORT WITH EACH INDIVIDUAL PIPE FASTENED TO THE UNISTRUT WITH A UNISTRUT CLAMP. SUPPORT UNISTRUT RACK AS A TRAPEZE HANGER WITH
  - EXISTING PIPING WHERE INSULATION IS DAMAGED BY NEW WORK NEW RAIN WATER CONDUCTORS

- 8. HANGER RODS SHALL BE ASTM A575 OR A576 HOT ROLLED CARBON STEEL AND MEET MECHANICAL PROPERTY REQUIREMENTS OF ASTM A663.
- PREFABRICATED EQUIPMENT SUPPORTS, SHALL BE 18 GAUGE GALVANIZED STEEL, CONTINUOUS MITERED AND WELDED CORNER SEAMS, INTEGRAL BASE PLATE, FACTORY INSTALLED WOOD NAILER AND 18 GAUGE GALVANIZED STEEL COUNTER FLASHING. UNITS SHALL BE EQUAL TO THYCURB EQUIPMENT SUPPORT FOR INSULATED DECKS WITH HEIGHTS AS REQUIRED FOR THE ITEM SUPPORTED. UNITS SHALL BE INSTALLED IN STRICT CONFORMANCE TO MANUFACTURERS RECOMMENDATIONS. UNITS SHALL SIT ON ROOF DECK, NOT ON ROOFING MATERIAL PROVIDE FLASHING, COUNTERFLASHING AND HOT MOPPING AS REQUIRED TO ASSURE A WATERTIGHT INSTALLATION. UNITS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR BUT TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION BY THE GENERAL CONTRACTOR.
- 10. PIPE PENETRATION CURBS SHALL BE EQUAL TO THYCURB TYPE TC-3 WITH TP-1 PIPE COVER. PROVIDE WITH THE CURB THE APPROPRIATE NUMBER OF PIPE COVERS. RUBBER AND STAINLESS STEEL CLAMPS. UNITS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR BUT TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION BY THE GENERAL CONTRACTOR.
- 11. UNLESS OTHERWISE INDICATED (OR INDICATED BY TRAPEZE NOTE 6 OF THIS SECTION), ALL HORIZONTAL RUNS OF PIPING SHALL BE SUPPORTED BY INDIVIDUAL
- 12. ALL LINES OF COPPER TUBING SHALL BE INDIVIDUALLY (UNLESS INDICATED OTHERWISE BY TRAPEZE NOTE 6 OF THIS SECTION) SUPPORTED BY APPROVED TYPE HANGERS NOT MORE THAN 6-FEET APART OR AS SHOWN ON THE DRAWINGS HANGERS FOR UNCOVERED LINES SHALL BE ESPECIALLY DESIGNED FOR COPPER TUBING AND SHALL BE EXACT O.D. OF TUBING. HANGERS FOR COVERED TUBING SHALL HAVE BROAD STRAPS FITTING OUTSIDE OF COVERING.
- B. HANGERS FOR COLD PIPING SHALL SUPPORT THE PIPE WITHOUT PIERCING THE INSULATION. INSULATION SHIELDS SHALL BE USED TO PROTECT THE INSULATION ON COLD PIPES. INSULATION PROTECTION SADDLES SHALL BE WELDED TO INSULATED HOT PIPES AT ROLLER SUPPORTS. WHEREVER FIBERGLASS PIPE INSULATION IS INSTALLED, KAYLO OF EQUAL THICKNESS SHALL BE INSTALLED IN LIEU FIBERGLASS PIPE INSULATION WHEREVER HANGERS AND INSULATION SHIELDS ARE INSTALLED. THE INSULATION SHIELDS SHALL BEAR ONLY ON AN INSULATION MATERIAL THAT WILL NOT COMPRESS, CRUSH OR DEFORM.
- 14. HORIZONTAL PIPING SHALL BE LATERALLY SUPPORTED AS REQUIRED TO PROVIDE PROPER RIGIDITY OF THE INSTALLATION TO PREVENT HORIZONTAL OR VERTICAL SWAY. ALL PIPING WILL BE INSPECTED TO INSURE THIS.

15. HANGERS FOR ALL HORIZONTAL PIPING SHALL BE SUPPORTED FROM REDHEAD

CLAMPS WHERE APPROPRIATE SECTION - 15240 VIBRATION ISOLATION EXPECTED NOISE LEVELS IN VARIOUS PARTS OF THE BUILDING SHALL CONFORM TO

NOISE CRITERIA RECOMMENDATIONS SET FORTH IN THE 2016 ASHRAE HANDBOOK

ANCHORS OR HILTI HDI ANCHORS, DRILLED INTO CONCRETE SLABS OR FROM BEAM

2. SUBMITTAL DATA SHALL INDICATE TYPE, SIZE AND DEFLECTION OF EACH ISOLATOR PROPOSED. BASES SHALL BE DETAILED. PROVIDE INSTALLATION AND ADJUSTMENT

OF HVAC APPLICATIONS. CHAPTER 48 - NOISE AND VIBRATION CONTROL. THE

MID-POINT OF THE RANGE OF NC CRITERIA CURVES SHALL APPLY.

- 3. PROVIDE VIBRATION ISOLATORS FOR ALL ROTATING AND RECIPROCATING 4. PROVIDE SPRING HANGERS FOR PIPING WITHIN MECHANICAL ROOM, THAT IS
- CONNECTED TO ROTATING EQUIPMENT.

5. PROVIDE FLEXIBLE DUCT CONNECTIONS AT FANS.

- 6. EQUIPMENT DRIVEN BY MOTORS, 2 HORSEPOWER AND SMALLER, SHALL BE ISOLATED BY MEANS OF ELASTOMERIC MOUNTS OR ELASTOMERIC HANGERS. SIZED FOR 1/2-INCH DEFLECTION. LARGER EQUIPMENT SHALL BE ISOLATED BY MEANS OF OPEN SPRING MOUNTS OR OPEN SPRING HANGERS, SIZED FOR THE SPECIFIED
- ISOLATORS EXPOSED TO THE WEATHER SHALL HAVE STEEL PARTS PVC COATED OR HOT-DIP GALVANIZED. ALUMINUM COMPONENTS SHALL BE ETCHED AND PAINTED. NUTS, BOLTS AND WASHERS MAY BE ZINC ELECTROPLATED.
- 8. ELASTOMERIC COMPONENTS SHALL BE OF NEOPRENE OR SYNTHETIC RUBBER WITH ANTI-OZONE AND ANTI-OXIDANT ADDITIVES.
- ISOLATOR TYPES: A. ADJUSTABLE, FREE STANDING, OPEN SPRING MOUNTING WITH COMBINATION LEVELING BOLT AND EQUIPMENT FASTENING BOLT. THE SPRING SHALL BE RIGIDLY ATTACHED TO THE SPRING MOUNTING BASEPLATE AND COMPRESSION PLATE. A NEOPRENE PAD OF MINIMUM 1/4-INCH THICKNESS SHALL BE BONDED TO THE BASEPLATE. ISOLATOR SHALL BE DESIGNED FOR A
- MINIMUM KX/KY (HORIZONTAL-TO-VERTICAL SPRING RATE) OF 1.0. B. SPRING HANGER CONSISTING OF A RECTANGULAR STEEL BOX, COIL SPRING SPRING RETAINERS, NEOPRENE IMPREGNATED FABRIC WASHER AND STEEL WASHER. HANGER SHALL HAVE 15 DEGREE ROD MISALIGNMENT CAPABILITY 10. ELASTOMERIC MOUNTING HAVING STEEL BASEPLATE WITH MOUNTING HOLES AND

THREADED INSERT FOR ATTACHING EQUIPMENT. ALL METAL PARTS SHALL BE

- COMPLETELY EMBEDDED IN THE ELASTOMERIC MATERIAL. 11. ELASTOMERIC HANGER CONSISTING OF A RECTANGULAR STEEL BOX AND AN ELASTOMERIC ISOLATION ELEMENT. ALL VIBRATION ELIMINATORS SHALL BE THOSE MANUFACTURED BY THE VIBRATION ELIMINATOR COMPANY, THE KORFUND COMPANY OR APPROVED EQUAL.
- 12. FLEXIBLE DUCT CONNECTIONS SHALL BE FIRE-RESISTANT FABRIC WITH METAL ENDS. CONNECTIONS SHALL HAVE A MINIMUM OF 3-INCHES BETWEEN METAL ENDS, WITH APPROXIMATELY 1-INCH OF SLACK. 13. VIBRATION ISOLATORS SHALL BE INSTALLED AS FOLLOWS:

ELASTOMERIC HANGER 1/2-INCH

ABOVE 2 HP SPRING HANGER IN-LINE PUMP ELASTOMERIC HANGER 1/2-INCH REFRIGERANT COMPRESSORS OPEN SPRING MOUNT 2-INCHES AIR-COOLED CONDENSER OPEN SPRING MOUNT 1-INCH PIPING IN MECHANICAL ROOM SPRING HANGER 1-INCH AIR HANDLING UNIT OPEN SPRING MOUNT 2-INCHES

EQUIPMENT IN-LINE CENTRIFUGAL

FANS UP TO 2 HP

SECTION 15250 - INSULATION

- INSULATION GENERALLY: A. NO COVERING SHALL BE APPLIED BEFORE THE PIPE OR EQUIPMENT TO BE INSULATED HAS BEEN TESTED AND PROVED TIGHT. ALL MATERIALS SHALL MEET THE REQUIREMENTS OF THE NATIONAL FIRE PROTECTION ASSOCIATION
- PAMPHLETS 90A AND 90B. B. ALL THERMAL AND ACOUSTICAL INSULATION JACKETS, FACINGS, MEMBRANE ADHESIVES, MASTICS, COATINGS AND ACCESSORY MATERIALS SHALL BE LISTED AND LABELED BY THE UNDERWRITERS LABORATORIES, INC. FOR A FIRE HAZARD CLASSIFICATION, AS TESTED UNDER ASTM E-84, NFPA 255 OR UL
- 723 PROCEDURES NOT TO EXCEED THE FOLLOWING: FLAME SPREAD 25; FUEL CONTRIBUTED 50; SMOKE DEVELOPED 50. ALL VALVES, STRAINERS, FLANGES AND FITTINGS, EXCEPTING THREADED UNIONS, SHALL BE INSULATED TO THE SAME THICKNESS AS THE PIPING IN
- WHICH THEY OCCUR. D. EXCEPT AS OTHERWISE SPECIFIED, ALL INSULATION FOR PIPING EXPOSED IN MECHANICAL AND/OR FLECTRICAL FOUIPMENT SPACES SHALL HAVE AN EXTRA FIELD-APPLIED JACKETING. JACKETING SHALL CONSIST OF A FLOOD COAT OF LAGGING ADHESIVE EQUAL TO CHILDERS CP-50, REINFORCED WITH FINE MESH GLASS CLOTH EQUAL TO CHIL-GLAS NO. 20. AT THE CONTRACTOR OPTION, COVER PIPING WITH 8 OZ. CANVAS FULLY COATED WITH BENJAMIN FOSTER 30-36 WHITE LAGGING ADHESIVE TO ASSURE COMPLIANCE WITH NFPA FLAME AND SMOKE SPREAD RATINGS.

SEALED ALSO.

4. THE FOLLOWING SHALL BE INSULATED:

- A. MOLDED FIBERGLASS PIPE INSULATION SHALL BE FINE FIBER RESILIENT FIBERGLASS BONDED AND MOLDED TO A NOMINAL DENSITY OF NOT LESS THAN 3-1/3 POUNDS PER CUBIC FOOT. CONFORMING TO FEDERAL SPECIFICATION NO. HH-I-562, AND FORMED TO DIMENSIONAL STANDARDS CONFORMING TO THE PIPE WHETHER IRON PIPE SIZE OR TUBING.
- THE MOLDED FIBERGLASS PIPE INSULATION SHALL HAVE A FACTORY APPLIED VAPOR BARRIER JACKET SECURED WITH AN APPROVED FIRE RESISTIVE VAPOR BARRIER TYPE ADHESIVE EQUAL TO BENJAMIN FOSTER NO. 81-99 JACKET SHALL CONSIST OF A LAMINATE OF KRAFT PAPER AND ALUMINUM FOIL NOT LESS THAN 0.0001-INCH THICK BETWEEN AND SHALL BE APPLIED WITH A LAP OF NOT LESS THAN 1-1/2-INCHES AT LONGITUDINAL JOINTS AND WITH A 4-INCH SEALING STRIP OF IDENTICAL MATERIAL AT END JOINTS. FLANGES, VALVES AND FITTING SHALL BE SIMILARLY JACKETED. USING ZESTON OR EQUAL PLASTIC FITTING JACKETS SECURED IN POSITION WITH THE SPECIFIED SEALER-ADHESIVE AND ALUMINUM BANDS. STRAINERS SHALL BE COVERED IN A MANNER THAT WILL ALLOW THE STRAINER BASKET TO BE REMOVED.
- WITHOUT CUTTING OR DESTROYING INSULATION. ALL MOLDED FIBERGLASS PIPE INSULATION SHALL BE INSTALLED IN ALL RESPECTS SO AS TO PRESERVE THE VAPOR BARRIER INTACT. WHERE VALVE INSULATION THE JOINT SHALL BE SEALED TO PREVENT ENTRANCE OF WATER OR MOIST AIR. WHEN STAPLES ARE USED, ALL EXPOSED METAL SHALL BE
- 3. AT EACH HANGER LOCATION IN FIBERGLASS INSULATED LINES, PROVIDE A CORROSION RESISTANT STEEL SHIELD COVERING THE LOWER ONE-HALF CIRCUMFERENCE OF INSULATION. LOWER HALF SECTION OF SHIELD SHALL INCLUDE A PIECE OF MOLDED LOAD-BEARING 14 POINT DENSITY FIBERGLASS INSULATION HAVING THE SAME THICKNESS AS THE PIPE INSULATION. THE VAPOR BARRIER JACKET SHALL BE CONTINUED OVER THIS RIGID INSULATION, LENGTH OF SHIELDS SHALL BE GRADUATED WITH PIPE SIZE FROM 6-INCHES TO 9-INCHES.
- SEE SCHEDULE 5. ALL PORTIONS OF INSULATED PIPING EXPOSED TO THE WEATHER SHALL BE ADDITIONALLY WRAPPED WITH .016 GAUGE CORRUGATED ALUMINUM JACKET. JACKETING SHALL HAVE FACTORY APPLIED MOISTURE BARRIER AND SHALL BE EQUAL TO CHILDERS OR INSUL-COUSTIC

TO MATCH EXISTING

NEW DOMESTIC HOT AND COLD WATER PIPING

DUCT AND CASING INSULATION:

DURING THIS CONTRACT.

- A. PROVIDE THERMAL INSULATION ON EQUIPMENT AND DUCTS AS FOLLOWS: OUTSIDE AIR AND MIXED AIR PLENUM AND DUCTS. ALL SUPPLY AIR AND RETURN AIR DUCTWORK. ALL SUPPLY AIR DUCTWORK ABOVE CEILINGS. ALL DUCTWORK ABOVE THE ROOF. ALL SUPPLY AIR DUCTWORK WITHIN FAN ROOMS AND ABOVE SUSPENDED CEILINGS. CASINGS ON NEW AIR CONDITIONING SYSTEMS. RELIEF AIR PLENUMS DOWNSTREAM OF RELIEF AIR DAMPER. ALL CASING AND DUCTWORK INSULATION DAMAGED
- B. THE INSULATION FOR EQUIPMENT, CASINGS AND OUTSIDE AIR AND MIXED AIR PLENUMS AND DUCTS SHALL BE RIGID BOARD MATERIAL HAVING A DENSITY OF NOT LESS THAN 6 POUNDS PER CUBIC FOOT, IT SHALL HAVE A KRAFT PAPER AND ALUMINUM FOIL VAPOR BARRIER APPLIED TO THE SURFACE TO BE INSULATED BY MEANS OF WELDED PINS AND SPEED WASHERS SPACED NO MORE THAN 18-INCHES APART OF EACH DIRECTION, PROVIDE A MINIMUM OF TWO ROWS OF FASTENERS ON EACH DUCT SIDE. ALL JOINTS IN INSULATION, AND THE PINS AND WASHERS, SHALL BE SEALED WITH A VAPORPROOF COMPOUND FOUAL TO FOSTER NO. 60-25. REINFORCED WITH OPEN MESH GLASS FIBER OR OTHER APPROVED METHOD. AT ALL EDGES AND CORNERS PROVIDE A SUITABLE CONTINUOUS CORNER BEAD, SEALED AS SPECIFIED FOR OTHER JOINTS.
- THE INSULATION ON EQUIPMENT, CASINGS AND OUTSIDE AIR AND MIXED AIR PLENUMS AND DUCTS SHALL BE NOT LESS THAN ONE-INCH THICK. THE THICKNESS OF INSULATION SHALL BE INCREASED AS NECESSARY TO COMPLETELY COVER ALL EXTERIOR-REINFORCING ANGLES.
- INSULATION FOR ACCESS DOORS IN CASINGS SHALL BE INSTALLED BETWEEN TWO THE SHEETS OF METAL COMPRISING THE DOOR, AND MAYBE HAVE THE VAPOR BARRIER OMITTED.

METAL CORNER REINFORCEMENT SHALL BE PROVIDED FOR ALL INSULATION.

PROVIDED FOR ALL OPENINGS IN INSULATION FOR ACCESS DOORS, PANELS INSERTION ELEMENTS OF CONTROL INSTRUMENTS AND DAMPER OPERATORS. INSULATION ON EQUIPMENT, DUCTS AND CASINGS WITHIN THE MECHANICAL ROOMS SHALL BE FINISHED BY COVERING WITH "REWETTABLE GLASS CLOTH" STYLE 84205/60. FINISH 9485. TYPE 205 AS MANUFACTURED BY J. P. STEVENS COMPANY. THE CLOTH SHALL BE APPLIED WITH FOSTER NO. 81-42 FIRE RESISTANT LAGGING ADHESIVE AND FLOOD COATED AFTER APPLICATION

INSULATION STOPS AND METAL CORNER REINFORCEMENT SHALL BE

WHITE LAGGING ADHESIVE. G. INSULATION ON ALL SUPPLY AIR DUCTWORK ABOVE SUSPENDED CEILINGS SHALL BE 1-1/2-INCH THICK FIBERGLASS DUCT WRAP EQUAL TO OWENS-CORNING FOIL FACED ALL SERVICE DUCT WRAP WITH VAPOR BARRIER. SEAL ALL JOINTS WITH APPROVED TAPE. INSTALL INSULATION IN A

NEAT MANNER TO PRESENT A FINISHED APPEARANCE.

SECTION 15300 - AUTOMATIC SPRINKLER SYSTEMS

SUBJECT TO APPROVAL.

WITH THE SAME PRODUCT. AS AN ALTERNATIVE THE DUCTWORK MAY BE

COVERED WITH 8 OZ. CANVAS FULLY COATED WITH BENJAMIN FOSTER 30-36

- INSULATION ON ALL DUCTWORK WHICH IS EXPOSED TO THE WEATHER SHALL HAVE A COATING OF PROTECTIVE MASTIC EQUAL TO FOSTER SAFETEE H. I., TROWELED ON TOP OF THE INSULATION. A WHITE MEMBRANE EQUAL TO MAST-A-FAB FABRIC CLOTH SHALL BE EMBED INTO THE FIRST COAT OF MASTIC. APPLY FINISH COAT OF MASTIC ON TOP OF THE FABRIC.
- INSULATION ON EXISTING PIPING, DUCTWORK, APPARATUS AND EQUIPMENT DISTURBED BY THE ALTERATIONS SHALL BE REPAIRED AND FINISHED TO MATCH THE ORIGINAL NEW CONDITION.

### THE WORK AREA IS CURRENTLY PROTECTED BY A WET SPRINKLER SYSTEM. THE CONTRACTOR SHALL ALTER THE EXISTING SYSTEM AS REQUIRED. INCLUDING PIPE FITTINGS, SPRINKLER HEADS, HANGERS, VALVES, ALARM DEVICES AND THE LIKE, TO MAKE THE INSTALLATION COMPLETE WHETHER SPECIFICALLY MENTIONED OR NOT.

- PROVIDE ELECTRICAL WIRING FOR ALARM DEVICES, PUMPS AND CONTROLLERS INSTALLED IN THE SPRINKLER SYSTEM PIPING ALL MATERIALS, SPRINKLER DEVICES, PIPE, FITTINGS, VALVES, HANGERS AND THE LIKE USED IN THE SYSTEM SHALL BE ON THE APPROVED OR ACCEPTABLE LIST OF THE CURRENT ISSUE OF INSPECTED FIRE PROTECTION EQUIPMENT AND MATERIALS AS PUBLISHED BY THE UNDERWRITERS' LABORATORIES INC., AND SHALL BE
- 4. THE WORK AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF PAMPHLET NO. 13 AND 14 OF THE NATIONAL FIRE PROTECTION ASSOCIATION AND TO ALL APPLICABLE REQUIREMENTS OF THE FOLLOWING: A. CITY OF PHILADELPHIA FIRE CODE OF 2018 YEAR
- THE CONTRACTOR SHALL SUBMIT HYDRAULIC CALCULATIONS AND SHOP DRAWINGS SHOWING THE SYSTEM AND ITS COMPLETE ARRANGEMENT. SUBMITTED DRAWINGS AND CALCULATIONS SHALL BEAR UNDERWRITER APPROVAL STAMP. SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED TO THE OWNERS INSURANCE

PIPE AND FITTINGS WITHIN THE BUILDING SHALL BE STANDARD WEIGHT BLACK

STEEL PIPE CONFORMING TO ASTM SPECIFICATION A-53 OR A-106. FITTINGS SHALI

BE STANDARD BLACK CAST IRON. UNDERWRITER'S & FACTORY MUTUAL APPROVED

B. ANY OTHER APPLICABLE CODES AND REGULATIONS

THREADED SPRINKLER FITTINGS. THREADED JOINTS SHALL BE MADE UP WITH AN APPROVED TAPE OR COMPOUND APPLIED TO MALE THREAD ONLY. AT CONTRACTOR'S OPTION, GROOVED-END STANDARD WEIGHT BLACK STEEL PIPE AND BOLTED GROOVED COUPLINGS MAY BE USED. COUPLINGS SHALL BE GRINNELL

PIPING FOR WET SPRINKLER SYSTEM SHALL BE BLACK STEEL, SCHEDULE 40.

FITTINGS SHALL BE CAST IRON WITH SCREWED JOINTS.

- RE-USE OF RECOVERED SPRINKLERS IS STRICTLY FORBIDDEN. ANY SPRINKLERS PRESENT ON RELOCATED BRANCHES MUST BE REMOVED AND REPLACED WITH BRAND NEW SPRINKLERS. THIS REQUIREMENT IS NOT SUBJECT TO CHANGE DRAIN PIPING SHALL BE PROVIDED AS REQUIRED FOR THE SYSTEMS WITH DISCHARGE LINES TO FLOOR DRAINS OR OTHER APPROVED POINTS. AUXII IARY
- DRAINS SHALL DISCHARGE AT APPROVED LOCATIONS. SPRINKLER SYSTEM DRAIN PIPING SHALL BE GALVANIZED WITH GALVANIZED FITTINGS. 10. ALL GATE, GLOBE AN CHECK VALVES SHALL BE PROVIDED AS REQUIRED AND AS SHOWN. VALVES SHALL BE OF TYPES SUITABLE FOR THE INTENDED SERVICE AND UNDERWRITER'S APPROVED. AND SHALL BE SUITABLE FOR NOT LESS THAN 175 POUNDS PER SQUARE INCH WATER WORKING PRESSURE. GATE AND GLOBE VALVES SHALL BE OF A TYPE THAT MAY BE REPACKED UNDER PRESSURE WHEN
- PATTERN, WITH THREADED ENDS. . REGULAR, SPRAY TYPE SPRINKLERS AND SPECIAL SPRINKLERS (I.E., HIGH TEMPERATURE CORROSIONPROOF, SIDE WALL, PENDANT AND THE LIKE) SHALL BE PROVIDED WHERE REQUIRED. WHERE PIPE IS INSTALLED ABOVE DROPPED CEILINGS, PENDANT SPRINKLERS SHALL BE LOCATED IN THE CENTERS OF TILE UNLESS OTHERWISE INDICATED. SPRINKLER GUARDS AND BAFFLES SHALL BE

WIDE OPEN. DRAINAGE AND TEST VALVES SHALL BE ALL BRONZE, O.S. & Y.

- INSTALLED WHERE REQUIRED. THE CONTRACTOR SHALL PROVIDE AN APPROVED CABINET CONTAINING NOT LESS THAN 12 EXTRA SPRINKLER HEADS AND 1 SPRINKLER WRENCH. HEADS SHALL BE PROPERLY PROPORTIONED AS TO TYPE AND TEMPERATURE RATINGS.
- 14. ALL MATERIALS, SPRINKLER DEVICES, PIPE, FITTINGS, VALVES, HANGERS AND THE LIKE, USED IN THE SYSTEM, SHALL BE ON THE APPROVED OR ACCEPTABLE LIST OF THE CURRENT ISSUE OF INSPECTED FIRE PROTECTION EQUIPMENT AND MATERIALS AS PUBLISHED BY THE UNDERWRITERS' LABORATORIES INC., AND SHALL BE SUBJECT TO APPROVAL. 15. THE EQUIPMENT, PIPING AND OTHER ITEMS SHALL BE SUBJECT TO INSPECTION AND TESTS AT ANY TIME DURING INSTALLATION, AND UPON COMPLETION OF THE

INSTALLATION. APPROVAL TESTS SHALL BE AS LISTED IN THE CURRENT ISSUE OF

REQUIREMENTS. TESTS SHALL BE PROPERLY PERFORMED IN THE PRESENCE OF

PAMPHLET NO. 13 OF THE NFPA AND SHALL MEET LOCAL CODE OFFICIALS

13. THE CONTRACTOR SHALL PROVIDE TEST CONNECTIONS AS REQUIRED.

### THE PROJECT REPRESENTATIVE AND . IF NECESSARY. BE REPEATED UNTIL THE INSTALLATION IS APPROVED

REQUIRED BY LOCAL CODE.

- SECTION 15414 FIRESTOPPING PROVIDE MATERIALS AND WORKMANSHIP TO CONFORM TO APPLICABLE
- GOVERNMENTAL AND BUILDING CODE REQUIREMENTS FOR FIRE RESISTIVE WALL AND FLOOR ASSEMBLIES. TESTING REQUIREMENTS: FIRESTOP MATERIALS USED SHALL HAVE BEEN TESTED BY A RECOGNIZED, INDEPENDENT TESTING AGENCY IN ACCORDANCE WITH ASTM F814-83 AND SHALL HAVE AN "F" RATING FOLITVALENT TO THE HOLIRLY RATING OF THE WALL OR FLOOR ASSEMBLY BEING PENETRATED, AND A "T" RATING AS
- PERSONNEL EXPERIENCED IN THE INSTALLATION OF SUCH SYSTEMS. FIRESTOP PRODUCTS SHALL BE FREE OF ASBESTOS, NOT CONTAIN ANY PCB'S AND NOT CONTAIN ANY SOLVENTS.

DO NOT USE FIRESTOP PRODUCTS THAT, AFTER CURING, DISSOLVE IN WATER,

DELIVER MATERIALS IN THE MANUFACTURER'S ORIGINAL, UNOPENED CONTAINERS

OR PACKAGES WITH THE MANUFACTURER'S NAME, PRODUCT IDENTIFICATION, LOT

MANUFACTURER'S REQUIREMENTS. ALL FIRESTOP MATERIALS SHALL BE INSTALLED

SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS OF ONE OF

THE FOLLOWING MANUFACTURERS: BIO FIRESHIELD, INC., HILTI CONSTRUCTION

NUMBERS. UL OR WARNOCK HERSEY LABELS. STORE MATERIALS UNDER COVER

FIRESTOPPING APPLICATION AND INSTALLATION SHALL BE PERFORMED BY

- THAT CONTAIN CERAMIC FIBERS, ETHYLENE GLYCOL OR THAT REQUIRE HAZARDOUS WASTE DISPOSAL. SUBMIT MANUFACTURER'S PRODUCT LITERATURE FOR EACH MATERIAL PROPOSED TO BE INSTALLED. SUBMIT MATERIAL SAFETY DATA SHEET FOR EACH FIRESTOP. PRODUCT AND MAINTAIN READILY AVAILABLE SET OF MATERIAL SAFETY DATA
- PRIOR TO EXPIRATION OF SHELF LIFE. 8. COMPLY WITH RECOMMENDED PROCEDURES, PRECAUTIONS OR REMEDIES DESCRIBED IN MATERIAL SAFETY DATA SHEETS AS APPLICABLE.

AND PROTECT FROM WEATHER AND DAMAGE IN COMPLIANCE WITH

CHEMICALS, INC., 3M COMPANY, 10. FIRESTOP MORTARS SHALL BE NOVASIT K-10 FIRESTOP MORTAR BY BIO FIRESHIELD OR K-2 FIRESTOP MORTAR BY BIO FIRESHIELD. FIRESTOP SEALANTS AND CAULKS SHALL BE BIOSTOP 500 INTUMESCENT FIRESTOP CAULK BY BIO FIRESHIELD, BIOTHERM 100 AND BIOTHERM 200 FIRESTOP SEALANTS BY BIO FIRESHIELD, CP 25WB+ CAULK BY 3M OR CS240 FIRESTOP SEALANT BY HILTI.

- 11. FIRESTOP PUTTY SHALL BE MPS 2 MOLDABLE PUTTY STIX BY 3M OR MPP 4S
- MOLDABLE PUTTY PADS BY 3M. 2. FIRESTOP SLEEVES SHALL BE BIO FIRESTOP SLEEVES BY BIO FIRESHIELD OR

PLASTIC PIPE DEVICE BY 3M.

- 13. INTUMESCENT WRAP STRIPS SHALL BE FS 195 WRAP STRIP BY 3M.
- 14. CLASSIFICATION: PROVIDE MATERIALS CLASSIFIED BY EITHER UL OR WARNOCK HERSEY TO PROVIDE FIRESTOPPING EQUAL TO TIME RATING (HOURS) OF CONSTRUCTION BEING PENETRATED.
- 15. WHERE SUBJECT TO MOVEMENT, FIRESTOP PRODUCTS USED SHALL REMAIN FLEXIBLE TO ALLOW FOR SUCH NORMAL MOVEMENT OF BUILDING STRUCTURE AND PENETRATING ITEM(S) WITHOUT AFFECTING THE INTEGRITY OF THE FIRESTOP 16. CONTRACTOR INSTALLING FIRESTOP MATERIALS SHALL PATCH ALL CRACKS
- DEVELOPED IN ANY FIRESTOP PRODUCTS THAT SHRINK WHILE CURING. SECTION 15440 - PLUMBING FIXTURES PLUMBING FIXTURES SHALL BE PROVIDED AS INDICATED ON THE DRAWINGS AND
- P. FIXTURE SUPPLIES SHALL BE EQUIPPED WITH STOP VALVES.
- FINISHED INSTALLATION OF PLUMBING FIXTURES SHALL PRESENT A NEAT, FINISHED AND UNIFORM APPEARANCE. ALL FIXTURES, TRIMMINGS, FITTINGS AND ACCESSORIES SHALL BE FINISHED WITH PARTS TRUE TO FORM, PROPERLY FITTED AND OF MATERIALS FREE FROM DEFECTS.
- 4. HOT WATER SHALL BE SUPPLIED AND CONTROLLED AT THE LEFT AND COLD WATER AT THE RIGHT WHERE BOTH HOT AND COLD WATER ARE SUPPLIED TO FIXTURES THROUGH SEPARATE OR COMBINATION FITTINGS.

SHALL BE PROVIDED COMPLETE WITH ALL FITTINGS, TRIM, BOLTS, CAPS, PLATES

SHALL BE OF THE WATER-SAVER TYPE AND SHALL COMPLY WITH LOCAL PLUMBING

AND HANGERS SUITABLE FOR INDIVIDUAL MOUNTING REQUIREMENTS. FIXTURES

- PROTECTION OF FIXTURES, MATERIALS AND EQUIPMENT SHALL BE EXERCISED AT ALL TIMES DURING DELIVERY, STORAGE AND HANDLING, FIXTURES AND EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT, WATER AND CHEMICAL OR MECHANICAL INJURY. 6. EXCEPT AS OTHERWISE SPECIFIED HEREIN OR INDICATED ON THE DRAWINGS,
- CATALOG NUMBERS ARE INDICATED ON THE DRAWINGS. ALL WATER AND WASTE PIPES SHALL RUN TO WALL AND SHALL HAVE CAST BRASS, SET SCREW TYPE ESCUTCHEONS. ALL EXPOSED METAL PARTS, INCLUDING FAUCETS, FLUSH VALVES, SUPPLY PIPES,

STOP VALVES. TRAPS. WASTE PIPES AND ESCUTCHEONS SHALL BE POLISHED

THE LATEST ISSUE OF FEDERAL SPECIFICATIONS NO. WW-P-541. PIPING FOR

CHROMIUM PLATED OVER NICKEL IN ACCORDANCE WITH THE REQUIREMENTS OF

PLUMBING FIXTURES. INCLUDING SUPPLY PIPES. STOP VALVES. WASTE FITTINGS

TRAPS, WASTE PIPES AND ESCUTCHEONS SHALL BE EQUAL TO THE MAKE WHOSE

COUNTERTOP LAVATORIES, EVEN IF WITHIN A CABINET, SHALL BE CONSIDERED 9. ALL FIXTURES SHALL BE ADEQUATELY AND RIGIDLY SUPPORTED. ALL EXPOSED FIXTURE SUPPORTING BOLTS SHALL HAVE CHINA BOLT CAPS. 10. PROVIDE WATERPROOF, NON-YELLOWING LATEX CAULKING AROUND ALL FIXTURES

MOUNTED AGAINST A WALL TO SEAL THE JOINT BETWEEN THE WALL AND THE

- PROVIDE WATER HAMMER ARRESTORS WHERE INDICATED, UNITS SHALL BE EQUAL TO JOSAM 75.000 SERIES "ABSORB-TRON". SIZED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. UNITS SHALL HAVE STAINLESS STEEL SHELL, STAINLESS STEEL ADAPTER, THREADED STAINLESS STEEL PLUG, ELASTOMER BELLOWS AND HYDRO-PNEUMATIC CUSHION OF ARGON AND
- 2. CAST IRON PIPE CLEANOUTS SHALL BE TAPPED EXTRA HEAVY CAST IRON FERRULE, CAULKED INTO CAST IRON FITTINGS AND EXTRA HEAVY LEAD SEAL PLUG WITH

SOLID HEXAGONAL NUT OR COUNTERSUNK PLUG TO SUIT.

TAPE APPLIED TO THE MALE THREADS.

ADJUSTABLE ABS HOUSING AND NIKALOY TOP.

CABINET WALL UNIT HEATERS

EXTRA HEAVY BRASS SCREW PLUG IN TAPPED CAST IRON FITTINGS. WITH SOLID HEXAGONAL NUT OR COUNTERSUNK PLUG TO SUIT. 14. CLEANOUT PLUGS SHALL COMPLY WITH THE PLUMBING CODE AND SHALL BE AMERICAN STANDARD PIPE THREADS WITH "PERMACEL" OR APPROVED TEFLON

13. NON-HUB CAST IRON PIPE CLEANOUTS SHALL BE NO-HUB CLEANOUT PLUG OR

15. EXTEND CLEANOUTS TO WALLS AND FLOOR WITH LONG SWEEP ELLS OR "Y" AND 1/8 BENDS WITH PLUGS AND FACE OR DOCK PLATES TO CONFORM TO THE ARCHITECTURAL FINISH IN THE ROOM. WHERE NO DEFINITE FINISH IS INDICATED ON THE ARCHITECTURAL AND/OR MECHANICAL DRAWINGS, USE STAINLESS STEEL WALL PLATES AND FLOOR PLATES OF NICKEL-BRONZE.

16. CLEANOUTS AT FLOOR LINE IN FINISHED AREAS SHALL BE EQUAL TO JOSAM SERIES

58370 WITH NICKEL-BRONZE TOPS, CAULK OUTLETS AND FLASHING CLAMPS AS

- REQUIRED. CLEANOUTS ALONG THE RUN OF EXPOSED DRAINAGE PIPE SHALL BE SERIES 58500 CAULKED INTO PIPE SPIGOT. PROVIDE FLOOR CLEANOUTS WHERE INDICATED. UNITS SHALL BE EQUAL TO JOSAM 56000 SERIES "LEVELEZE KLEENATRON" WITH COATED CAST IRON BODY,
- SECTION 15700 HEATING, VENTILATING AND COOLING EQUIPMENT MATERIAL, EQUIPMENT, INSTALLATION AND PROCEDURES, ENERGY RATINGS AND CONSERVATION ANTI-POLLUTION AND SAFETY PROCEDURES SHALL MEET THE REQUIREMENTS OF CURRENT STANDARDS, CODES, AND SPECIFICATIONS. ALL

18. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO ROUGH-IN AND MAKE

FINAL CONNECTIONS TO ALL ITEMS OF LAUNDRY EQUIPMENT FURNISHED BY

ASME REQUIREMENTS. ALL HEATING AND COOLING COILS SHALL BE ARI CERTIFIED EQUIPMENT SHALL BEAR THE SEAL OF RATING SERVICES OR TESTING AGENCIES, SUCH AS, ADC, AMCA, ARI, NEMA, UL. PROVIDE PLATFORMS, BASES, WALL MOUNTINGS, HANGERS, INSERTS AND ANY SPECIAL MOUNTING DEVICES FOR EQUIPMENT SPECIFIED IN THIS SECTION AS REQUIRED AND RECOMMENDED BY THE MANUFACTURER OF EACH SPECIFIC ITEM

UNFIRED PRESSURE VESSELS SHALL BE TESTED AND STAMPED ACCORDING TO

- A. THE HEATING EQUIPMENT SHALL INCLUDE AN ELECTRIC AUTOMATIC FAN FORCED AIR HEATER SUITABLE FOR AREA HEATING. THE HEATER SHALL BE DESIGNED FOR WALL MOUNTING, RECESS OR SURFACE. HEATERS SHALL BE
- INSTALLATIONS. THE BACK BOX SHALL BE HEAVY GAUGE GALVANIZED STEE AND SHALL CONTAIN KNOCKOUTS THROUGH WHICH POWER LEADS ENTER. INNER FRAME ASSEMBLY: THE HEATER ASSEMBLY, WHICH FITS INTO THE BACK BOX. SHALL CONSIST OF A HEAVY GAUGE STEEL FAN PANEL TO WHICH ALL OF THE OPERATIONAL PARTS OF THE HEATER ARE MOUNTED. THE INNER FRAME ASSEMBLY SHALL BE COMPLETELY PREWIRED.

HEATING ELEMENT: THE HEATING ELEMENT SHALL BE OF THE NON-GLOWING

DESIGN CONSISTING OF AN 80/20 NICKEL-CHROMIUM RESISTANCE WIRE

B. BACK BOX: THE BACK BOX SHALL BE DESIGNED AS A RECESSED ROUGH-IN

SURFACE MOUNTING FRAMES ARE USED IN SURFACE MOUNTING

BOX IN EITHER MASONRY OR FRAME INSTALLATIONS AND IS ALSO USED WHEN

- ENCLOSED IN A STEEL SHEATH TO WHICH PLATE FINS ARE COPPER BRAZED THE ELEMENT SHALL COVER THE ENTIRE AIR DISCHARGE AREA TO ENSURE UNIFORM HEATING OF ALL DISCHARGED AIR. IT SHALL BE WARRANTIED FOR 5 ON/OFF SWITCH: A DOUBLE-POLE, SINGLE THROW ON/OFF SWITCH SHALL BE MOUNTED ON THE BACK BOX FOR POSITIVE DISCONNECT OF POWER SUPPLY.
- SNAP-ACTION TYPE AND SHALL ACTIVATE FAN AFTER HEATING ELEMENT REACHES OPERATING TEMPERATURE, AND CONTINUE TO OPERATE THE FAN AFTER THE THERMOSTAT IS SATISFIED AND UNTIL ALL HEATED AIR HAS BEEN DISCHARGED, THE THERMOSTAT SHALL BE EXTERNALLY MOUNTED AS INDICATED ON DRAWINGS AND CONTROL DIAGRAMS. THE FAN SHALL BE

ENCLOSED ROTOR. FAN CONTROL SHALL BE OF THE BIMETALLIC,

IT WILL BE COMPLETELY CONCEALED BEHIND THE FRONT COVER.

MOTOR AND CONTROLS: THE FAN MOTOR SHALL BE TOTALLY ENCLOSED,

IMPEDANCE PROTECTED, PERMANENTLY LUBRICATED AND WITH A TOTALLY

SURFACE MOUNTING FRAME: THE SURFACE MOUNTING FRAME SHALL BE OF

HEAVY GAUGE STEEL DESIGNED TO MOUNT AROUND THE BACK BOX FOR A

FINISHED SURFACE INSTALLATION. SLOT KNOCK OUTS SHALL BE PROVIDED FOR POWER SUPPLY CONDUIT. H. FRONT COVER: THE LOUVERED FRONT COVER SHALL BE OF HEAVY GAUGE STEEL WITH A POWDER PAINT FINISH. A PLUG BUTTON WILL BE PROVIDED TO

REPLACE THE THERMOSTAT KNOB AND RENDER THE UNIT

I. FINISH:ALL SHEET METAL PARTS, EXCEPT THE GALVANIZED STEEL

BACK BOX, SHALL BE PHOSPHATIZED. THEN COMPLETELY PAINTED BY A

POWDER PAINT PROCESS. CONSULT ARCHITECTURAL TEAM FOR CHOICE OF

ELECTRICAL CODE AND SHALL BE LISTED BY UNDERWRITERS LABORATORIES

FOR ZERO SPACING BETWEEN THE DUCT AND COMBUSTIBLE SURFACES AND

HEATER FRAMES AND TERMINAL BOXES SHALL BE CORROSION RESISTANT

STEEL UNLESS OTHERWISE INDICATED THE TERMINAL BOX SHALL BE NEMA 1.

TYPE CONSTRUCTION AND SHALL BE PROVIDED WITH A HINGED. LATCHING

COVER AND MULTIPLE CONCENTRIC KNOCKOUTS FOR FIELD WIRING.

FIVE-BLADED ALUMINUM.

TAMPER-RESISTANT.

- COLOR OF THE PAINT. ELECTRIC AIR DUCT HEATERS A. APPROVALS - HEATERS SHALL MEET THE REQUIREMENTS OF THE NATIONAL
- B. HEATING ELEMENTS SHALL BE OPEN COIL. 80% NICKEL. 20% CHROMIUM. GRADE A RESISTANCE WIRE, TYPE C ALLOYS CONTAINING IRON OR OTHER ALLOYS ARE NOT ACCEPTABLE. COILS SHALL BE MACHINE CRIMPED INTO STAINLESS STEEL TERMINALS EXTENDING AT LEAST 1" INTO THE AIRSTREAM AND ALL TERMINAL HARDWARE SHALL BE STAINLESS STEEL. COILS SHALL BE SUPPORTED BY CERAMIC BUSHINGS STAKED INTO SUPPORTING BRACKETS.

FOR USE WITH HEAT PUMPS AND AIR CONDITIONING EQUIPMENT

- D. ALL HEATERS SHALL BE FURNISHED WITH A DISC TYPE. AUTOMATIC RESET THERMAL CUTOUT FOR PRIMARY OVER-TEMPERATURE PROTECTION, ALL HEATERS SHALL ALSO BE FURNISHED WITH DISC TYPE LOAD CARRYING MANUAL RESET THERMAL CUTOUTS, FACTORY WIRED IN SERIES WITH HEATER STAGES FOR SECONDARY PROTECTION, HEAT LIMITERS OR OTHER
- E. HEATERS SHALL BE RATED FOR THE VOLTAGE, PHASE, AND NUMBER OF HEATING STAGES INDICATED IN THE SCHEDULE. ALL THREE-PHASE HEATERS SHALL HAVE EQUAL. BALANCED. THREE-PHASE STAGES, ALL INTERNAL WIRING SHALL BE STRANDED COPPER WITH 105°C INSULATION AND SHALL BE TERMINATED IN CRIMPED CONNECTORS OR BOX LUGS.

FUSIBLE OVERTEMPERATURE DEVICES ARE NOT ACCEPTABLE.

- F. TERMINAL BLOCKS SHALL BE PROVIDED FOR ALL FIELD WIRING AND SHALL BE SIZED FOR INSTALLATION OF 75°C COPPER WIRE RATED IN ACCORDANCE WITH NEC REQUIREMENTS.
- G. HEATERS SHALL BE FURNISHED, EITHER WITH THE CONTROL OPTION SPECIFIED IN THE SCHEDULE AND DESCRIBED BELOW. OR WITH THE SPECIFIC
- H. THERMAL CUTOUTS, AIRFLOW SWITCH, PE SWITCHES, CONTACTORS (WHERE REQUIRED), FUSES (OVER 48 AMPS), CONTROL CIRCUIT TRANSFORMER (WHERE REQUIRED), AND BUILT-IN SNAP-ACTING DOOR INTERLOCKED

COMPONENTS LISTED IN THE SCHEDULE.

7. POWER ROOF EXHAUST FANS

DISCONNECT SWITCH.

- A. GENERAL REQUIREMENTS: DOWNBLAST FAN SHALL BE FOR ROOF MOUNTED APPLICATIONS, MAXIMUM CONTINUOUS OPERATING TEMPERATURE IS 180 FAHRENHEIT (82.2 CELSIUS). EACH FAN SHALL BEAR A PERMANENTLY AFFIXED MANUFACTURE'S ENGRAVED METAL NAMEPLATE CONTAINING THE MODEL NUMBER AND INDIVIDUAL SERIAL NUMBER.
- B. WHEEL: CONSTRUCTED OF ALUMINUM, NON-OVERLOADING, BACKWARD INCLINED CENTRIFUGAL STATICALLY AND DYNAMICALLY BALANCED IN ACCORDANCE TO AMCA STANDARD 204-05. THE WHEEL CONE AND FAN INLET WILL BE MATCHED AND SHALL HAVE PRECISE RUNNING TOLERANCES FOR MAXIMUM PERFORMANCE AND OPERATING EFFICIENCY.
- C. MOTORS: AC INDUCTION MOTOR, OPEN DRIPPROOF, WITH PERMANENTLY LUBRICATED, HEAVY DUTY BALL BEARING TYPE TO MATCH WITH THE FAN LOAD AND FURNISHED AT THE SPECIFIC VOLTAGE AND PHASE FOR FAN SIZES 90 AND LARGER, FAN SIZES 60-80 USE SLEEVE BEARING, MOTOR IS TO BE MOUNTED ON VIBRATION ISOI ATORS OUT OF THE AIRSTREAM FOR MOTOR COOLING THERE SHALL BE FRESH AIR DRAWN INTO THE MOTOR COMPARTMENT THROUGH AN AREA FREE OF DISCHARGE CONTAMINANTS.

MOTOR SHALL BE ACCESSIBLE FOR MAINTENANCE

INTEGRAL ROLLED BEAD FOR EXTRA STRENGTH, SHALL BE DRAWN FROM A DISC AND DIRECT AIR DOWNWARD. LOWER WINDBAND SHALL HAVE A FORMED EDGE FOR ADDED STRENGTH, MOTOR COVER SHALL BE DRAWN FROM A DISC. ALL HOUSING COMPONENTS SHALL HAVE FINAL THICKNESSES EQUAL TO OR GREATER THEN PREFORMED THICKNESS. CURB CAP SHALL HAVE PRE-PUNCHED MOUNTING HOLES TO ENSURE CORRECT ATTACHMENT WITH RIGID INTERNAL SUPPORT STRUCTURE AND BE LEAK PROOF.

D. HOUSING: MOTOR COVER, SHROUD, CURB CAP, AND LOWER WINDBAND SHALL

E. HOUSING SUPPORTS AND DRIVE FRAME: DRIVE FRAME ASSEMBLIES SHALL BE

CONSTRUCTED OF HEAVY GAUGE STEEL AND MOUNTED ON VIBRATION

BE CONSTRUCTED OF HEAVY GAUGE ALUMINUM. SHROUD SHALL HAVE AN

ISOLATORS. F. VIBRATION ISOLATION: SHALL BE RUBBER ISOLATORS, SIZED TO MATCH THE

G. DISCONNECT SWITCHES: SHALL BE NEMA 4X RATED. POSITIVE ELECTRICAL

SHUT-OFF, WIRED AS DESCRIBED ON CONTROL DIAGRAM ON PLAN.

GALVANIZED STEEL, PROTECTING FAN DISCHARGE. I. ROOF CURBS: GPNS TYPE. MOUNTED ONTO ROOF WITH FAN. ALUMINUM: 1.5" THICK INSULATION; UNCOATED. HI-PRO POLYESTER.

H. OPTIONS AND ACCESSORIES: BIRD SCREEN CONSTRUCTED FROM

J. CURB EXTENSION: ISB TYPE, ALUMINUM CONSTRUCTION. HI-PRO POLYESTER K. CURB SEAL: RUBBER SEAL BETWEEN THE FAN AND THE ROOF CURB.

L. DAMPERS: GRAVITY, AS SCHEDULED ON DRAWING.

ALLOWS HOOK UP TO MANOMETER.

TO WHEEL AND DUCTWORK FOR INSPECTION AND CLEANING. HINGE BASE: ALUMINUM HINGES, HINGES AND RESTRAINT CABLES ARE MOUNTED TO A BASE (SLEEVE), ALLOWS THE FAN TO TILT AWAY FOR ACCESS TO WHEEL AND DUCTWORK FOR INSPECTION AND CLEANING.

N. PRESSURE PROBE: 1/4 INCH DIAMETER TUBE IN THE FAN VENTURI THAT

A. DUCT MOUNTED SUPPLY AIR FAN SHALL BE OF THE CENTRIFUGAL DIRECT

M. HINGE KIT: ALUMINUM HINGES, ALLOWS THE FAN TO TILT AWAY FOR ACCESS

- O. TIE-DOWN POINTS: FOUR HEAVY GAUGE ALUMINUM BRACKETS TO SECURE THE FAN IN HEAVY WIND APPLICATIONS. 8. TUBULAR IN-LINE CENTRIFUGAL FANS
- DRIVE TYPE. THE FAN HOUSING SHALL BE CONSTRUCTED OF HEAVY-GAUGE GALVANIZED STEEL. THE HOUSING INTERIOR SHALL BE LINED WITH 0.5 INCH (13 MM) ACOUSTICAL INSULATION. THE ACCESS FOR WIRING SHALL BE EXTERNAL. THE MOTOR DISCONNECT SHALL BE INTERNAL AND OF THE

B. THE MOTOR SHALL BE MOUNTED ON VIBRATION ISOLATORS. THE FAN WHEEL

AMCA AIR PERFORMANCE SEAL AND SHALL BE UL/CUL LISTED.

SHALL BE OF THE FORWARD-CURVED CENTRIFUGAL TYPE AND DYNAMICALLY

BALANCED. ALL FANS SHALL BEAR THE AMCA CERTIFIED RATINGS PROGRAM

C. THE OUTLET DUCT COLLAR SHALL NOT INCLUDE AN ALUMINUM BACKDRAFT DAMPER. CONTACT THE MANUFACTURER TO ORDER THE FAN WITHOUT AN INTEGRAL BACK DRAFT DAMPER. OR OBTAIN MANUFACTURER'S INSTRUCTIONS TO REMOVE THE DAMPER IN FIELD.

SECTION 15900 - DUCTWORK, OUTLETS AND FILTERS

DUCT SYSTEMS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, NFPA AND MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE.

2. LOW VELOCITY AIR CONDITIONING SUPPLY, RETURN, OUTSIDE AIR, EXHAUST AND

GENERAL USE DUCTWORK SHALL BE GALVANIZED STEEL. FITTINGS FOR ALL DUCT

DUCTWORK SHALL BE OF GASKETED, FLANGED TYPE CONSTRUCTION, EQUAL TO

DUCTMATE, TDC, OR TDS IN ALL SIZES WHERE AVAILABLE. SMALLER SIZES SHALL BE

ALL SYSTEMS SHALL BE CLASSIFIED AS 2-INCH W.G., UNLESS NOTED OTHERWISE. 4. TURNING VANES FOR SQUARE OR SHORT RADIUS ELBOWS IN RECTANGULAR DUCTS SHALL BE SINGLE TURNING VANES.

SYSTEMS SHALL BE OF THE SAME MATERIAL AS THE DUCT.

6. DUCT SEALANT SHALL BE APPLIED WITH CAULKING GUNS ON INTERIOR OF JOINTS. NO SEALANT SHALL BE BRUSHED ON THE EXTERIOR OF THE DUCTWORK. DUCTWORK LAYOUT SHALL BE THOROUGHLY EXAMINED AND ARRANGEMENTS

MADE TO PROVIDE ALL NECESSARY OFFSETS, BENDS OR CHANGES, INCLUDING

DUCT ENLARGEMENTS AND STREAMLINED TO ACCOMMODATE PIPE AND HANGER

RODS, CASINGS, ETC., AS REQUIRED TO ELIMINATE CONFLICT WITH OTHER TRADES.

WHERE AIR DUCTS PASS THROUGH WALLS, FLOORS OR PARTITIONS, THE SPACE BETWEEN THE DUCT AND THE OPENING WILL BE SEALED AS SPECIFIED UNDER

PROVIDE FIRE DAMPERS WHERE INDICATED BY THE DRAWINGS. FIRE DAMPERS

SHALL BE OF ANY DESIGN, WITH THE BLADES OUT OF THE AIR STREAM AND APPROVED BY THE FIRE UNDERWRITERS. ALL FIRE DAMPERS INSTALLED MUST

BEAR THE LABEL OF THE UNDERWRITERS LABORATORIES.

10. PROVIDE ACCESS DOORS IN DUCTS FOR ACCESS TO EACH FIRE DAMPER. ACCESS DOORS SHALL NOT BE SMALLER THAN 12-INCHES BY 12-INCHES, DUCT SIZE 11. PROVIDE ACOUSTIC DUCT LINER WHERE INDICATED ON THE DRAWINGS. SIZES OF

DUCTS INDICATED ON DRAWINGS ARE FREE AREA INSIDE OF LINING. ACOUSTIC

DUCT LINER SHALL BE EQUAL TO OWENS/CORNING AEROFLEX DUCT LINER, 1-INCH

THICK FIBERGLASS CONFORMING TO NFPA 90A. 12. REGISTERS, GRILLES AND DIFFUSERS SHALL BE OF THE TYPE, SIZE AND DISCHARGE PATTERN SCHEDULED ON THE DRAWINGS. FURNISH DEVICES IN STANDARD FACTORY FINISH, IN COLOR INDICATED.

13. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL NEW SHEET METAL WORK. SHEET

CEILING OBSTRUCTIONS, INCLUDING, BUT NOT LIMITED TO, FIRE ALARM HEADS,

METAL SHOP DRAWINGS SHALL BE 3/8-INCH SCALE AND SHALL INDICATE ALL

CEILING INSERTS, LIGHTING FIXTURES, ETC.

AND RETURN AIR DUCTWORK.

ARCHITECT.

14. SHEET METAL CONTRACTOR SHALL COORDINATE DUCTWORK AND REGISTERS WITH ALL OBSTRUCTIONS. 15. PROVIDE ACCESS PANELS IN DUCTWORK AT EACH FIRE DAMPER, BOTH SIDES OF WATER COILS, SMOKE DAMPER, SMOKE DETECTOR, VALVE AND ALL SIMILAR

DEVICES REQUIRING ACCESS AND SERVICE. ALL ACCESS PANELS SHALL BE

MINIMUM 18" x 18" WHERE POSSIBLE, AND BE COMPLETE WITH SASH LOCKS.

16. ROUND ELBOWS SHALL BE SMOOTH, STAMPED TYPE OR FIVE PIECE TYPE, HAVING CENTERLINE RADIUS OF 1-1/2 TIMES THE DUCT DIAMETER AFTER NEW DUCT OR PORTIONS OF SYSTEMS HAVE BEEN INSTALLED, THE NEW DUCT SYSTEM SHALL BE THOROUGHLY VACUUMED TO ASSURE NO DUST WILL BE

DISPERSED INTO THE OCCUPIED SPACE. VACUUMING SHALL INCLUDE ALL SUPPLY

. PROVIDE OUTSIDE AIR INTAKE LOUVERS IN QUANTITIES AND SIZES AS INDICATED

ON THE DRAWINGS. LOUVER DEPTH SHALL BE 4-INCH AND SHALL BE OF EXTRUDED

PENETRATION OF 0.003 OUNCES AT 1100-FEET PER MINUTE, BASED ON TESTS MADE

ALUMINUM CONSTRUCTION. WITH 12 GAUGE BLADES AND JAMBS. LOUVER SHALL

HAVE A MAXIMUM PRESSURE DROP OF 0.26-INCH, AND A MAXIMUM WATER

REQUIREMENTS OF THE AMCA CERTIFIED RATINGS PROGRAM, PROVIDE IN

FACTORY BAKED ENAMEL FINISH, IN A COLOR AS LATER SELECTED BY THE

IN ACCORDANCE WITH AMCA STANDARD 500, AND COMPLY WITH THE

SECTION 15970 - AUTOMATIC TEMPERATURE CONTROLS 1 SEE CONTROL SEQUENCE NOTES AND CONTROL DIAGRAM LOCATED ON M1.2 DRAWINGS FOR

DETAILED INSTRUCTIONS.

LEAKS THAT DEVELOP.

SECTION 15990 - TESTING, ADJUSTING AND BALANCING 1. PRIOR TO MAKING FINAL CONNECTIONS TO EXISTING WASTE AND VENT LINES. TEST NEW WASTE AND VENT PIPING FOR LEAKS BY MEANS OF HYDROSTATIC HEAD

EQUAL TO THE HEIGHT OF THE BUILDING. CORRECT ALL

- 2. AT THE COMPLETION OF THE WORK ALL NEW EQUIPMENT AND ALL PIPING AND CONTROL SYSTEMS SHALL BE ADJUSTED AND BALANCED SO AS TO FUNCTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE DRAWINGS. ALL SUCH ADJUSTING AND BALANCING SHALL BE DONE UNDER BOTH THE COOLING AND HEATING CYCLES OF OPERATION AND CONTROL SO THAT ALL SYSTEMS WILL OPERATE SATISFACTORILY UNDER BOTH
- 3. BEFORE ANY SYSTEMS ARE BALANCED THE CONTRACTOR, UNDER THIS SPECIFICATION, SHALL SUBMIT TO THE ENGINEER, FOR APPROVAL, THE BALANCING METHODS AND INSTRUMENTS HE PROPOSES TO USE. THE CONTRACTOR SHALL NOT PROCEED WITH AIR BALANCING UNTIL BOTH HAVE BEEN NOTIFIED. ALL INSTRUMENTS SHALL BE CALIBRATED BEFORE BEING FIRST USED, AND ADDITIONALLY, DURING THE PROGRESS OF THE BALANCING IF, IN THE OPINION OF THE ENGINEER,

CYCLES WITHOUT SEASONAL ADJUSTMENTS.

- SUCH RECALIBRATION IS NECESSARY. 4. PROVIDE ALL REQUIRED BELTS, SHEAVES, ETC. TO ASSURE DELIVERY OF THE REQUIRED AIR QUANTITIES. SUPPLY, RETURN AND EXHAUST AIR QUANTITIES SHALL
- BE MEASURED AND RECORDED. 5. PREPARE AIR BALANCE REPORT IN ACCORDANCE WITH NEBB "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING AND BALANCING OF ENVIRONMENTAL SYSTEMS." FOR THE NEW SYSTEM. THE REPORT SHALL BE PREPARED AND SUBMITTED TO THE ENGINEER FOR APPROVAL. A CONTRACTOR APPROVED BY THE NEBB OR AABC SHALL PREPARE BALANCING REPORT. NEBB OR

AABC FORMS SHALL BE USED FOR THE REPORT.

6. ALL SUPPLY AND RETURN AIR OUTLETS WITH AN AIR

QUANTITY INDICATED SHALL BE TESTED AND BALANCED

ALL MAIN TRUNK DUCTS SHALL HAVE PITOT TRAVERSES TAKEN UPSTREAM OF ANY DIFFUSERS, ALL DAMPER POSITIONS SHALL BE MARKED ON DUCTWORK TO INDICATE THE PROPER POSITION FOR MAINTAINING DESIGN AIR QUANTITIES. BALANCE THE SYSTEM WITH CLEAN AIR FILTERS IN THE NEW SYSTEM. AIR QUANTITIES MAY BE AS MUCH AS 10 PERCENT HIGH, BUT SHALL NOT

BE BELOW DESIGN REQUIREMENTS.

TO STERILIZE THE WATER LINES.

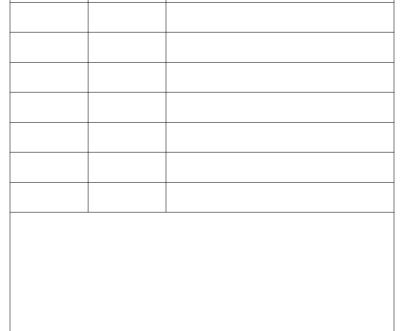
SECTION 15995 - WATER TREATMENT

A. SUBMIT CERTIFICATE TO ARCHITECT SHOWING SYSTEM HAS BEEN STERILIZED.

1. AFTER FINAL TESTING FOR LEAKS, ALL POTABLE WATER

LINES SHALL BE THOROUGHLY FLUSHED TO REMOVE

FOREIGN MATERIAL. BEFORE PLACING THE SYSTEMS IN SERVICE. ENGAGE A QUALIFIED SERVICE ORGANIZATION

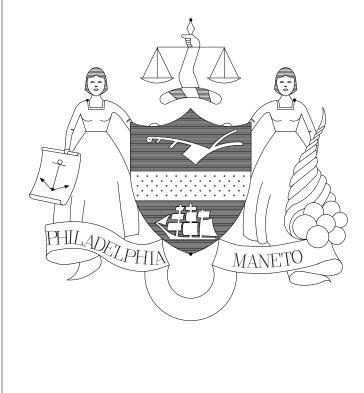


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**DECONTAMINATION SUITE** 

### DRAWING SPECIFICATIONS - ELECTRICAL (DIVISION 16) SECTION 16001 - SUMMARY OF THE WORK

- 1. WORK UNDER DIVISION 16 SHALL INCLUDE, BUT NOT BE LIMITED TO, THE
- A. UPGRADE ELECTRIC UTILITY SERVICE, INCLUDING NEW MAIN SERVICE PANEL
- B. POWER TO NEW WASHER, DRYING CABINETS, AND HVAC EQUIPMENT C. RELOCATION OF EXISTING LIGHTS, INCLUDING NEW BRANCH CIRCUIT AND
- PROVISION OF NEW SWITCH D. NEW WIRING DEVICES

AS REQUIRED BY THE PROJECT

### SECTION 16010 - BASIC ELECTRICAL REQUIREMENTS

- THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL, EQUIPMENT AND SERVICES FOR THE PROPER INSTALLATION AND OPERATION OF THE ELECTRICAL
- WORK AS INDICATED ON THE DRAWINGS. 2. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT AND SERVICES NECESSARY FOR REMOVAL OR RELOCATION OF EXISTING ELECTRICAL EQUIPMENT
- 3. TEST AND OPERATE ALL SYSTEMS TO DEMONSTRATE TO THE OWNER, OR HIS DESIGNATED REPRESENTATIVE, THAT THE INSTALLATION OF THESE SYSTEMS CONFORM TO DESIGN INTENT.
- 4. THE CONTRACTOR SHALL COMPLY WITH ALL RULES AND REGULATIONS OF THE OWNER, LOCAL, STATE AND FEDERAL LAWS, ORDINANCES, RULES AND REGULATIONS APPLICABLE TO THE WORK SHOWN OR SPECIFIED, AND WITH THE RULES OF THE NATIONAL FIRE PROTECTION ASSOCIATION. THE OWNER'S UNDERWRITER, AND ALL PUBLIC UTILITIES HAVING CONNECTION WITH ANY OF THE VARIOUS SYSTEMS HEREIN SPECIFIED. WHERE APPLICABLE, ALL EQUIPMENT SHALL CARRY THE LABEL OF THE UNDERWRITERS LABORATORIES, INC.
- 5. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN, PAY FOR AND DELIVER ALL PERMITS. CERTIFICATES OF INSPECTION. AND PAY ALL COSTS. REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. DELIVER ALL PERMITS, CERTIFICATES AND APPROVALS TO THE OWNERS AGENT PRIOR TO FINAL ACCEPTANCE OF THE WORK. THE CONTRACTOR MUST FILE NECESSARY DRAWINGS. PREPARE DOCUMENTS AND MAKE APPLICATION FOR EACH REQUIRED PERMIT AND INSPECTION, PRIOR TO COMMENCING WORK TO AVOID DELAYS DURING CONSTRUCTION.
- 6. INDEPENDENT INSPECTION AGENCY CERTIFICATES SHALL BE FURNISHED FOR ALL ELECTRICAL WORK. ALL CERTIFICATES SHALL BE IN DUPLICATE AND SHALL BE DELIVERED TO THE OWNER'S AGENT AND SHALL BECOME THE PROPERTY OF THE
- 7. BEFORE SUBMITTING HIS BID, THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD. FAILURE TO DO SO WILL NOT RELIEVE THE CONTRACTOR OF HIS OBLIGATION TO PAY FOR ALL COSTS THAT MAY BE INCURRED. DUE TO THE RELOCATION. REMOVAL OR MODIFICATION OF ANY PART OF THE EXISTING ELECTRICAL WORK THAT MAY BE REQUIRED, OR ANY CONDITION THAT MAY AFFECT THE COST OF INSTALLING THE NEW WORK.
- 8. IT IS THE INTENTION OF THE DRAWINGS AND SPECIFICATIONS TO CALL FOR CLEAR FINISHED WORK, TESTED AND READY FOR OPERATION. ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE AND PERFECT IN ALL RESPECTS AND READY FOR OPERATION, EVEN IF NOT PARTICULARLY SPECIFIED OR SHOWN SHALL BE PROVIDED WITHOUT ADDITIONAL EXPENSE MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT MANIFESTLY NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OF THE VARIOUS SYSTEMS, SHALL BE INCLUDED IN THE WORK, THE SAME AS IF SPECIFIED OR SHOWN ON THE DRAWINGS.
- 9. SUBMIT DIGITAL FILES OF SHOP DRAWINGS IN PDF FORMAT. SHOP DRAWINGS SHALL INCLUDE PLANS, ELEVATIONS, SECTIONS, MOUNTING DETAILS OF COMPONENT PARTS, POINT TO POINT INTERCONNECTION DIAGRAMS, ELEMENTARY DIAGRAMS, SINGLE LINE DIAGRAMS AND ANY OTHER DRAWINGS NECESSARY TO SHOW THE FABRICATION AND CONNECTION OF THE COMPLETE ITEM OR SYSTEM.
- 10. RECORD DRAWINGS SHALL BE KEPT IN THE CONTRACTOR'S JOB SITE OFFICE FROM THE BEGINNING OF THE WORK, SHALL BE MAINTAINED DAILY AND SHALL BE PRODUCED FOR INSPECTION BY THE OWNER OR HIS AGENTS UPON DEMAND. AT THE COMPLETION OF THE PROJECT, BIND THE PRINTS INTO A SET AND FORWARD THEM TO THE OWNER'S AGENT WITHIN 30 DAYS OF SYSTEM ACCEPTANCE. THE RECORD DRAWINGS SHALL CONSIST OF A SEPARATE SET OF WHITE PRINTS OF THE CONTRACT DRAWINGS ON WHICH SHALL BE RECORDED IN INK OR COLORED PENCIL
- A. DIMENSIONED LOCATIONS OF CONDUITS BURIED BELOW, OR CAST INTO, CONCRETE FLOOR SLABS.
- B. DIMENSIONED LOCATIONS OF CONDUITS OUTSIDE THE BUILDING.
- C. LUMINAIRE ARRANGEMENTS, IF DIFFERENT FROM CONTRACT DRAWINGS.
- D. LOCATIONS OF ELECTRIC PANELS, MOTOR STARTERS, WALL MOUNTED EQUIPMENT AND THE LIKE, IF DIFFERENT FROM CONTRACT DRAWINGS.
- E. ALL WORK ADDED TO THE CONTRACT BY LAYOUT DRAWINGS, FIELD SKETCHES, ADDENDUM OR CHANGE ORDER. 11. BEFORE COMPLETION OF THE INSTALLATION, THE CONTRACTOR SHALL FURNISH

THREE COPIES OF MANUALS COVERING IN DETAIL ALL REQUIRED INSTRUCTIONS

- FOR THE OPERATION OF THE SYSTEMS PROVIDED. 12. FURNISH ALL LABOR REQUIRED BY THE OWNER'S AGENT, AND OR INSPECTION AGENCIES IN MAKING EXAMINATION OF WORK, DURING THE COURSE OF
- CONSTRUCTION. 13. THE CONTRACTOR SHALL FURNISH A WRITTEN WARRANTY FOR THIS INSTALLATION, SUBSTANTIALLY STATING THAT ALL MATERIALS FOLIPMENT FIXTURES AND APPURTENANCES AND THE SYSTEMS WHICH THEY COMPRISE ARE FREE FROM INHERENT DEFECTS OR FLAWS IN WORKMANSHIP OR OPERATION, AND ARE FUNCTIONING PROPERLY AND CAPABLE OF PROVIDING SATISFACTORY OPERATION. IN ACCORDANCE WITH DESIGN CONDITIONS. ANY DEFECTS IN WORKMANSHIP, DEFECTIVE MATERIALS, MALFUNCTION OF EQUIPMENT OR UNSATISFACTORY PERFORMANCE, AND ALL OTHER WORK DAMAGED THEREBY, SHALL BE REPAIRED

REPLACED OR OTHERWISE REMEDIED WITHOUT EXPENSE TO THE OWNER. SUCH

REPAIRS OR REPLACEMENTS SHALL BE MADE WITHIN REASONABLE TIME AND AT

THE CONVENIENCE OF THE OWNER. SUCH WARRANTY SHALL BE IN EFFECT FOR A

- PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF THE SYSTEMS AS A WHOLE. 14. MATERIAL OR EQUIPMENT SPECIFIED BY MANUFACTURER, BRAND NAME, TYPE OR CATALOG NUMBER. ARE DESIGNED TO ESTABLISH STANDARDS OF DESIRED QUALITY, STYLE, PERFORMANCE, ELECTRICAL, MECHANICAL AND PHYSICAL CHARACTERISTICS, AND DIMENSIONS, SUBSTITUTION OF ANY ITEMS SO SPECIFIED. WILL NOT BE PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE OWNER'S AGENT. WHERE THE SUBSTITUTION REQUIRES ANY REDESIGN OR RELOCATION OF THE STRUCTURES, FOUNDATIONS, PARTITIONS, PIPING, RACEWAYS, WIRING OR ANY OTHER PART OF THE MECHANICAL, ELECTRICAL, STRUCTURAL OR ARCHITECTURAL WORK, ALL SUCH REDESIGN AND ALL THE NEW DRAWINGS AND DETAILS REQUIRED SHALL BE PREPARED BY THE CONTRACTOR AT HIS OWN EXPENSE AND SUBMITTED FOR THE APPROVAL OF THE OWNER'S AGENT. ALL SUCH ADDITIONAL WORK AND ANY ADDITIONAL EQUIPMENT FOR THESE SYSTEMS SHALL
- 15. THE CONTRACTOR SHALL PROVIDE, UPON REQUEST, COPIES OF MATERIAL SAFETY DATA SHEETS FOR ANY MATERIAL OR PRODUCT USED IN THE WORK AND NOT SUPPLIED BY THE OWNER. MSDS SHEETS SHALL BE PROVIDED PRIOR TO DELIVERY OF MATERIALS TO THE JOB SITE.

BE PROVIDED AT THE EXPENSE OF THE CONTRACTOR.

- 16. WORKMANSHIP SHALL BE FIRST CLASS IN EVERY RESPECT AND SHALL BE PERFORMED BY TRADESMAN SKILLED IN THE PARTICULAR AREA OF THE WORK AND IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE OR PUBLIC UTILITY LAWS, ORDINANCES OR REGULATIONS.
- 17. THE CONTRACTOR SHALL EFFECTIVELY PROTECT THE EXISTING BUILDING, ITS CONTENTS AND ALL HIS NEW WORK AGAINST DAMAGE FROM ANY SOURCE RELATED TO THIS CONTRACT UNTIL FINAL COMPLETION AND ACCEPTANCE BY THE OWNER. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY DAMAGED WORK AT HIS EXPENSE AND TO THE SATISFACTION OF THE OWNER'S AGENT.
- 18. AT ALL TIMES, KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL AND RUBBISH CAUSED BY AGENTS AND EMPLOYEES OF THE
- 19. THE CONTRACTOR SHALL NOT PERFORM ANY FUNCTIONS WHICH WILL INTERRUPT MECHANICAL OR ELECTRICAL SERVICES WITHOUT PRIOR APPROVAL OF THE OWNER. NECESSARY INTERRUPTIONS SHALL BE REVIEWED. SCHEDULED AND APPROVED BY THE OWNER. DURING PARTIAL OR FULL OCCUPANCY OF THE FACILITY, ALL WORK SHALL BE SCHEDULED AND COORDINATED WITH THE OWNER SO THAT DISRUPTION TO THE AREAS INVOLVED IS KEPT TO A MINIMUM. THE CONTRACTOR SHALL GIVE THE OWNER A MINIMUM OF FIVE WORKING DAYS NOTICE OF ANY WORK THAT WILL INTERFERE WITH THE OWNER'S OPERATION SO A SCHEDULE SUITABLE TO THE OWNER CAN BE ARRANGED. ANY ACCIDENTAL INTERRUPTIONS TO SERVICES SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.
- 20. PROVIDE SCAFFOLDING, LADDERS, RIGGING, HOISTING AND ALL OTHER EQUIPMENT REQUIRED FOR THE INSTALLATION OF THE WORK.
- 21. ESTABLISH PASSAGE CLEARANCES REQUIRED TO DELIVER, INSTALL AND ERECT ALL REQUIRED EQUIPMENT. IF STRUCTURES, EQUIPMENT AND SYSTEMS MUST BE ALTERED TO PROVIDE PASSAGE OF EQUIPMENT, THE CONTRACTOR SHALL RESTORE STRUCTURES, EQUIPMENT AND SYSTEMS TO THEIR ORIGINAL CONDITION, AT THE CONTRACTOR'S EXPENSE.
- 22. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL MAKE A THOROUGH INSPECTION OF ALL THE ELECTRICAL WORK. AT THE FINAL INSPECTION, ALL SYSTEMS MUST BE 100 PERCENT COMPLETE AND TESTS SHALL BE PERFORMED TEST PROCEDURES AND THE ACCEPTANCE TEST STANDARDS OF THE INTERNATIONAL ELECTRICAL TESTING ASSOCIATION, ALL INSTRUMENTS, METERS. WIRING, PERSONNEL, ETC., REQUIRED FOR TESTING SHALL BE INCLUDED UNDER
- 23. AFTER ALL ADJUSTMENTS AND TESTS HAVE BEEN COMPLETED, CLEAN, DUST, WASH AND VACUUM, ETC., ALL PARTS OF INSTALLATION, INCLUDING INTERIORS OF BOXES, CABINETS AND EQUIPMENT ENCLOSURES, CLEAN LIGHTING FIXTURE LENS AND REFLECTORS WITH ANTI-STATIC DETERGENT TO ENSURE RATED OUTPUT.
- 24. PROVIDE SERVICES OF MANUFACTURER'S FACTORY ENGINEERS TO SUPERVISE INSTALLATION, FINAL CONNECTIONS AND TESTING, PROVIDE SERVICES OF FACTORY ENGINEERS OR REPRESENTATIVES WHO WILL GIVE FULL INSTRUCTIONS AND DEMONSTRATIONS IN THE OPERATION AND MAINTENANCE OF ALL THE ELECTRICAL SYSTEMS AND EQUIPMENT INSTALLED TO THE DESIGNATED REPRESENTATIVE OF THE OWNER.

### SECTION 16110 - CONDUIT SYSTEMS

- 1. INSTALL ALL WIRE AND CABLES IN ELECTRICAL METALLIC TUBING UNLESS OTHERWISE SPECIFIED OR INDICATED BY THE DRAWINGS. ELECTRICAL METALLIC TUBING (FMT) SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH FS WWC 563 ANSI C80.3 AND UL 797. FITTINGS 1-1/4-INCH AND SMALLER SHALL BE COMPRESSION TYPE AND 1-1/2-INCH AND LARGER SHALL BE SET SCREW TYPE. ALL FITTINGS SHALL BE OF WROUGHT STEEL CONSTRUCTION.
- RIGID ALUMINUM CONDUIT WITH THREADED FITTINGS SHALL BE USED FOR ALL CONDUIT INSTALLATIONS EXPOSED TO THE WEATHER. RIGID ALUMINUM CONDUIT SHALL BE 6063 ALLOY, T41 TEMPER, CONFORMING TO FS WWC 540, ANSI C80.5 AND UL 6. FITTINGS SHALL BE THREADED TYPE OF ALUMINUM CONSTRUCTION.
- 3. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR CONNECTION TO MOTORS AND OTHER EQUIPMENT WHICH PRODUCES OR TRANSMITS VIBRATION OR NOISE. UNLESS THE MOTORS OR EQUIPMENT ARE MOUNTED ABOVE SUSPENDED CEILING. PROVIDE SUITABLE BONDING JUMPER FOR ALL CONNECTIONS. LIQUID-TIGHT FLEXIBLE METAL CONDUIT SHALL BE CONSTRUCTED OF SINGLE STRIP, FLEXIBLE CONTINUOUS, INTERLOCKED AND DOUBLE-WRAPPED STEEL GALVANIZED INSIDE AND OUTSIDE AND COATED WITH LIQUID-TIGHT JACKET OF FLEXIBLE POLYVINYL CHLORIDE (PVC). FITTINGS SHALL BE LIQUID-TIGHT COMPRESSION TYPE.
- 4. FLEXIBLE METALLIC CONDUIT (MIN. 1/2-INCH TRADE SIZE) SHALL BE USED FOR CONNECTION FROM A JUNCTION BOX TO LIGHTING FIXTURES, MOTORS AND SIMILAR EQUIPMENT MOUNTED IN A SUSPENDED CEILING. AS WELL AS FOR CONNECTION TO TRANSFORMERS. FLEXIBLE METAL CONDUIT SHALL BE FORMED FROM CONTINUOUS LENGTH OF SPIRALLY WOUND. INTERLOCKED ZINC-COATED STRIP STEEL CONFORMING TO FS WWC 566 AND UL 1. FITTINGS SHALL BE OF THE THREADLESS, HINGED CLAMP TYPE.
- RIGID STEEL CONDUIT SHALL BE USED WHERE CONDUIT IS ENCASED IN THE BUILDING'S POURED CONCRETE CONSTRUCTION. RIGID STEEL CONDUIT SHALL BE HOT DIP GALVANIZED CONFORMING TO FS WWC 581. ANSI C80.1 AND UL 6. FITTINGS SHALL BE THREADED TYPE OF GALVANIZED MALLEABLE IRON CONSTRUCTION.
- HEAVY WALL PVC CONDUIT SHALL BE USED FOR ALL GROUNDING CONDUCTORS AND OTHER SPECIFIC USES AS INDICATED BY THE DRAWINGS. HEAVY WALL PVC CONDUIT SHALL BE SCHEDULE 40, 90 DEGREES C, UL RATED, CONSTRUCTED OF POLYVINYL CHLORIDE AND CONFORMING TO NEMA TC-2 FOR DIRECT BURIAL OR NORMAL ABOVE GROUND USE. FITTING SHALL BE OF THE SOLVENT WELD TYPE. CONDUITS SHALL BE SUPPORTED WITH NON-METALLIC DEVICES.
- MINIMUM SIZE CONDUIT UNLESS OTHERWISE INDICATED SHALL BE 3/4-INCH TRADE SIZE. ALL CONDUITS WHICH ARE TO REMAIN EMPTY SHALL BE PROVIDED WITH A NYLON PULL LINE CONDUITS SHALL BE INDEPENDENTLY SUPPORTED FROM THE BUILDING STRUCTURE AND SHALL NOT BE ATTACHED TO THE SUPPORT SYSTEMS PROVIDED BY OTHER TRADES UNLESS SPECIFICALLY INDICATED.
- 8. PROVIDE SLEEVES FOR ALL CONDUITS PASSING THROUGH FLOOR SLABS AND WALLS. THE ANNULAR SPACE BETWEEN THE WALL AND THE SLEEVE SHALL BE KEPT TO A MINIMUM AND FILLED WITH FIRE STOP MATERIALS. SLEEVES SHALL BE NOMINALLY 1-INCH TRADE SIZE LARGER AND CONSTRUCTED OF THE SAME MATERIAL AS THE CONDUIT BEING INSTALLED.

### SECTION 16120 - WIRE AND CABLES (600 VOLT AND BELOW)

- WIRE AND CABLES FOR FEEDER AND BRANCH CIRCUITS SHALL BE SINGLE ANNEALED STRANDED COPPER CONDUCTORS WITH CONDUCTIVITY OF NOT LESS THAN 98 PERCENT AT 20 DEGREES C. WIRE AND CABLE SHALL BEAR THE UL LABEL AND SHALL MEET OR EXCEED THE REQUIREMENTS OF IPCEA-NEMA STANDARDS S-19-81 AND ASTM D-1352.
- WIRE SIZES SHALL GENERALLY BE AS FOLLOWS:
- A. CONTROL AND INTERLOCK WIRING NO. 14 AWG.
- B. BRANCH CIRCUIT AND FEEDER WIRING NO. 12 AWG AND LARGER.
- WIRE AND CABLE INSULATION SHALL BE AS FOLLOWS:
- A. CONDUCTORS SIZE NO. 14 AWG THROUGH NO. 4/0 AWG SHALL BE 600 VOLT TYPE THWN FOR DRY AND WET LOCATIONS WITH A MAXIMUM OPERATING TEMPERATURE OF 75 DEGREES C
- B. CONDUCTORS SIZE 250 KCMIL AND LARGER SHALL BE 600 VOLT TYPE THHN/THWN OR XHHW FOR DRY AND WET LOCATIONS WITH A MAXIMUM OPERATING TEMPERATURE OF 90 AND 75 DEGREES C., RESPECTIVELY.
- 4. FOR CONVENIENCE IN TESTING AND MAINTENANCE ALL SECONDARY CONDUCTORS SHALL BE COLOR-CODED IN ACCORDANCE WITH THE ESTABLISHED BUILDING STANDARD. CONTROL CIRCUIT WIRING SHALL HAVE SEPARATED IDENTIFYING
- 5. METAL-CLAD CABLE (TYPE MC) SHALL BE PERMISSIBLE FOR INSTALLATION OF INDOOR BRANCH CIRCUITS NOT MORE THAN 30 AMPERES ABOVE ACCESSIBLE CEILING AND IN HOLLOW DRYWALL PARTITIONS, WITHOUT BEING INSTALLED IN RACEWAYS. IF PERMISSIBLE BY CODE. TYPE MC CABLES SHALL NOT BE INSTALLED EXPOSED, INCLUDING IN ELECTRICAL CLOSETS. TYPE MC CABLE SHALL BE SUPPORTED AND SECURED NOT EXCEEDING EVERY 6-FEET, AND SHALL BE SECURED WITHIN 12-INCHES OF EVERY BOX, CABINET, OR FITTING FOR CABLES. TYPE MC CABLE SHALL NOT BE USED IN HEALTH CARE FACILITIES. METAL-CLAD CABLE (TYPE MC) SHALL BE COPPER, MULTI CONDUCTOR TYPE, WITH NO MORE THAN EIGHT CONDUCTORS. THE INTERLOCKING SHEATH SHALL BE OF EITHER GALVANIZED STEEL OR ALUMINUM. CONDUCTORS SHALL BE SOFT-ANNEALED COPPER. MEETING ASTM B3. AND STRANDED AS PER ASTM B8. TYPE MC CABLE SHALL BE UL LABELED. THE GROUNDING CONDUCTOR SHALL BE INSULATED AND SHALL BE ROUTED WITH THE CIRCUIT CONDUCTORS.
- PROVIDE UL LABELED CONNECTORS OF AMPACITY RATINGS AND TYPES FOR APPLICATIONS INDICATED.
- A. CONNECTIONS FOR WIRE SIZES NO. 14 AWG THROUGH NO. 10 AWG SHALL BE MADE WITH 3-M "SCOTCHLOK" SPRING CONNECTORS.
- B. CONDUCTORS NO. 8 AWG AND LARGER SHALL BE SPLICED AND TAPPED WITH COLOR-KEYED WROUGHT COPPER COMPRESSION CONNECTORS AS MANUFACTURED BY THOMAS & BETTS. THE MANUFACTURER'S RECOMMENDED TOOLING SHALL BE USED FOR INSTALLATION, LONG BARREL SLEEVES, TWO HOLE LUGS AND "C" TYPE CONNECTORS SHALL BE USED. SPLICE AND TAP CONNECTORS SHALL BE COMPATIBLE WITH CONDUCTOR MATERIAL.
- UNLESS SPECIFICALLY INDICATED OTHERWISE, EACH SINGLE PHASE BRANCH CIRCUIT SHALL CONSIST OF RESPECTIVE PHASE CONDUCTOR AND A DEDICATED NEUTRAL CONDUCTOR.
- 8. PROVIDE A SEPARATE "GREEN" INSULATED GROUND WIRE IN EACH FEEDER, BRANCH CIRCUIT AND OTHER CONDUITS CONTAINING CURRENT CARRYING

### SECTION 16135 - ELECTRICAL BOXES AND FITTINGS

- 1. OUTLET BOXES SHALL BE CONSTRUCTED OF GALVANIZED FLAT ROLLED SHEET-STEEL OF SHAPES AND SIZES SUITABLE FOR INSTALLATION OF WIRING DEVICES, PROVIDE BOXES WITH THREADED SCREW HOLES, WITH CORROSION-RESISTANT COVER AND GROUNDING SCREWS FOR FASTENING SURFACE AND DEVICE TYPE BOX COVERS AND FOR EQUIPMENT TYPE GROUNDING. OUTLET BOX ACCESSORIES SHALL BE PROVIDED AS REQUIRED FOR EACH INSTALLATION.
- JUNCTION AND PULL BOXES SHALL BE CONSTRUCTED OF GALVANIZED CODE-GAUGE SHEET STEEL WITH SCREW-ON COVERS OF TYPES, SHAPES AND SIZES TO SUIT EACH RESPECTIVE LOCATION AND INSTALLATION. BOXES SHALL BE OF RIVETED OR WELDED CONSTRUCTION AND SHALL HAVE PLAIN MACHINE SCREW ATTACHED COVERS.

### SECTION 16143 - WIRING DEVICES

- GROUND FAULT DUPLEX RECEPTACLES SHALL BE SPECIFICATION GRADE, BROWN IN COLOR. 2-POLE. 3-WIRE GROUNDING TYPE. RATED 20 AMPERES. 125 VOLTS. NEMA CONFIGURATION 5-20R, HUBBELL GF-5362, OR APPROVED EQUAL.
- 2. SINGLE-POLE TOGGLE SWITCHES SHALL BE SPECIFICATION GRADE, BROWN IN COLOR QUIET TYPE RATED 20 AMPERES, 120-277 VOLTS, 60 HERTZ, HUBBELL 1221, 3. WALLPLATES SHALL BE FOR SINGLE WIRING DEVICES OF TYPES, SIZES AND WITH
- GANGING AND CUTOUTS AS REQUIRED. WALLPLATES SHALL BE 0.035 GAUGE THICK, TYPE 302 SATIN FINISHED STAINLESS STEEL. 4. PROVIDE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR CONNECTION FOR
- ALL WIRING DEVICES, UNLESS OTHERWISE INDICATED. PRIOR TO ENERGIZING CIRCUITRY, TEST WIRING FOR ELECTRICAL CONTINUITY AND

### FOR SHORT-CIRCUITS. ENSURE PROPER POLARITY OF CONNECTIONS IS

### SECTION 16170 - DISCONNECT SWITCHES

- PROVIDE SURFACE-MOUNTED, HEAVY-DUTY TYPE, SHEET-STEEL ENCLOSED SAFETY SWITCHES, OF TYPES, SIZES AND ELECTRICAL CHARACTERISTICS INDICATED. SWITCHES SHALL BE QUICK-MAKE, QUICK-BREAK TYPE CONSTRUCTED SO THAT SWITCH BLADES ARE VISIBLE IN OFF POSITION WITH DOOR OPEN. FOLLIP WITH OPERATING HANDLE WHICH IS INTEGRAL PART OF ENCLOSURE BASE AND WHOSE OPERATING POSITION IS EASILY RECOGNIZABLE, AND IS PADLOCKABLE IN THE ON OR OFF POSITION. CONSTRUCT CURRENT CARRYING PARTS OF HIGH-CONDUCTIVITY COPPER, WITH SILVER-TUNGSTEN TYPE SWITCH CONTACTS AND POSITIVE PRESSURE TYPE REINFORCED FUSE CLIPS. SWITCH ENCLOSURES GENERALLY SHALL BE NEMA TYPE I AND 3R FOR RAIN-TIGHT CONSTRUCTION.
- PROVIDE FUSES FOR SAFETY SWITCHES. AS RECOMMENDED BY SWITCH MANUFACTURER. OF CLASSES, TYPES AND RATINGS NEEDED TO FULFILL

### SECTION 16190 - SUPPORTING DEVICES

HAVING THE FOLLOWING CONSTRUCTION FEATURES:

DIAMETER HOLE FOR ROUND STEEL ROD.

- 1. PROVIDE SUPPORTING DEVICES OF TYPES, SIZES AND MATERIALS INDICATED,
- A. CLEVIS HANGERS SHALL BE USED FOR SUPPORTING 2-INCH AND LARGER CONDUIT AND SHALL BE CONSTRUCTED OF GALVANIZED STEEL WITH 1/2-INCH
- B. ONE-HOLE CONDUIT STRAPS SHALL BE USED FOR SUPPORTING 3/4-INCH TO 1-1/2-INCH CONDUIT AND SHALL BE CONSTRUCTED OF GALVANIZED STEEL.
- C. TWO-HOLE CONDUIT STRAPS SHALL BE USED FOR SUPPORTING CONDUIT ON STEEL RACKS.
- PROVIDE STEEL ANCHORS OF TYPES, SIZES AND MATERIALS REQUIRED FOR THE EQUIPMENT BEING SUPPORTED.
- 3. PROVIDE U-CHANNEL STRUT SYSTEM FOR SUPPORTING ELECTRICAL EQUIPMENT. 12-GAUGE HOT-DIP GALVANIZED STEEL, OF TYPES AND SIZES INDICATED AND WITH THE CONDUIT CLAMPS, CONDUIT HANGERS AND OTHER FITTINGS WHICH MATE AND MATCH WITH U-CHANNEL
- 4. INSTALL HANGERS, SUPPORTS, CLAMPS AND ATTACHMENTS TO SUPPORT PIPING PROPERLY FROM BUILDING STRUCTURE. ARRANGE FOR GROUPING OF PARALLEL RUNS OF HORIZONTAL CONDUITS TO BE SUPPORTED TOGETHER ON TRAPEZE TYPE HANGERS WHERE POSSIBLE. INSTALL SUPPORTS WITH SPACINGS INDICATED AND
- 5. NO MINERALLAC "JIFFY" TYPE CONDUIT SUPPORTS SHALL BE INSTALLED EXPOSED BELOW 8'-0" A.F.F. USE ONE-HOLE STRAPS INSTEAD.

### SECTION 16195 - ELECTRICAL IDENTIFICATION

IN COMPLIANCE WITH NEC REQUIREMENTS.

- PANELBOARDS MOTOR STARTERS AND SIMILAR ELECTRICAL ENCLOSURES SHALL BE IDENTIFIED BY NAMEPLATES SHOWING THE EQUIPMENT IDENTIFICATION NUMBER, VOLTAGE AND FEEDER OR BRANCH CIRCUIT NUMBERS (E.G. PANEL LP-1 208/120 VOLTS - FDR 1-5). NAMEPLATES GENERALLY SHALL BE CUSTOM TWO-TON LAMINATED PLASTIC WITH BEVELED EDGES. NAMEPLATES, UNLESS OTHERWISE INDICATED, SHALL BE WHITE LETTERS ON BLACK BACKGROUND.
- 2. CONDUITS SHALL BE IDENTIFIED IN EACH ROOM AND 50 FOOT ON CENTERS IN OPEN AREAS BY VOLTAGE AND FEEDER NUMBER (E.G. FDR 1-5 - 208/120 VOLTS). CONDUIT MARKERS SHALL BE STANDARD PRE-PRINTED FLEXIBLE PLASTIC SHEET MATERIAL OR SELF-ADHERING VINYL LABELS.
- FEEDER CONDUCTORS IN EACH PULL BOX AND IDENTIFIED WITH A PAPER TAG AS TO NUMBER, VOLTAGE AND CABLE SIZE (E.G. FDR 1-5 - 208/120 VOLTS - 4 NO. 250 MCM). BRANCH CIRCUITS SHALL BE IDENTIFIED WITH A PAPER TAG IN EACH JUNCTION AND OUTLET BOX BY PANEL AND CIRCUIT NUMBER (E.G. PNL. LP-5 - CIRC.

### SECTION 16470 - PANELBOARDS (600A OR BELOW)

- 1. PANELBOARDS SHALL BE NEMA 1 FOR SURFACE OR RECESSED MOUNTING, CIRCUIT BREAKER TYPE, IN A SINGLE WIDTH FACTORY ASSEMBLED ENCLOSURE INCLUDING BOX. INTERIOR. TRIM AND FRONT. PANELBOARDS AND ENCLOSING CABINETS SHALL CONFORM TO STANDARDS ESTABLISHED BY UNDERWRITERS' LABORATORIES, INC., AND REQUIREMENTS OF NEC AND SHALL BEAR THE UL LABEL. UNLESS OTHERWISE INDICATED, PANELBOARDS SHALL BE MOUNTED 6 FEET TO THE TOP OF THE
- 2. EACH PANELBOARD SHALL BE PROVIDED WITH AN INSULATED NEUTRAL BUS AND A GROUND BUS BONDED TO THE PANEL BACKBOX. NEUTRAL AND GROUND BUS SHALL BE READILY IDENTIFIED AND SHALL BE PROVIDED WITH SCREW TYPE TERMINALS. ALL BUS BARS SHALL BE ELECTRICAL GRADE COPPER. THE MAIN BUS BRACING SHALL BE EQUAL OR GREATER THAN THE INTERRUPTING CURRENT RATING CALLED FOR BY THE DRAWINGS.
- 3. EACH PANEL SHALL BE EQUIPPED WITH A TYPEWRITTEN DIRECTORY, INDICATING PLAINLY WHAT EACH BRANCH CIRCUIT OF THE PANEL CONTROLS. THE DIRECTORY SHALL BE PLACED IN A CLEAR PLASTIC PROTECTIVE ENVELOPE AND FASTENED TO THE INSIDE OF THE DOOR.
- 4. BRANCH CIRCUIT PROTECTION DEVICES SHALL BE MOLDED CASE CIRCUIT BREAKERS WITH QUICK-MADE, QUICK-BREAK TOGGLE MECHANISM, INVERSE TIME DELAY OVERLOAD AND INSTANTANEOUS SHORT CIRCUIT PROTECTION BY MEANS OF THERMAL MAGNETIC FLEMENT, AUTOMATIC TRIPPING SHALL BE INDICATED BY A HANDLE POSITION BETWEEN THE MANUAL "OFF" AND "ON" POSITION. BREAKERS SHALL BE "BOLT-ON" INTERCHANGEABLE TYPE AND CAPABLE OF BEING OPERATED IN ANY POSITION. CIRCUIT BREAKERS SHALL BE DESIGNED TO CARRY THEIR FULL RATING CONTINUOUSLY IN AMBIENT TEMPERATURE OF 40 DEGREES C. TWO AND THREE POLE BREAKERS SHALL HAVE COMMON TRIP HANDLE. ALL LIGHTING MAIN AND BRANCH CIRCUIT BREAKERS AS INDICATED ON THE DRAWINGS WHERE PANELS HAVE SPACES FOR FUTURE BREAKERS, THE SPACE SHALL INCLUDE COMPLETE BUSWORK, HARDWARE, APPURTENANCES, ETC., TO ACCOMMODATE FUTURE BREAKERS. PROVIDE LOCKING DEVICES FOR CIRCUIT BREAKERS WHICH ARE TO BE KEPT IN LOCKED POSITION.
- 5. PANEL FRONTS SHALL BE PROVIDED WITH A CONTINUOUS HINGE ALONG THE LEFT SIDE FOR EASY ACCESS TO THE WIRE COMPARTMENT (DOOR WITHIN DOOR CONSTRUCTION).
- SECTION 16480 MOTOR STARTERS 1. PROVIDE COMBINATION CIRCUIT BREAKER/MAGNETIC MOTOR STARTER FOR EQUIPMENT REQUIRING MANUAL AND AUTOMATIC CONTROL. STARTERS GENERALLY SHALL BE FULL VOLTAGE NON-REVERSING UNITS CONSISTING OF A [FUSED DISCONNECT] [NON-FUSIBLE DISCONNECT] [MOTOR CIRCUIT PROTECTOR], HORSEPOWER RATED CONTACTOR AND THERMAL OVERLOAD RELAY MOUNTED IN A NEMA TYPE I COMMON ENCLOSURE. STARTER UNITS SHALL BE FURNISHED WITH EXTERNAL OPERATING HANDLE, CONTROL CIRCUIT TRANSFORMER (120V. SECONDARY), PILOT LIGHT, THERMAL OVERLOADS AND, UNLESS OTHERWISE INDICATED, A HAND-OFF-AUTOMATIC SELECTOR SWITCH. AUXILIARY CONTACTS SHALL BE PROVIDED AS REQUIRED. COMBINATION STARTERS SHALL BE MADE BY

ALLEN BRADLEY OR APPROVED EQUAL SUITABLE FOR THE VOLTAGE AND

HORSEPOWER INDICATED ON THE DRAWINGS. STARTER UNITS SHALL BE MINIMUM

- MANUAL MOTOR STARTERS SHALL BE PROVIDED FOR EQUIPMENT REQUIRING MANUAL CONTROL ONLY. MANUAL STARTING SWITCHES GENERALLY SHALL BE FULL VOLTAGE NON-REVERSING UNITS CONSISTING OF A MOTOR RATED TOGGLE SWITCH AND THERMAL OVERLOAD RELAY MOUNTED IN A COMMON ENCLOSURE. STARTER UNITS SHALL BE FURNISHED WITH A NEON PILOT LIGHT. UNITS IN MECHANICAL AREAS OR OTHERWISE UNFINISHED AREAS SHALL HAVE A NEMA TYPE I SURFACE MOUNTED ENCLOSURE. UNITS IN FINISHED AREAS SHALL BE MOUNTED IN A RECESSED BOX WITH FLUSH COVER PLATE. MANUAL MOTOR STARTERS SHALLBE ALLEN BRADLEY BULLETIN 600 OR APPROVED EQUAL SUITABLE FOR
- 3. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO DETERMINE THE QUANTITY AND SIZE OF MOTOR STARTERS REQUIRED IN ACCORDANCE WITH APPROVED SHOP DRAWINGS. MOTOR THERMAL OVERLOAD UNITS SHALL BE PROVIDED IN ACCORDANCE WITH THE ACTUAL MOTOR NAMEPLATE.

FRACTIONAL HORSEPOWER MOTORS AT 120 VOLTS, 60 HERTZ.

### SECTION 16721 - FIRE ALARM SYSTEM

- THE EXISTING SYSTEM SHALL BE TESTED FOR PROPER OPERATION PRIOR TO ANY WORK BEING PERFORMED. ANY MALFUNCTION SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER PRIOR TO ANY WORK BEING PERFORMED.
- 2. EXISTING DETECTORS IN AREAS BEING RENOVATED SHALL BE CLEANED AND
- 3. NEW MODULES AND PERIPHERAL DEVICES SHALL BE BY THE SERVICING INSTALLER (FORTRESS PROTECTION 215-854-8400) AND SHALL BE RATED WITH AND COMPATIBLE TO THE EXISTING HONEYWELL S3 SERIES FIRE ALARM CONTROL PANEL. FORTRESS PROTECTION SHALL BE RETAINED BY THE CONTRACTOR TO PROVIDE ALL NECESSARY MODIFICATIONS TO THE HEAD-END EQUIPMENT, INCLUDING POWER EXTENDER PANELS FOR SUPPORTING ADDITIONAL AUDIBLE/VISUAL APPLIANCES.
- 4. DETECTION CIRCUITS SHALL BE MINIMUM NO. 16 AWG STRANDED COPPER CONDUCTORS INSTALLED IN 1/2-INCH EMT. AUDIO/VISUAL ALARM CIRCUITS AND CONTROL WIRING SHALL BE MINIMUM NO. 14 AWG STRANDED COPPER CONDUCTORS INSTALLED IN 1/2-INCH EMT. ALL SPLICES SHALL BE SOLDERED AND TAPED. WHERE INSTALLED IN HOLLOW DRY WALL PARTITION OR ABOVE SUSPENDED CEILING MANUFACTURER RECOMMENDED POWER LIMITED FIRE ALARM CABLE MAY BE USED WITHOUT CONDUIT. ALL WIRING SHALL BE PLENUM

RATED. UNLESS ENTIRELY INSTALLED IN RACEWAY.

PAINTED ON EACH FULL LENGTH.

- 5. OUTLET BOXES WHICH ARE PART OF THE SYSTEM SHALL HAVE THE COVERS PAINTED RED. CONDUITS SHALL HAVE A RED BAND NOMINALLY 6-INCH WIDE
- THE SYSTEM SHALL BE CHECKED AND TESTED FOR PROPER OPERATION BY THE MANUFACTURER'S REPRESENTATIVE PRIOR TO FINAL ACCEPTANCE. EACH DEVICE SHALL BE OPERATED AND ADJUSTED FOR PROPER SENSITIVITY. AS PART OF THE FINAL ACCEPTANCE THE SYSTEM SHALL BE DEMONSTRATED FOR PROPER OPERATION IN THE PRESENCE OF THE OWNER'S REPRESENTATIVES.
- THE FIRE ALARM SYSTEM VENDOR SHALL SUBMIT SHOP DRAWINGS FOR ALL SYSTEM COMPONENTS AND WIRING. SUBMITTALS SHALL INCLUDE ALL PLANS, DEVICES LAYOUTS, WIRING DIAGRAMS, SEQUENCE OF OPERATION, VOLTAGE DROP CALCULATIONS AND BATTERY CALCULATIONS.
- 8. THE FIRE ALARM SYSTEM VENDOR SHALL SUBMIT ALL REQUIRED INFORMATION FOR REVIEW BY THE AHJ IN ORDER TO OBTAIN A PERMIT.

ISSUE	DATE	REVISIONS
1	11/08/22	ISSUED FOR BID

REVISIONS



KYLE O'CONNOR, PROJECT MANAGER

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PROJECT TITLE ENGINE 72 **DECONTAMINATION SUITE** 

PENNSYLVANIA

ELECTRICAL **SPECIFICATIONS** 

PHILADELPHIA

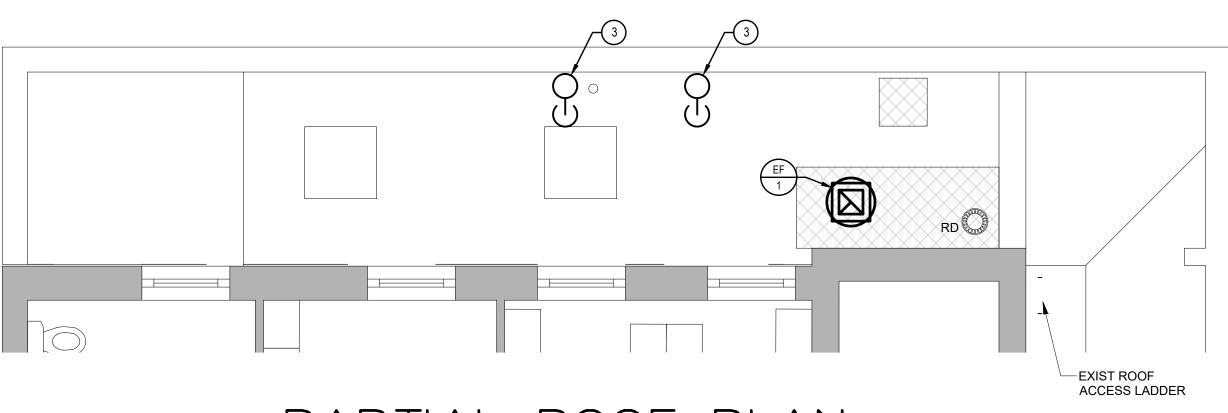
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ALL DIMENSIONS AND CONDITIONS SHALL B VERIFIED BY THE CONTRACTOR AT THE SIT BEFORE PROCEEDING WITH THE WORK

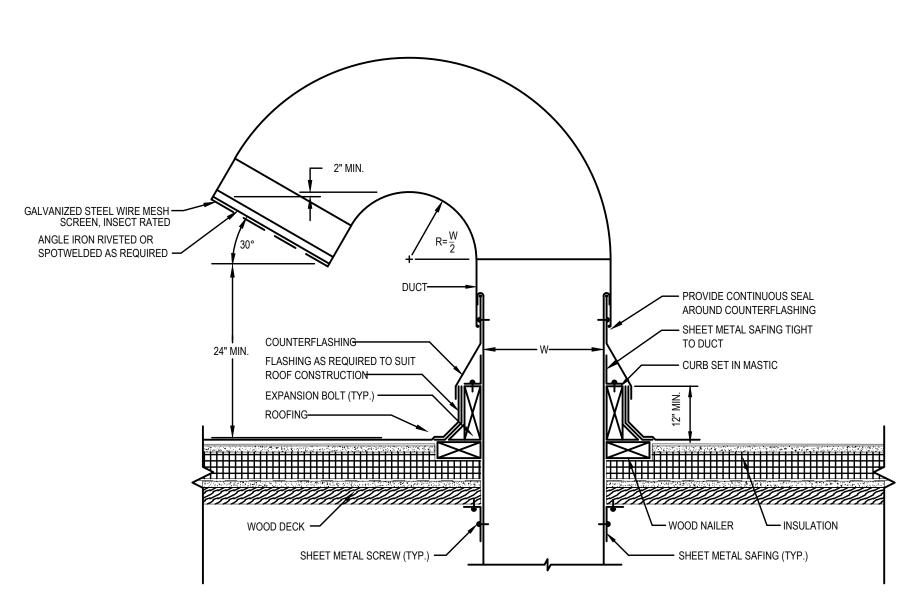
### **DECON ROOM** HOSE TOWER PROVIDE AND INSTALL IN DECON ROOM 104 A THA2P TEMPERATURE AND HUMIDITY PROBE WITH 15' PROVIDE AND INSTALL A 120V/24V TRANSFORMER IN PROBE CONTROL WIRING. CORE HOLE IN EXISTING WALL, SLEEVE WITH A ½ GALVANIZED STEEL SEPARATE NEMA 3R ENCLOSURE. PROVIDE 120V DEDICATED CIRCUIT POWER TO LINE VOLTAGE SIDE SCHEDULE 10 TUBE AND SEAL PENETRATION WITH 3HR FIRE CAULK. OF TRANSFORMER AND 24V LOW VOLTAGE POWER FROM TRANSFORMER TO CONTROLLER. 120V - PROVIDE AND INSTALL A SUPCO MODEL JUNCTION BOX SHALL BE LOCATED A MAXIMUM OF THA2U TEMPERATURE AND HUMIDITY AWAY FROM CONTROLLER. ALARM PANEL ON WALL 5' ABOVE

# PARTIAL FIRST FLOOR PLAN MILZ MILZ MECHANICAL NEW WORK SCALE: 1/4" = 1'-0"

FINISHED FLOOR.



# PARTIAL ROOF PLAN MECHANICAL NEW WORK SCALE: 1/4" = 1'-0"



GOOSENECK GDC EXHAUST

DUCT THROUGH ROOF DETAIL

SCALE: NONE

					FA	N S	CHE	DU	LE			
No	LOCATION	TYPE	CFM	W	RPM	ECD (IN W.C)	DRIVE	El	ECTRICAL DATA		BASIS OF DESIGN	NOTES
INO	LOCATION	TIPE	CFIVI	VV	RPM	ESP (IN.W.C)	DRIVE	V	Ø	Hz	BASIS OF DESIGN	NOTES
EF-1	ROOF TOP AREA OF DECON ROOM 104	ROOF MOUNTED DOWNBLAST DIRECT DRIVEN EXHAUST FAN	200	1/6 HP	1140	0.20	DIRECT	115	1	60	GREENHECK G-097-B-X	INSTALLED AND FURNISHED BY M.C. MOUNT ON ROOF CURB, W/ BACK DRAFT DAMPER (GREEN HECK BD-100, SPRING LOADED) AND TERMINATED WITH AN EXHAUST GRILLE; PROVIDE ROOF PENETRATION. SEE CONTROL NOTES DIAGRAM FOR DETAILS. COORDINATE CONTROL, MEANS OF DISCONNECT INSTALLATION WITH E.C.
MF-1	DECON ROOM 104	INLINE MOUNTED, SUSPENDED FROM ROOF, MAKE UP AIR FAN	839	467 W	1070	0.66	DIRECT	115	1	60	ODEENUIEOU	INSTALLED AND FURNISHED BY M.C. MOUNT INLINE ON THE DUCT. SEE CONTROL NOTES DIAGRAM FOR DETAILS. COORDINATE CONTROL, MEANS OF DISCONNECT INSTALLATION WITH E.C.

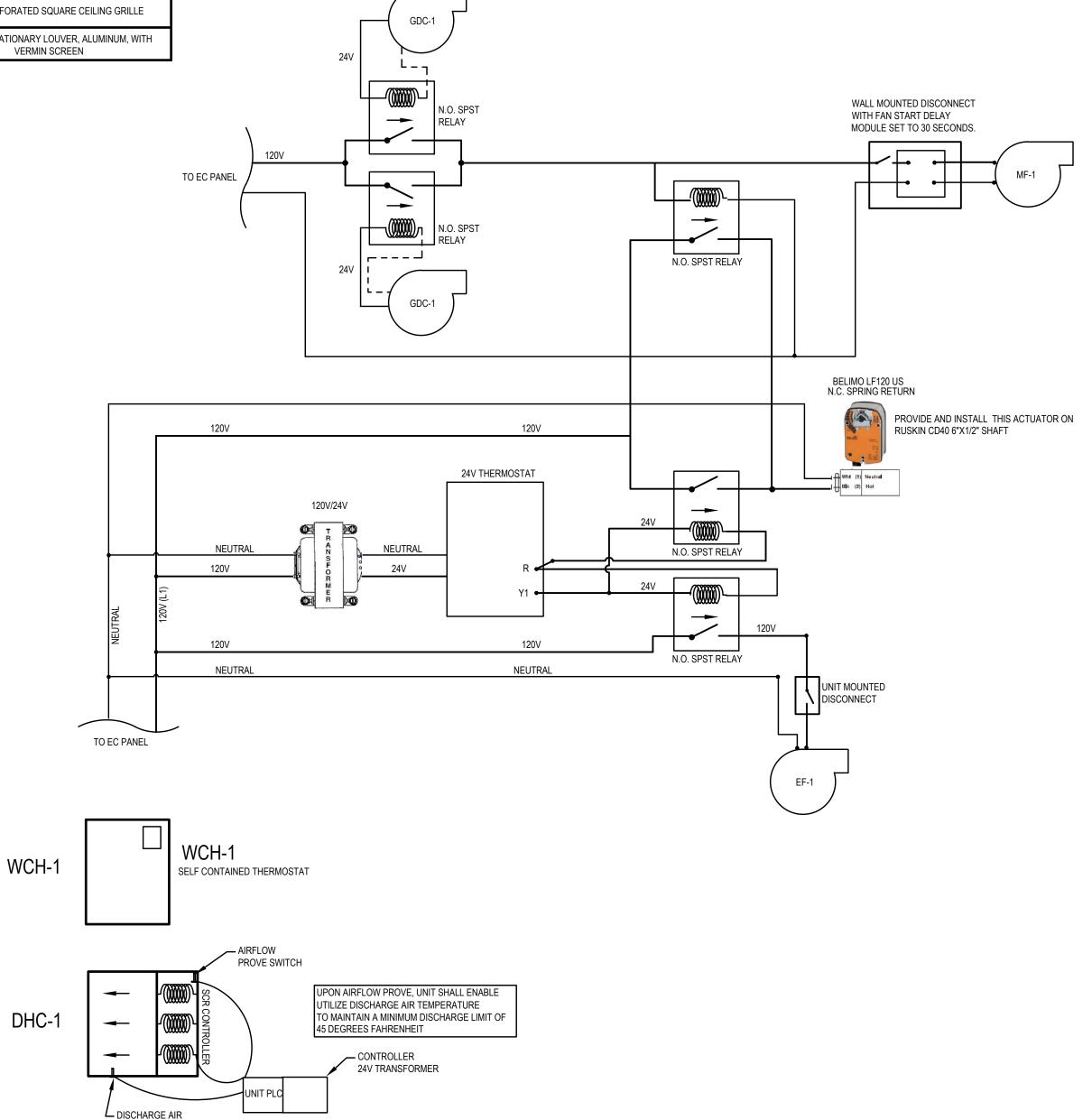
	ELECTRIC CABINET WALL HEATER SCHEDULE											
No	LOCATION	TYPE	BASIS OF DESIGN	kW	V	LECTRICAL Ø	DATA Hz	FAN DATA CFM	NOTES			
WCH-1	DECON ROOM 104	SEMI RECESSED CABINET WALL HEATER	BERKO FRASM4024F	4/2	240	1	60	100	INSTALLED AND FURNISHED BY M.C. MOUNT AT 3' 6" A.F.F. PROVIDE THERMOSTAT AND SEE CONTROL DIAGRAM AND NOTES FOR DETAILS. PROVIDE A SURFACE MOUNTING BOX KIT (PREFIX "SM") AND MOUNT ON SURFACE INSTEAD OF RECESSED. SEE ELECTRICAL PLANS FOR MEANS OF DISCONNECT. PROVIDE MOUNTING EQUIPMENT REQUIRED.			

	ELECTRIC DUCT HEATER COIL											
No		LOCATION	TYPE	BASIS OF DESIGN	kW	El	LECTRICAL	DATA		IR FLOW DA		NOTES
NO	,	LOCATION	TIPE	BASIS OF DESIGN	KVV	V	Ø	Hz	CFM	PRESSURE DROP	DELTA T°F	NOTES
DH	C-1	DECON ROOM 104	DUCT HEATER COIL - OPEN COIL W/ PRESSURE PLATE DESIGN	INDEECO	16	240	1	60	839	0.034" W.C.	00 F	INSTALLED AND FURNISHED BY M.C. MOUNT INSIDE DUCT AFTER THE MF-1 AS INDICATED ON FLOOR PLANS; SEE CONTROL NOTES DIAGRAM FOR DETAILS. COORDINATE CONTROL, MEANS OF DISCONNECT INSTALLATION WITH E.C. PROVIDE INTEGRAL PLC TO START ON 70°F AND CUT OFF AT 80°F. MOUNT INSIDE DUCT, BEHIND COIL.

PROVIDE AND INSTALL WITH UNIT CONTROLLER (PLC) AND SCR CONTROL. NOTED TO CONTROL DETAIL FOR FURTHER REQUIREMENTS

	GEAR DRYING CABINET											
No	0	LOCATION	TYPE	BASIS OF DESIGN	kW	E	LECTRICAL	DATA	EXHAUST DATA	NOTES		
						V	Ø	Hz	CFM			
GDO	)C-1	DECON ROOM 104	FLOOR MOUNTED CABINET	ADC LAUNDRY MODEL ADFG-6	12	240	1	60	300	INSTALLED BY M.C., SELECTED FURNISHED BY DPP/PFD, NO SUBSTITUTIONS WILL BE ACCEPTED. SEE PLUMBING DRAWINGS FOR DRAIN LINES. FOLLOW MANUFACTURER INSTALLATION INSTRUCTIONS. NO MORE THAN 2 90° ELBOWS IN EXHAUST DUCT. COORDINATE CONTROL, MEANS OF DISCONNECT INSTALLATION WITH E.C.		

	AIR DEVICE SCHEDULE											
DEVICE NO.	FUNCTION	NECK SIZE	MANUFACTURER & MODEL NO.	FINISH	NC LEVEL	REMARKS						
SG-1	MAKE UP	24"x18"	KRUEGER 80 STEEL	WHITE	<30	LOUVERED FACE SUPPLY GRILLE; 45° BLADES						
EG-1	EXHAUST	14"x14"	KRUEGER 6490	WHITE	<30	STEEL PERFORATED SQUARE CEILING GRILLE						
ML-1	MAKE UP	58"x40"	RUSKIN ELF211	GRAY	<30	THIN LINE STATIONARY LOUVER, ALUMINUM, WITH VERMIN SCREEN						





### NOTES:

PER SPECIFICATION.

- 1- REFER TO DRAWING MPE1.1 FOR HVAC, PLUMBING/FIRE PROTECTION & ELECTRICAL GENERAL NOTES, ABBREVIATIONS, LEGENDS & DRAWING LIST.
- 2- ALL EXPOSED DUCTWORK SHALL BE 1/2" ACOUSTICALLY LINED. EXPOSED DUCTWORK SHALL NOT BE EXTERNALLY LINED AND CONTRACTOR SHALL REMOVE ALL MARKINGS FROM EXPOSED DUCTWORK. UNEXPOSED DUCTWORK SHALL BE EXTERNALLY INSULATED
- 3- WORK TO CONFORM TO PHILADELPHIA IMC 2018 AS ADOPTED BY BY COUNTY OF PHILADELPHIA
- 4- THIS DRAWING IS DIAGRAMMATIC IN NATURE, CONTRACTOR IS RESPONSIBLE FOR COORDINATING DUCT ROUTES WITH ALL OTHER TRADES. NO SUPPORT HANGER OR CLAMP TO BE MOUNTED ON DUCTWORK. CONSULT STRUCTURAL TEAM FOR ALL ROOF PENETRATIONS AND MOUNTING METHODS PRIOR TO IMPLEMENTING THEM.
- 5- PROVIDE AND INSTALL CLEAR LOCKABLE COVERS FOR ALL THERMOSTATS.
- 6- TEST ALL INTERLOCKED CONTROLS. BALANCE THE ROOM TO BE POSITIVELY PRESSURIZED, AS NO MAKE UP AIR IS ALLOWED TO BE DRAWN FROM GARAGE.

  DRAWING NOTES:
- 1) INSTALL NEW WCH-1 WITH REMOTE THERMOSTATIC CONTROLS. SEE CONTROL NOTES FOR WIRING INFORMATION.
- PROVIDE NEW 24"x16" TYPE B FIRE DAMPER, MATCHING OUTSIDEWALL RATING. IF RATING CAN NOT BE DETERMINED, PROVIDE A 2H RATED TYPE B FIRE DAMPER.
- 6" Ø EXHAUST DUCT GOOSE NECK TERMINATION. SEE THE DETAIL 3 / M1-2 FOR ADDITIONAL INFORMATION. TERMINATE W/ 45° ELBOW. PROVIDE GALVANIZED STEEL WIRE MESH SCREEN ON THE END.
- PROVIDE A MOTORIZED BACK DRAFT DAMPER RUSKIN CD40 OR EQUAL MATCHING THE DUCT 24"X16" IN SIZE. SEE CONTROL NOTES FOR WIRING INFORMATION
- 5 INSTALL AN EF-1 W/ BD-100 AND EG-1 W/ ENOUGH DUCT TO HOUSE THE BACKDRAFT DAMPER UNOBSTRUCTED. SEE CONTROL NOTES FOR WIRING INFORMATION.
- PROVIDE INSULATED PANEL BEHIND LOUVER TO INFILL THE REMAINDER OF THE EXISTING WINDOW OPENING UNUSED BY NEW DUCT.

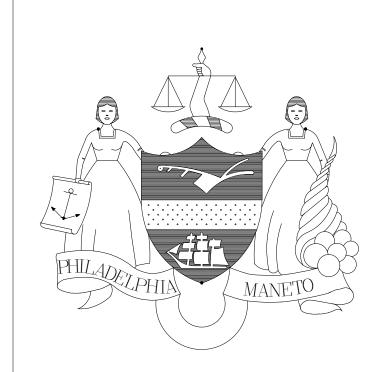
### CONTROL NOTES :

PROVIDE CONTROLS, RELAYS AND INTERLOCKS. AS NOTED IN DETAIL BELOW
 ALL CONTROL AND LOW VOLTAGE WIRING SHALL BE ENCASED IN RIGID GALVANIZED STEEL CONDUIT WITH ALL RELAYS, TRANSFORMERS AND SENSORS MOUNTED IN LABELED

4- 24V SOURCE FROM DRYING CABINETS SHALL BE TAPPED FROM CONTROL NODE FOR

INTERNAL FAN CONTACT. REFER TO MANUFACTURER'S WIRING DIAGRAM.

- JUNCTION BOXES
  AND PLCS SHALL BE INSTALLED IN A NEMA 3R ENCLOSURE.
- 3- PROVIDE A CIRCUIT WIRED IN PARALLEL THAT ENERGIZES MAKE UP AIR FAN MF-1 WHEN EITHER OF THE GEAR DRYING CABINETS GDC-1s ARE ENERGIZED AS NOTED IN CONTROL DIAGRAM.



REVISIONS

ISSUE DATE REVISIONS

1 | 11/08/22 | ISSUED FOR BID

KYLE O'CONNOR, PROJECT MANAGER

PHILADELPHIA

PROJECT TITLE



CITY OF PHILADELPHIA

DEPARTMENT OF PUBLIC PROPERTY

1400 JFK BOULEVARD

7TH FLOOR, CITY HALL

ENGINE 72
DECONTAMINATION SUITE

ENLARGED PLANS,
SCHEDULES & DETAILS

13-21-4643-01

DATE 11/08/22

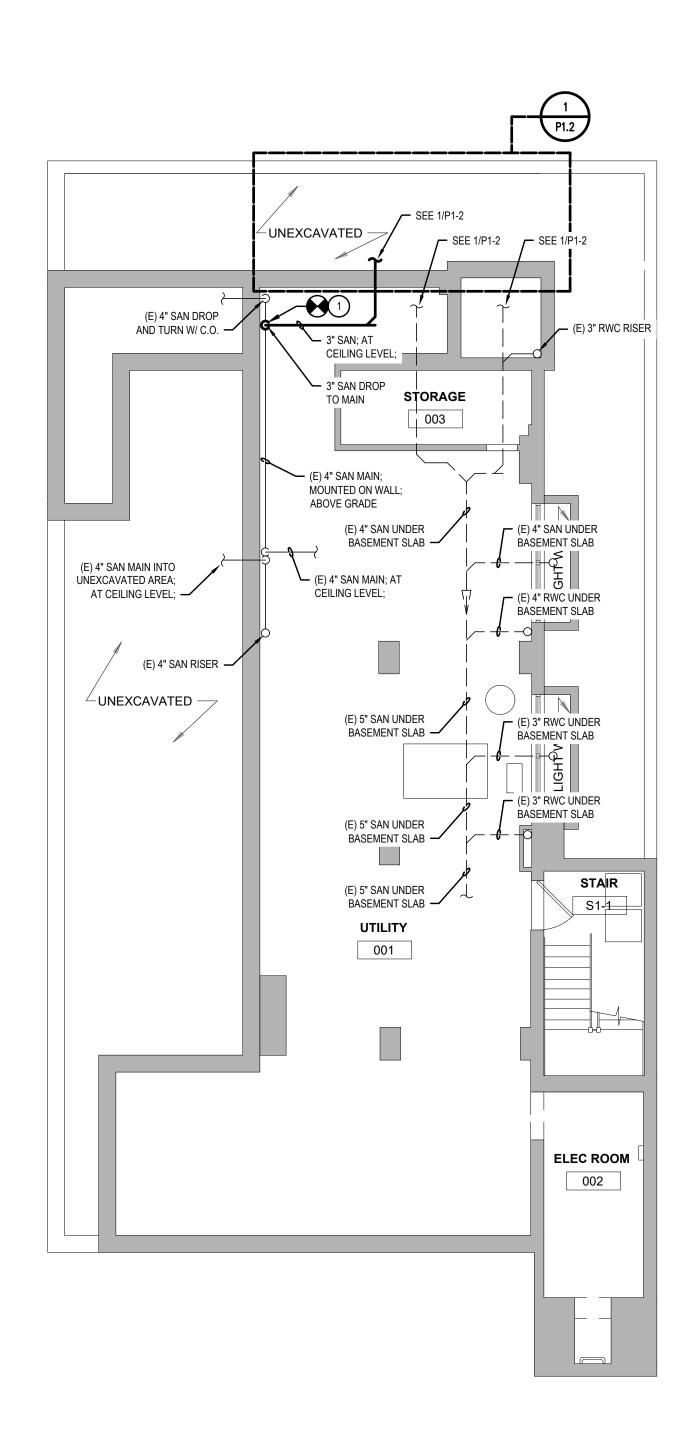
SCALE NOTED

DRAWN BY WFW

CHECKED RY WFW

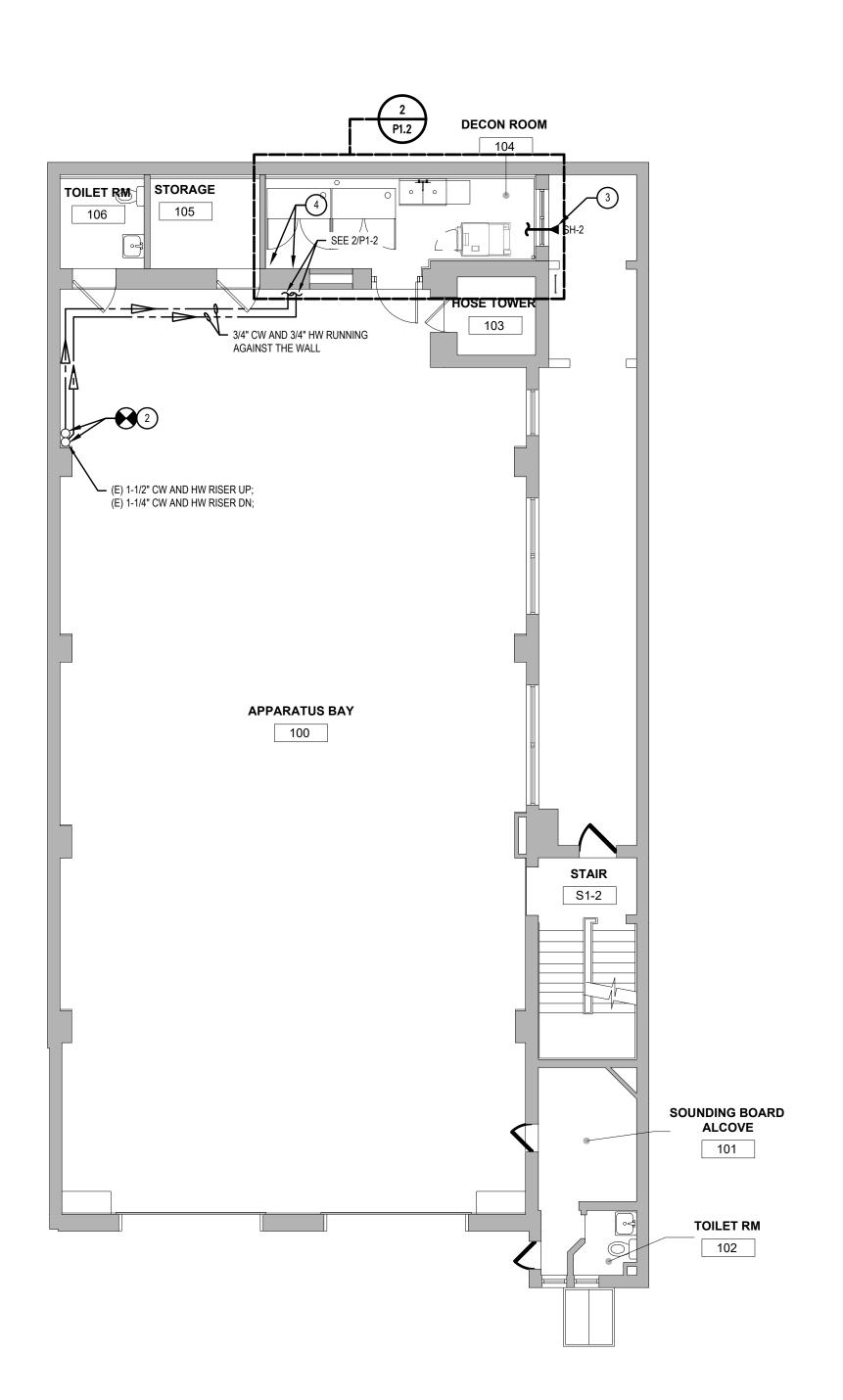
BHA No.: 20-150

NOTE: ALL DIMENSIONS AND CONDITIONS SHALL BE SEFORE PROCEEDING WITH THE WORK.



BASEMENT FLOOR PLAN

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



FIRST FLOOR PLAN

DOMESTIC WATER NEW WORK

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

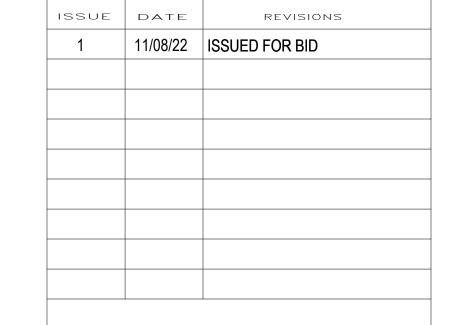
### NOTES:

1- REFER TO DRAWING MPE1.1 FOR HVAC, PLUMBING/FIRE PROTECTION & ELECTRICAL GENERAL NOTES, ABBREVIATIONS, LEGENDS & DRAWING LIST.

- 2- THIS DRAWING IS DIAGRAMMATIC IN NATURE, CONTRACTOR IS RESPONSIBLE FOR COORDINATING PIPING ROUTES WITH ALL OTHER TRADES, NO SUPPORT HANGER OR CLAMP TO BE MOUNTED ON DUCTWORK. NO HORIZONTAL CLEAN OUT (CAPPED EIGHTH BEND) TO BE OBSTRUCTED BY WALL, DUCT WORK OR OTHER ELEMENTS. ALL FIRE PROTECTION PIPING IS TO TAKE LAST PRIORITIES DURING ROUTE COORDINATION.
- 3- WORK TO CONFORM TO 2018 PHILADELPHIA PLUMBING CODE. USE SECTION 919 FOR SINGLE STACK PHILADELPHIA STYLE SYSTEM AND ALL APPLICABLE TABLES AS MANDATED BY AHJ AND IECC 2018. ALL UNDERGROUND PIPING IS GRANDFATHERED AS PER IEBC 2018 SECTION 503 AND CHAPTER CHAPTER 7 "ALTERATIONS LEVEL 1" AS ADOPTED BY PHILADELPHIA CODE AUTHORITY.
- 4- ALL SANITARY PIPING IS DEPICTED BELOW SLAB OR BURIED UNDER SLAB UNLESS INDICATED OTHERWISE. ALL COLD/HOT WATER SUPPLY / RETURN PIPING IS RUN TIGHT TO SLAB OF FLOOR ABOVE UNLESS INDICATED OTHERWISE. ALL VENT PIPING IS RUN TIGHT TO SLAB OF FLOOR ABOVE UNLESS INDICATED OTHERWISE.
- 5- ALL SANITARY PIPING 3" AND LARGER IS SLOPED 1/8" PER FOOT UNLESS INDICATED OTHERWISE. ALL SAN PIPING 2-1/2" AND SMALLER IS SLOPED AT 1/4" PER FOOT. ALL VENT, COLD WATER, HOT WATER, HOT WATER RETURN IS SLOPED TO DRAIN AS NEEDED PER CODE. PROVIDE DRAIN VALVES AT LOW POINTS FOR SYSTEMS MAINTENANCE IN CONVENIENT LOCATIONS. COORDINATE WITH ARCHITECTURAL DRAWINGS, THE LOCATIONS OF THOSE VALVES. ALL VENT PIPING MUST BE SLOPED TO DRAIN AS REQUIRED PER CODE AWAY FROM STACK TOWARDS A FIXTURE.

### DRAWING NOTES:

- TIE IN NEW 3" SAN PIPE IN BASEMENT CEILING INTO A (E) 4" SAN PIPE RUNNING AGAINST BASEMENT WALL AS INDICATED.
- TIE IN NEW 3/4" CW AND 3/4" HW PIPING TO EXISTING 1-1/2" CW & 1-1/2" HW PIPES AND RUN NEW PIPES AGAINST GARAGES WALLS. ENTER THE NEW DECON ROOM TRHU A WALL AND SEE ENLARGE PLANS FOR DETAILS.
- PROVIDE NEW SIDE WALL, NITROGEN LOADED, DRY TYPE HEAD (SH-2) TO PROVIDE FIRE PROTECTION UNDER THE TEMPORARY STRUCTURE LOCATED OUTSIDE THE DECON 104 ROOM; RELOCATE THE SPRINKLER PIPE INSIDE THE DECON 104 ROOM AS REQUIRED AND DESCRIBED IN 2/P1.2, PER NEW HVAC AND PLUMBING WORK. SEE P5.1 FOR DESIGN CRITERIA;
- REMOVE ALL TEMPORARY SUPPLY PIPING ERECTED DURING PREVIOUS PHASES OF THIS PROJECT. MODIFY COPPER DRAIN FROM THE SINK TO MATCH THE DESIGN OF DRAINAGE DIAGRAM ON P5.1



REVISIONS



KYLE O'CONNOR, PROJECT MANAGER

SEALS

BLACKNEY
HAYES
ARCHITECTS
Federal Reserve Ba
100 North Independen

CITY OF PHILADELPHIA

DEPARTMENT OF PUBLIC PROPERTY

1400 JFK BOULEVARD

7TH FLOOR, CITY HALL

PHILADELPHIA PEN
PROJECT TITLE

ENGINE 72 DECONTAMINATION SUITE

FLOOR PLANS

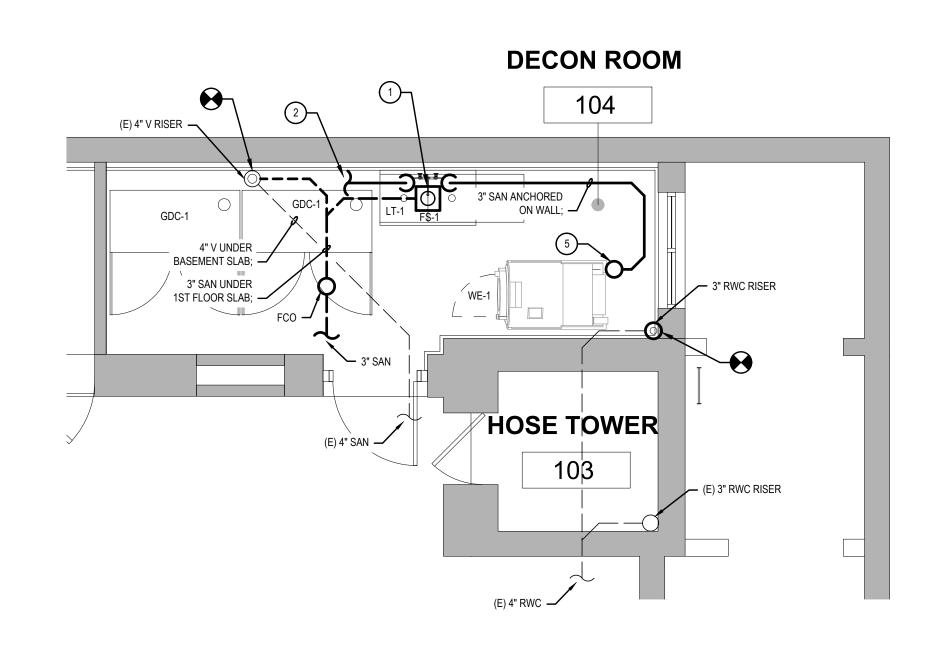
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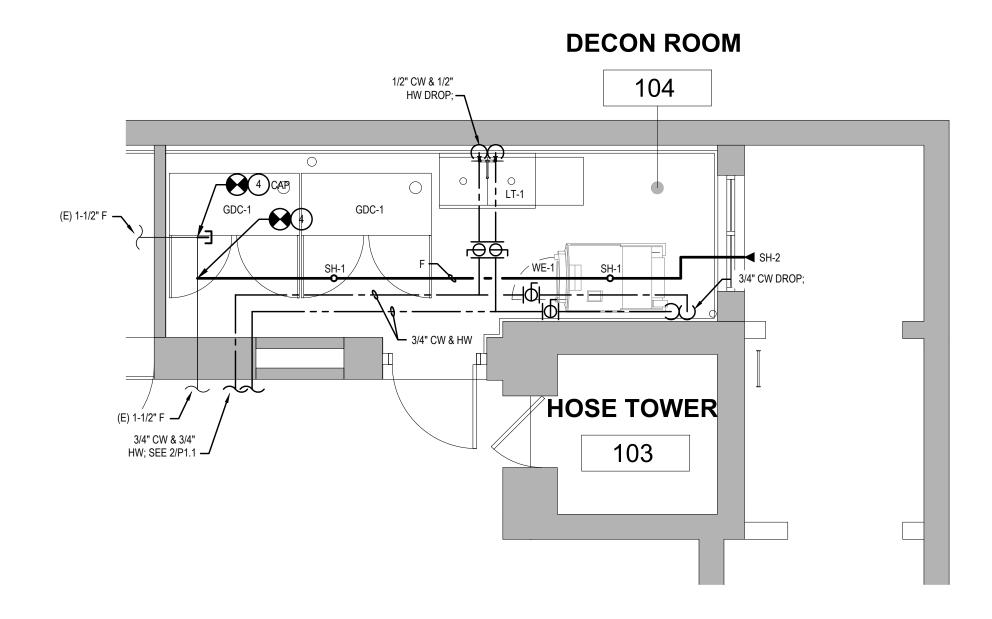
Date 11/08/22

WFW

BHA No.: 20-150

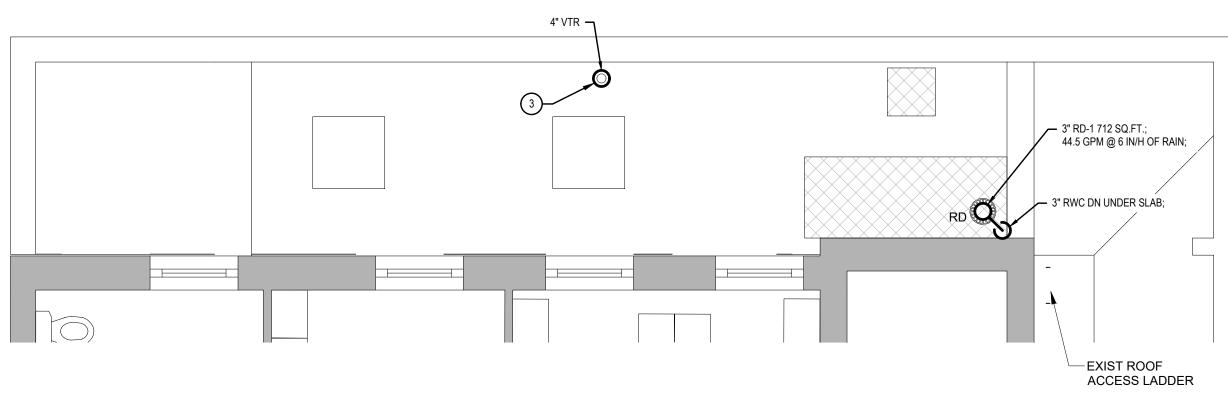
ALL DIMENSIONS AND CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR AT THE SITE BEFORE PROCEEDING WITH THE WORK.





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

# PARTIAL FIRST FLOOR PLAN DOMESTIC WATER NEW WORK SCALE: 1/4" = 1'-0"



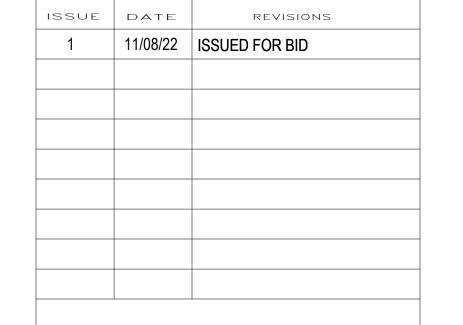
PARTIAL ROOF PLAN
P1.2 PLUMBING NEW WORK
SCALE: 1/4" = 1'-0"

### NOTES:

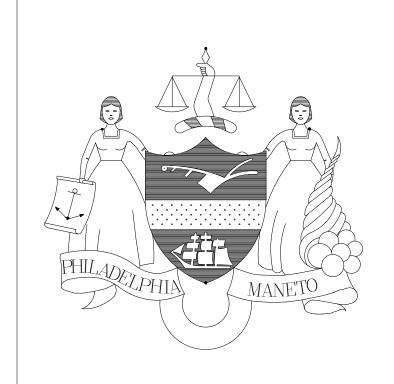
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- 2- THIS DRAWING IS DIAGRAMMATIC IN NATURE, CONTRACTOR IS RESPONSIBLE FOR COORDINATING PIPING ROUTES WITH ALL OTHER TRADES, NO SUPPORT HANGER OR CLAMP TO BE MOUNTED ON DUCTWORK. NO HORIZONTAL CLEAN OUT (CAPPED EIGHTH BEND) TO BE OBSTRUCTED BY WALL, DUCT WORK OR OTHER ELEMENTS. ALL FIRE PROTECTION PIPING IS TO TAKE LAST PRIORITIES DURING ROUTE COORDINATION.
- 3- WORK TO CONFORM TO 2018 PHILADELPHIA PLUMBING CODE. USE SECTION 919
  FOR SINGLE STACK PHILADELPHIA STYLE SYSTEM AND ALL APPLICABLE TABLES AS
  MANDATED BY AHJ AND IECC 2018. ALL UNDERGROUND PIPING IS GRANDFATHERED
  AS PER IEBC 2018 SECTION 503 AND CHAPTER CHAPTER 7 "ALTERATIONS LEVEL 1"
  AS ADOPTED BY PHILADELPHIA CODE AUTHORITY.
- 4- ALL SANITARY PIPING IS DEPICTED BELOW SLAB OR BURIED UNDER SLAB UNLESS INDICATED OTHERWISE. ALL COLD/HOT WATER SUPPLY / RETURN PIPING IS RUN TIGHT TO SLAB OF FLOOR ABOVE UNLESS INDICATED OTHERWISE. ALL VENT PIPING IS RUN TIGHT TO SLAB OF FLOOR ABOVE UNLESS INDICATED OTHERWISE.
- 5- ALL SANITARY PIPING 3" AND LARGER IS SLOPED 1/8" PER FOOT UNLESS INDICATED OTHERWISE. ALL SAN PIPING 2-1/2" AND SMALLER IS SLOPED AT 1/4" PER FOOT. ALL VENT, COLD WATER, HOT WATER, HOT WATER RETURN IS SLOPED TO DRAIN AS NEEDED PER CODE. PROVIDE DRAIN VALVES AT LOW POINTS FOR SYSTEMS MAINTENANCE IN CONVENIENT LOCATIONS. COORDINATE WITH ARCHITECTURAL DRAWINGS, THE LOCATIONS OF THOSE VALVES. ALL VENT PIPING MUST BE SLOPED TO DRAIN AS REQUIRED PER CODE AWAY FROM STACK TOWARDS A FIXTURE.

### DRAWING NOTES:

- 1) INSTALL NEW FLOOR SINK FS-1 AND DIRECT WASTE FROM GDC-1s, WE-1 AND LT-1 TO THE NEW FLOOR SINK. MAINTAIN 1" AIRGAP ABOVE THE FLOOR SINK.
- PIPE AND ROUTE 2" DRAIN CONNECTION FROM EACH GDC-1 TO THE FS-1. ROUTE AGAINST THE WALL.
- PROVIDE NEW VENT THRU ROOF ASSEMBLY ON EXISTING VENT STACK. REFLASH EXISTING 4" VENT THRU ROOF DURING ROOF RESTORATIONS.
- CONNECT NEW FIRE PROTECTION LINE AS INDICATED. CAP EXISTING TEE AS INDICATED. DO NOT RE-USE SPRINKLERS. PROVIDE NEW UPRIGHT SPRINKLERS SH-1 W/ PROTECTIVE GUARDS (TO PROTECT FROM MECHANICAL DAMAGE). SEE P5.1 FOR DESIGN CRITERIA;
- PIPE AND ROUTE 3" DRAIN CONNECTION FROM WE-1 TO THE FS-1. ROUTE AGAINST WALL. EXACT HEIGHT OF OPEN CONNECTION FOR NEW DRAIN LINE TO BE COORDINATED WITH REQUIRED SLOPE TO FS-1 AND LENGTH OF DISCHARGE HOSE RECOMMENDED BY MANUFACTURER.



REVISIONS



KYLE O'CONNOR, PROJECT MANAGER

SEALS



CITY OF PHILADELPHIA

DEPARTMENT OF PUBLIC PROPERTY

1400 JFK BOULEVARD

7TH FLOOR, CITY HALL

PHILADELPHIA PENNSYLVANIA

PROJECT TITLE

ENGINE 72 DECONTAMINATION SUITE

ENLARGED PLANS

13-21-4643-01
DATE 11/08/22
SCALE NOTED
DRAWN BY

BHA No.: 20-150

ALL DIMENSIONS AND CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR AT THE SITE BEFORE PROCEEDING WITH THE WORK.

	PLUMBING FIXTURE SCHEDULE												
No	FIXTURE	MANUFACTURER	MODEL #	TYPE	TRIM	DRAINAGE FIXTURE UNITS	CW	CONNECT		TRAP	REMARKS		
LT-1	TWO COMPARTMENT LAUNDRY TRAY	REGENCY TABLES AND SINKS	600S22424B	16 GA TYPE 430 STAINLESS STEEL, W/ BACKSPLASH AND ROLLED EDGES, 8" CENTERED FAUCET, 48"L x 24"W x 13"D;	FAUCET: CHICAGO FAUCET 540-LDE35-317WXFAB; DRAIN KOHLER K-8801; REGENCY 600DTD24213 24" DETACHABLE DRAIN BOARD; SHUT OFF BALL VALVES MOUNTED TIGHT TO CEILING	2 2	3/4"	HW 3/4"	1-1/2"		FURNISHED AND INSTALLED BY P.C. INSTALL AGAINST THE WALL, DIRECT DRAINAGE TO FS-1 INSTALLED BELOW. MAINTAIN 1" AIRGAP. PROVIDE SHUT OFF VALVES TIGHT TO CEILING IN THE DECON 104 ROOM.		
FS-1	FLOOR SINK	ZURN INDUSTRIES	ZN1901-NL	CAST-IRON ENAMEL COATED 8" DEEP FLOOR SINK W/ A GRATE AND A STEEL FRAME AND NEOLOCK OUTLET. PROVIDE CHARLOTTE SERVICE WEIGHT DEEP SEAL TRAP.	PROVIDE ALL LISTED OPTIONS AND A CHARLOTTE SERVICE WEIGHT DEEP SEAL TRAP OR EQUAL.	2	X	X	3"	3"	FURNISHED AND INSTALLED BY P.C. INSTALL UNDER LT-1 AND DIRECT LT-1, WE-1 AND BOTH GDC-1s DISCHARGES TO THIS FLOOR SINK.		
RD-1	MAIN ROOF DRAIN	ZURN INDUSTRIES	ZC100-C	CAST IRON DOMED PRIMARY ROOF DRAIN W/ UNDERDECK CLAMP & CAST IRON DOME.	PROVIDE ALL LISTED OPTIONS.			$\times$	3"	X	FURNISHED AND INSTALLED BY P.C. PROVIDE ANY OTHER PRODUCT OPTION (SUFFIX) THAT IS REQUIRED FOR COMPLETE INSTALLATION.		
WE-1	RIGID MOUNTED WASHER EXTRACTOR	MILNOR INC.	30022 VRJ	RIGID MOUNTED WASHER EXTRACTOR, 60LB. CAPACITY, 208V / 3PH / 60HZ , 5 HP MOTOR.	PROVIDE ISOLATION BALL VALVES AND UNIONS FOR COLD AND HOT WATER SUPPLY. PROVIDE A 3" DWV COPPER DRAIN. PROVIDE WATER HAMMER ARRESTORS.		3/4"	3/4"	3"	X	FURNISHED AND INSTALLED BY P.C. MOUNT AND CONNECT AS DIRECTED BY MANUFACTURER. PROVIDE VIBRATIONAL ISOLATION MOUNTS AS REQUIRED BY MANUFACTURER. PROVIDE A 3" DWV COPPER DRAIN PIPE AND ROUTE AGAINST THE WALL AND TERMINATE AT FS-1 W/ A 1" AIRGAP. PROVIDE WHA.		

PIPE INSULATION SCHEDULE											
SERVICE	MANUFACTURER	TYPE	VAPOR BARRIER	INSULATION THICKNESS	REMARKS						
DOMESTIC COLD WATER	OWENS CORNING OR AEROFLEX	FIBERGLASS OR CLOSED CELL ELASTOMERIC	YES, FACTORY APPLIED OR INTEGRAL	1" : FOR PIPES 2" AND BELOW 1-1/2" : FOR PIPES 2-1/2" AND ABOVE	RUNOUTS NOT TO EXCEED 12' IN LENGTH. ASTM C534 5 PCF DENSITY FOR ELASTOMETRIC ASTM C547 4 PCF DENSITY FOR MINERAL FIBER						
DOMESTIC HOT WATER / HOT WATER RETURN	OWENS CORNING OR AEROFLEX	FIBERGLASS OR CLOSED CELL ELASTOMERIC	YES, FACTORY APPLIED OR INTEGRAL	1" : FOR PIPES 2" AND BELOW 1-1/2" : FOR PIPES 2-1/2" AND ABOVE	RUNOUTS NOT TO EXCEED 12' IN LENGTH. ASTM C534 5 PCF DENSITY FOR ELASTOMETRIC ASTM C547 4 PCF DENSITY FOR MINERAL FIBER						
STORM WATER	OWENS CORNING OR AEROFLEX	FIBERGLASS OR CLOSED CELL ELASTOMERIC	YES, FACTORY APPLIED OR INTEGRAL	1" : FOR PIPES 2" AND BELOW 1-1/2" : FOR PIPES 2-1/2" AND ABOVE	RUNOUTS NOT TO EXCEED 12' IN LENGTH. ASTM C534 5 PCF DENSITY FOR ELASTOMETRIC ASTM C547 4 PCF DENSITY FOR MINERAL FIBER						

SYSTEM	PIPE SIZE	LOCATION	MATERIAL	SCHEDULE AND/OR TYPE	FITTING	JOINT	REMARKS
	2" & LARGER	ABOVE GRADE/GROUND	CAST IRON	SERVICE WEIGHT	CAST IRON	NO-HUB	STAINLESS STEEL CLAMPS & NEOPRENE GASKET
SANITARY, STORM	1-1/2" & SMALLER	ABOVE GRADE/GROUND	COPPER	TYPE 'DWV'	COPPER	SOLDERED	95% TIN & 5% ANTIMONY
& WASTE	ALL	BELOW GRADE/GROUND	CAST IRON	SERVICE WEIGHT	CAST IRON	BELL AND SPIGOT	PUSH ON RUBBER GASKET JOINTS OR LEAD AND OAKUM
	2" & LARGER	ABOVE GRADE/GROUND	CAST IRON	SERVICE WEIGHT	CAST IRON	NO-HUB	STAINLESS STEEL CLAMPS & NEOPRENE GASKET
SANITARY VENT	1-1/2" & SMALLER	ABOVE GRADE/GROUND COPPER		TYPE 'DWV'	COPPER	SOLDERED	95% TIN & 5% ANTIMONY
& WASTE VENT	ALL	BELOW GRADE/GROUND	CAST IRON	SERVICE WEIGHT	CAST IRON	BELL AND SPIGOT	PUSH ON RUBBER GASKET JOINTS OR LEAD AND OAKUM
COLD WATER	ALL	ABOVE GRADE/GROUND	COPPER	TYPE 'L'	COPPER	SOLDERED	95% TIN & 5% ANTIMONY
HOT WATER / HOT WATER RETURN	ALL	ABOVE GRADE/GROUND	COPPER	TYPE 'L'	COPPER	SOLDERED	95% TIN & 5% ANTIMONY
	ALL	BELOW GRADE/GROUND	><	><	><	><	CONSULT PGW COMPANY FOR DETAILS
NATURAL GAS PIPING	ALL	ABOVE GRADE/GROUND; CONCEALED/ AND OR >7" W.C.	BLACK STEEL	SCHEDULE 40	FORGED; CLASS 2000 SOCKET WELD	SOCKET WELDED	IN CONCEALED SPACES, NO UNIONS ARE PERMITTED;
	ALL	ABOVE GRADE/GROUND AND BELOW <7" W.C.	BLACK STEEL	SCHEDULE 40	CAST IRON CLASS 125	THREADED	PROTECTIVE COATING PER IFGC 2009 403.8

WATER HAMMER SCHEDULE WA-1									
PPP SIZE	P.D.I. SYMBOL	MAX FIXTURES RATINGS	'A' SIZE	'B' SIZE					
1/2"	A	1 - 11	5"	1/2"					
3/4"	В	12 - 32	5"	3/4"					

### **FIRE PROTECTION DESIGN DATA: DECON ROOM 104**

HAZARD CLASSIFICATION ORDINARY HAZARD GROUP II SPRINKLER TAG 1,500 SQ FT MINIMUM OPERATING AREA 0.2 MINIMUM GPM/ SQ FT HOSE STREAM ALLOWANCE : 130 SQ FT MAXIMUM SPRINKLER COVERAGE SPRINKLER TYPE UPRIGHT, W/ GUARDS : QUICK RESPONSE HIGH TEMPERATURE SPRINKLER RESPONSE TYPE TEMPERATURE RATING : PER NFPA 13

NOMINAL K-FACTOR PIPING - WET SYSTEM : SCHEDULE 40 BLACK STEEL, GROOVED, THREADED OR WELDED, CLASS 125 FITTINGS

(E) 1-1/2" CW; (E) 1-1/2" HW;

(E) 1-1/4" CW;

(E) 1-1/4" HW;

SCALE : DIAGRAMMATIC

**OUTSIDE OVERHANG** 

NOMINAL K-FACTOR

PIPING - WET SYSTEM

HAZARD CLASSIFICATION ORDINARY HAZARD GROUP II SPRINKLER TAG 1,500 SQ FT MINIMUM OPERATING AREA DENSITY 0.2 MINIMUM GPM/ SQ FT HOSE STREAM ALLOWANCE : 250 GPM : 130 SQ FT MAXIMUM SPRINKLER COVERAGE SPRINKLER TYPE

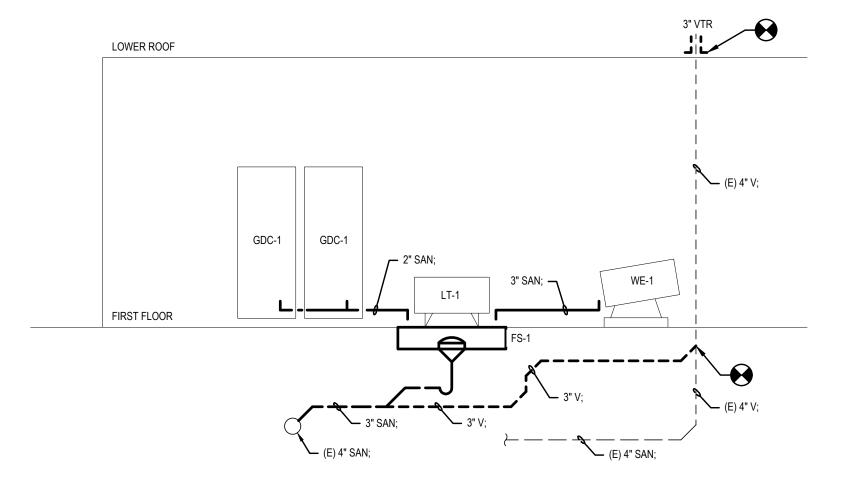
SIDEWALL, DRYTYPE, NITROGEN LOADED SPRINKLER RESPONSE TYPE : QUICK RESPONSE INTERMEDIATE TEMPERATURE TEMPERATURE RATING

> : SCHEDULE 40 BLACK STEEL, GROOVED, THREADED OR WELDED, CLASS 125 FITTINGS

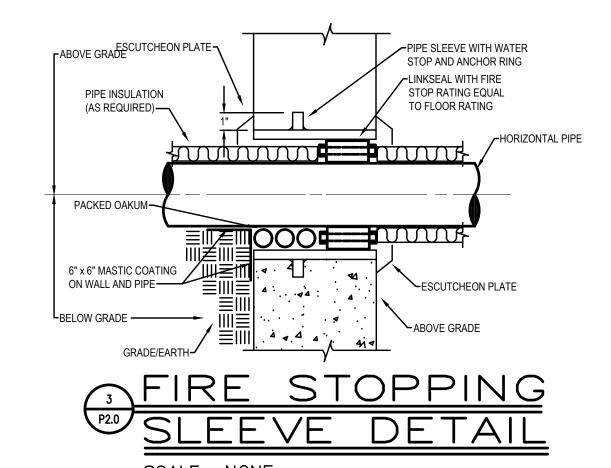


1- REFER TO DRAWING MPE1.1 FOR HVAC, PLUMBING/FIRE PROTECTION & ELECTRICAL GENERAL NOTES, ABBREVIATIONS, LEGENDS & DRAWING LIST.

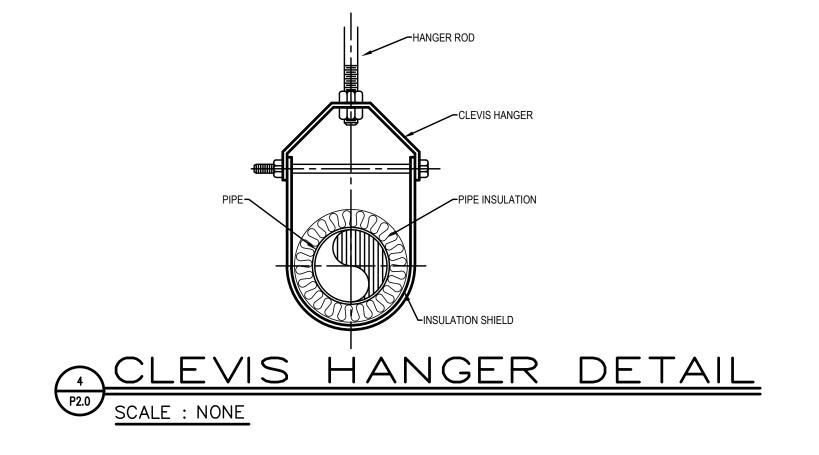
2- WORK TO CONFORM TO PHILADELPHIA PLUMBING CODE 2018 EDITION, WITH ALL CURRENT AMENDMENTS AS WELL AS ALL EXCEPTIONS MANDATED BY OFFICE OF PHILADELPHIA

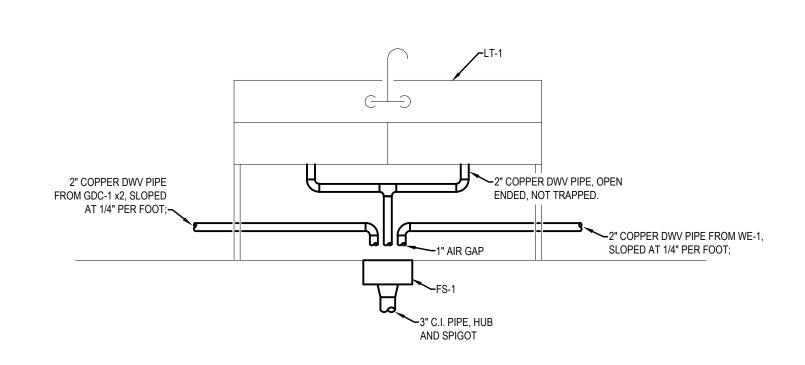






PARTIAL RISER DIAGRAM
PLUMBING - DOMESTIC

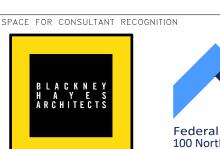




LOWER ROOF

NOTE: AGGREGATE THREE 2" COPPER PIPES OVER FLOOR SINK FS-1 WITH 1" AIR GAP ABOVE FLOOR SINK; SINK DRAINAGE DETAIL

SCALE: NONE



KYLE O'CONNOR, PROJECT MANAGER



CITY OF PHILADELPHIA DEPARTMENT OF PUBLIC PROPERTY 1400 JFK BOULEVARD 7TH FLOOR, CITY HALL

REVISIONS

ISSUE DATE REVISIONS

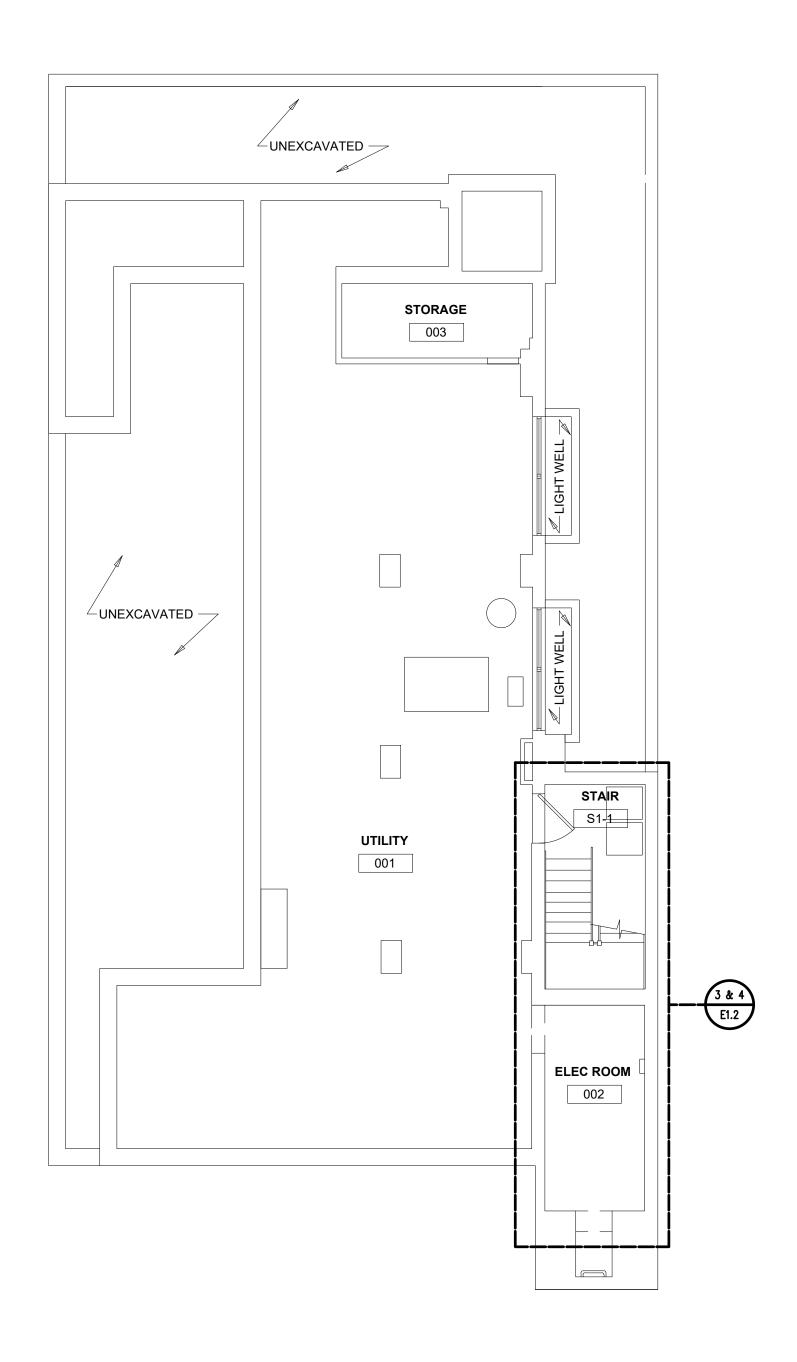
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PHILADELPHIA

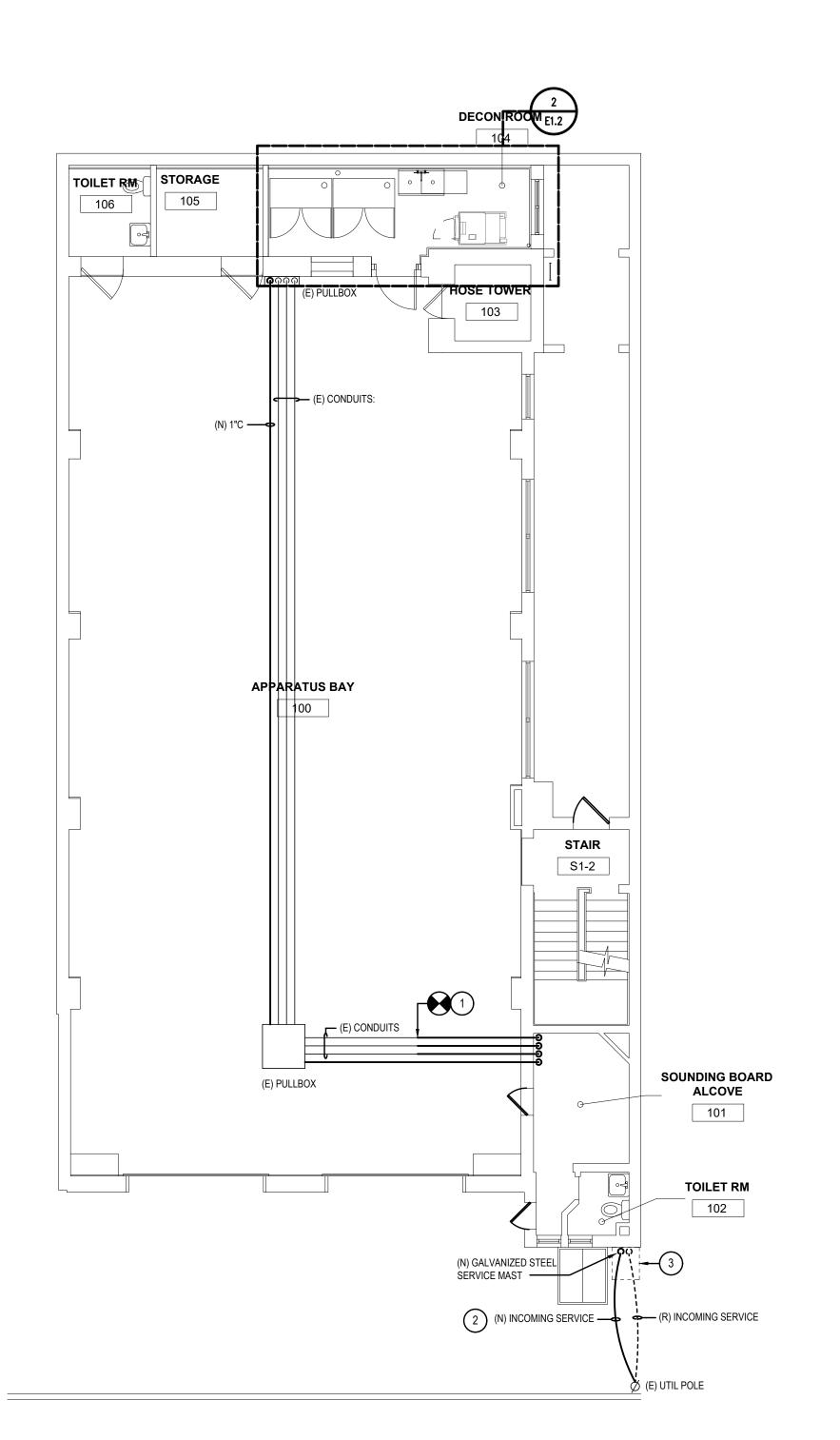
ENGINE 72 DECONTAMINATION SUITE

DETAILS, SCHEDULES AND DIAGRAMS

DATE	3-21-4643-01 1/08/22	DE 1
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NOTE:	ALL DIMENSIONS AND CO VERIFIED BY THE CONTRA BEFORE PROCEEDING	ACTOR AT THE SITE



BASEMENT FLOOR PLAN ELECTRICAL NEW WORK SCALE : 1/8" = 1'-0"



FIRST FLOOR PLAN
ELECTRICAL NEW WORK SCALE : 1/8" = 1'-0"

### NOTES:

1- REFER TO DRAWING MPE-1 FOR HVAC, PLUMBING/FIRE PROTECTION & ELECTRICAL GENERAL NOTES, ABBREVIATIONS, LEGENDS & DRAWING LIST.

### DRAWING NOTES:

- EXTEND EXISTING CONDUIT PROVISIONS, AND CORE DOWN THROUGH FLOOR TO BASEMENT ELECTRICAL ROOM BELOW.
- 2 NEW INCOMING AERIAL SERVICE SHALL BE IN ACCORDANCE WITH PECO ILLUSTRATIONS 12.02 AND 12.03.
- E.C. TO EXCAVATE FOR NEW SERVICE ENTRANCE AS REQUIRED. BACKFILL AND REPAIR SIDEWALK TO MATCH EXISTING. ENSURE GRADING SLOPES AWAY FROM

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1	11/08/22	ISSUED FOR BID



KYLE O'CONNOR, PROJECT MANAGER



CITY OF PHILADELPHIA DEPARTMENT OF PUBLIC PROPERTY

1400 JFK BOULEVARD 7TH FLOOR, CITY HALL PHILADELPHIA PROJECT TITLE

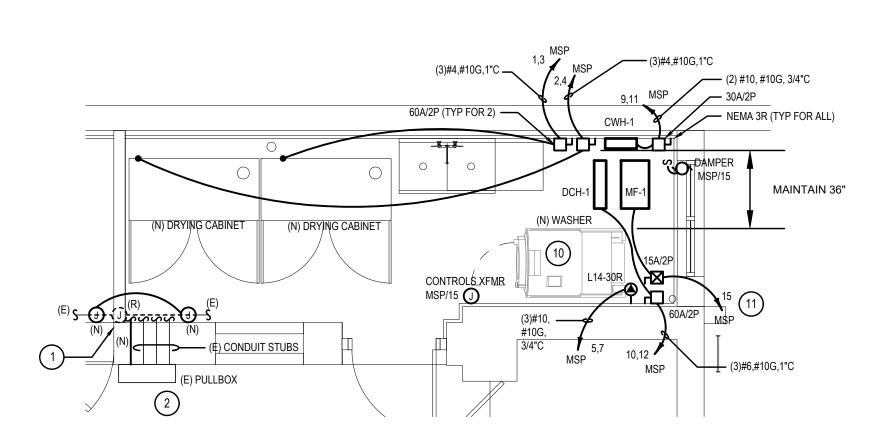
ENGINE 72 DECONTAMINATION SUITE

FLOOR PLANS

13-21-4643-01
DATE 11/08/22

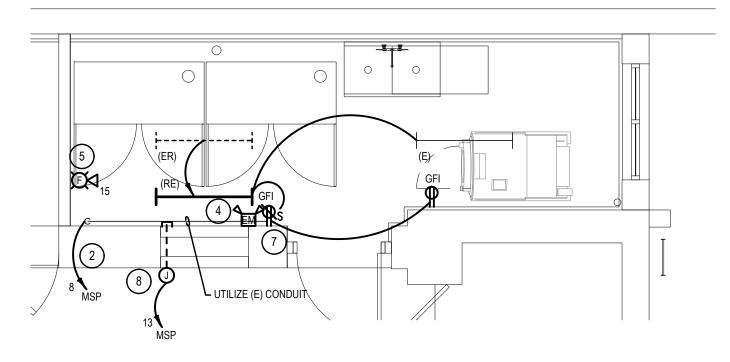
BHA No.: 20-150

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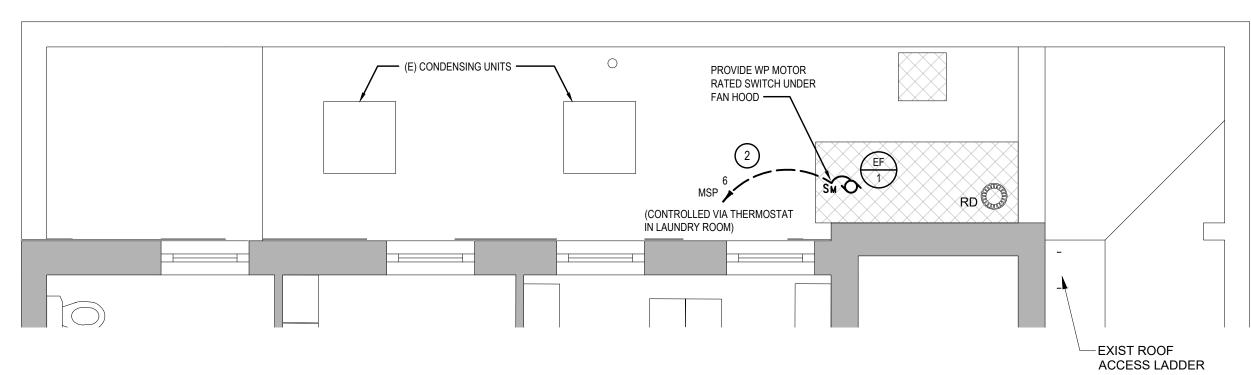


### PARTIAL FIRST FLOOR PLAN E12 ELECTRICAL NEW WORK

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



# PARTIAL FIRST FLOOR PLAN E12 E12 E12 E12 E12

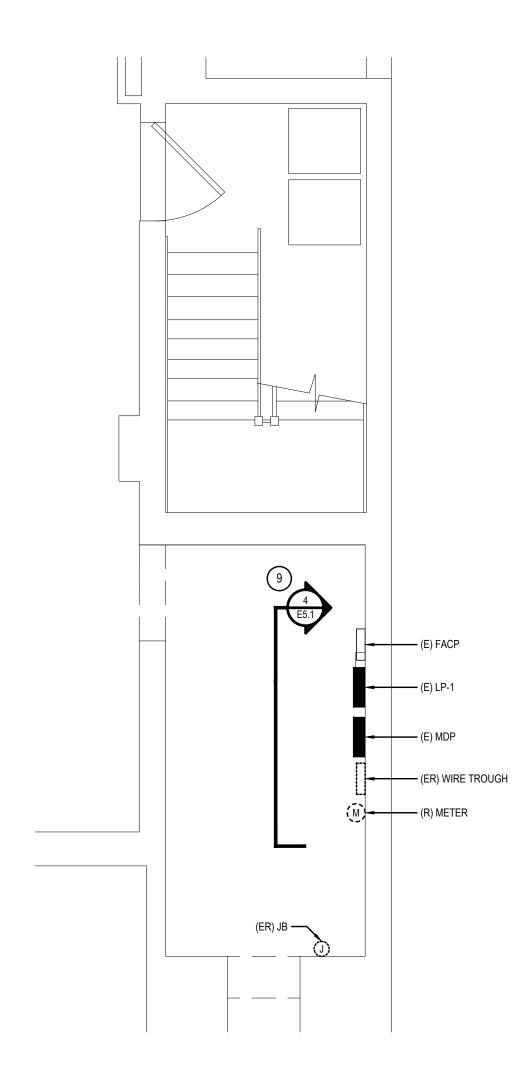


PARTIAL ROOF PLAN

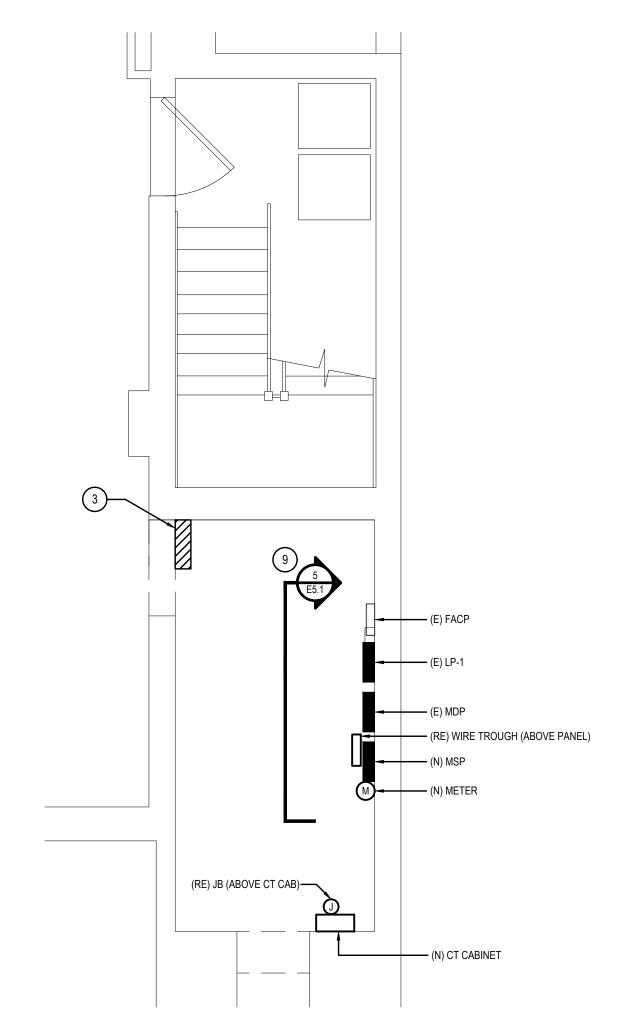
E12

ELECTRICAL NEW WORK

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







BASEMENT FLOOR PLAN

E12

ELECTRICAL NEW WORK

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

# NOTES: 1 11/08/22 ISSUED FOR BID 1- REFER TO DRAWING MPE-1 FOR HVAC, PLUMBING/FIRE PROTECTION & ELECTRICAL GENERAL NOTES, ABBREVIATIONS, LEGENDS & DRAWING LIST. 2- WIRING FOR NEW LAUNDRY EQUIPMENT ASSUMES A NEUTRAL IS REQUIRED. IF NOT USED, SAFE OFF AT BOTH ENDS, AND DO NOT CONNECT TO NEUTRAL BUS AT PANEL. DRAWING NOTES:

REMOVE EXISTING JUNCTION BOX. INTERCEPT EXISTING MC CABLE ON EITHER SIDE OF PROPOSED NEW WALL AND PROVIDE NEW JUNCTION BOXES FOR EXTENDING MC

CABLE THROUGH NEW CORED AND SLEEVED OPENING WITH FIRESTOP.

ROUTE POWER FEEDS TO EQUIPMENT THROUGH TO PULLBOX ON OPPOSITE SIDE OF LAUNDRY ROOM WALL. USE EXISTING CONDUIT STUBS WHERE POSSIBLE.

PROVIDE FLOOR CORES IN THIS AREA FOR CONDUITS UP TO LAUNDRY ROOM. COORDINATE EXACT LOCATION WITH OWNER. FIELD VERIFY ROUTE PRIOR TO

PROVIDE NEW EMERGENCY BATTERY PACK WITH DUAL ADJUSTABLE LAMPS AND WIRE GUARD, LITHONIA ELM2-LED-HO-ELA-WG1 OR APPROVED EQUAL. WIRE TO

5 CONNECT NEW HORN/STROBE TO EXISTING NAC LOOP IN THIS AREA. PROVIDE UPDATED BATTERY AND VOLTAGE DROP CALCULATIONS FOR TOWNSHIP REVIEW.

7) SWITCH AND RECEPTACLE MAY SHARE A 2-GANG BACKBOX AT 44" AFF.

CONFIGURATION WITH FINAL SUPPLIED WASHER.

ROOM FOR SENSING LEAD.

8 PROVIDE 120V POWER TO NEW TEMPERATURE/HUMIDITY SENSOR AND LOCAL ALARM. REFER TO MECHANICAL FOR SPECIFICATION. COORDINATE WITH

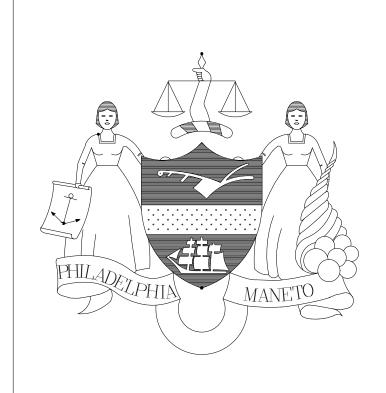
9) REFER TO ELEVATIONS ON E-5.1 FOR ADDITIONAL DETAILS ON WORK IN THIS AREA.

PROVIDE FIELD INSTALLED CORD-AND-PLUG FOR NEW WASHER. CORD SHALL BE SJ TYPE, WITH NEMA L14-30 CORD CAP. COORDINATE PLUG AND OUTLET

COORDINATE WITH MECHANICAL TO INTERLOCK STARTER OF FAN WITH DRYERS TO PROVIDE MAKEUP AIR DURING DRYER EXHAUST CYCLES. 120V CIRCUIT POWERING FAN SHALL BE USED TO POWER MOTORIZED DAMPER, AS WELL AS LINE VOLTAGE TO CONTROLS CIRCUIT. REFER TO MECHANICAL FOR CONTROLS DIAGRAM.

MECHANICAL CONTRACTOR FOR INSTALLATION OF CONDUIT SLEEVE INTO LAUNDRY

SAME CIRCUIT SERVING LIGHTS IN SAME SPACE AHEAD OF ANY SWITCHING.



REVISIONS

KYLE O'CONNOR, PROJECT MANAGER



CITY OF PHILADELPHIA

DEPARTMENT OF PUBLIC PROPERTY

1400 JFK BOULEVARD

1400 JFK BOULEVARD

7TH FLOOR, CITY HALL

PHILADELPHIA PENNSYLVANI

PROJECT TITLE

ENGINE 72 DECONTAMINATION SUITE

ENLARGED PLANS

DRAWING NO.

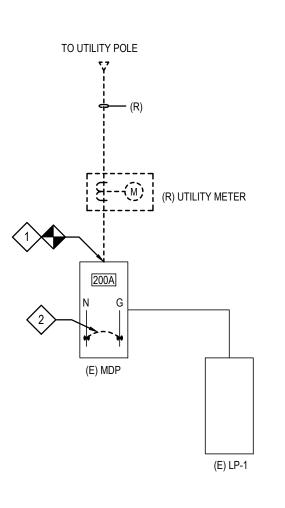
13-21-4643-01

DATE 11/08/22

SCALE NOTED

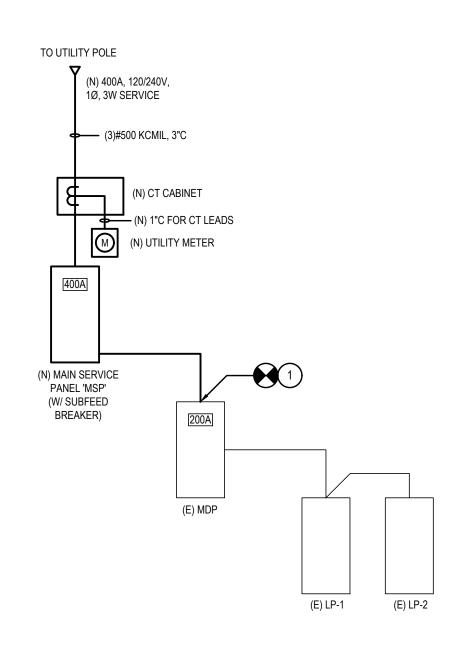
DRAWN BY WFW

CHECKED BY THE CONTRACTOR AT THE SITE BEFORE PROCEEDING WITH THE WORK.



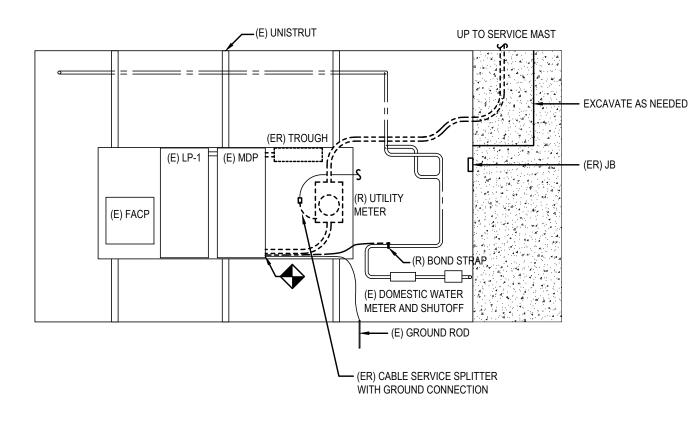
### ARTIAL SINGLE LINE DIAGRAM LECTRICAL — DEMOLITION

SCALE : DIAGRAMMATIC

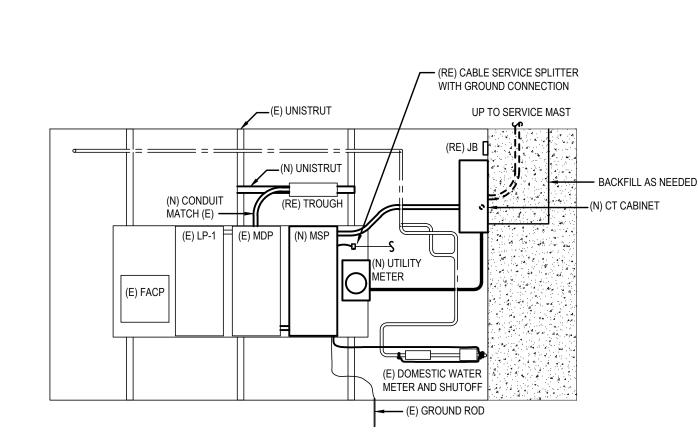


# PARTIAL SINGLE LINE DIAGRAM ELECTRICAL — NEW WORK

SCALE : DIAGRAMMATIC



SCALE : NOT TO SCALE



### BASEMENT ELEC ROOM NEW WORK ELEVATION SCALE : NOT TO SCALE

MOUNTING: SURFACE

120/240V 1Ø 3W

60/2 DRYING CABINET

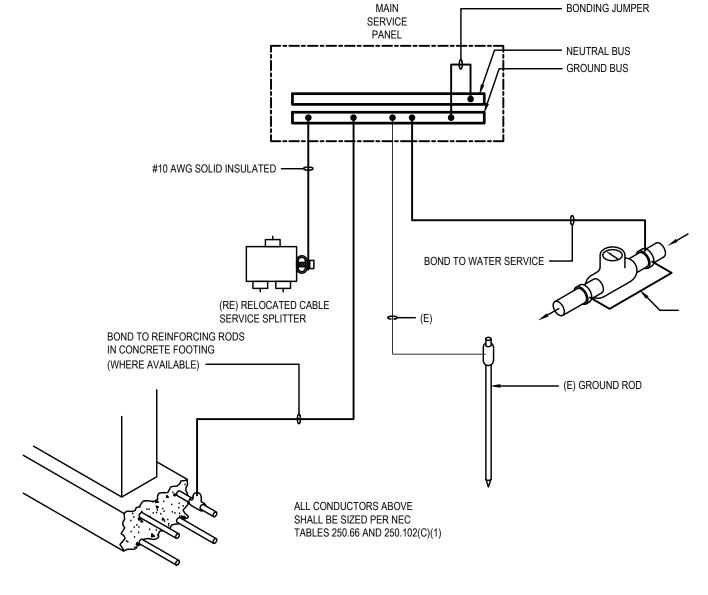
15/1 DECON RM EXHAUST

20/1 DECON RM REC & LTG

BRANCH CIRCUIT-DESCRIP. & LOCATION

400A MCB

NEW PANEL



### GROUNDING DIAGRAM SCALE : DIAGRAMMATIC

PANEL DESIGNATION: MDP					120/240V 1Ø 3W MOUNTING : SURFACE							
LOCATION: BSMT ELEC EXISTING PANEL				200A MCB								
CIR NO.	LOAD V.A.	BRANCH CIRCUIT- DESCRIP. & LOCATION	C/B SIZE	C/B SIZE	BRANCH CIRCUIT- DESCRIP. & LOCATION	LOAD V.A.	CIR NO.	*				
1		PANEL 'LP1'	100/2	100/2	PANEL 'P1'		2					
3							4					
5		CLOTHES DRIER	20/2	20/2	A/C UNIT LOCKER R		6					
7							8					
9		KITCHEN FREEZER	50/2	20/1	KITCHEN REC		10					
11				20/1	KITCHEN RANGE HOOD		12					
13		KITCHEN RANGE	50/2	100/2	A/C UNIT KITCHEN		14					
15							16					
17		GARAGE CEILING HEAT	20/1	20/1	GARAGE CEILING HEAT		18					
19		(UNLABELED LOAD)	20/1	20/1	(UNLABELED LOAD)		20					
21		GARAGE CEILING HEAT	20/1	20/1	GARAGE CEILING HEAT		22					
23		FRONT BATHRM HEAT	20/1	20/1	(UNLABELED LOAD)		24					
25		OUTSIDE LIGHTS	20/1	20/1	BOILER (BSMT)		26					
27		A/C UNIT LOCKER ROOM	20/1	20/1	(UNLABELED LOAD)		28					
29		FIRE ALARM PANEL	20/1	20/1	HOT WATER PUMP		30					
31		SPARE (C.B. ON)	20/1	20/1	SPARE (C.B. ON)		32					
33		EXHAUST FAN	20/2	20/1	GARAGE CORD REELS		34					
35				20/1	GARAGE CORD REELS		36					
37		(UNLABELED LOAD)	20/1	20/1	SPARE (C.B. ON)		38					
39		SPARE (C.B. ON)	20/1	20/1	SPARE (C.B. ON)		40					
41		SPARE (C.B. ON)	20/1	20/1	SPARE (C.B. ON)		42					
CON	NECTED	) LOAD 0	I.C. RATING			* 18000 K DEMAND REFI 20 UTILITY BILLS		/E				

FREEZER	50/2		20/1	KITCHEN REC		10		9	4000	DECON RM HEAT	25/2		90/2	DECON RM DUCT HEAT	16000	10
			20/1	KITCHEN RANGE HOOD		12	]	11								12
RANGE	50/2		100/2	A/C UNIT KITCHEN		14		13	250	DECON RM HEAT/HUMID SENS	20/1		20/1	SPARE		14
						16	]	15	800	DECON RM FAN MF-1 & CONTROLS	15/1	İ	20/1	SPARE		16
CEILING HEAT	20/1		20/1	GARAGE CEILING HEAT		18	]	17		SPARE	20/1		20/1	SPARE		18
.ED LOAD)	20/1		20/1	(UNLABELED LOAD)		20	]	19		SPARE	20/1		20/1	SPARE	:	20
CEILING HEAT	20/1		20/1	GARAGE CEILING HEAT		22	]	21		SPARE	20/1	İ	20/1	SPARE	:	22
ATHRM HEAT	20/1		20/1	(UNLABELED LOAD)		24	]	23		SPARE	20/1	İ	20/1	SPARE	:	24
LIGHTS	20/1		20/1	BOILER (BSMT)		26	]	25		SPARE	20/1	İ	20/1	SPARE	:	26
LOCKER ROOM	20/1		20/1	(UNLABELED LOAD)		28	]	27		SPARE	20/1	Ī	20/1	SPARE	:	28
RM PANEL	20/1		20/1	HOT WATER PUMP		30	]	29		SPARE	20/1	Ì	20/1	SPARE	;	30
C.B. ON)	20/1		20/1	SPARE (C.B. ON)		32	]	31		SPARE	20/1	Ì	20/1	SPARE	;	32
FAN	20/2		20/1	GARAGE CORD REELS		34	]	33		SPARE	20/2		20/2	SPARE	;	34
			20/1	GARAGE CORD REELS		36	]	35								36
LED LOAD)	20/1		20/1	SPARE (C.B. ON)		38	]	37								38
C.B. ON)	20/1		20/1	SPARE (C.B. ON)		40	]					ľ	200/2	SUB-FEED TO 'MDP'	18000	40
C.B. ON)	20/1		20/1	SPARE (C.B. ON)		42	]								\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	42
0		-			* 18000	50TI) (5	]	CON	INECTE	D LOAD 67430					67430	
MIN. A.I.C. RATIN	G	65,0	000	* PEAK DEM/ OF 2020 UTIL						MIN. A.I.C. RATING	·	65,	000 (2	)		
D FOR REFERENCE ONLY. ALL LO	ADS INDICAT	ΓED AR	E EXISTIN	IG TO REMAIN.												

PANEL DESIGNATION: MSP

\* CIR LOAD BRANCH CIRCUIT-NO. V.A. DESCRIP. & LOCATION

11200 DRYING CABINET

WASHING MACHINE

LOCATION: BSMT ELEC

NOTE - SCHEDULE INCLUDED FO

### NOTES:

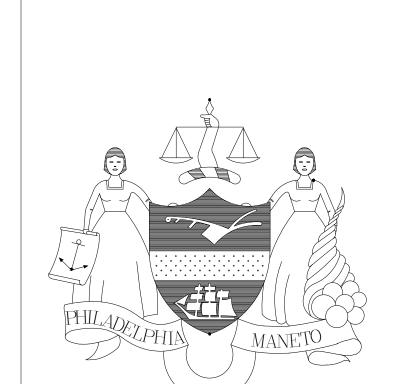
1- REFER TO DRAWING MPE-1 FOR HVAC, PLUMBING/FIRE PROTECTION & ELECTRICAL GENERAL NOTES, ABBREVIATIONS, LEGENDS & DRAWING LIST.

### **DEMOLITION NOTES:**

- DISCONNECT AND REMOVE EXISTING CONDUCTORS FROM LOAD SIDE OF METER. SALVAGE FOR REUSE AND CONNECTION TO NEW MAIN SERVICE PANEL.
- REMOVE BONDING JUMPER BETWEEN NEUTRAL AND GROUND IN EXISTING MAIN PANEL, IN PREPARATION FOR NEW MAIN SERVICE PANEL TO PROVIDE NEUTRAL-GROUND BOND.

### **DRAWING NOTES:**

- PROVIDE CLOSE-NIPPLE CONNECTION, AND REINSTALL EXISTING #3/0 CONDUCTORS SALVAGED FROM DEMOLITION. PROVIDE NEW EQUIPMENT GROUND CONDUCTOR
- 2 CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH UTILITY COMPANY. PROVIDE LABEL AT MAIN SERVICE DISCONNECT INDICATING AVAILABLE FAULT CURRENT, PER NEC 110.24.
- PROVIDE MINIMUM 24" OF CONDUCTOR BEYOND THE SERVICE HEAD FOR CONNECTION TO SERVICE DROP BY UTILITY COMPANY.



REVISIONS

11/08/22 ISSUED FOR BID

ISSUE DATE REVISIONS

KYLE O'CONNOR, PROJECT MANAGER



CITY OF PHILADELPHIA DEPARTMENT OF PUBLIC PROPERTY 1400 JFK BOULEVARD 7TH FLOOR, CITY HALL

WICK

PROJECT TITLE ENGINE 72 DECONTAMINATION SUITE

DETAILS AND DIAGRAMS

PHILADELPHIA

PROJECT NO.	DRAWING NO.
13-21-4643-01	
11/08/22	
SCALE NOTED	LJ. I
DRAWN WFW	
CHECKED BY WFW	BHA No.: 20-150

ALL DIMENSIONS AND CONDITIONS SHALL BE Verified by the contractor at the site before proceeding with the work.