

PROPOSED NEW BUILDING FOR:
NOOR INTERNATIONAL ACADEMY

4050 COOLIDGE HWY
TROY, MICHIGAN 48098
PERMITS 08.17.2022



OWNER



Hamadeh Educational Services, Inc. For
Star International Academy | Universal Learning Academy |
Universal Academy | Noor International Academy
"Promoting Academic Excellence, Leadership & Cultural Diversity"
P.O. Box 1440 | Dearborn, MI 48121 | (313) 565-0507

CIVIL



CONSULTING
ENGINEERS
CIVIL

PEA GROUP
1849 POND RUN DRIVE
AUBURN HILLS, MICHIGAN 48326
PHONE (248) 689-9090
Email: jbutler@peagroup.com

PROJECT INFORMATION

PROJECT NUMBER: 22010

PROJECT LOCATION: 4050 COOLIDGE HWY
TROY, MICHIGAN 48098

DESIGN FIRM: GAY & ASSOCIATES, INC.
24001 ORCHARD LAKE RD
FARMINGTON, MI 48336
PHONE: (248) 985-9101

1. THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE:
SAMIR M. KARIM, MI LIC. #1301030452.

2. THESE CONSTRUCTION DOCUMENTS WERE PREPARED FOR COMPLIANCE WITH THE
MICHIGAN CONSTRUCTION CODES IN EFFECT AT THE TIME OF PERMIT SUBMITTAL. ALL
ENGINEERS, CONTRACTORS AND SUPPLIERS INVOLVED WITH THIS PROJECT SHALL
COMPLY WITH THE SAME CODES, ISSUED AND APPROVED CODE MODIFICATIONS
AND/OR CITY OF TROY / STATE OF MICHIGAN CONSTRUCTION BOARDS OF APPEALS
RULINGS AND WHENEVER REQUIRED SHALL PROVIDE SHOP DRAWINGS AND SUBMITTALS
CLEARLY DESCRIBING COMPLIANCE TO THE REGISTERED DESIGN PROFESSIONAL IN
RESPONSIBLE CHARGE FOR REVIEW AND APPROVAL.

3. ALL APPLICABLE GOVERNMENTAL AGENCIES, SUCH AS MDOT, COUNTY, UTILITY SERVICES, ETC.
SHALL HAVE DRAWINGS SUBMITTED FOR REVIEW FOR ENGINEERING APPROVAL AT THE TIME OF
PERMIT SUBMITTAL.

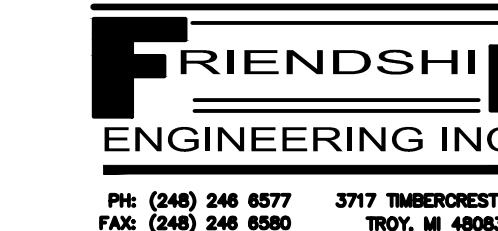
ARCHITECTURAL



ARCHITECTURAL
DESIGN
RESIDENTIAL
COMMERCIAL
INDUSTRIAL

G.A.V. & Associates, Inc.
24001 ORCHARD LAKE RD.
SUITE #180A
FARMINGTON, MICHIGAN 48336
PHONE (248) 985-9101

STRUCTURAL



CONSULTING
ENGINEER
STRUCTURE

FRIENDSHIP ENGINEERING
3717 TIMBERCREST DRIVE
TROY, MICHIGAN, 48083
PHONE (248) 246-6577
FAX (248) 246-6580

MECHANICAL / ELECTRICAL / PLUMBING



CONSULTING
ENGINEERS
MECHANICAL
ELECTRICAL
PLUMBING
ENERGY

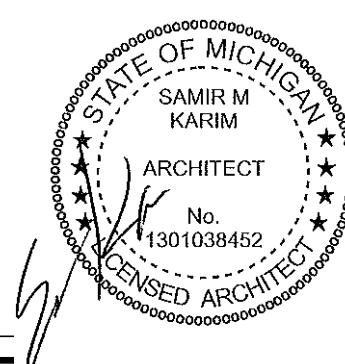
MEP Engineers
380 NORTH MAIN STREET
CLAWSON, MICHIGAN
PHONE (248) 488-9822
FAX (248) 488-9811
EMAIL: mep@mepmi.com
WEB: mepmi.com

CONTRACT RELATED DOCUMENTS (BUILDING ONLY):

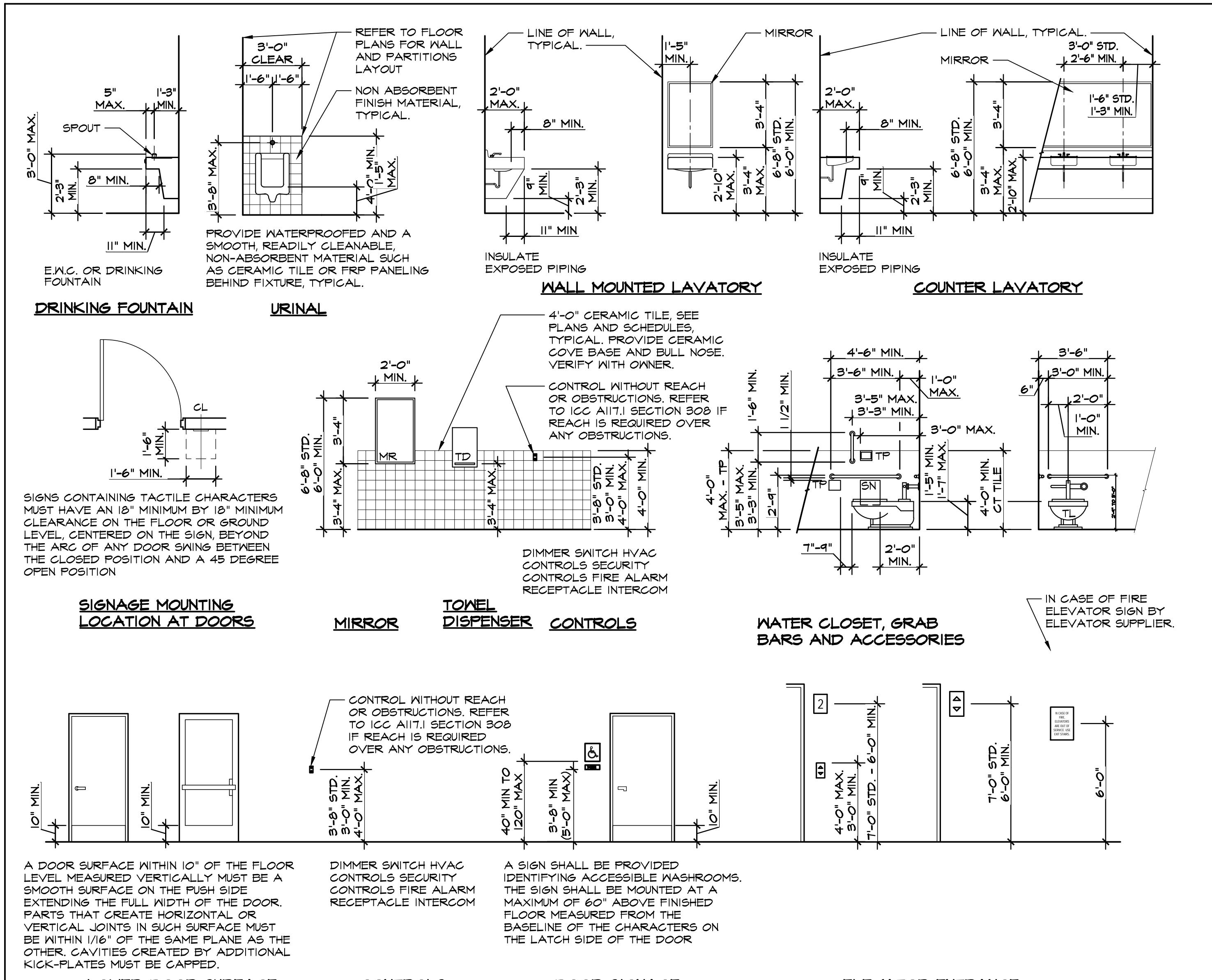
GEOTECHNICAL EXPLORATION AND ENGINEERING REPORT PEA ENGINEERS

PERMIT APPROVAL DOCUMENTS (PLAN REVIEW):

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS:
OFFICE _____ PROJECT NUMBER _____ DATE _____
BUREAU OF FIRE SERVICES _____
BUREAU OF CONSTRUCTION CODES _____
GC/CM TO INCLUDE AND PROVIDE TO ALL CONTRACTORS. _____



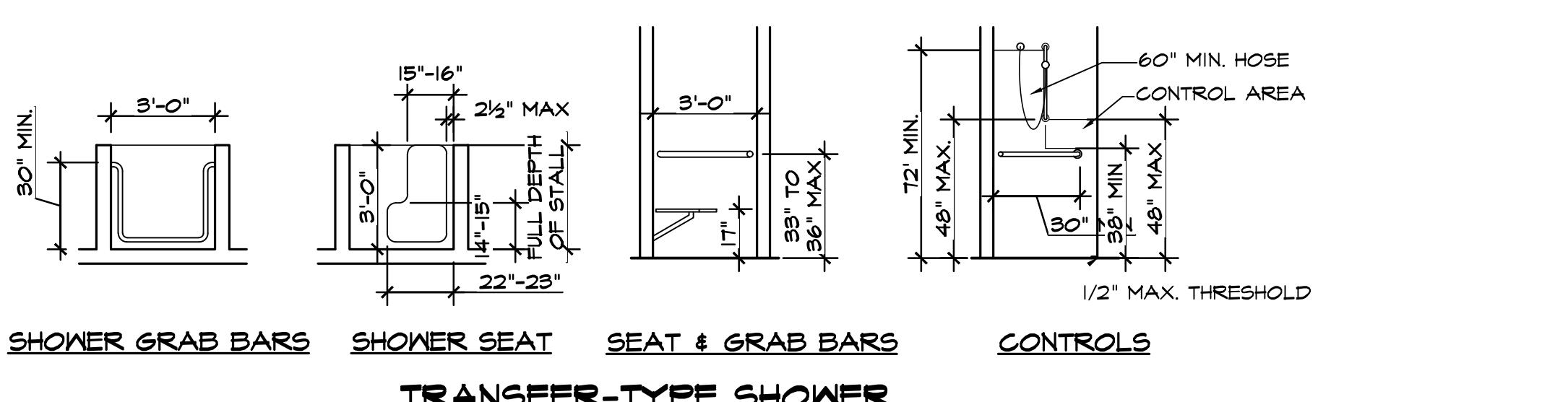
-6.00-



A DOOR SURFACE WITHIN 10" OF THE FLOOR LEVEL MEASURED VERTICALLY MUST BE A SMOOTH SURFACE ON THE PUSH SIDE EXTENDING THE FULL WIDTH OF THE DOOR. PARTS THAT CREATE HORIZONTAL OR VERTICAL JOINTS IN SUCH SURFACE MUST BE WITHIN 1/6" OF THE SAME PLANE AS THE OTHER CAVITIES CREATED BY ADDITIONAL KICK-PLATES MUST BE CAPPED.

LOWER DOOR SURFACE

TYPICAL RESTROOMS BARRIER FREE MOUNTING HEIGHTS AND REQUIREMENTS

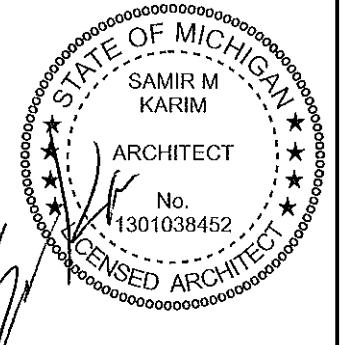


ABBREVIATIONS:

AFF	ABOVE FINISH FLOOR
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
ALUM	ALUMINUM
ANOD	ANODIZED
AT	ARCHITECTURAL TILE
BC	BOTTOM CHORD
BRD	BOARD
BFF	BELLOW FINISH FLOOR
BLK	BLOCK
BM	BEAM
BO	BOTTOM OF
BOF	BOTTOM OF FOOTING
BU	BUILT UP
CAB	CABINET
CB	CATCH BASINS
CD	OLD
CER	CERAMIC
CFJ	CAST IRON JOINT
CL	CENTER LINE
CLG	CEILING
CLOS	CLOSET
CO	CLEAN OUT
CM	CONSTRUCTION MANAGER
CH	CONTINUOUS
CONC	CONCRETE
CONT	CONTINUOUS
DEPS	DIRECT APPLIED FINISH SYSTEM
DET	DETAIL
DIM	DIMENSION
DIA	DIAMETER
DL	DEAD LOAD
DN	DOWN
D.O.	DOOR OPENING
DS	DOWN SPOUT
DWS	DRAWING
E.C.	ELC. CONTRACTOR
EF	EACH FACE
E.J.	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATION
EXI	EXHAUST
EXIST	EXISTING
EXT	EXTERIOR
EW	EACH WAY
F&I	FURNISH AND INSTALL
FD	FLOOR DRAIN
FFE	FINISH FLOOR ELEVATION
FNT	FINISHING MATERIALS
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOG	FACE OF GYPSUM
FOM	FACE OF MASONRY
FTG	FOOTING
GALV	GALVANIZED
GEN	GENERAL CONTRACTOR
GL	Glass
GRB	GRAB BAR
GYP	GYPSUM
HM	HOLLOWED METAL
HVAC	HEATING & VENT.
ID	INNER DIAMETER
INSUL	INSULATION
JST	JOIST
JOINT	JOINT
LD	LIVE LOAD
LP	LIGHT POLE
MAS	MATERIAL
MAX	MAXIMUM
MCM	METAL COMPOSITE
MFG	MANUFACTURER
MFR	MANUFACTURE
MIC	MINIMUM
M.O.	Masonry Opening
MTL	METAL
OC	ON CENTER
OD	OUTER DIAMETER
OPH	OPPOSITE HAND
NIC	NOT IN CONTRACT
NO SCALE	NO SCALE
PLATE	PLATE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PFT	PAINT
RA	RETURN AIR
REIN	REINFORCING
REQ	REQUIRED
RO	ROUGH OPENING
SA	SUPPLY AIR
SIM	SIMILAR
STL	STEEL
AASHO	AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
CRSI	CONCRETE REINFORCING SOCIETY INSTITUTE
MBC	MICHIGAN BUILDING CODE
MMC	MICHIGAN MECHANICAL CODE
MPC	MICHIGAN PLUMBING CODE
MEC	MICHIGAN ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
UL	UNDERWRITERS LABORATORIES

DRAWING INDEX		ISSUED FOR:
NO.	SHEET TITLE	● ISSUED ○ DELETED SHEET ☒ NEW SHEET
CIVIL	NOT INCLUDED	08/17/2022 PERMITS
A.000	COVER SHEET	●
A.001	DRAWING INDEX AND GENERAL INFORMATION	●
A.002	GENERAL INFORMATION AND SPECIFICATIONS	●
A.003	LIFE SAFETY PLAN AND INFORMATION	●
A.004	ARCHITECTURAL SITE PLAN	●
A.005	SITE LIGHTING PHOTOMETRIC	●
A.051	GENERAL INFORMATION AND SCHEDULES	●
A.052	GENERAL INFORMATION AND SCHEDULES	●
A.053	GENERAL INFORMATION AND SCHEDULES	●
A.101	GROUND LEVEL FLOOR PLAN	●
A.102	SECOND LEVEL FLOOR PLAN	●
A.151	ROOF PLAN	●
A.152	ENLARGED FLOOR PLANS AREA "A"	●
A.153	ENLARGED FLOOR PLANS AREA "B"	●
A.154	ENLARGED FLOOR PLANS AREA "C"	●
A.155	ENLARGED FLOOR PLANS AREA "D"	●
A.156	ENLARGED FLOOR PLANS AREA "D"	●
A.61	ENLARGED FLOOR PLANS	●
A.201	BUILDING ELEVATIONS	●
A.202	BUILDING ELEVATIONS	●
A.301	BUILDING SECTIONS	●
A.302	BUILDING SECTIONS	●
A.401	WALL SECTIONS	●
A.402	WALL SECTIONS	●
A.403	WALL SECTIONS	●
A.411	SECTION DETAILS	●
A.412	SECTION DETAILS	●
A.413	SECTION DETAILS	●
A.461	ELEVATOR SECTION	●
A.462	STAIRS SECTIONS	●
A.463	STAIRS SECTIONS	●
A.601	GROUND LEVEL REFLECTED CEILING PLAN	●
A.651	ENLARGED REFLECTED CEILING PLAN AREA "A"	●
A.652	ENLARGED REFLECTED CEILING PLAN AREA "B"	●
A.653	ENLARGED REFLECTED CEILING PLAN AREA "C"	●
A.654	ENLARGED REFLECTED CEILING PLAN AREA "D"	●
A.655	ENLARGED REFLECTED CEILING PLAN AREA "D"	●
A.701	INTERIOR ELEVATIONS	●
A.702	INTERIOR ELEVATIONS	●
S.100	STRUCTURAL INFORMATION AND SPECIFICATIONS	●
S.101	FOUNDATION PLAN	●
S.102	FRAMING PLAN	●
S.103	FRAMING PLAN	●
S.111	ENLARGED FOUNDATION PLANS AREA "A"	●
S.112	ENLARGED FOUNDATION PLANS AREA "B"	●
S.113	ENLARGED FOUNDATION PLANS AREA "C"	●
S.114	ENLARGED FOUNDATION PLANS AREA "D"	●
S.121	ENLARGED FRAMING PLANS AREA "A"	●
S.122	ENLARGED FRAMING PLANS AREA "B"	●
S.123	ENLARGED FRAMING PLANS AREA "C"	●
S.124	ENLARGED FRAMING PLANS AREA "D"	●
S.125	ENLARGED FRAMING PLANS AREA "A"	●
S.126	ENLARGED FRAMING PLANS AREA "D"	●
S.301	TYPICAL SECTIONS AND DETAILS	●
M.000	MECHANICAL LEGEND, SYMBOLS AND SHEET INDEX	●
M.100	OVERALL SANITARY & VENT PLUMBING GROUND LEVEL FLOOR PLAN	●
M.101	OVERALL SANITARY & VENT PLUMBING SECOND LEVEL FLOOR PLAN	●
M.102	PARTIAL SANITARY & VENT PIPING GROUND LEVEL FLOOR PLAN - AREA "D & C"	●
M.103	PARTIAL SANITARY & VENT PIPING GROUND LEVEL FLOOR PLAN - AREA "A & B"	●
M.104	PARTIAL SANITARY & VENT PIPING SECOND LEVEL FLOOR PLAN - AREA "D"	●
M.105	OVERALL DOMESTIC WATER & GAS PIPING GROUND LEVEL FLOOR PLAN	●
M.106	OVERALL DOMESTIC WATER & GAS PIPING SECOND LEVEL FLOOR PLAN	●

DRAWING INDEX		ISSUED FOR:
NO.	SHEET TITLE	● ISSUED ○ DELETED SHEET ☒ NEW SHEET
M.107	PARTIAL DOMESTIC WATER & GAS PIPING GROUND LEVEL FLOOR PLAN - AREA "D & C"	●
M.108	PARTIAL DOMESTIC WATER & GAS PIPING GROUND LEVEL FLOOR PLAN - AREA "A & B"	●
M.109	PARTIAL DOMESTIC WATER & GAS PIPING SECOND LEVEL FLOOR PLAN - AREA "D"	●
M.200	OVERALL HVAC GROUND LEVEL FLOOR PLAN	●
M.201	OVERALL HVAC SECOND LEVEL FLOOR PLAN	●
M.202	HVAC GROUND LEVEL ENLARGED FLOOR PLAN - AREA "D"	●
M.203	HVAC GROUND LEVEL ENLARGED FLOOR PLAN - AREA "C"	●
M.204	HVAC GROUND LEVEL ENLARGED FLOOR PLAN - AREA "A"	●
M.205	HVAC GROUND LEVEL ENLARGED FLOOR PLAN - AREA "B"	●
M.206	HVAC SECOND LEVEL ENLARGED FLOOR PLAN - AREA "D"	●
M.300	OVERALL MECHANICAL ROOF PLAN	●
M.400	MECHANICAL SCHEDULES 1	●
M.401	MECHANICAL SCHEDULES 2	●
M.402	MECHANICAL DETAILS	●
M.403	MECHANICAL DETAILS (FOR REFERENCE ONLY)	●
M.500	MECHANICAL SPECIFICATIONS	●
E100	ELECTRICAL NOTES & SYMBOLS	●
E101	ELECTRICAL SITE PLAN	●
E200	OVERALL - 1ST FLOOR LIGHTING PLAN	●
E201	GROUND LEVEL ENLARGED LIGHTING FLOOR PLAN - AREA "A"	●
E202	GROUND LEVEL ENLARGED LIGHTING FLOOR PLAN - AREA "B"	●
E203	GROUND LEVEL ENLARGED LIGHTING FLOOR PLAN - AREA "C"	●
E204	GROUND LEVEL ENLARGED LIGHTING FLOOR PLAN - AREA "D"	●
E205	LIGHTING - 2ND FLOOR PLAN - AREA "D"	●
E300	OVERALL - 1ST FLOOR POWER PLAN	●
E301	GROUND LEVEL ENLARGED POWER FLOOR PLAN - AREA "A"	●
E302	GROUND LEVEL ENLARGED POWER FLOOR PLAN - AREA "B"	●
E303	GROUND LEVEL ENLARGED POWER FLOOR PLAN - AREA "C"	●
E304	GROUND LEVEL ENLARGED POWER FLOOR PLAN - AREA "D"	●
E305	POWER - 2ND FLOOR PLAN - AREA "D"	●
E306	POWER - ROOF PLAN	●
E400	ENLARGED KITCHEN POWER PLAN	●
E501	LIGHTING FIXTURE SCHEDULE & PANELS SCHEDULE	●
E502	POWER DISTRIBUTION RISER DIAGRAM & PANELS SCHEDULE	●
E503	PANELS SCHEDULE	●
E600	LIGHTING CONTROL DIAGRAMS	●
E700	ELECTRICAL DETAILS	●
FS-1	FOODSERVICE EQUIPMENT (FOR REFERENCE ONLY)	●
FS-2	FOODSERVICE ELECTRICAL (FOR REFERENCE ONLY)	●
FS-3	FOODSERVICE PLUMBING (FOR REFERENCE ONLY)	●
FS-4	FOODSERVICE BLOCKING (FOR REFERENCE ONLY)	●
1	FOODSERVICE EQUIPMENT DRAWINGS (FOR REFERENCE ONLY)	●
2	FOODSERVICE EQUIPMENT DRAWINGS (FOR REFERENCE ONLY)	●
3	FOODSERVICE EQUIPMENT DRAWINGS (FOR REFERENCE ONLY)	●
4	FOODSERVICE EQUIPMENT DRAWINGS (FOR REFERENCE ONLY)	●
5	FOODSERVICE EQUIPMENT DRAWINGS (FOR REFERENCE ONLY)	●
6	FOODSERVICE EQUIPMENT DRAWINGS (FOR REFERENCE ONLY)	●
7	FOODSERVICE EQUIPMENT DRAWINGS (FOR REFERENCE ONLY)	●

DRAWN:	SSA	DESIGNED:	GA	CHECKED:	GA
SCALE :					
FILE NAME :	22010_A001				
JOB # :	22010				
SHEET TITLE					
DRAWING INDEX AND GENERAL INFORMATION					
SHEET #					
 STATE OF MICHIGAN SAMIR M. KARIM No. 1301038452 LICENSED ARCHITECT					
A.001					

GENERAL CONDITIONS:

- THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERALLY THE LOCATIONS OF MATERIAL AND EQUIPMENT; THESE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. CONSTRUCTION MANAGER IS RESPONSIBLE FOR REVIEWING, COORDINATING AND APPROVING ALL WORK TO BE DONE BY CONTRACTORS. ANY SUBMITTAL TO ARCHITECT / ENGINEER SHALL BE REVIEWED BY THE C.M. BEFORE SUBMITTING TO ARCHITECT / ENGINEER.
- BUILDING SHALL BE FULLY FIRE SUPPRESSED IN ACCORDANCE WITH 2015 MBC AND ALL APPLICABLE CODES.
- SPRINKLER CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF FIRE SUPPRESSION SYSTEM FOR FIRE MARSHALS REVIEW AND APPROVAL.
- BUILDING SHALL HAVE A FIRE ALARM SYSTEM PER ELECTRICAL DRAWINGS AND THE SYSTEM SHALL COMPLY WITH 2015 MBC AND ALL APPLICABLE CODES.
- ALL EXTERIOR WOOD, PLYWOOD, ETC. SHALL BE PRESERVATIVE TREATED.
- CONSTRUCTION MANAGER AND THE CONTRACTORS SHALL COMPLY WITH ALL CODES CURRENTLY IN EFFECT IN THE CITY OF AUBURN HILLS AND THE STATE OF MICHIGAN.
- CONFORM TO A.I.A. DOCUMENT NO. A-201, LATEST EDITION, AND COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, LAWS, RULES AND REGULATIONS.
- ALL CONTRACTORS SHALL CARRY ADEQUATE INSURANCE OR OTHERWISE SECURE, PROTECT AND HOLD HARMLESS THE OWNER AND ITS AGENTS AND THE ARCHITECT/ENGINEER FROM ANY LIABILITY OR DAMAGE WHATSOEVER, FOR INJURY (INCLUDING DEATH) TO ANY PERSON OR PROPERTY.
- SUSPENDED ACOUSTICAL CEILING TILES AND GRID SYSTEM SHALL COMPLY NFPA 101-2012 AND MBC 2015.
- GRID WORK SHALL BE SUPPORTED WITH A MINIMUM OF 2-12 GA. HANGER WIRES TO STRUCTURE ABOVE.
- PROVIDE A KNOX BOX FOR FIRE DEPARTMENT ACCESS. LOCATE ON BUILDING, AS PER FIRE MARSHALL.
- INSTALL 6" HIGH ADDRESS NUMBERS WHICH ARE VISIBLE FROM THE STREET. VERIFY LOCATION WITH FIRE MARSHAL.
- ALL WALLS SHALL EXTEND UP TO AND BE SEALED TO THE UNDERSIDE OF FLOOR / ROOF DECK.
- CONTRACTOR SHALL PROVIDE ALL NECESSARY SIGNAGE PER SECTION II 104 OF THE 2015 MBC AND SECTION 703 OF THE ANSI A111.
- ALL PROTRUDING OBJECTS ON CIRCULATION PATHS SHALL COMPLY WITH SECTION 307 OF THE ANSI A111-2009.
- ANY RATED WALL THAT HAS PROTECTED OPENINGS OR PENETRATIONS SHALL BE PERMANENTLY IDENTIFIED ABOVE CEILING WITH SIGNS OR STENCILING @ NOT LESS THAN 30" O.C. ALONG THE HORIZONTAL DIMENSION. LETTERS SHALL NOT BE LESS THAN 0.5" IN HT. AND CONTAIN THE WORDS "FIRE & SMOKE BARRIER-PROTECT ALL OPENINGS". ALL PENETRATIONS IN WALLS FOR PIPING.
- ALL PENETRATIONS IN RATED WALLS SHALL BE SEALED w/ APPLICABLE FIRE RATED SEALANT, STOP, OR OTHER APPROVED METHOD PER I.F.C. 2012. ANY PENETRATIONS SHALL BE SEALED WITH FIRE RATING EQUIVALENT TO PENETRATED SYSTEM.
- A PORTABLE FIRE EXTINGUISHER MUST BE PRESENT DURING CONSTRUCTION. PERMANENT PORTABLE FIRE EXTINGUISHER LOCATIONS TO BE DETERMINED PER I.F.C. AND FIELD BUILDING INSPECTOR.
- FIRESTOPPING SHALL BE TESTED IN ACCORDANCE WITH ASTM E-814 TEST STANDARDS. CONTRACTOR TO SUBMIT TEST REPORT ATTACHED WITH THE SUBMITTAL COVER SHEET FOR EACH APPLICATION, I.E., FOR EACH KIND OF CONSTRUCTION (RATED FLOOR/CEILING RATED WALLS/ETC.) BEFORE INSTALLATION. FIRESTOPPING INSTALLATION SHALL NOT BE CONCEALED WITH FINAL CONSTRUCTION UNTIL APPROVED BY BUILDING INSPECTOR.
- ALL HAZARDOUS ROOMS TO HAVE DOOR CLOSURE AND SHALL BE SMOKE TIGHT ENCLOSURES IN JANITOR CLOSETS, MECHANICAL / ELECTRICAL ROOMS AND STORAGE ROOMS.
- DO NOT SCALE DRAWINGS. USE GIVEN DIMENSIONS ONLY. DIMENSIONS ARE NOT FACED DRAWINGS. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERALLY THE LOCATION OF MATERIAL AND EQUIPMENT. THESE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. GENERAL CONTRACTOR IS RESPONSIBLE FOR REVIEWING, COORDINATING AND APPROVING ALL WORK TO BE DONE BY SUB CONTRACTORS. ANY SUBMITTAL TO ARCHITECT / ENGINEER SHALL BE REVIEWED BY THE G.C. BEFORE SUBMITTING TO ARCHITECT / ENGINEER. IF DIMENSIONS ARE IN QUESTION THE CONTRACTOR IS RESPONSIBLE FOR CONSULTING WITH THE TENANT AND OWNER BEFORE CONTINUING WITH THE WORK FOR POSSIBLE REDESIGN.
- VERIFY LOCATION OF ALL EQUIPMENT AND VERIFY SIZES, WALL OPENINGS, AND SUPPORT REQUIREMENTS. WITH MANUFACTURER, PROVIDE OPENINGS, BRACING AND REINFORCEMENT AS REQUIRED BY MANUFACTURER.
- CONSTRUCTION MANAGER WILL SUPPLY SECURED STAGING AREA AND OFFICE TRAILER.
- CONSTRUCTION MANAGER WILL COMPLY WITH ENVIRONMENTAL AGENCIES.
- CONSTRUCTION MANAGER WILL SUPPLY TOILET FACILITIES FOR ALL TRADES.
- CONSTRUCTION MANAGER WILL COMPLY WITH DEMATERIALIZATION AS NECESSARY.
- CONSTRUCTION MANAGER WILL BE RESPONSIBLE TO KEEP A CLEAN SITE AT ALL TIMES.
- TEMPORARY BRACING, GUYING AND TIE DOWNS OF THE STRUCTURE DURING ERECTION SHALL BE THE RESPONSIBILITY OF THE ERECTOR AND CONTRACTOR(S). THE ENGINEER AND ARCHITECT ASSUME NO RESPONSIBILITY FOR THE ABSENCE, PRESENCE OR ADEQUACY OF ANY TEMPORARY BRACING. ALL EXISTING STRUCTURES THAT MAY BE AFFECTED BY THE NEW CONSTRUCTION SHALL BE BRAZED AND PROTECTED AS REQUIRED.
- WHERE A DETAIL IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS (UNLESS NOTED OTHERWISE).
- ALL FURRED/ STUDDED WALLS SHALL HAVE FIRE BLOCKING AS REQUIRED BY CODE.
- VERIFY ALL EXISTING FIELD CONDITIONS PRIOR TO COMMENCEMENT OF ANY WORK. VERIFY ALL DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS. IN THE EVENT OF DISCREPANCY, NOTIFY THE G.C. AND/OR THE ARCHITECT AND OBTAIN RESOLUTION BEFORE PROCEEDING. FAILURE TO NOTIFY THE ARCHITECT WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO PERFORM THE WORK AS INTENDED BY THE CONTRACT DOCUMENTS. CONTRACTOR(S) SHALL BE RESPONSIBLE FOR ANY AND ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ARCHITECT.
- ALIGN PARTITIONS WITH FACE OF OTHER PARTITIONS OR COLUMNS, UNLESS NOTED OTHERWISE. THE FACE OF EVERY PARTITION SHALL BE FLUSH WITHOUT OFFSETS. CHANGES IN PARTITION THICKNESS SHALL OCCUR AT CORNERS, PARTITION INTERSECTIONS OR OTHER FEATURES WHICH INTERRUPT THE PLANE OF THE PARTITION. FACE OF CORRIDOR PARTITIONS SHALL BE FLUSH FOR THE ENTIRE LENGTH OF THE CORRIDOR REGARDLESS OF CHANGES IN PARTITION THICKNESS. ALL ADJUSTMENTS SHALL BE MADE TO THE ROOM SIDE OF THE CORRIDOR PARTITION AND AT CORNERS.
- ALL GYPSUM BOARD MATERIALS AND ACCESSORIES SHALL CONFORM TO THE APPROPRIATE STANDARDS IN ACCORDANCE WITH TABLE 2506.2 MBC 2015.
- REFER TO INTERIOR FINISHES REQUIREMENT ON LIFE SAFETY SHEET A.091. ALL INTERIOR FINISHES SHALL HAVE A CLASS C FLAME SPREAD OF 76 TO 200 AND A SMOKE DEVELOPMENT INDEX NOT GREATER THAN 450 IN ACCORDANCE WITH ASTM E84 OR UL 723. ALL INTERIOR CARPET INCLUDING THOSE IN EXIT ENCLOSURES SHALL COMPLY WITH MBC SECTION 204. DOC FF-1 "PILL TEST" (SPEC 16 CFR, PART 1630) CONTRACTOR TO PROVIDE COMPLETE DOCUMENTATION TO FIELD INSPECTOR. FLOOR FINISH SHALL MEET A MIN. OF CLASS II FOR THE MIN. CRITICAL RADIANT FLUX INCLUDING THOSE IN EXIT ENCLOSURES. ALL FLOOR FINISHES SHALL BE IN ACCORDANCE WITH NFPA 253.

GENERAL CONDITIONS (CONTINUED):

- ALL EXPOSED INSULATION SHALL HAVE A CLASS A FLAME SPREAD NOT GREATER THAN 25 AND A SMOKE DEVELOPMENT NOT GREATER THAN 450 IN ACCORDANCE WITH ASTM E84 REQUIREMENTS. OWNER TO PROVIDE DOCUMENTATION.
- ALL EXIT DOORS & MEANS OF EGRESS DOORS SHALL BE SIDE HINGED, NON-LOCKING & SWING IN DIRECTION OF EGRESS.
- ALL PLYWOOD, WOOD BLOCKING & NAILERS TO BE NON COMBUSTIBLE.
- INFILL AROUND ALL EXTERIOR WALL PENETRATIONS. FLASH WITH METAL & RUBBER AND SEAL TIGHT AT WALL.
- "EXIT" SIGNS SHALL HAVE RED LETTERS AT LEAST 6" HIGH AND THE MINIMUM WIDTH OF EACH STROKE SHALL BE 3/4" ON A WHITE BACKGROUND OR IN OTHER APPROVED DISTINGUISHABLE COLOR. THE WORD "EXIT" EXCEPT THE LETTER "I" SHALL HAVE LETTERS HAVING A WIDTH NOT LESS THAN 2 INCHES AND THE MINIMUM SPACING BETWEEN LETTERS SHALL NOT BE LESS THAN 3/8" OF AN INCH. SIGNS LARGER THAN THE MINIMUM SIZE REQUIRED SHALL HAVE LETTERS WIDTH AND SPACING IN THE SAME PROPORTION TO THE HEIGHT AS INDICATED IN THIS CODE. IF AN ARROW IS PROVIDED AS PART OF AN EXIT SIGN, THE CONSTRUCTION SHALL BE SUCH THAT THE ARROW CAN NOT BE READILY CHANGED. THE WORD "EXIT" SHALL BE CLEARLY DISCERNIBLE WHEN THE SIGN IS ILLUMINATION MEANS IS NOT ENERGIZED.
- MIN. AVERAGE ILLUMINATION OF 10 FOOTCANDLES IS REQUIRED AT A HEIGHT OF 30' AFF OVER THE AREA OF ALL ROOMS
- PROVIDE TYVEK DRAWRAP SHEET FOR ALL E.F.I.S. WORK INDICATED ON DRAWINGS.

SITE WORK:

REFER TO CIVIL DRAWINGS FOR ALL SITE INFORMATION. CIVIL DRAWINGS SHALL OVERRIDE THE SITE NOTES IN THIS SECTION.

- PLACE FOUNDATIONS ON UNDISTurbed SOIL, U.N.O. VERIFY IN THE FIELD BY TEST AS REQUIRED THE BEARING CAPACITY UNDER FOOTINGS.
- WHERE FOOTINGS CHANGE ELEVATIONS, STEP DOWN FOOTINGS ON FIRM BEARING AT THE RATE OF ONE FOOT VERTICAL TO TWO FEET HORIZONTAL.
- STEP DOWN ALL FOOTINGS ADJACENT TO SUMPS, PITS, SEWERS, TANKS, EXISTING UNDERGROUND WORK, ETC., AND WHEREVER PRESSURE PLANE OF FOOTINGS MAY BE CUT BY DEEPER EXCAVATION. DROP THE FOOTING DOWN TO THE BOTTOM OF THE EXCAVATION FOR SUCH WORK TO FIRM BEARING.
- ALL CONTINUOUS REINFORCING BARS SHALL BE LAPPED AS PER TENSION EMBEDMENT OR TENSION CLASS "C" SPLICE LENGTH, LAP CONTINUOUS TOP REINFORCING AT CENTER OF SPAN AND BOTTOM REINFORCING AT SUPPORTS. TERMINATE TOP BARS AT NON-CONTINUOUS END WITH STANDARD HOOK.
- REMOVE ALL EXCESS MATERIAL OFF THE SITE. REMOVE ALL TOP SOIL, BRUSH, ROOTS, TREES, RUBBISH AND ALL OBSTRUCTIONS TO THE WORK FROM THE AREAS OF BOTH CUT AND FILL. REMOVE EXISTING FILL WITHIN BUILDING AREA AND REPLACE WITH COMPACTED SAND FILL AS REQUIRED.
- PRIOR TO BACKFILLING TRENCHES OR FILLING EMBANKMENTS AT THE BUILDING AREA PRO ROLL THE AREA WITH A 10 TON TRUCK LOADED WITH SOIL. ANY AREA UNDER THE WHEEL THAT SHOWS A DEPRESSION MORE THAN ONE INCH SHALL BE REMOVED TWO FOOT DEEP AND REPLACED WITH APPROVED FILL MATERIAL FREE OF ORGANIC MATERIAL AND WITH GRAIN SIZE LESS THAN 2 INCHES AND WITH GRADATION THAT CAN BE COMPACTED TO 95% MAXIMUM DRY DENSITY PER ASTM D-157.
- AND SHALL BE COMPACTED IN 6 INCH LOOSE LIFTS TO 95% MAXIMUM DENSITY PER ASTM D-157 AND THE REMAINING 12 INCH SPACE SHALL BE FILLED WITH CRUSHED AGGREGATE MDOT-22A COMPACTED IN 6 INCH LAYERS TO 98% MAXIMUM DENSITY PER ASTM D-157. ALL COMPACTION SHALL BE SUPERVISED BY A COMPETENT TESTING LABORATORY RETAINED BY THE CONTRACTOR AND APPROVED BY THE ARCHITECT.
- BACKFILL AGAINST GRADE BEAMS OR WALLS SHALL CONSIST OF GRANULAR FILL FREE OF ORGANICS AND NO MORE THAN 3 PERCENT SILT OR CLAY WITH PARTICLE SIZE LESS THAN 4 INCHES IN DIAMETER AND PASSING NO 4 SIZE BY 25 TO 10 PERCENT NOTIFY ARCHITECT/ENGINEER IF POOR SOIL CONDITIONS ARE FOUND AT THE SITE. BACKFILL SHALL BE PLACED IN 6 INCH LOOSE LIFTS AND COMPACTED TO 95% MAXIMUM DENSITY PER ASTM D-157 ON BOTH SIDES OF THE STRUCTURE BY HAND COMPACTORS. HEAVY COMPACTING ROLLERS SHALL BE KEPT 10 FEET CLEAR OF THE STRUCTURE.
- NO FROZEN MATERIAL SHALL BE USED AS FILL AND NO FILL SHALL BE PLACED ON FROZEN GROUND.
- USE ONLY CLEAN COMPACTED SAND UNDER THE FLOOR SLAB AND PAVED AREAS WHERE AGGREGATE BASE COURSE IS NOT SPECIFIED. PLACE FOUNDATIONS ON UNDISTurbed SOIL, U.N.O. VERIFY IN THE FIELD BY TEST AS REQUIRED THE BEARING CAPACITY UNDER FOOTINGS.
- WHERE FOOTINGS CHANGE ELEVATIONS, STEP DOWN FOOTINGS ON FIRM BEARING AT THE RATE OF ONE FOOT VERTICAL TO TWO FEET HORIZONTAL. WALL AND PIER FOOTINGS SHALL BE A MIN. OF 12 INCH THICK AND SHALL PROJECT A MINIMUM OF 6" BEYOND THE FACE OF WALLS, PIERS, STACKS, ETC.
- UNLESS OTHERWISE NOTED, PROVIDE (2) #5 ADDITIONAL BARS AROUND ALL OPENINGS IN WALL OR SLAB. EXTEND BARS 2 FEET BEYOND OPENING IN TO THE WALL OR SLAB.
- PLACE SLAB ON GRADE IN CHECKERBOARD PATTERN OR IN AN ALTERNATE LANES. CONSTRUCTION JOINTS OR CONTROL JOINTS SHALL BE PROVIDED SPACED NO GREATER THAN 20 FEET, UNLESS SHOWN OTHERWISE.
- SLAB ON GRADE SHALL BE 5" THICK WITH SMOOTH FLOAT FINISH.
- CONTRACTOR SHALL SUBMIT DRAWINGS SHOWING SIZE, LENGTH, AND LOCATION OF REINFORCING INTENDED POURING SEQUENCE AND LOCATION OF CONSTRUCTION JOINTS TO ARCHITECT FOR REVIEW.
- BEFORE PLACING THE PIT MAT SPREAD AT NO COST TO THE OWNER ONE 94 LB. BAG OF DRY CEMENT PER 3 SY OF AREA AT THE BOTTOM OF THE EXCAVATION WHENEVER THE SOIL AT THE BOTTOM IS COMPOSED OF MORE THAN 16 PERCENT SILT AS DETERMINED BY THE TESTING AGENCY.

FOUNDATION & EARTH WORK

- FOOTINGS SHALL BEAR ON THE FIRM UNDISTurbed SOIL WITH A SAFE NET CAPACITY OF 1500 PSF. IF SOIL OF THIS CAPACITY IS NOT FOUND AT THE ELEVATIONS INDICATED, FOOTINGS SHALL BE ENLARGED OR LOWERED AT THE DIRECTION OF THE ENGINEER. VERIFY FOUNDATION SOIL BEARING PRESSURE IN FIELD BY SOILS ENGINEER.
- EXCAVATION OF FILLS, ORGANIC MATERIALS AND OTHER UNSUITABLE MATERIAL IS TO BE REMOVED UNTIL THE MIN. SOIL BEARING IS OBTAINED PER AN ONSITE SOILS ENGINEER. PAD FOOTING IS TO EXTEND TO THAT POINT. IF WATER IS ENCOUNTERED DURING EXCAVATION, CONTRACTOR TO CONSULT WITH DEMATERIALIZATION CONTRACTOR FOR RECOMMENDATIONS.
- ALL FOOTINGS SHALL BE PLACED ONTO COMPAKTED SUB GRADE OR ENGINEERED FILL (95% MINIMUM DENSITY AT OPTIMUM MOISTURE CONTENT). FOOTING ELEVATIONS SHOWN DESIGNATE A MINIMUM DEPTH OF FOOTINGS WHERE A SAFE SOIL BEARING PRESSURE OF 3000 PSF FOR COLUMNS AND WALL FOOTINGS IS EXPECTED. UNDERCUT AND PROVIDE ENGINEERED FILL AS NECESSARY TO ACHIEVE BEARING CAPACITY INDICATED.
- ALL FOUNDATION EXCAVATIONS SHALL BE INSPECTED AND CERTIFIED. CONTRACTOR TO SUBMIT TESTING REPORT TO CITY.
- NO FOOTINGS SHALL BE PLACED ONTO OR AGAINST SUB GRADES CONTAINING FROST OR ICE. CROSS REFERENCE ARCHITECTURAL AND STRUCTURAL DRAWINGS TO ASSURE PROPER DIMENSIONS AND PLACEMENT OF ALL ANCHORS, BOLTS, INSERTS, ETC.
- AFTER EXCAVATING FOR ALL EARTH-SUPPORTED FLOOR AND STAIR SLABS, THE EXPOSED NATURAL SOIL SHALL BE THOROUGHLY COMPAKTED PRIOR TO PLACING FILL.

DESIGN LOADS:

THE STRUCTURE IS DESIGN FOR THE FOLLOWING LIVE LOADS, IN ADDITION TO THE LATERTAL LOADS AND SUPERIMPOSED DEAD LOADS AND SELF-WEIGHT OF THE STRUCTURE.
BUILDING OCCUPANCY CATEGORY: II
LIVE LOADS:
1. ROOF SNOW LOAD:
A. GROUND SNOW LOAD: 25 PSF
B. FLAT ROOF SNOW LOAD (PI): (MIN ROOF LOAD): 20 PSF
C. SNOW EXPOSURE FACTOR (Ge): 1.0
D. SNOW LOAD IMPORTANCE FACTOR (I): 1.0
E. THERMAL FACTOR (Cs): 1.0
F. ADDITIONAL LOADING DUE TO DRIFTING AT CHANGES IN ROOF ELEVATIONS AND ICE AT OVERHANGS PER APPLICABLE CODE.
ROOF DEAD LOAD: 15 PSF
TOTAL ROOF DESIGN LOAD: 35 PSF

SECOND FLOOR DESIGN LOADS:

- DEAD LOAD 65 PDF
- LIVE LOAD (CLASSROOMS): 60 PSF
- LIVE LOAD (HALLWAYS): 100 PSF

WIND LOAD:

- BASIC WIND SPEED (3-SECOND GUST): 115 MPH
- RISK CATEGORY FACTOR: II
- EXPOSURE CATEGORY: A
- INTERNAL PRESSURE COEFFICIENT: +/- 0.18
- MAIN FORCE RESISTING STRUCTURAL SYS (EQUIVALENT STATIC FORCE): 6 MIN UNIFORM: 16 PSF

EARTHQUAKE DATA:

- OCCUPANCY CATEGORY: II
- MAPPED SPECTRAL RESPONSE ACCELERATION Ss=0.085g & SI=0.044g
- SITE CLASS: D
- SPECTRAL RESPONSE COEFFICIENTS SDs=0.091g & SDI=0.071g
- SEISMIC DESIGN CATEGORY A
- SECTION II.7 (ASCE-10) DESIGN REQUIREMENT FOR SDC A
- DESIGN BASE SHEAR Fx=0.01kN
- Cs=SDs / (Ra)
- RESPONSE MODIFICATION FACTOR R=5
- SECTION II.7 (ASCE-10) DESIGN REQUIREMENT FOR SDC A

STRUCTURAL STEEL:

- ALL EXPOSED STEEL SHALL BE MEET ARCHITECTURALLY EXPOSED STRUCTURAL STEEL A352-2 OR AS NOTED FOR AISI STANDARDS.
- THE STRUCTURAL INTEGRITY OF THE BUILDING SHOWN ON THESE PLANS IS DEPENDENT UPON COMPLETION ACCORDING TO THE PLANS AND SPECIFICATIONS. STRUCTURAL MEMBERS ARE NOT SELF-BRACING UNTIL PERMANENTLY AFFIXED TO THE STRUCTURE AS DIRECTED. THE ARCHITECT/STRUCTURAL ENGINEERS ASSUME NO LIABILITY FOR THE STRUCTURE DURING CONSTRUCTION, MEANS AND METHODS OF CONSTRUCTION AND JOB SITE SAFETY ARE THE SOLE RESPONSIBILITY OF THE CONTRACTORS.
- ALL CONTINUOUS REINFORCING BARS SHALL BE LAPPED AS PER TENSION EMBEDMENT OR TENSION CLASS "C" SPLICE LENGTH, LAP CONTINUOUS TOP REINFORCING AT CENTER OF SPAN AND BOTTOM REINFORCING AT SUPPORTS. TERMINATE TOP BARS AT NON-CONTINUOUS END WITH STANDARD HOOK.
- ALL REINFORCING STEEL SHALL BE DEFORMED BARS GRADE 60 CONFORMING TO THE LATEST EDITION OF ASTM A-615/A 615M-00 OR ASTM-616 AND HAVE A MINIMUM YIELD STRENGTH OF 60000 PSI
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A25-85 USING COLD DRAWN WIRE CONFORMING TO ASTM A82-01.
- UNLESS OTHERWISE NOTED, MINIMUM CONCRETE COVER FOR REINFORCING STEEL SHALL BE 3/4 INCH FOR SLABS, 1.5 INCH FOR BEAMS, COLUMNS AND PIERS, AND 1 INCH FOR WALLS. ALL CONCRETE EXPOSED TO WEATHER OR EARTHFLUID SHALL HAVE A MINIMUM COVER OF 1.5 INCHES FOR #8 BARS OR SMALLER, 2 INCH FOR BARS LARGER THAN #5 AND 3 INCH FOR CONCRETE PLACED AGAINST EARTH.
- ALL STRUCTURAL STEEL CONSTRUCTION TO CONFORM TO AISI-360 "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" AND AISI CODE OF STANDARD PRACTICE, UNLESS MODIFIED.
- ALL DETAILING FABRICATION AND ERECTION SHALL CONFORM TO MBC SECTION 2204 CODE, THE LATEST EDITION OF "AISC SPECIFICATION FOR STRUCTURAL FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS AND BRIDGES."
- CONTRACTOR TO USE AISI SPECIFICATIONS FOR THE MANUFACTURE OF ALL STRUCTURAL STEEL MEMBERS WITH TENSILE YIELD STRENGTH FY = 50 KSI, AND WHICH SHALL CONFORM TO ASTM A-992 STANDARDS, AND SHALL SUBMIT SHOP DRAWINGS. ALL STRUCTURAL STEEL SHALL BE ASTM A-992 (UNLESS NOTED OTHERWISE) HAVING FY=50,000 PSI.
- STRUCTURAL TUBING SHALL CONFORM TO ASTM A500, GRADE B OR ASTM A501. SEE DRAWING FOR EACH APPLICATION.
- ALL DRAWINGS SHOW THE INTENT AND CONCEPT OF THE CONNECTIONS BUT NOT THE DETAIL OF BOLTS AND WELDS. ALL CONNECTIONS NOT DETAILED SHALL BE DESIGNED, DETAILED AND MANUFACTURED BY THE FABRICATOR.
- SHOP CONNECTIONS SHALL BE WELDED FIELD CONNECTIONS USE ETTOX ELECTRODES, RUN PARALLEL TO THE TENSION MEMBERS, AND USE HIGH STRENGTH BOLTS WITH WASHER AND NUT.
- FIELD BOLT CONNECTIONS WITH ASTM A-325 OR ASTM A-490.
- PROVIDE PERIMETER STEEL ANGLES FOR METAL ROOF DECK SUPPORT AS REQUIRED, INCLUDING AROUND ALL ELEVATORS, STAIRS, AND OPENINGS IN FLOOR OR ROOF.
- ALL WELDING TO CONFORM TO AISI D.1 "STRUCTURAL WELDING CODE", E 70 XX LOW HYDROGEN ELECTRODES CONFORMING TO AISI SPECIFICATION A5.1 SHALL BE USED FOR WELDING.
- ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS USING ELECTRIC ARC METHODS IN ACCORDANCE WITH LATEST EDITION OF "AISI CODE FOR WELDING IN BUILDING CONSTRUCTION." ETTOX ELECTRODES TO BE USED.
- UNLESS OTHERWISE NOTED, ALL FIELD CONNECTIONS SHALL BE FASTENED WITH 3/4 INCH DIAMETER ASTM A325-X, BEARING TYPE (WITH THREADS EXCLUDED FROM SHEAR PLANE) BOLTS.
- UNLESS OTHERWISE SHOWN, ALL BEAM END CONNECTIONS SHALL BE DESIGNED TO SUPPORT ONE-HALF THE TOTAL UNIFORM LOAD CAPACITY SHOWN IN AISI MANUAL FOR GIVEN BEAM, SPAN AND END GRADE OF STEEL SPECIFIED. FOR COMPOSITE BEAM CONNECTIONS SHALL BE DESIGNED FOR THREE-FOURTHS OF THE TOTAL UNIFORM LOAD CAPACITY.
- ALL ANCHOR BOLTS SHALL CONFORM TO ASTM A-307-00.
- MINIMUM CONNECTION SHALL BE 3/4 INCH DIAMETER BOLTS OR A WELD DEVELOPING A FORCE OF 10 KIPS.
- PAINT ONE COAT OF PRIMER ON ALL EXPOSED SURFACES EXCEPT FOR THE FOLLOWING SURFACES WHICH WILL NOT BE PAINTED:
A. SURFACES THAT ARE IN CONTACT WITH CONCRETE.
B. CONTACT SURFACES IN FRICTION TYPE CONNECTIONS.
C. SURFACES WHICH METAL FLOOR DECK AND/OR SHEAR STUDS ARE TO BE WELDED.
D. SURFACES TO BE WELDED SHALL NOT BE PAINTED WITHIN THREE INCHES OF THE WELD.
- THE CONTRACTOR SHALL FURNISH AND INSTALL STEEL ANGLES WITH ANCHORS AT MECHANICAL CURBS WHERE INDICATED.
- FLOOR AND ROOF OPENINGS ARE TO BE FRAMED WITH STEEL ANGLES AS INDICATED. FRAMES TO BE CONNECTED TO THE PANEL POINTS OF BAR JOISTS OR GIRDER AND TRUSSES.
- REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL ANGLES, PLATES, BARS, CLIPS, ETC., ATTACHED TO STRUCTURAL STEEL. VERIFY EXACT SIZE AND LOCATION OF ALL FLOOR AND ROOF OPENINGS WITH CONTRACTOR INVOLVED.
- PROVIDE "DUR-O-WALL" RE-STEE; USE NO. 8 LADDER TYPE ONLY. BLOCKWORK - EVERY 24" STEEL FABRICATOR TO PROVIDE SHOP DRAWINGS FOR ARCHITECT'S APPROVAL PRIOR TO FABRICATION. THE SHOP DRAWINGS SHALL INCLUDE CONNECTION DETAILS FOR ALL STRUCTURAL STEEL MEMBERS. SPECIFY THAT STEEL JOIST AND JOIST GIRDER STRUCTURAL.
- NO COMBUSTIBLES IN PLENUM SPACE

SPECIAL INSPECTIONS:

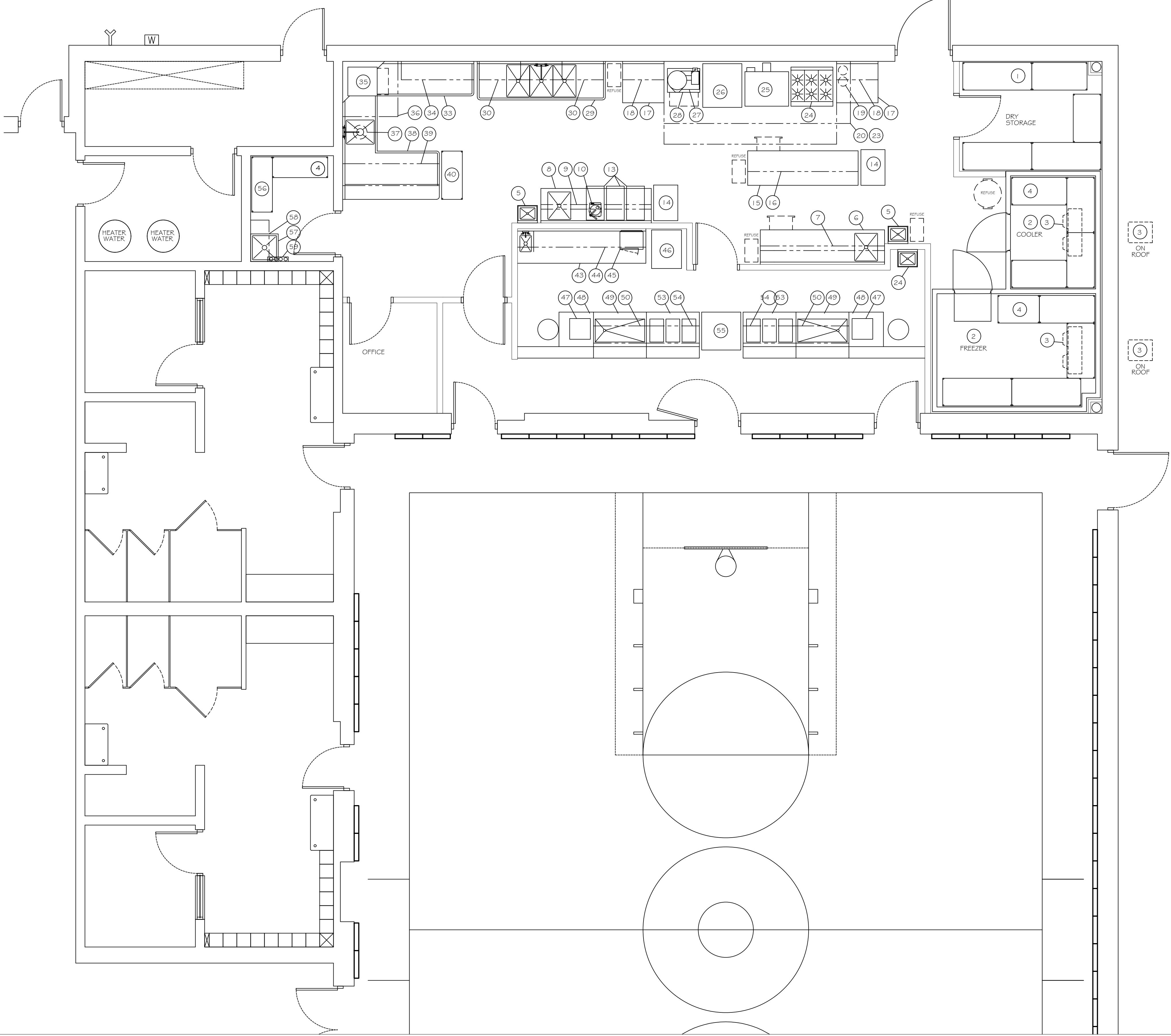
BUILDER SHALL BE SELECT AND PROVIDE A THIRD PARTY TESTING AGENCY - PER SECTION. I705 MBC 2015.
THE SPECIAL INSPECTIONS SHALL INCLUDE:
SECTION I705.2 STEEL CONSTRUCTION
SECTION I705.3 CONCRETE CONSTRUCTION
SECTION I705.4 MASONRY CONSTRUCTION
SECTION I705.6 SOILS

REINFORCING STEEL:

- DETAILING AND PLACING OF REINFORCING SHALL CONFORM TO AISI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES.
- SECURE REBAR AND HOLD IN PLACE WITH GALVANIZED METAL ACCESSORIES, OR PLASTIC BOOTED CHAIRS.
- ALL RE-STEEL SHALL BE INTERMEDIATE GRADE NEW BILLET STEEL, ASTM 15.
- PLACE (2) #5 BARS CONTINUOUS IN TOP AND BOTTOM OF ALL WALL FOOTINGS, GRADE BEAMS, AND AT THE SIDES OF ALL OPENINGS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- UNLESS NOTED, ROOF DECK SHALL BE MANUFACTURED FROM STEEL CONFORMING TO ASTM A100, 33 KSI.
- LOADS SHALL NOT BE HUNG FROM ROOF DECK.
- METAL DECK TO BE CONNECTED TO SUPPORTING MEMBERS AS PER RECOMMENDATION BY SDI OR AS SPECIFIED.
- THE CONTRACTOR SHALL FURNISH ALL ACCESSORIES INCLUDING CLOSURES, "Z" CLOSURES, COLUMN CLOSURES, SCREW ANGLES AND GIRDERS, AS REQUIRED.
- ROOF DECK SHALL HAVE MANUFACTURER'S STANDARD RUST INHIBITIVE PAINT.
- METAL DECK SHALL BE CONTINUOUS OVER THREE SPANS WHEREVER INDICATED. SINGLE AND DOUBLE SPANS SHALL COMPLY WITH "STEEL DECK" REQUIREMENT.
- ALL METAL DECKING SHALL BE WELDED TO THE STEEL BEAM WITH A 3/4 INCH PLUG WELD AT THE FLUTES NOT EXCEEDING 12 INCHES APART.
- ALL INTERIOR ROOF Sumps SHALL HAVE AN OVER FLOW 3" ABOVE ROOF SURFACE

METAL DECK:

- METAL DECK SHALL CONFORM TO ALL REQUIREMENTS OF "BASIC DESIGN SPECIFICATION" AS ADOPTED BY THE STEEL DECK INSTITUTE (SDI).
<li



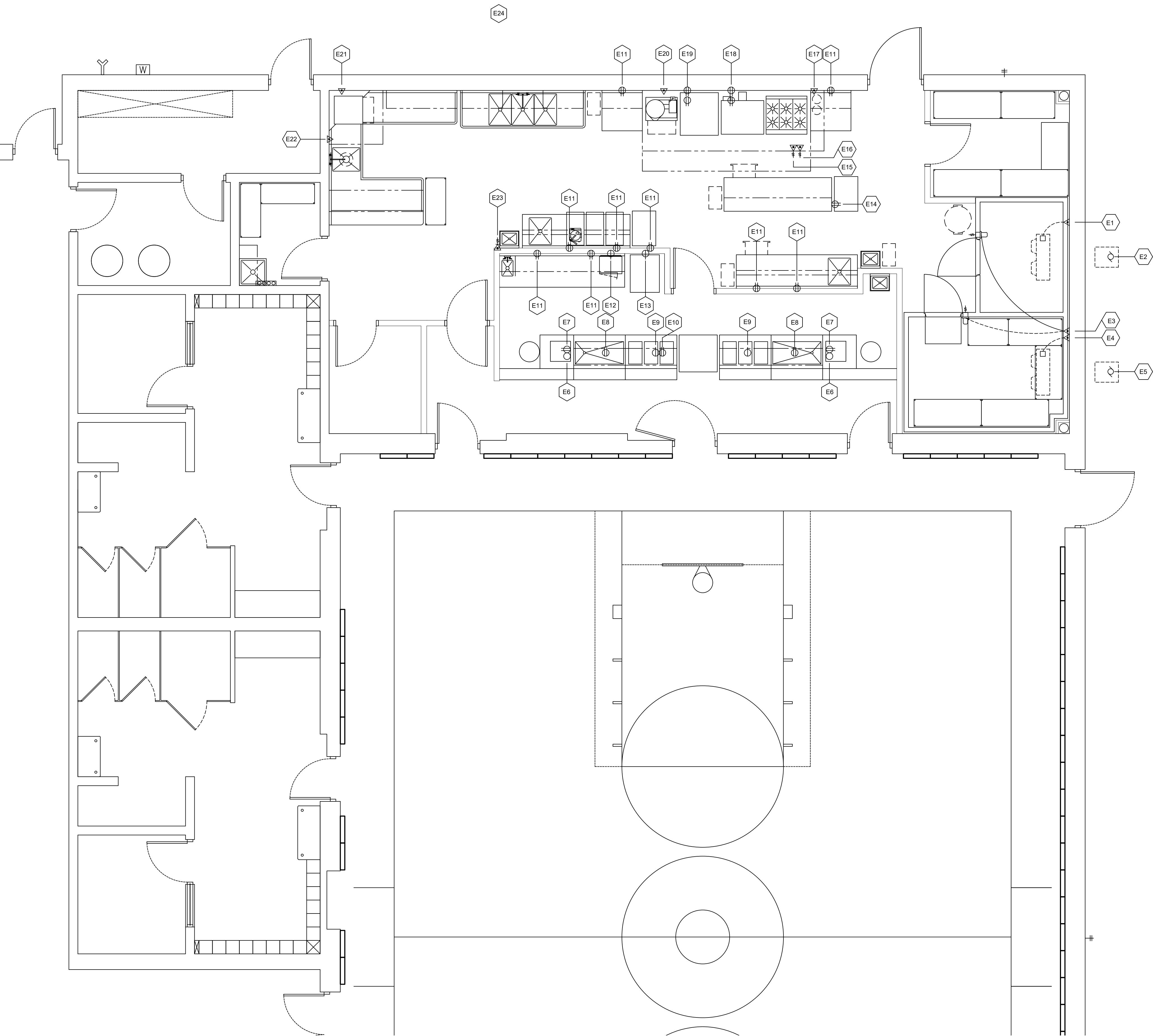
NO.	QTY.	DESCRIPTION
1	1 LOT	WIRE SHELVING
2	1	WALK-IN COOLER/FREEZER COMBO
3	1	WALK-IN REFRIGERATION SYSTEM
4	1 LOT	WALK-IN SHELVING
5	3	HAND SINKS
6	1	PREPARATION WORKTABLE W/ SINK
7	2	WALL SHELVES
8	1	PREPARATION WORKTABLE W/ SINK
9	2	WALL SHELVES
10	1	FOOD PROCESSOR
11	-	SPARE NUMBER
12	-	SPARE NUMBER
13	3	MOBILE INGREDIENT BINS
14	2	MOBILE BUN PAN RACKS
15	1	WORK TABLE
16	1	OVERSHELF
17	2	WORK TABLE
18	4	WALL SHELVES
19	1	FIRE SUPPRESSION SYSTEM
20	1	EXHAUST HOOD
21	-	SPARE NUMBER
22	-	SPARE NUMBER
23	1	EXHAUST/MAKE-UP AIR SYSTEM
24	1	6 BURNER RANGE W/ OVEN
25	1	DOUBLE DECK CONVECTION OVEN
26	1	COMBI OVEN/STEAMER
27	1	TLTING KETTLE
28	1	KETTLE STAND
29	1	THREE COMPARTMENT SINK
30	3	WALL SHELVES
31	-	SPARE NUMBER
32	-	SPARE NUMBER
33	1	CLEAN DISHTABLE
34	1	CLEAN SLANTED RACK SHELF
35	1	POT & PAN DISHWASHER
36	1	CONDENSATE EXHAUST HOOD
37	1	DISPOSER
38	1	SOILED DISHTABLE
39	1	SOILED RACK SHELF
40	1	SOILED SHELVING UNIT
41	-	SPARE NUMBER
42	-	SPARE NUMBER
43	1	UTILITY COUNTER W/ HAND SINK
44	1	WALL SHELF
45	1	MICROWAVE OVEN
46	1	MOBILE HEATED HOLDING CABINET
47	1	CASH REGISTER/POS SYSTEM
48	2	CASHIERS COUNTERS
49	2	COLD FOOD SERVING COUNTERS
50	2	SNEEZE GUARDS/SERVING SHELVES
51	-	SPARE NUMBER
52	-	SPARE NUMBER
53	2	HOT FOOD COUNTERS
54	2	SNEEZE GUARDS/SERVING SHELVES
55	1	REFRIGERATED MILK DISPENSER
56	1 LOT	CHEMICAL STORAGE SHELVING
57	1	MOP SINK
58	2	WALL SHELVES
59	1	UNDERCOUNTER REFG. UNIT

FOR REFERENCE ONLY

Restaurant
Equipment,
Products &
Services llc

NOOR INTERNATIONAL ACADEMY
4050 COOLIDGE HIGHWAY TROY, MICHIGAN 48098
THIS DRAWING IS THE PROPERTY OF RESTAURANT EQUIPMENT PRODUCTS & SERVICES LLC.
ANY UNAUTHORIZED USE OR REPRODUCTION WITHOUT WRITTEN CONSENT MAY BE SUBJECT TO APPLICABLE DESIGN FEES.

PROJECT NAME	_____
DATE:	ISSUED FOR
REVISIONS	
DATE:	7-11-2022
DRAWN BY:	JR
CHECKED BY:	GE
SCALE:	1/4" = 1'-0"
FILE NO.:	-
SHEET TITLE	
FOODSERVICE EQUIPMENT PLAN	
SHEET NO.:	
FSE - 1	



NO. ELECTRICAL CHARACTERISTICS

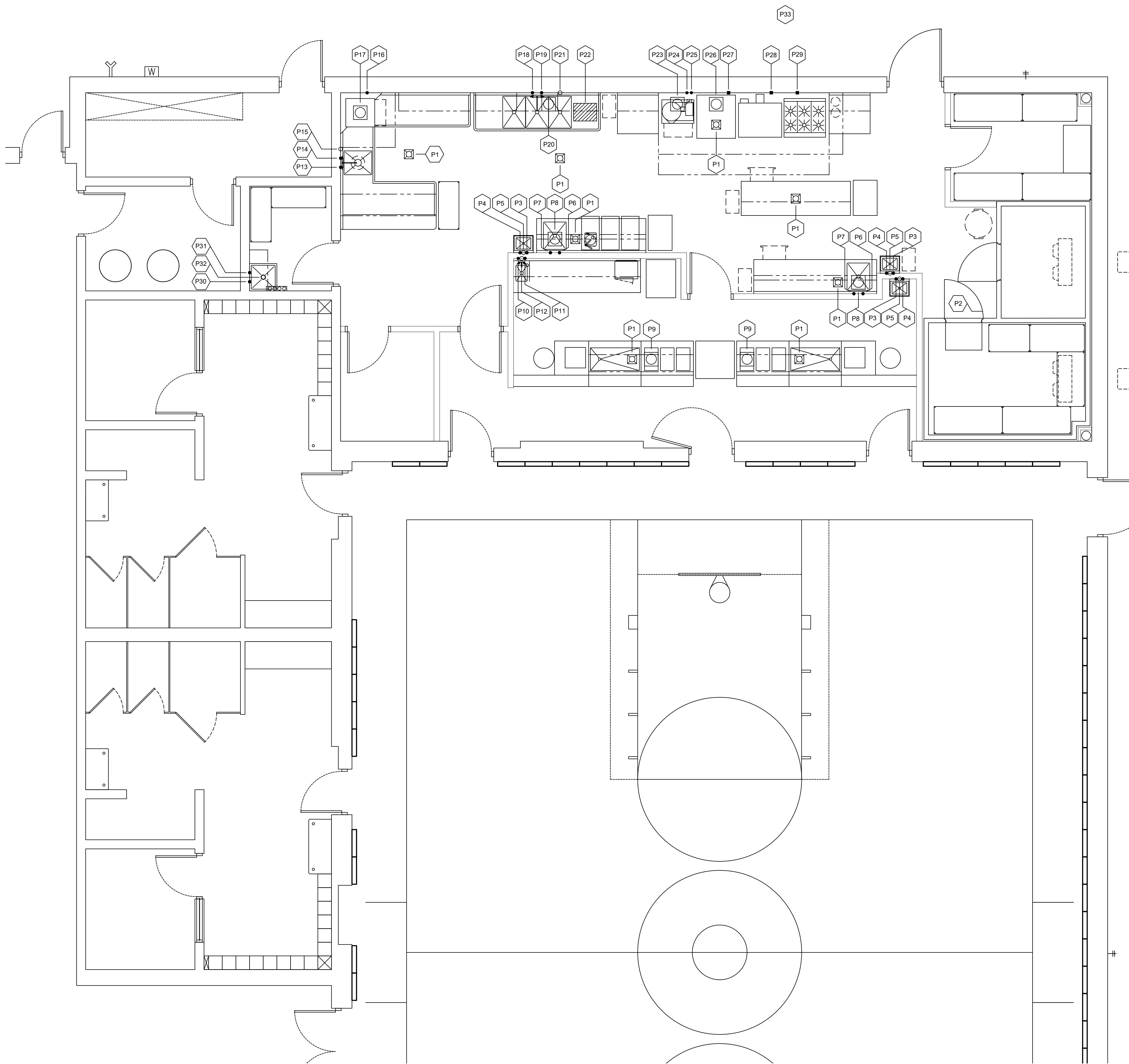
E1	E.C. 0.7 KW. 120V. 1PH. 6.5 AMPS 9'-0" A.F.F. - CT WALK-IN COOLER EVAPORATOR COIL
E2	E.C. 3/4 HP. 208V. 3PH. 3.5 AMPS ON ROOF OF BUILDING - CT WALK-IN COOLER CONDENSING UNIT
E3	E.C. 0.6 KW. 120V. 1PH. 5.2 AMPS 9'-0" A.F.F. - CT WALK-IN COOLER/FREEZER LIGHTS
E4	E.C. 2.3 KW. 208V. 1PH. 10.0 AMPS 9'-0" A.F.F. - CT FREEZER EVAPORATOR COIL
E5	E.C. 2 HP. 208V. 3PH. 4.4 AMPS ON ROOF OF BUILDING - CT FREEZER CONDENSING UNIT
E6	EMPTY CONDUIT 4" A.F.F. - FOR POS/CASH REGISTER SYSTEM
E7	D.R. 120V. 1PH. 15.0 AMPS 4" A.F.F. - FOR POS/CASH REGISTER SYSTEM
E8	D.R. 0.9 KW. 120V. 1PH. 6.8 AMPS 4" A.F.F. - FOR COLD FOOD UNIT
E9	S.R. 2.7 KW. 208V. 1PH. 13.0 AMPS 4" A.F.F. - FOR HOT FOOD UNIT
E10	D.R. 1/3 HP. 120V. 1PH. 5.0 AMPS 4" A.F.F. - FOR MILK COOLER
E11	D.R. 120V. 1PH. 20.0 AMPS EA. 48" A.F.F. - FOR GENERAL USE
E12	S.R. 1.2 KW. 120V. 1PH. 17.3 AMPS 72" A.F.F. - FOR MICROWAVE OVEN
E13	S.R. 1.8 KW. 120V. 1PH. 15.0 AMPS 48" A.F.F. - FOR HEATED CABINET
E14	D.R. 120V. 1PH. 20.0 AMPS EA. DROP DOWN FROM CEILING TO 72" A.F.F. - FOR GENERAL USE
E15	E.C. 0.4 KW. 120V. 1PH. 3.5 AMPS DROP DOWN FROM ABOVE - CT SWITCH HOOD LIGHT
E16	E.C. DROP DOWN FROM ABOVE - CT SWITCH ON HOOD TO EXHAUST FAN ON ROOF - VERIFY REQMTS. W/ SUPPLIER
E17	E.C. 1.0 KW. 120V. 1PH. 8.3 AMPS DROP DOWN FROM ABOVE TO 6" BELOW CEILING - CT FIRE SUPPRESSION SYSTEM
E18	E.C. 1/2 HP. 120V. 1PH. 10.8 AMPS EACH 12" x 48" A.F.F. - FOR DOUBLE DECK CONVECTION OVEN
E19	D.R. 1.0 KW. 120V. 1PH. 8.3 AMPS EACH 12" x 48" A.F.F. - FOR COMBO OVEN/STEAMER
E20	E.C. 1.0 KW. 120V. 1PH. 8.3 AMPS DROP DOWN FROM ABOVE TO 6" BELOW CEILING - CT FIRE SUPPRESSION SYSTEM
E21	E.C. 6.3 KW. 208V. 3PH. 18.0 AMPS 12" A.F.F. - CT KETTLE
E22	E.C. 2 HP. 208V. 3PH. 6.1 AMPS 24" A.F.F. - DT + CT SWITCH + DISPOSER
E23	E.C. 48" A.F.F. - CT SWITCH FOR EXHAUST FAN ON ROOF OF BUILDING - VERIFY REQUIREMENTS W/ SUPPLIER
E24	PROVIDE ELECTRIC SUPPLY ON ROOF OF BLDG. FOR EXHAUST FANS & MAKE-UP AIR UNIT - VERIFY REQMTS. W/ SUPPLIER

ELECTRICAL SYMBOLS	
⊖	SINGLE RECEPTACLE
⊖⊕	DUPLEX RECEPTACLE
▷	ELECTRICAL CONNECTION
✖	SWITCH
□	JUNCTION BOX
□	DISCONNECT SWITCH
□	CONTROL PANEL
○	MOTOR
○	LIGHT
A.F.F.	ABOVE FINISHED FLOOR - ON CENTER
D.F.A.	DROP FROM ABOVE
CT	CONNECT TO
S.R.	SINGLE RECEPTACLE
D.R.	DOUBLE RECEPTACLE
E.C.	ELECTRICAL CONNECTION

NOTE: TRADES TO PROVIDE THE NECESSARY CONNECTIONS FOR EQUIPMENT SUPPLIED BY OTHERS OR OWNER.
IF MAKE-UP AIR IS REQUIRED, THE ELECTRICAL CONTRACTOR IS TO PROVIDE THE NECESSARY ELECTRICAL.
TRADES TO VERIFY EXACT LOCATION OF CONNECTIONS ON ROOF OF BUILDING.
ELECTRICAL TRADES ARE RESPONSIBLE FOR VERIFYING & MEETING ALL CITY, STATE, & FEDERAL CODES

FOR REFERENCE ONLY

PROJECT NAME:	ISSUED FOR:
REVISIONS:	DATE: 8-4-2022
DRAWN BY: JR	CHECKED BY: GE
SCALE: 1/4" = 1'-0"	FILE NO.:
SHEET TITLE: FOODSERVICE ELECTRICAL PLAN	
SHEET NO.:	
FSE - 3	



NO.	PLUMBING CHARACTERISTICS
P1	FLOOR DRAIN
P2	FLOOR DRAIN W/ FUNNEL TO ACCEPT WALK-IN COOLER/FREEZER EVAPORATOR CONDENSATE DRAIN LINES
P3	1/2" HW, 20° A.F.F. - CT HAND SINK FAUCET
P4	1/2" CW, 20° A.F.F. - CT HAND SINK FAUCET
P5	1 1/2" W, 1G° A.F.F. - CT HAND SINK DRAIN
P6	1/2" HW, 1G° A.F.F. - CT PREPARATION SINK FAUCET
P7	1/2" CW, 1G° A.F.F. - CT PREPARATION SINK FAUCET
P8	OPEN FLOOR SINK FOR PREPARATION SINK DRAIN LINE
P9	OPEN FLOOR SINK FOR HOT & COLD SERVING UNITS DRAIN LINES
P10	1/2" HW, 20° A.F.F. - CT HAND SINK FAUCET
P11	1/2" CW, 20° A.F.F. - CT HAND SINK FAUCET
P12	1 1/2" W, 1G° A.F.F. - CT HAND SINK DRAIN
P13	1/2" HW, 20° A.F.F. - CT PRE-RINSE FAUCET
P14	3/4" CW, 20° A.F.F. - CT PRE-RINSE FAUCET, SOLENOID VALVE & DISPOSER
P15	2" W, 12° A.F.F. - CT DISPOSER
P16	3/4" HW 73° A.F.F. - CT DISHWASHER
P17	OPEN FLOOR SINK FOR DISHWASHER DRAIN LINE
P18	3/4" HW, 1G° A.F.F. - CT SINK FAUCET(S)
P19	3/4" CW, 1G° A.F.F. - CT SINK FAUCET(S)
P20	OPEN FLOOR SINK TO ACCEPT RINSE & SANITIZE SINK DRAINS
P21	2" W, 12° A.F.F. - CT SOILED SINK DRAIN & RUN TO GREASE TRAP
P22	GREASE TRAP - VERIFY REQUIREMENTS W/ LOCAL/STATE CODES
P23	OPEN FLOOR SINK FOR KETTLE STAND DRAIN
P24	1/2" HW, 12° A.F.F. - CT KETTLE FILL FAUCET
P25	3/4" CW, 12° A.F.F. - BT & CT KETTLE FILL FAUCET & COMBI STEAMERS
P26	OPEN FLOOR SINK TO ACCEPT COMBI OVEN/STEAMER DRAINS
P27	1" G, 18° A.F.F. - CT COMBI OVEN/STEAMER @ 82,000 BTU EACH - TOTAL 164,000 BTU
P28	3/4" G, 18° A.F.F. - CT CONVECTION OVEN @ 144,000 BTU
P29	3/4" G, 18° A.F.F. - CT RANGE @ 203,000 BTU
P30	1/2" HW, 30° A.F.F. - CT MOP SINK FAUCET
P31	1/2" CW, 30° A.F.F. - CT MOP SINK FAUCET
P32	2" W, IN FLOOR - CT MOP SINK DRAIN - VERIFY REQUIREMENTS W/ SUPPLIER
P33	PROVIDE NECESSARY GAS SUPPLY ON ROOF OF BLDG. FOR MAKE-UP AIR UNIT - VERIFY REQMTS. W/ SUPPLIER

PLUMBING SYMBOLS	
• HW	HOT WATER
• CW	COLD WATER
○ W	WASTE
■ G	GAS
□	FLOOR DRAIN
□○	FUNNEL TYPE FLOOR DRAIN
○○	INDIRECT WASTE DRAIN
○○○	OPEN FLOOR SINK
○○○○	SLEEVE IN FLOOR OR CEILING
○○○○○	GREASE TRAP
A.F.T.	ABOVE FINISHED FLOOR - ON CENTER
D.F.A.	DROP FROM ABOVE
BT	BRANCH & CONNECT TO
CT	CONNECT TO

NOTE: TRADES TO PROVIDE THE NECESSARY CONNECTIONS FOR EQUIPMENT SUPPLIED BY OTHERS OR OWNER. IF MAKE-UP AIR IS REQUIRED, THE PLUMBING CONTRACTOR IS TO PROVIDE THE NECESSARY GAS CONNECTIONS. TRADES TO VERIFY EXACT LOCATION OF CONNECTIONS ON ROOF OF BUILDING. ALL ADDITIONAL PIPING, DRAINS, FD'S, ETC., AS REQD BY CODES, TO BE SHOWN BY MECH. ENGINEER. PLUMBING TRADES ARE RESPONSIBLE FOR VERIFYING & MEETING ALL CITY, STATE, & FEDERAL CODES.

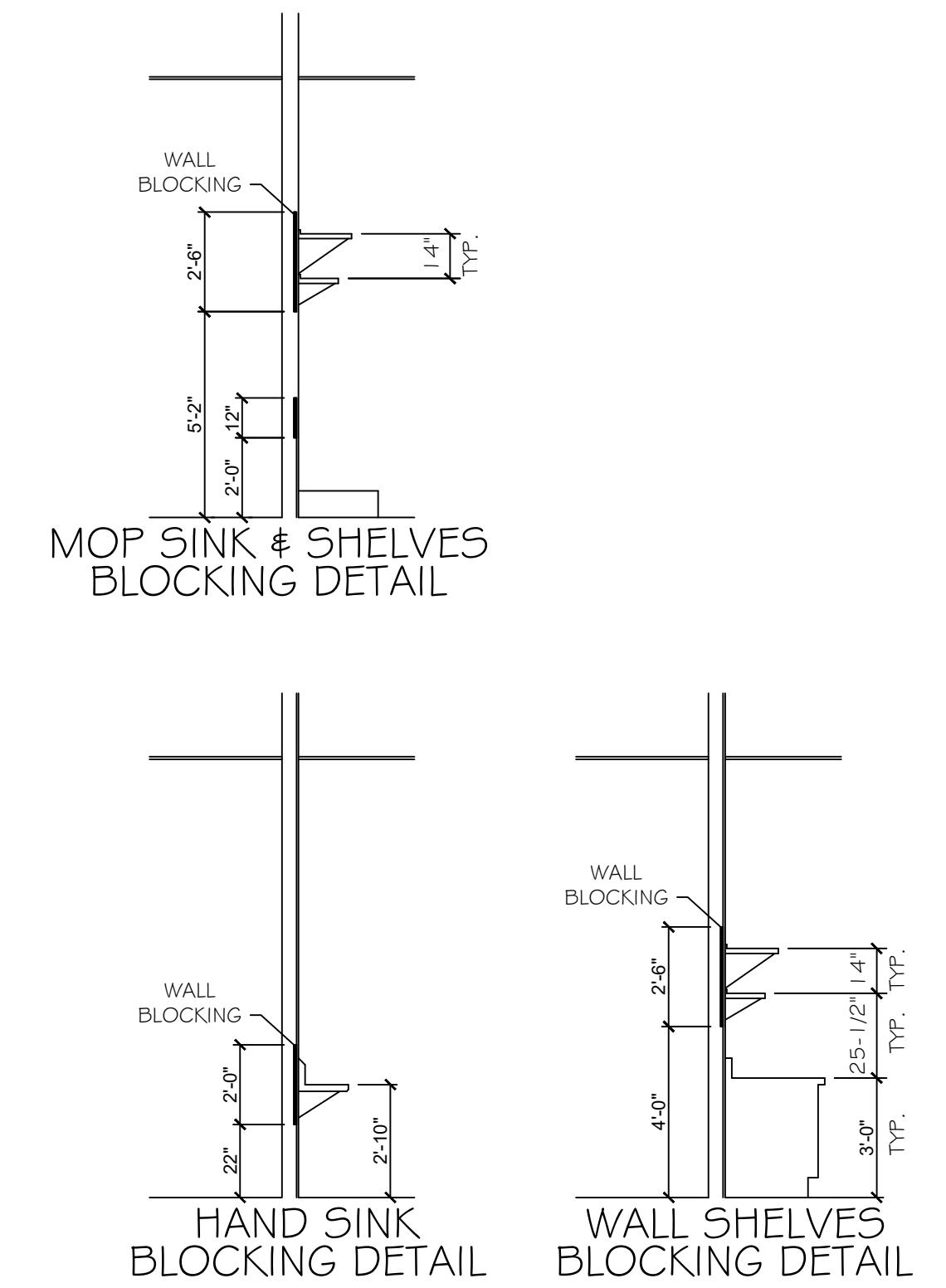
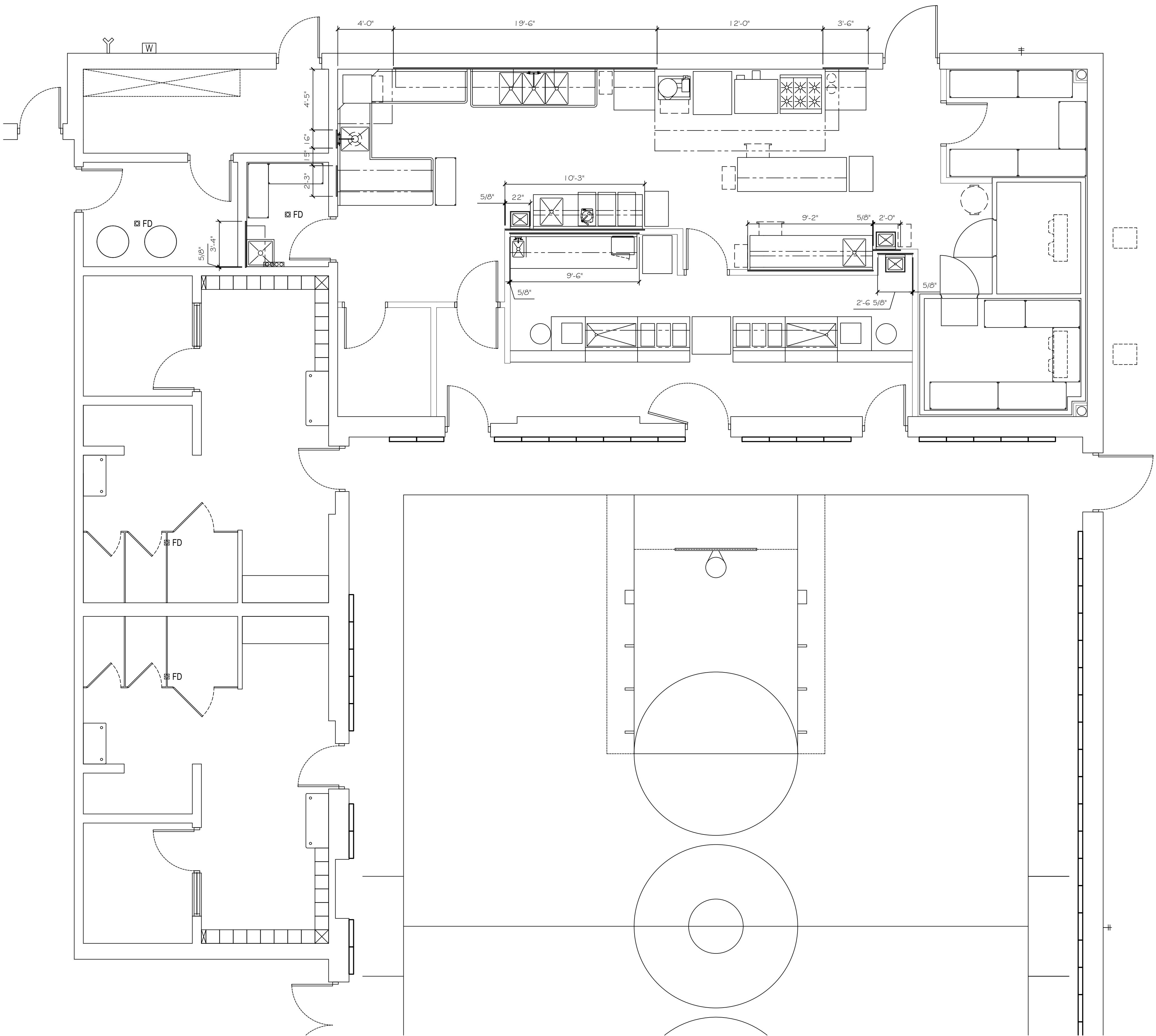
NOTE: WHERE REQUIRED, PLUMBING TRADES TO PROVIDE WATER SUPPLY LINES W/ APPROVED BACKFLOW PREVENTER AND/OR VACUUM BREAKERS.

FOR REFERENCE ONLY

FSE - 2

NOOR INTERNATIONAL ACADEMY
4050 COOLIDGE HIGHWAY TROY, MICHIGAN 48098
PROJECT NAME: NOOR INTERNATIONAL ACADEMY
DATE: 8-7-2022 DRAWN BY: JR
REVISIONS: CHECKED BY: GE
SCALE: 1/4" = 1'-0"
FILE NO.: -
SHEET TITLE: WALL BLOCKING PLAN
SHEET NO.: -

FOR REFERENCE ONLY
FSE - 4



FOR QUESTIONS, CALL THE
Michigan Office
REGION 77
PHONE: (616) 942-9881
EMAIL: reg77@ktechhools.com

PATENT NUMBERS

AC-PSP (UNITED STATES) - US PATENT 7963830 B2.
AC-PSP WALL (CANADA) - CA PATENT 2820509.
AC-PSP ISLAND (CANADA) - CA PATENT 2520330.

SPECIFICATION CAPTRATE® GREASE-STOP® SOLO FILTER

THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

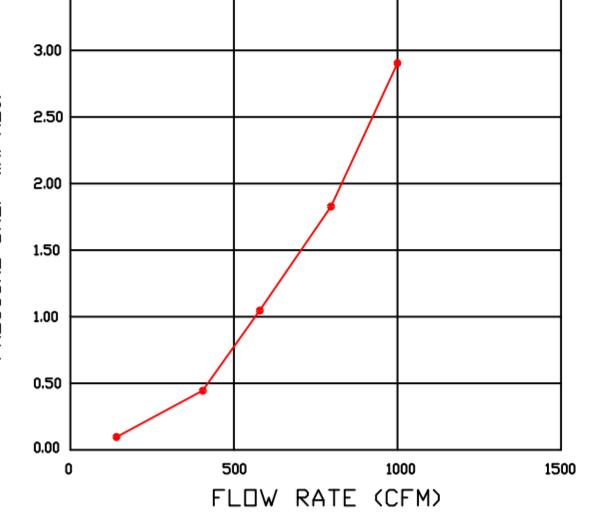
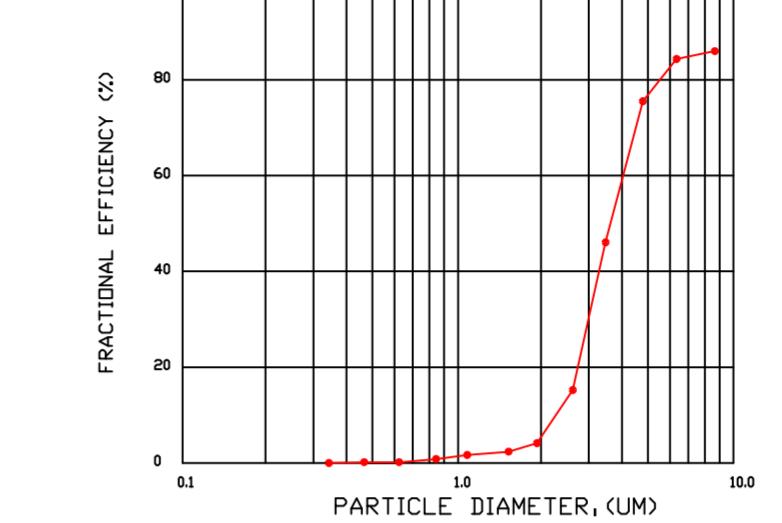
UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLO WAS TESTED TO ASTM STANDARD ASTM F2519-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

EFFICIENCY VS. PARTICLE DIAMETER

PRESSURE DROP VS. FLOW RATE



CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH:
NFPA #96.
NSF STANDARD #2.
UL STANDARD #1046.
INT. MECH. CODE (IMC).
ULC-S649.



HOOD INFORMATION - JOB#5555672

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLUMA RISER(S)				TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG		
										WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP		
1		PK-ND-2 Q-SB-F	K-TECH	12' 6"	450 DEG	I	MEDIUM	200	2500		4"	16"	2500	1790	-1.152"	2500	430 SS WHERE EXPOSED	ALONE ALONE
2		4824 VHB-G	K-TECH	4' 0"	700 DEG	II	N/A	150	600		4"	10"	600	1100	-0.090"	0	430 SS 100%	ALONE ALONE

HOOD INFORMATION

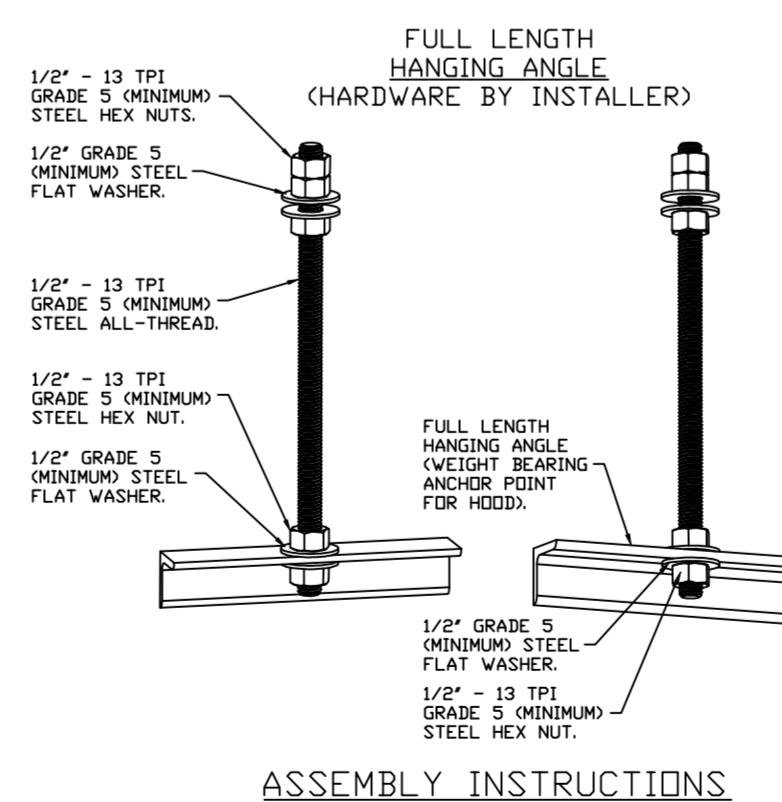
HOOD NO	TAG	FILTER(S)				LIGHT(S)			UTILITY CABINET(S)				FIRE SYSTEM PIPING	HOOD HANGING WEIGHT	
		TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	QTY	TYPE	WIRE GUARD	LOCATION	SIZE	TYPE	SIZE	MODEL #	QUANTITY
1		CAPTRATE SOLO FILTER	9	16"	16"	85% SEE FILTER SPEC	4	L55 SERIES E26	NO	RIGHT	12"x54"x24"			SC-31110MA	1 LIGHT 1 FAN
2							0								NO 175 LBS

HOOD OPTIONS

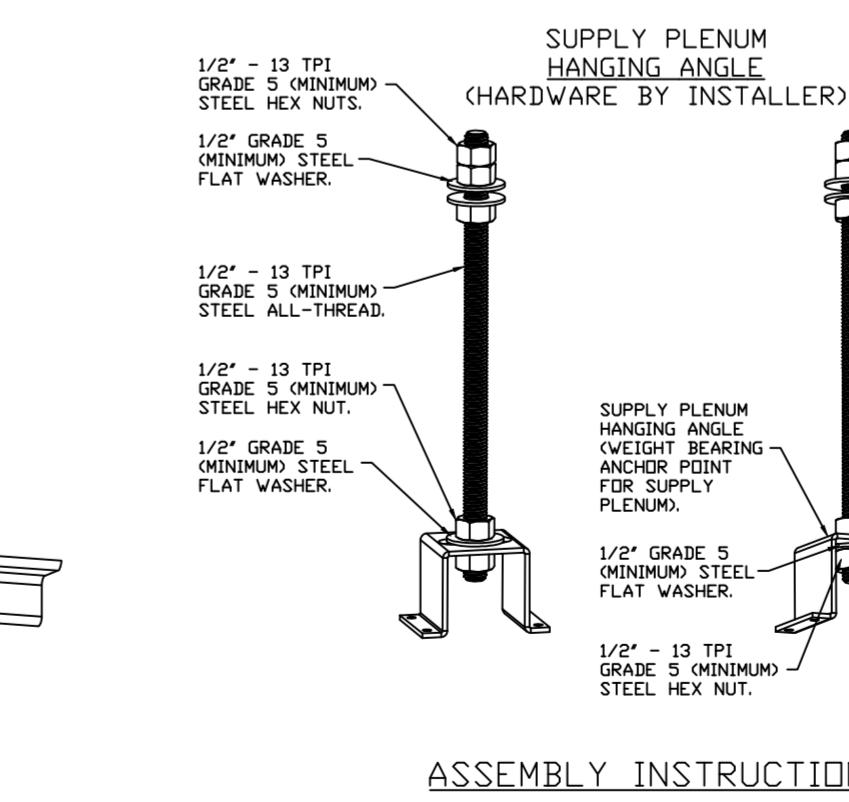
HOOD NO	TAG	OPTION									
		FIELD WRAPPER	18.00"	HIGH	FRONT, LEFT, RIGHT.						
		BACKSPLASH	80.00"	HIGH X 162.00"	LONG 430 SS VERTICAL.						
1		RIGHT VERTICAL END PANEL	27"	TOP WIDTH,	21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.						
		LEFT VERTICAL END PANEL	27"	TOP WIDTH,	21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.						
		SENSDR-CV.									
2		FIELD WRAPPER	18.00"	HIGH	FRONT, LEFT.						

PERFORATED SUPPLY PLUMA PLUMA(S)

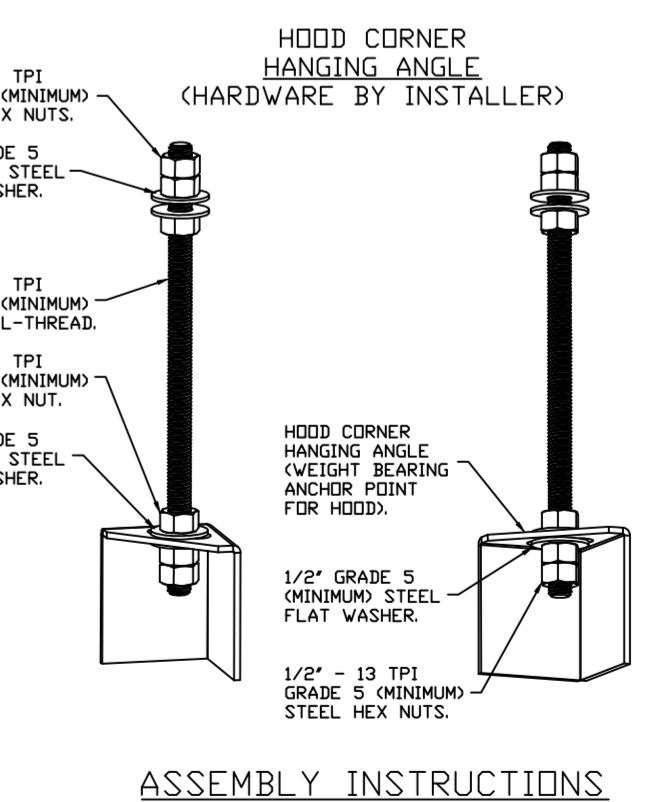
HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)				
							WIDTH	LENG	DIA	CFM	SP
1		Front	162"	18"	6"	MUA	12"	28"		831	0.221"
						MUA	12"	28"		831	0.221"
						MUA	12"	28"		831	0.221"



HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BEHIND HANGING ANGLE IS ACCEPTABLE FOR PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BEHIND BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BEHIND HANGING ANGLE IS ACCEPTABLE FOR PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BEHIND BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BEHIND CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BEHIND BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

DATE: 7/13/2022
DWG.#: 5555672
DRAWN BY: DKC
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO.

FOR REFERENCE ONLY

Noor International Academy
8379 W Auburn Rd,
Rochester Hills, MI, 48307

3676 East Paris Ave SE, Suite 18, Grand Rapids, MI, 49512 PHONE: (616) 942-9881 FAX: (919) 227-5984 EMAIL: reg77@ktechhools.com

REVISIONS

DESCRIPTION	DATE
△	
△	
△	
△	

REVISIONS		
△	DESCRIPTION	DATE:
△		
△		
△		



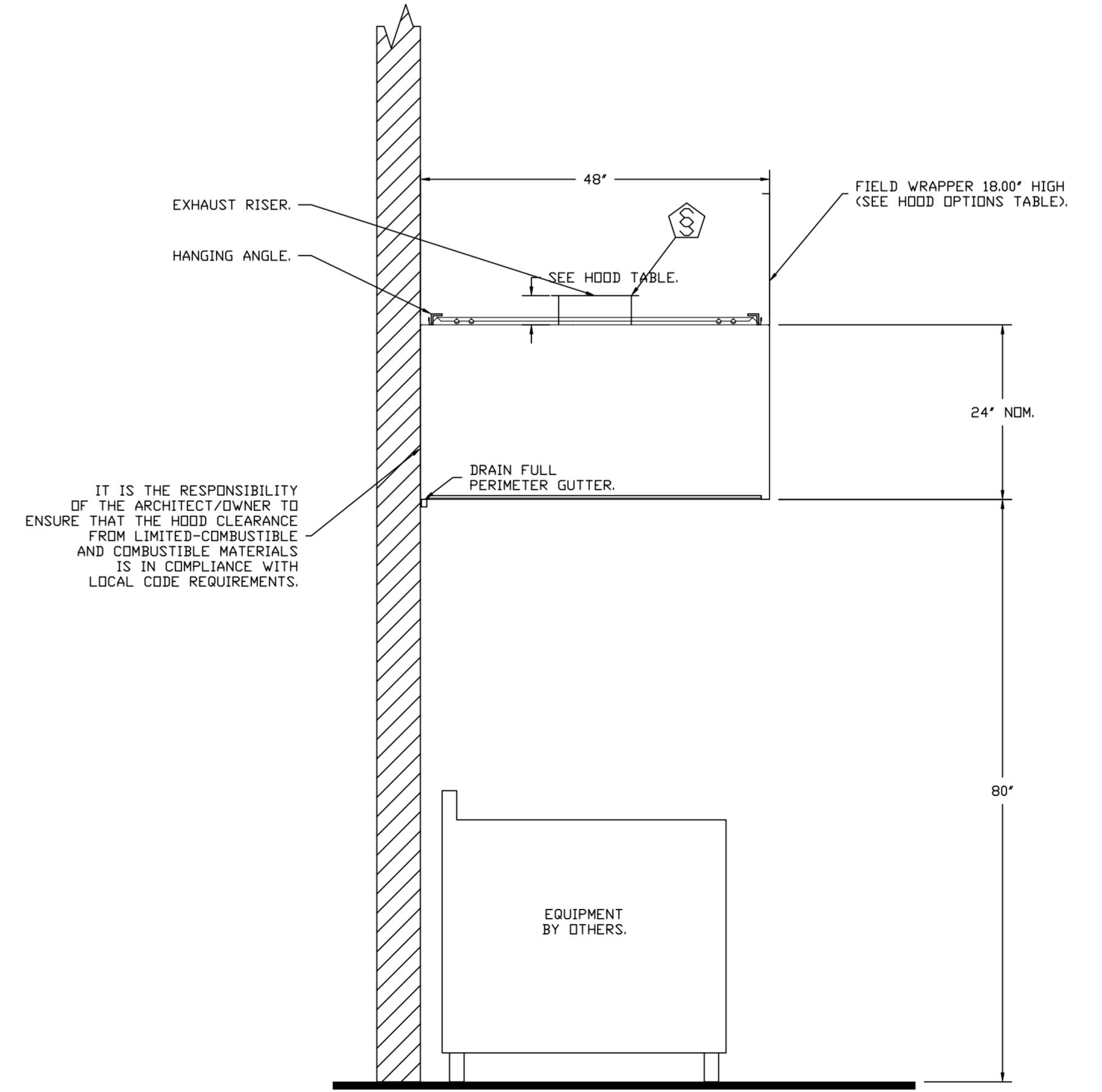
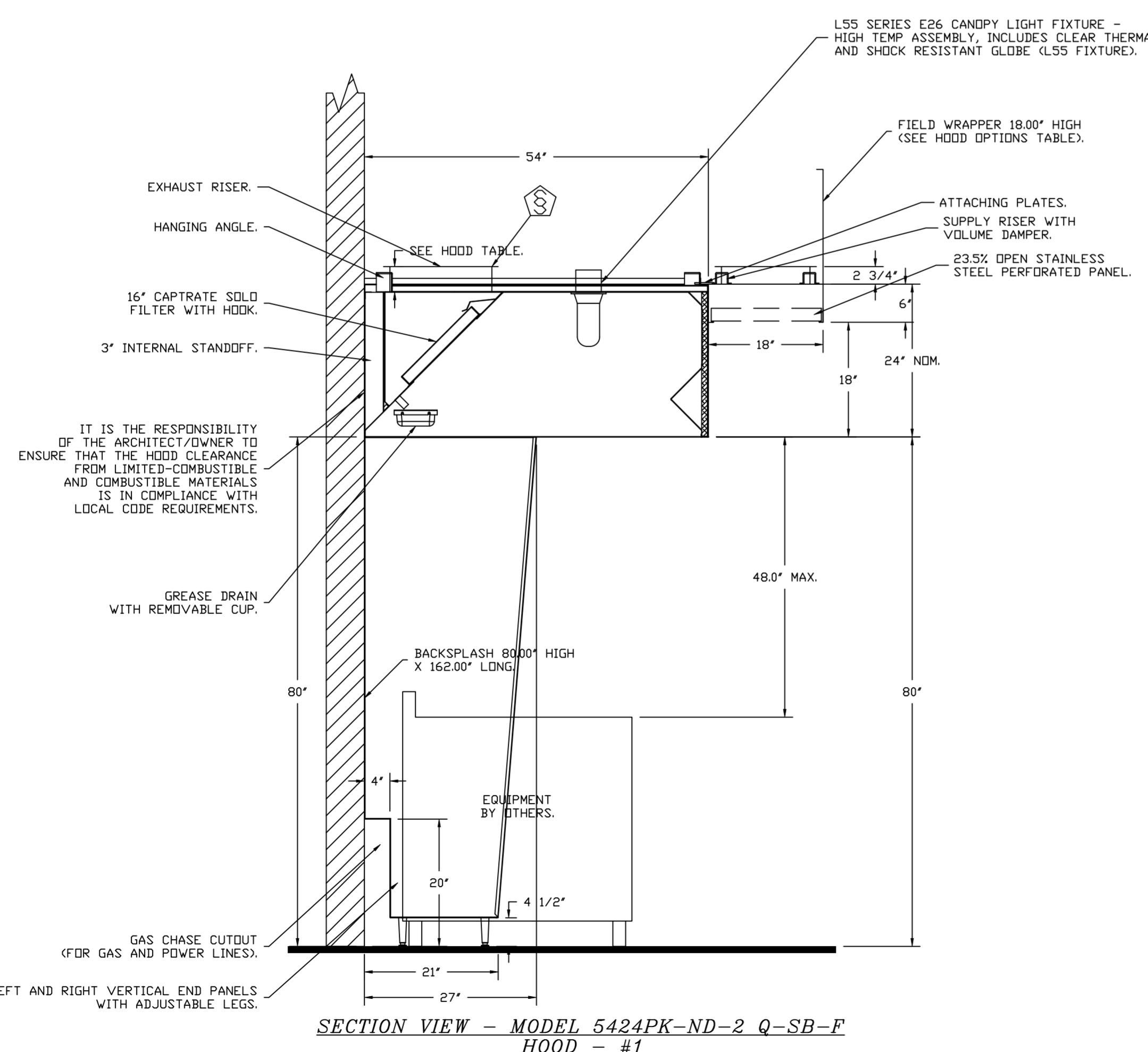
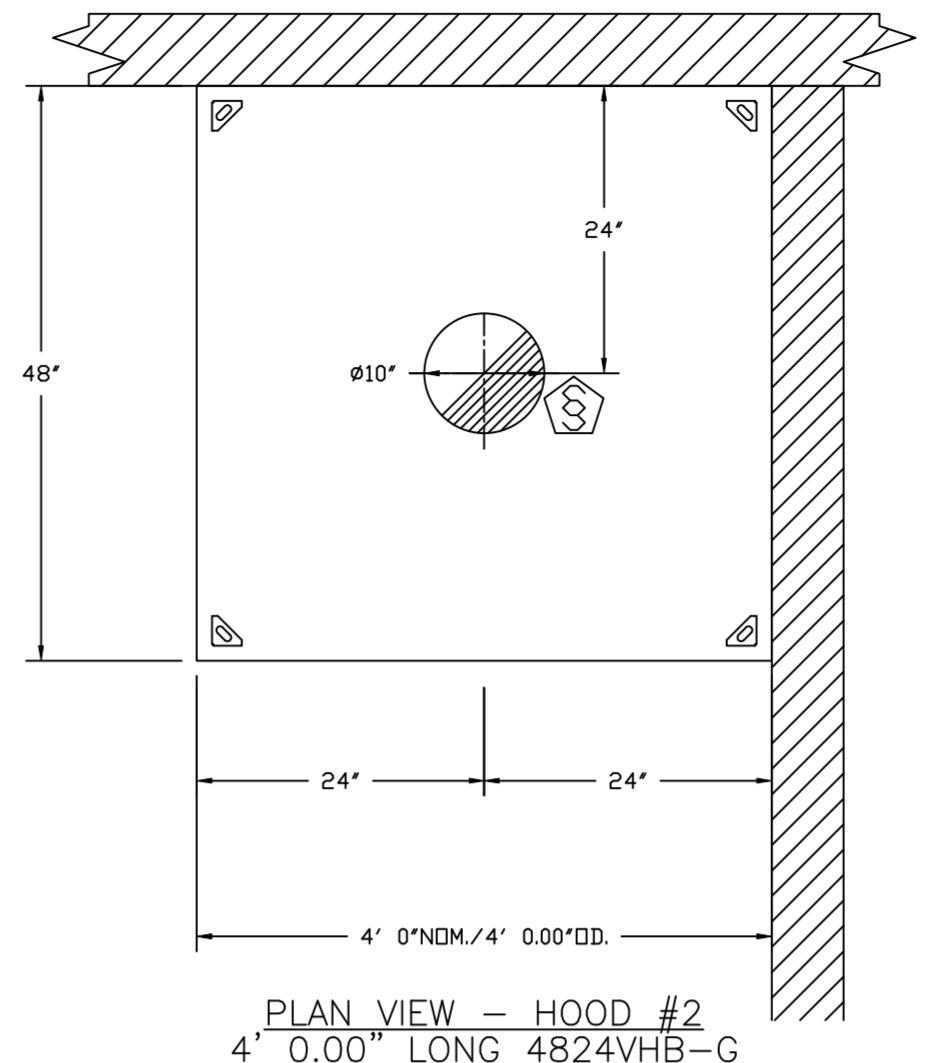
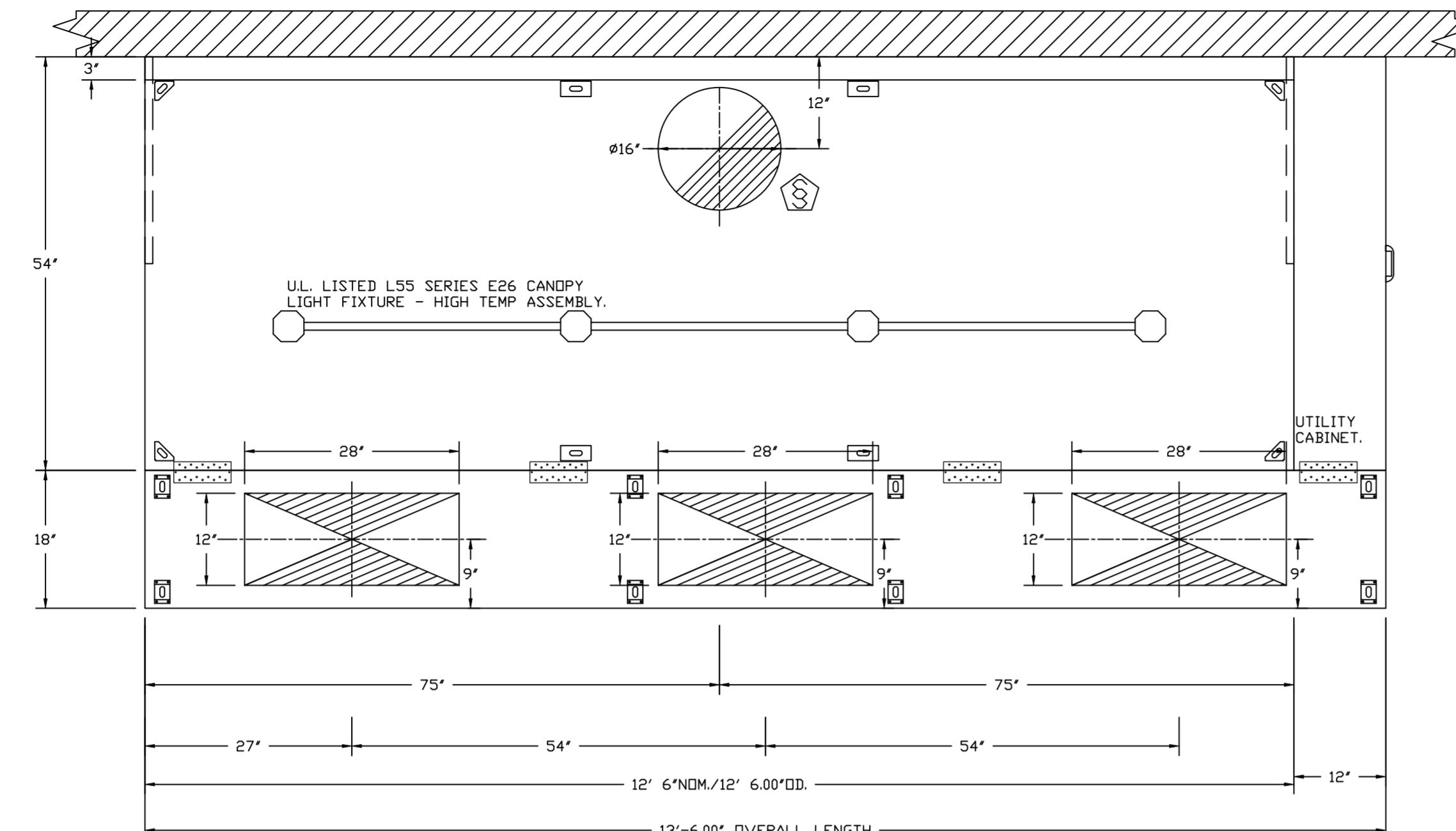
KTECH
Michigan Office

www.muckertktech.com

Noor International Academy
879 W Auburn Rd,
Rochester Hills, MI, 48307

3676 East Paris Ave SE, Suite 18, Grand Rapids, MI, 49512 PHONE: (616) 942-9881 FAX: (919) 227-5984 EMAIL: reg77@ktechhoods.com

SHEET NO.
2



DATE:	7/13/2022
DWG.#:	5555672
DRAWN BY:	DKC
SCALE:	3/4" = 1'-0"
MASTER DRAWING	

FOR REFERENCE ONLY

REVISIONS	
△	DESCRIPTION
△	DATE:
△	
△	
△	

K-Tech
www.muckertktech.com
Michigan Office

3876 East Paris Ave SE, Suite 18, Grand Rapids, MI, 49512 PHONE: (616) 942-9881 FAX: (919) 227-5984 EMAIL: reg77@ktechschools.com
EXHAUST FAN INFORMATION - JOB#5555672

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1		1	DU180HK	K-TECH	2500	1.503	1240	ODP,PREMIUM	3.000	1.2990	3	208	9.5	577 FPM	188	16.9
3		1	DU30HK	K-TECH	600	0.250	1014	ODP	0.250	0.0480	1	115	3.8	297 FPM	66	5.5

CONDENSER DETAILS

FAN UNIT NO	TAG	FAN UNIT MODEL #	CONDENSER NO	TONNAGE	VOLTAGE	PHASE	FREQUENCY	MCA	RLA	MAX FUSE SIZE	MIN WIRE SIZE	SEER
2		K-A2-D.250-20D-MPU	1	5	208-230	3 PHASE	60 HZ	21.4 AMPS	17.4 AMPS	30 AMPS	10 AWG	14

MUA FAN INFORMATION - JOB#5555672

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MDCP	WEIGHT (LBS)	SONES
2		1	K-A2-D.250-20D-MPU	20MF-2-MOD	A2-D.250	2000	2500	0.375	1122	ODP,PREMIUM	1.500	0.7510	3	208	6.6	8.3A	15A	1367	9.3

COILS - JOB#5555672

FAN UNIT NO	TAG	COIL TYPE	DESIGN CFM	COOLING								HEATING											
				ENTERING DB TEMP	ENTERING WB TEMP	LEAVING DB TEMP	LEAVING WB TEMP	ENTERING FLUID TEMP	LEAVING FLUID TEMP	FLUID FLOW RATE	PERCENT GLYCOL	TOTAL CAPACITY	SENSIBLE CAPACITY	LATENT CAPACITY	ENTERING DB TEMP	LEAVING DB TEMP	ENTERING FLUID TEMP	LEAVING FLUID TEMP	FLUID FLOW RATE	PERCENT GLYCOL	STEAM PRESSURE	TOTAL CAPACITY	SENSIBLE CAPACITY
2		DX	2500	87.0°F	73.0°F	75.1°F	67.7°F	---	---	---	---	48.1 MBH	30.7 MBH	17.4 MBH	---	---	---	---	---	---	---	---	---

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO	TAG	INPUT BTUS	OUTPUT BTUS	TEMP RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE	BURNER EFFICIENCY(%)
2		220892	203221	80°F	7 IN. W.C. - 14 IN. W.C.	NATURAL	92

FAN OPTIONS

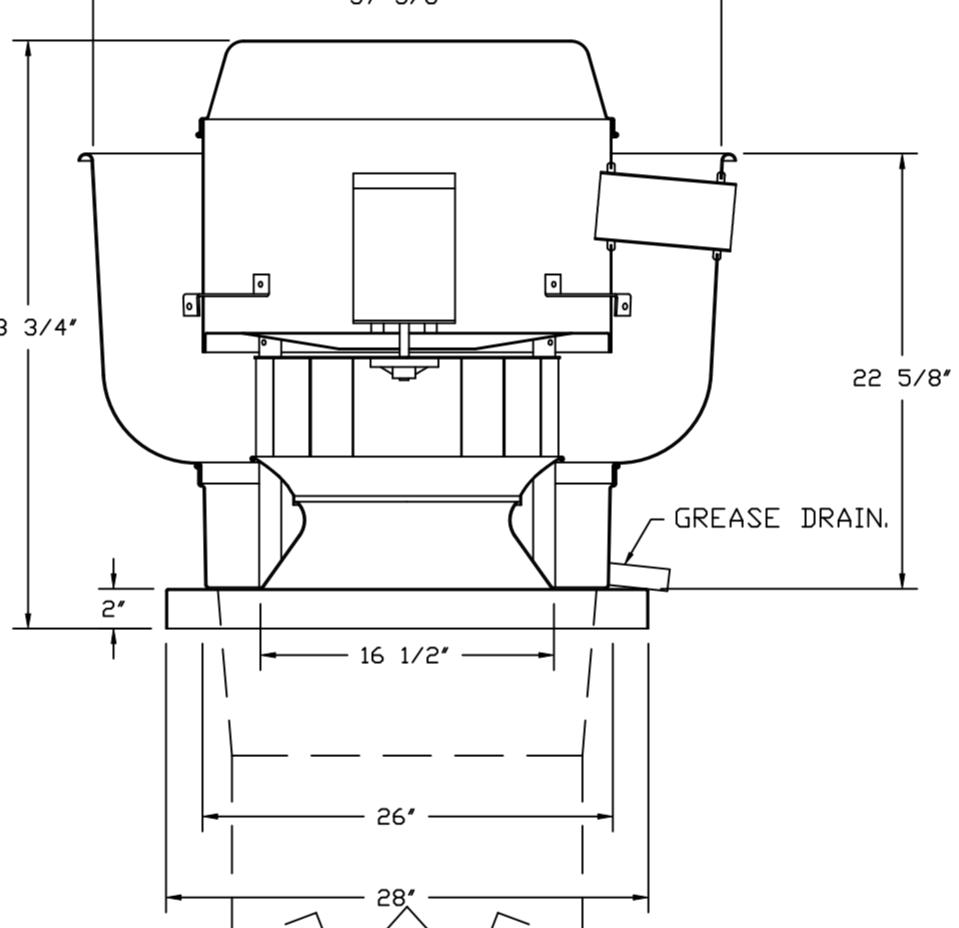
FAN UNIT NO	TAG	QTY	DESCRIPTION
1		1	GREASE BOX
		1	FAN BASE CERAMIC SEAL - INSTALLED AT PLANT - FOR GREASE DUCTS
		1	2 YEAR PARTS WARRANTY
2		1	INLET PRESSURE GAUGE, 0-35"
		1	MANIFOLD PRESSURE GAUGE, -5 TO 15° WC
		1	LOW FIRE START
		1	SHIP LOOSE GAS STRAINER 1"
		1	AC INTERLOCK RELAY - 24VAC COIL
		1	MOTORIZED BACKDRAFT DAMPER FOR A2-D HOUSING - MEETS AMCA CLASS 1A RATING
		1	5 TON SINGLE CIRCUIT MODULAR PACKAGED COOLING OPTION FOR SIZE 2 DF/EH MUA (2,000 TO 3,000 CFM), 208V/230V, 3 PHASE, COOLING THERMOSTAT OR PROGRAMMABLE STAT REQUIRED FOR PROPER OPERATION
		1	DOWNTURN PLENUM FOR SIZE 2 DX COIL MODULE
		1	COOLING THERMOSTAT AND RELAY (NOT REQUIRED FOR EVAP)
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY
		1	SIZE 2 DIRECT FIRED HEATER LOW CFM PROFILE PACKAGE - USED ON HEATERS UNDER 2500 CFM
		1	2 YEAR PARTS WARRANTY
3		1	2 YEAR PARTS WARRANTY

FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST		SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER
1		YES					YES
2							

CURB ASSEMBLIES

NO	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	41 LBS	CURB	26.500"W X 26.500"L X 20.000"H ALONG LENGTH, RIGHT VENTED HINGED.
2	# 2	107 LBS	CURB	31.000"W X 79.000"L X 20.000"H ALONG WIDTH, RIGHT INSULATED.
	# 2		RAIL	6.000"W X 31.000"L X 20.000"H RIGHT.
3	# 3	30 LBS	CURB	19.500"W X 19.500"L X 22.000"H ALONG LENGTH, RIGHT VENTED.

FAN #1 DU180HK - EXHAUST FAN

FEATURES:

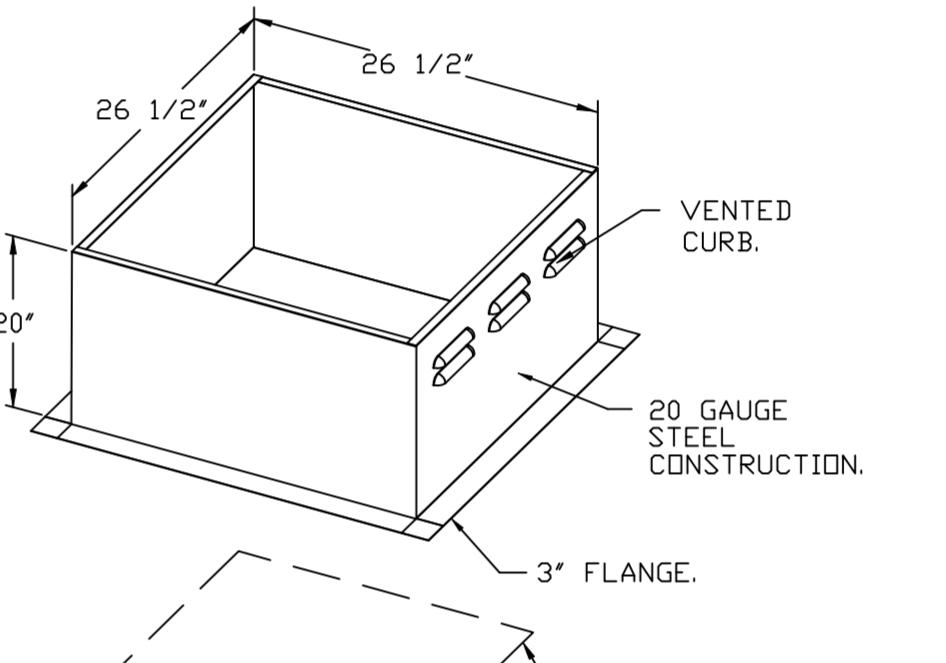
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE AN UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

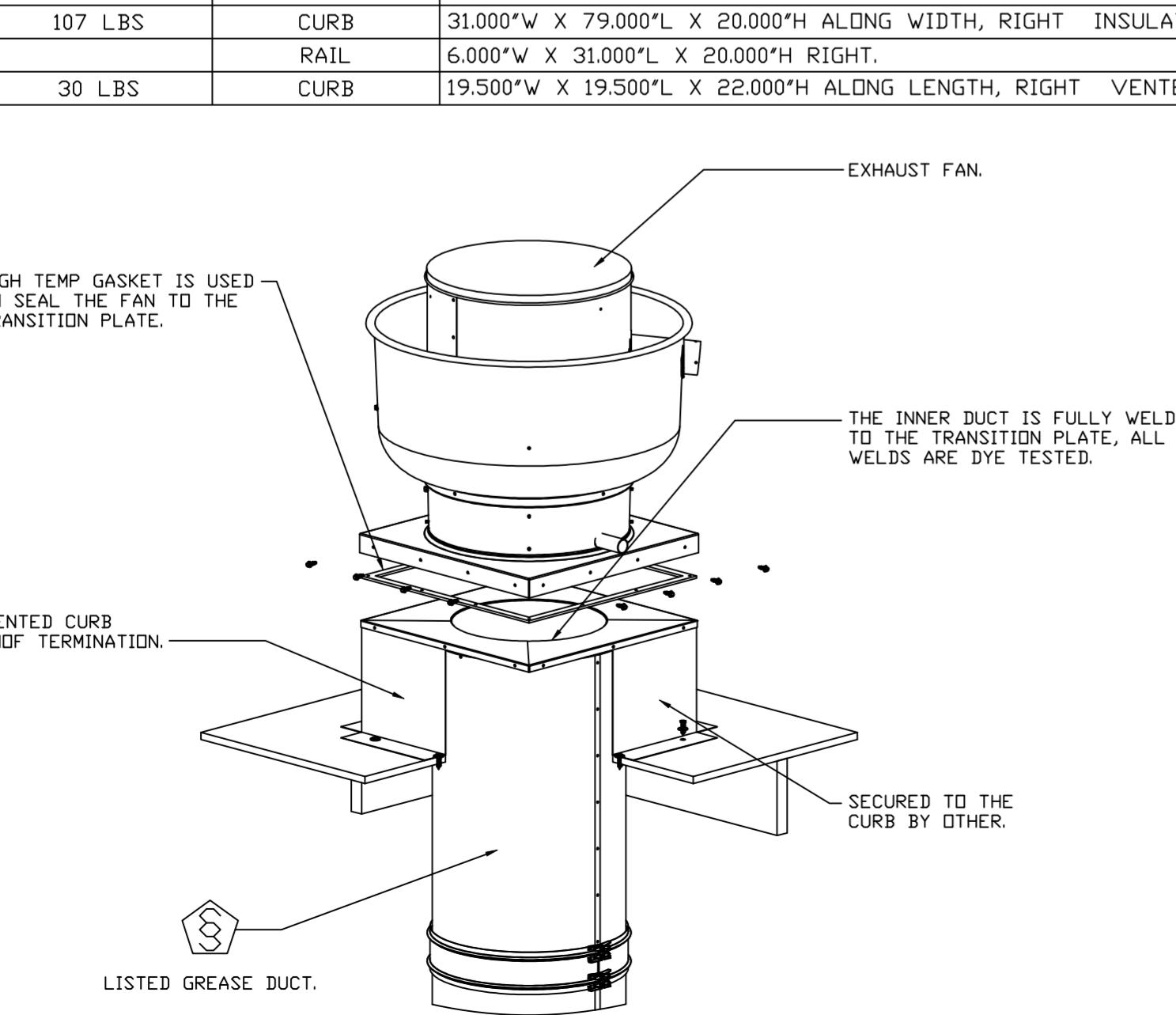
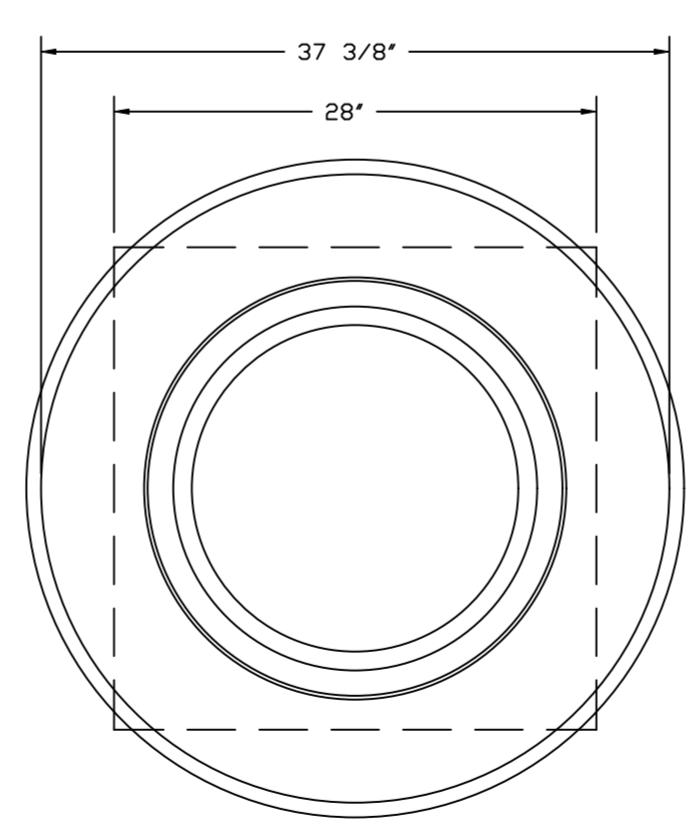
OPTIONS

GREASE BDY.
FAN BASE CERAMIC SEAL - INSTALLED AT PLANT - FOR GREASE DUCTS.
2 YEAR PARTS WARRANTY.



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE.

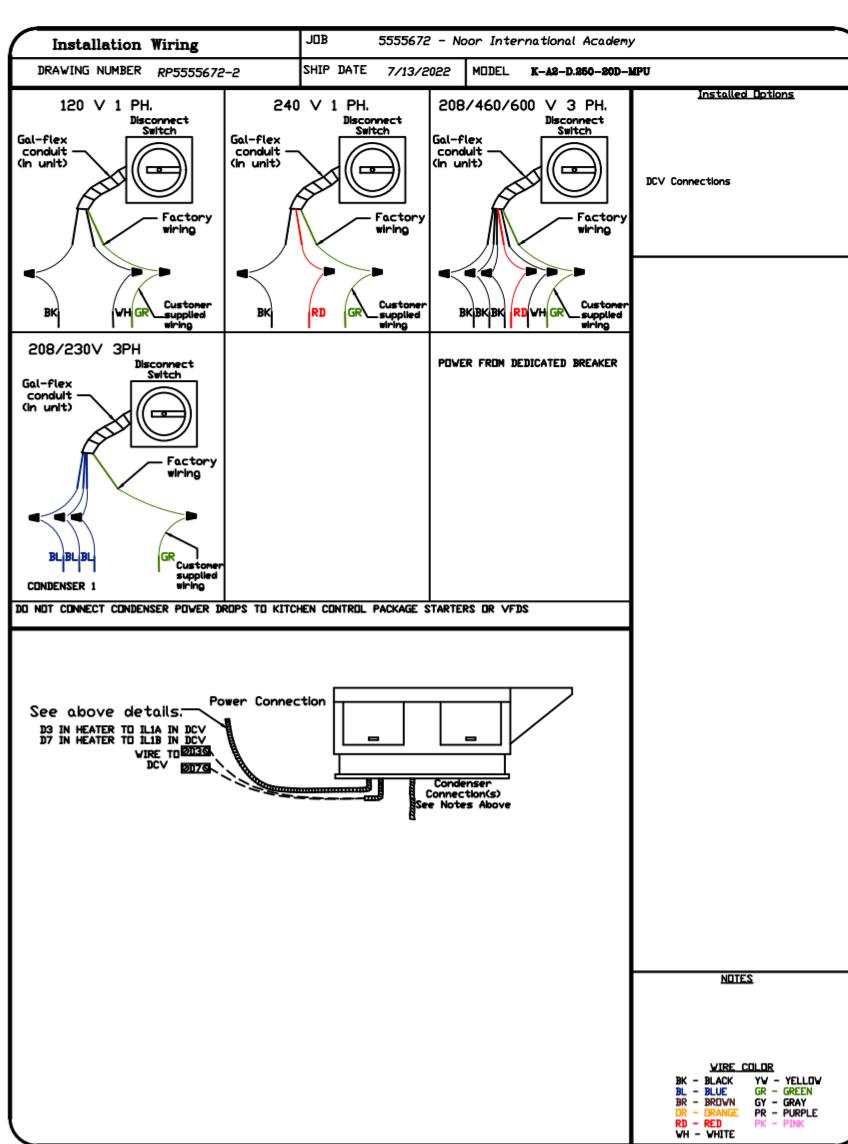
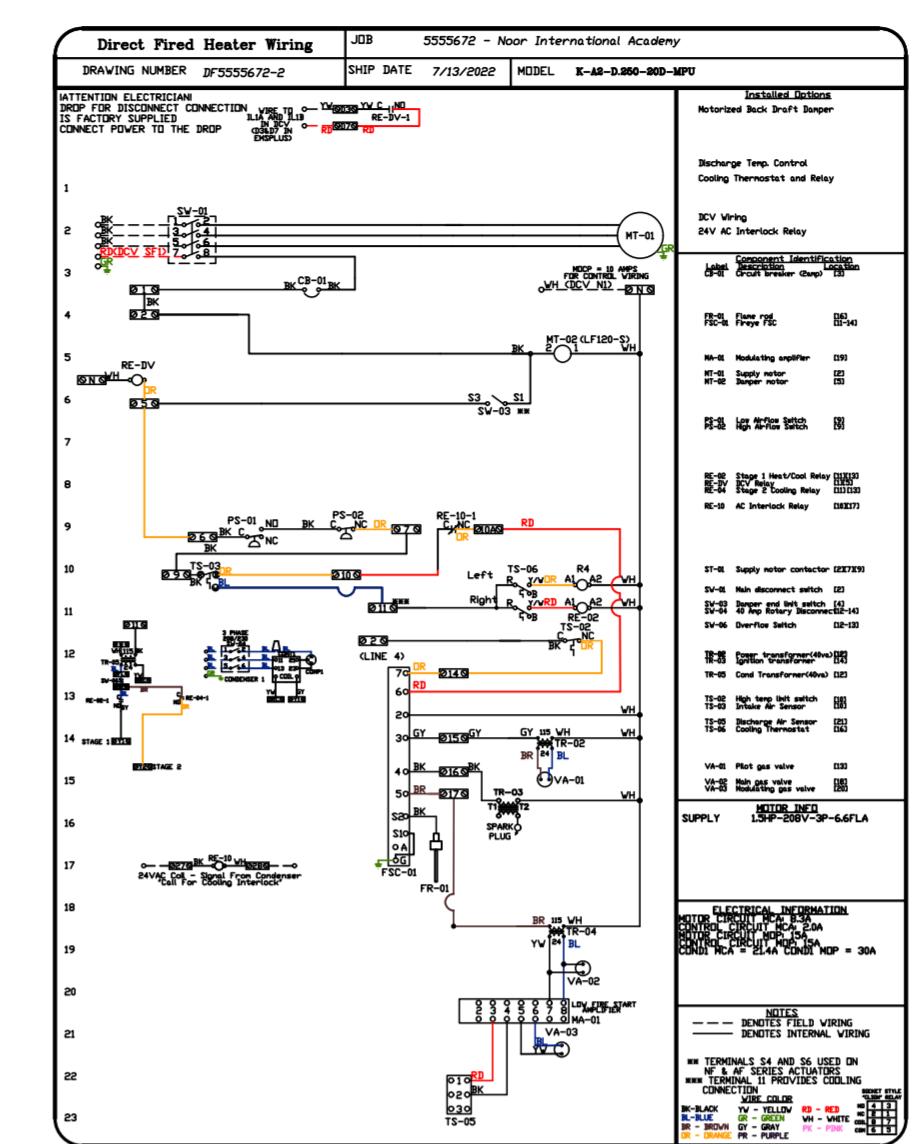


Noor International Academy
879 W Auburn Rd,
Rochester Hills, MI, 48307

DATE: 7/13/2022
DWG.#: 5555672
DRAWN BY: DKC
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO. 1
FOR REFERENCE ONLY

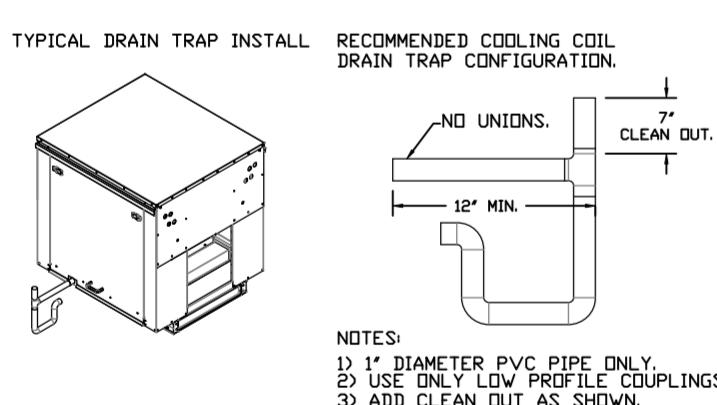
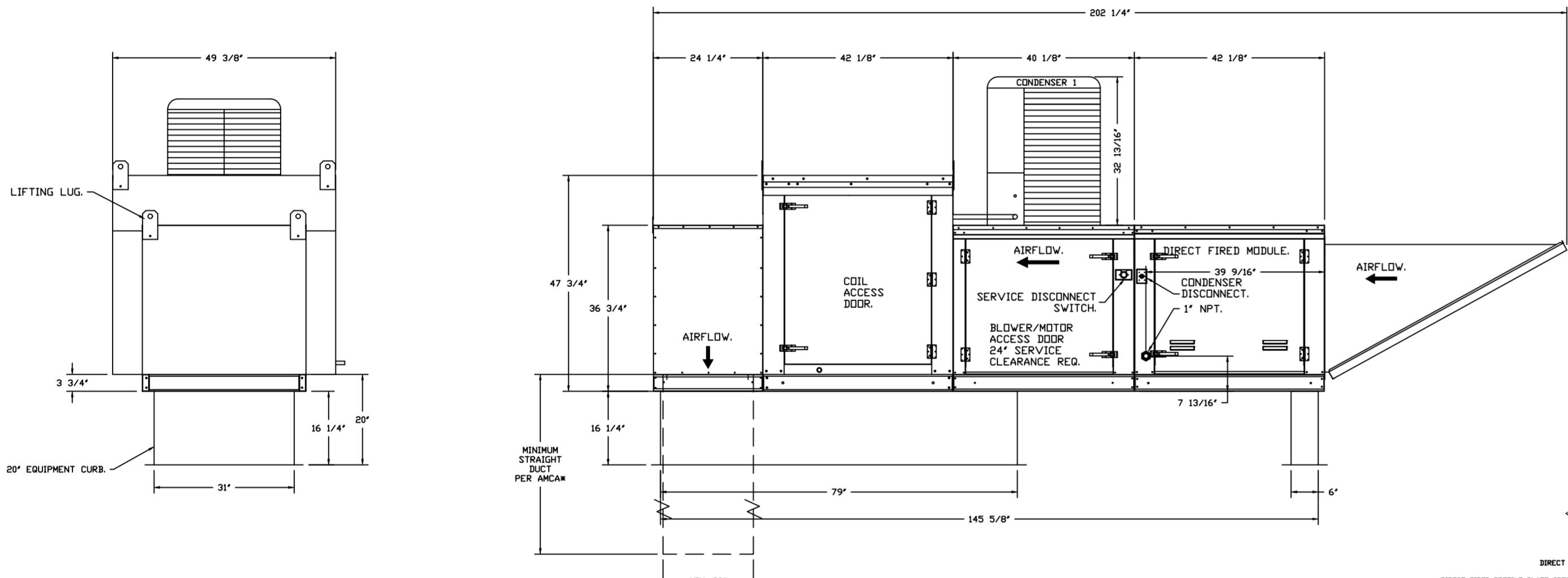
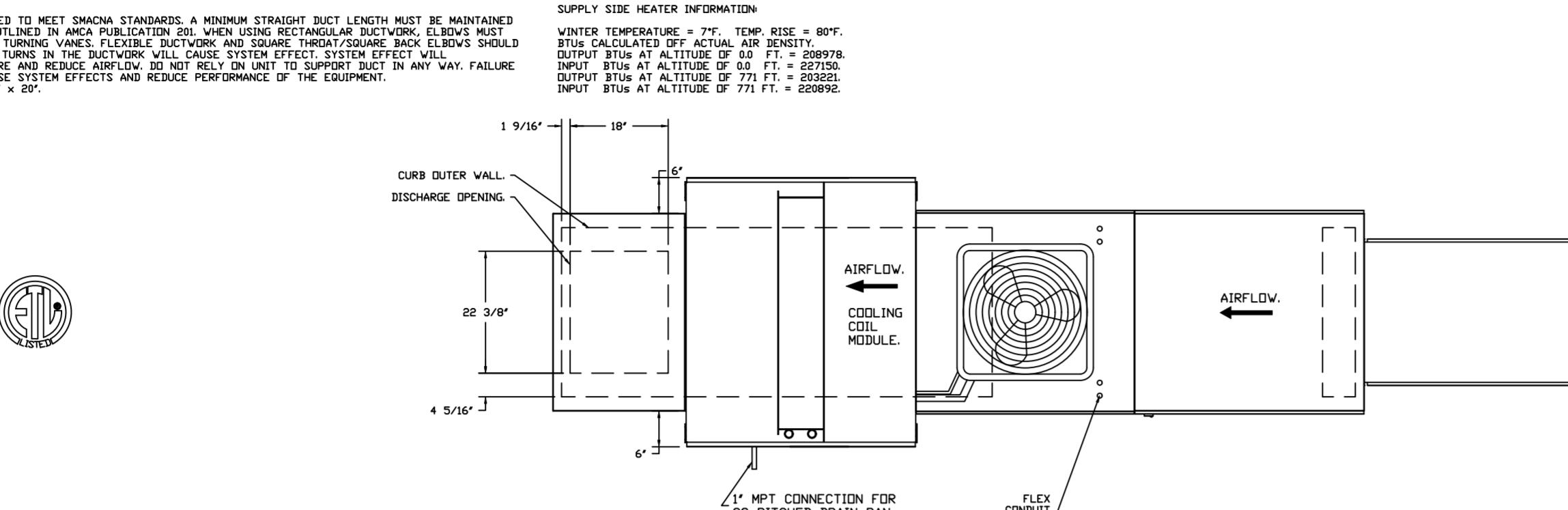
REVISIONS	
DESCRIPTION	DATE:



FAN #2 K-A2-D250-20D-MPU - HEATER

1. DIRECT GAS FIRED HEATED MAKE UP AIR UNIT WITH 20' MIXED FLOW DIRECT DRIVE FAN.
2. INTAKE HOOD WITH EZ FILTERS.
3. DOWN DISCHARGE - AIR FLOW RIGHT → LEFT.
4. GAS PRESSURE GAUGE, 0-35', 2.5" DIAMETER, 1/4" THREAD SIZE.
5. GAS PRESSURE GAUGE, -5 TO +15 INCHES WC, 2.5" DIAMETER, 1/4" THREAD SIZE.
6. LOW FIRE START. ALLOWS THE BURNER CIRCUIT TO ENERGIZE WHEN THE MODULATION CONTROL IS IN A LOW FIRE POSITION.
7. SHIP LOOSE GAS STRAINER. TO BE INSTALLED UPSTREAM OF UNIT CONNECTION. 1" CONNECTION.
8. COOLING INTERLOCK RELAY. 24VAC COIL, 120V CONTACTS. LOCKS OUT BURNER CIRCUIT WHEN AC IS ENERGIZED.
9. MOTORIZED BACK DRAFT DAMPER 22.75" X 24" FOR SIZE 2 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT. STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, LF120S ACTUATOR INCLUDED.
10. 5 TON, SINGLE CIRCUIT MODULAR PACKAGED COOLING OPTION FOR SIZE 2 DF/EH MODULAR PACKAGED UNIT. INCLUDES CONDENSER, DX COIL, FILTER/DRYER KIT, THERMAL EXPANSION VALVE, R410A REFRIGERANT, AND REFRIGERANT PIPING (2,000 TO 3,000 CFM) WHEN ORDERED WITH OPPOSITE AIRFLOW CONDENSERS ACCESS AND COIL PIPING WILL REMAIN IN STANDARD POSITION. DRAIN AND SLEDS WILL MOVE TO THE OPPOSITE SIDE. ANY OTHER CHANGE WILL REQUIRE CLI. CONDENSERS REQUIRE SEPARATE 208V, 3 PHASE POWER SUPPLY UNLESS ORDERED WITH SINGLE POINT CONNECTION. COIL = 3EZ100R.
11. DOWNTURN PLENUM FOR SIZE 2 COOLING COIL MODULE - REQUIRED FOR DOWN DISCHARGE COOLING COIL APPLICATIONS.
12. DX COOLING INTAKE AIR THERMOSTAT AND RELAYS MOUNTED IN UNIT - SET POINT FOR THERMOSTAT SHOULD BE 85°F.
13. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREWIRE

***NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRAMATICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT. SUGGESTED STRAIGHT DUCT SIZE IS 20" x 20".**



TYPICAL DRAIN TRAP INSTALL RECOMMENDED COOLING COIL
DRAIN TRAP CONFIGURATION

NOTES:

- 1) 1" DIAMETER PVC PIPE ONLY.
- 2) USE ONLY LOW PROFILE COUPLINGS.
- 3) ADD CLEAN OUT AS SHOWN.

Noor International Academy

879 W Auburn Rd,
Rochester Hills, MI 48307

A 10x10 grid representing a maze or pathfinding problem. The grid contains several black squares representing obstacles. A path is drawn using a sequence of small squares, starting from the bottom-left corner and ending at the top-right corner. The path navigate around obstacles and through a central circular area.

 www.mucklertech.com

122 PHONE: (616) 942-9881 FAX: (918) 227-5981 EMAIL:

DATE: 7/13/2022

DWG.#:
5555672

DRAWN BY: DKC

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

SHEET N

REVISIONS		
	DESCRIPTION	DATE:
△		
△		
△		
△		



KTECH
www.muckertktech.com

Michigan Office

3876 East Paris Ave SE, Suite 18, Grand Rapids, MI, 49512 PHONE: (616) 942-9881 FAX: (919) 227-5984 EMAIL: reg77@ktechhoods.com

Noor International Academy
879 W Auburn Rd,
Rochester Hills, MI, 48307

DATE: 7/13/2022

DWG.#:
5555672

DRAWN BY: DKC

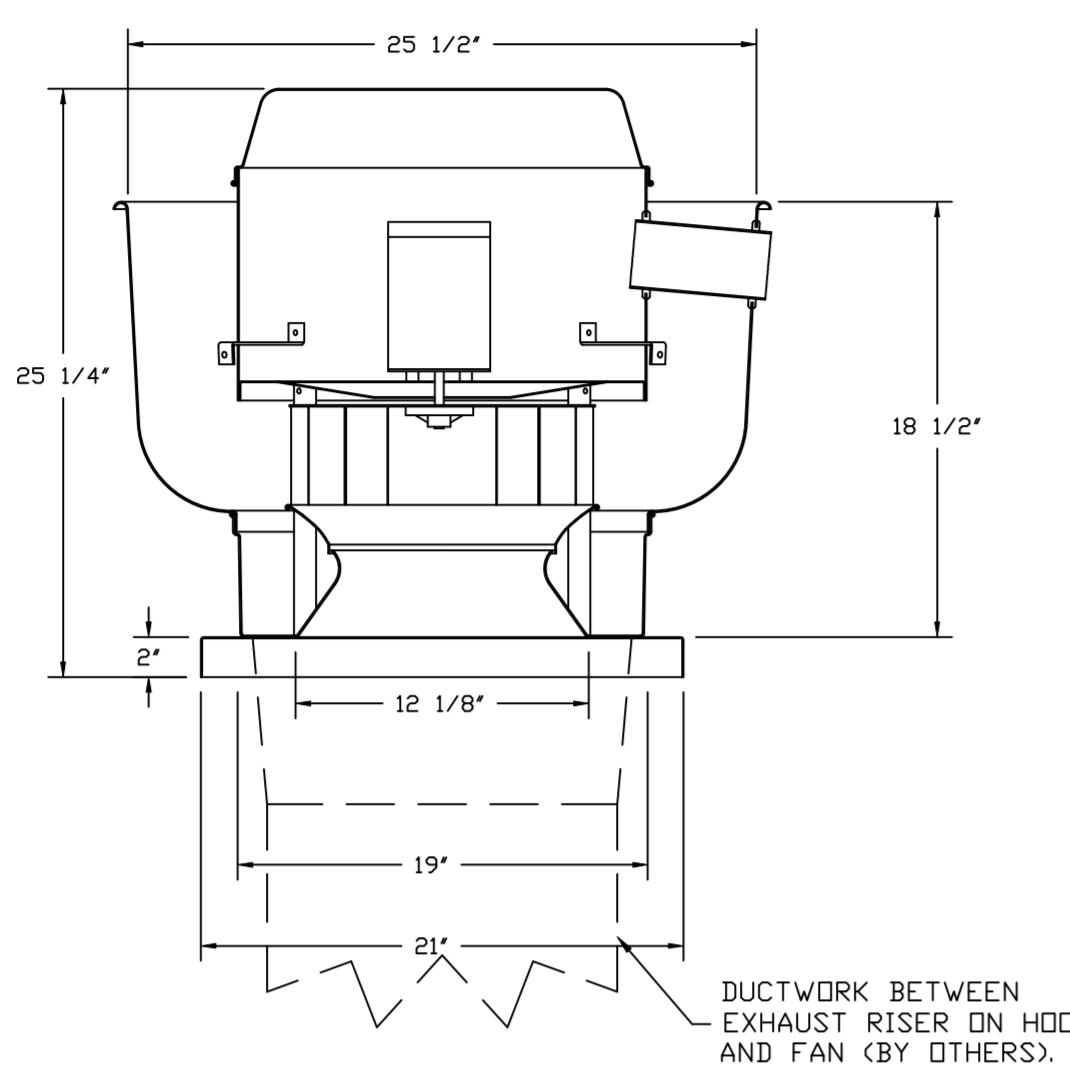
SCALE:
3/4" = 1'-0"

MASTER DRAWING

SHEET NO.

5

FAN #3 DU30HK - EXHAUST FAN

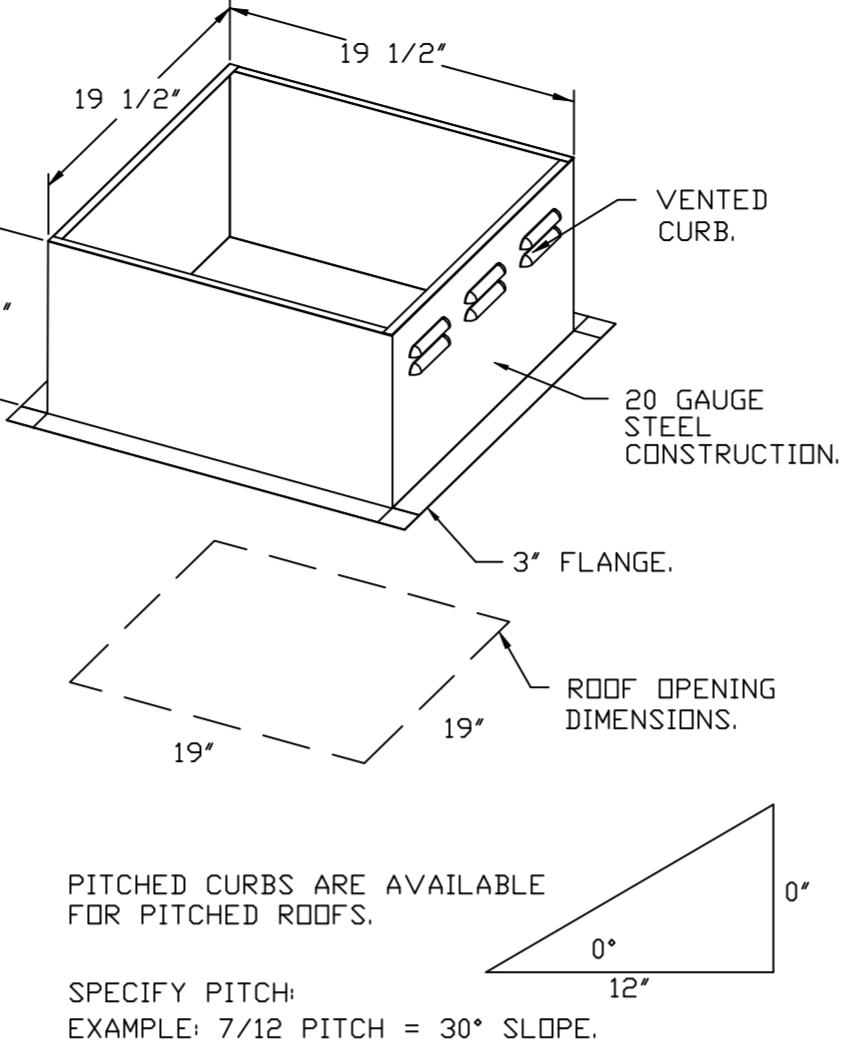


FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- NEMA 3R SAFETY DISCONNECT SWITCH.

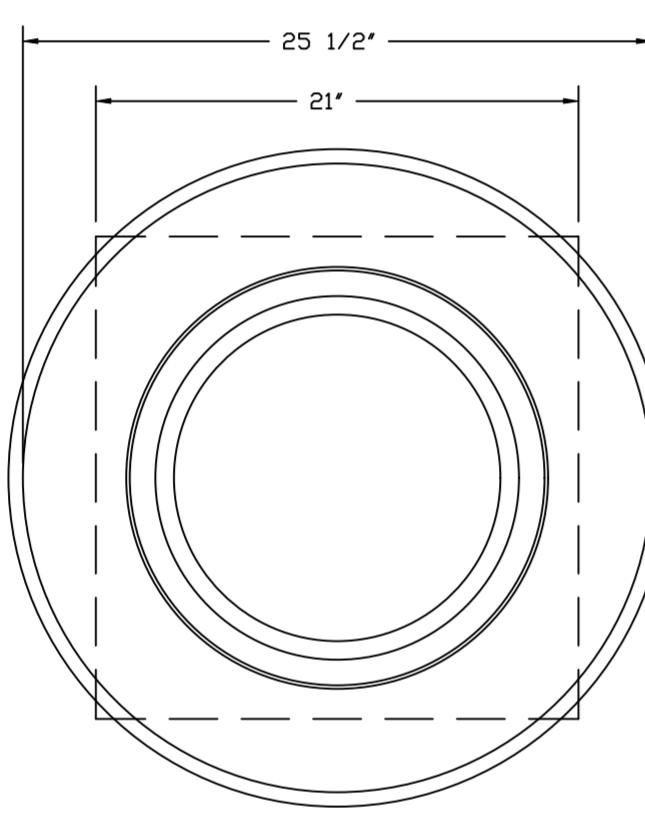
NORMAL TEMPERATURE TEST

EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

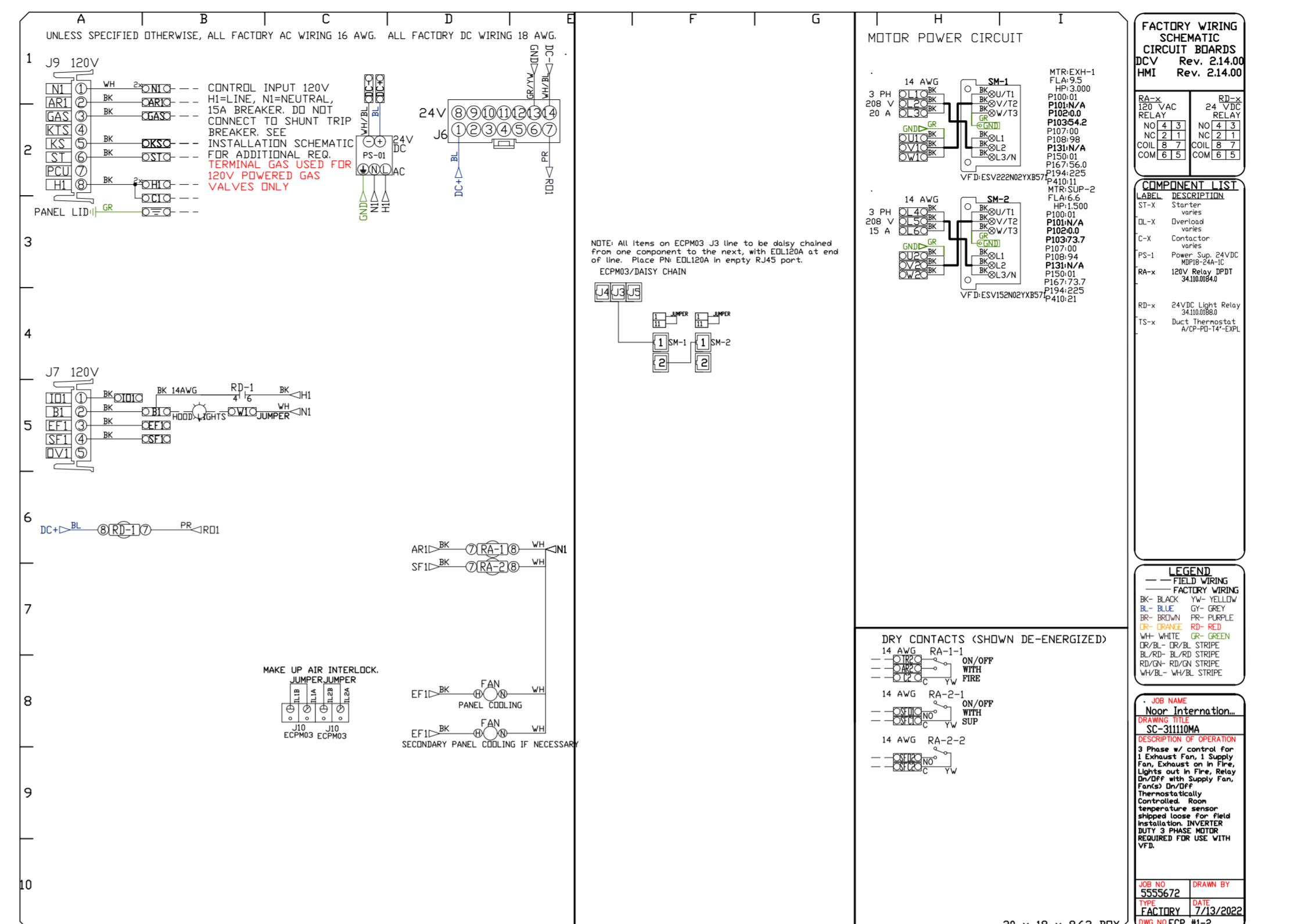
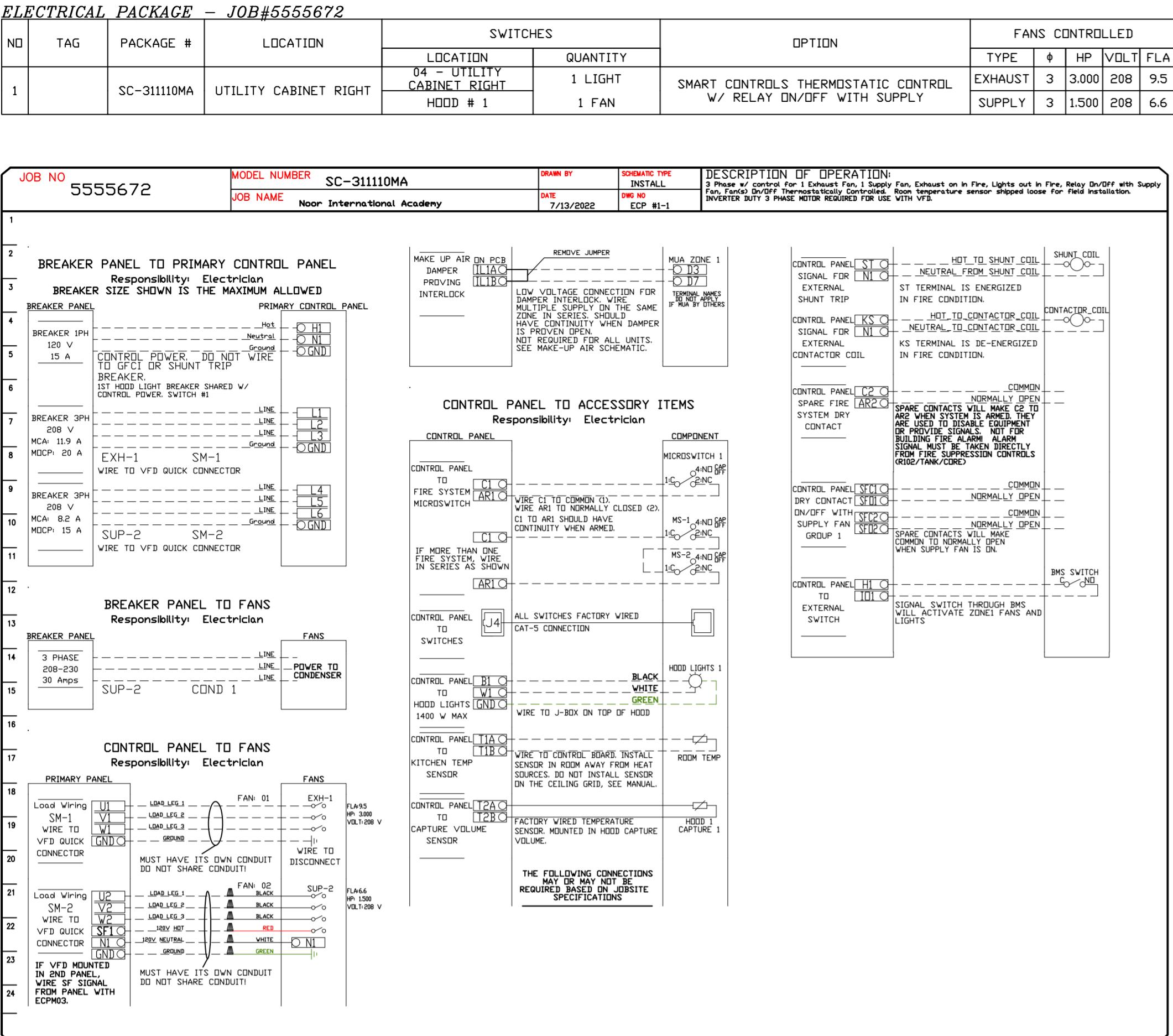


OPTIONS

2 YEAR PARTS WARRANTY.



TOP VIEW



卷之三

Dose-Response | MT

Rochester Hills, MI 48307

7 / 13 / 20

DWG.#:
5555672

DNK

SCALE:

TER DRAWI

HEET NO

REVISIONS	
DESCRIPTION	DATE:
△	
△	
△	



DUCTWORK #1 PARTS - JOB#5555672 DOUBLE WALL

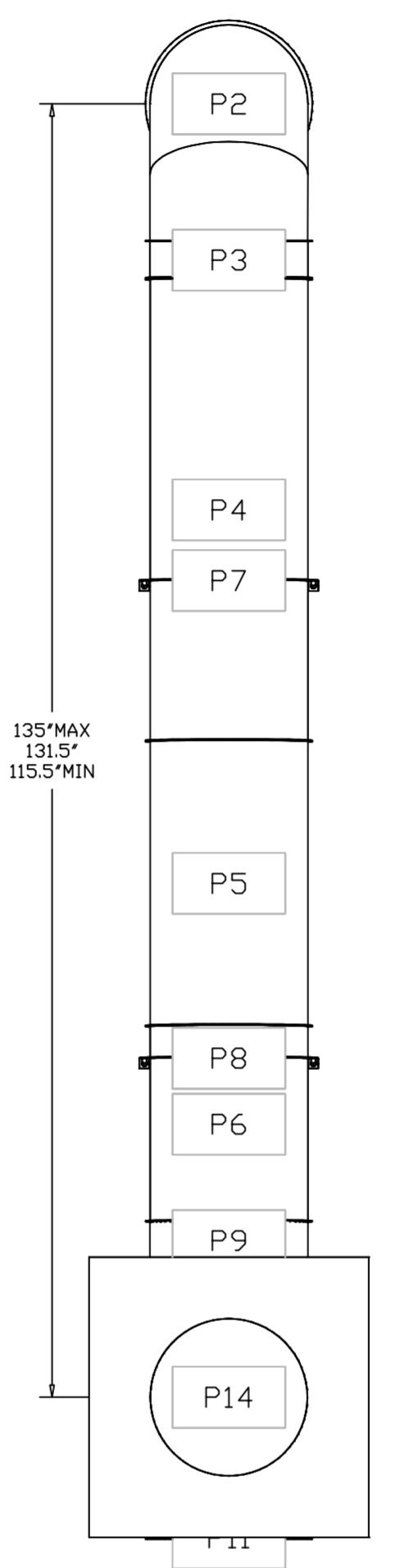
TAG	PART #	CFM	GPM	ZONE	COVERED BY	SP	WEIGHT	VELOCITY	QTY	DESCRIPTION
P1	KDW1607LT	2500				-0.003	4.14	1790.49	1	SINGLE WALL DUCT 16" DIAMETER, 7' LONG, FLANGE AT BOTH ENDS. STAINLESS STEEL.
P2	KDW1690ASY	2500				-0.168	13.00	1790.49	1	SINGLE WALL DUCT 90 DEGREE ELBOW, 16" DUCT, ASSEMBLY.
P3	KDW1604CID	2500				-0.002	2.79	1790.49	1	SINGLE WALL DUCT OFF SET COLLAR - 16" DIAMETER DUCT - 1/4" PITCH.
P4	KDW1647LT	2500				-0.0196	24.89	1790.49	1	SINGLE WALL DUCT 16" DIAMETER, 47" LONG, FLANGE AT BOTH ENDS. STAINLESS STEEL.
P5	KDW1629LT	2500				-0.0121	15.68	1790.49	1	SINGLE WALL DUCT 16" DIAMETER, 29" LONG, FLANGE AT BOTH ENDS. STAINLESS STEEL.
P6	KDW1630AJDKIT	2500				-0.0083	20.06	1790.49	1	SINGLE WALL DUCT ADJUSTABLE, 16" DIAMETER, 29.5" LONG, FLANGE AT ONE END WITH A 16" ADJUSTABLE COLLAR - STAINLESS STEEL.
P7	KDW16SUBRASY					3.18			1	DUCT SUPPORT BRACKET KIT, 16" DUCT, USED FOR HANGING DUCT. 12 GA STEEL, CLEAR ZINC COATING. - 2 RINGS, 4 BRACKETS, & HARDWARE BAG 2.
P8	KDW16SUBRASY					3.18			1	DUCT SUPPORT BRACKET KIT, 16" DUCT, USED FOR HANGING DUCT. 12 GA STEEL, CLEAR ZINC COATING. - 2 RINGS, 4 BRACKETS, & HARDWARE BAG 2.
P9	KDW1604CID	2500				-0.002	2.79	1790.49	1	SINGLE WALL DUCT OFF SET COLLAR - 16" DIAMETER DUCT - 1/4" PITCH.
P10 ASSEMBLED W/P11	KDW16TEASY	2500		1		-0.1152	19.23	1790.49	1	SINGLE WALL DUCT TEE, 16" DUCT, ASSEMBLY.
P11 ASSEMBLED W/P10 D=5	KDW1617ADKIT					4.59			1	DUCT ACCESS DOOR WITH HANDLE & GREASE DAM, FOR 16" DUCT USE 17" DOOR. STAINLESS STEEL.
P12	KDW1604LT	2500				-0.002	2.57	1790.49	1	SINGLE WALL DUCT 16" DIAMETER, 4" LONG, FLANGE AT BOTH ENDS. STAINLESS STEEL.
P13 ASSEMBLED W/P14	KDW164550DWLTTP-2R-S	2500				-0.019	68.55	1790.49	1	DOUBLE WALL DUCT - 16" INNER DUCT, 45.5" LONG - 2 LAYERS REDUCED CLEARANCE - 20" STAINLESS STEEL OUTER SHELL - USED WITH TRANSITION PLATE.
P14 ASSEMBLED W/P13	KDW2616TP	2500				11.62		1790.49	1	DUCT TO CURB TRANSITION, 26-1/2" CURB TO 16" DUCT, 16 GA ALUMINIZED. USED ON BDU18.
SYSTEM AT P14						-1.5032	0.00			
	K3M-2000PLUS					0.80			4	DUCT - 3M FIRE BARRIER 2000 PLUS SILICONE - USED AS SEALANT TO SEAL DUCT JOINTS.
	KDW16CLASY					1.18			11	DUCT "V" CLAMP WITH NEW DESIGN 14 GA BRACKETS, 16" DUCT, ASSEMBLY.
	KDW16DWEASY-2					3.18			1	DOUBLE WALL DUCT END CAP ASSEMBLY - 16" DUCT 2 LAYERS 21" OD - INCLUDES DW20CLASY - USED TO SEAL DOUBLE WALL WHEN CONNECTING TO SINGLE WALL DUCT.
TOTAL WEIGHT						215.63				

SINGLE WALL FACTORY BUILT DUCTWORK

- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
- FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE INSTALLATION AND OPERATION MANUAL.
- DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD OR AN APPROVED GREASE COLLECTION RESERVOIR.
- WHERE HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 3/16" PER LINEAR FOOT.

DUCT DIAMETER	HORIZONTAL SUPPORT (FT)	VERTICAL WALL SUPPORT (FT)	VERTICAL CURB SUPPORT (FT)
5"	10'	10'	24'
6"	10'	10'	24'
7"	10'	10'	24'
8"	10'	10'	24'
10"	10'	10'	24'
12"	10'	10'	24'
14"	10'	10'	24'
16"	10'	10'	24'
18"	10'	10'	24'
20"	10'	10'	24'
22"	10'	10'	24'
24"	10'	10'	24'
26"	10'	10'	24'
28"	10'	10'	24'
30"	10'	10'	24'
32"	10'	10'	24'
34"	10'	10'	24'
36"	10'	10'	24'

DUCTWORK #1 TOP VIEW



Noor International Academy

879 W Auburn Rd,

Rochester Hills, MI, 48307

DATE: 7/13/2022
DWG.#: 5555672
DRAWN BY: DKC
SCALE: 3/4" = 1'-0"
MASTER DRAWING

SHEET NO.

7

FOR REFERENCE ONLY

DOUBLE WALL FACTORY BUILT DUCTWORK

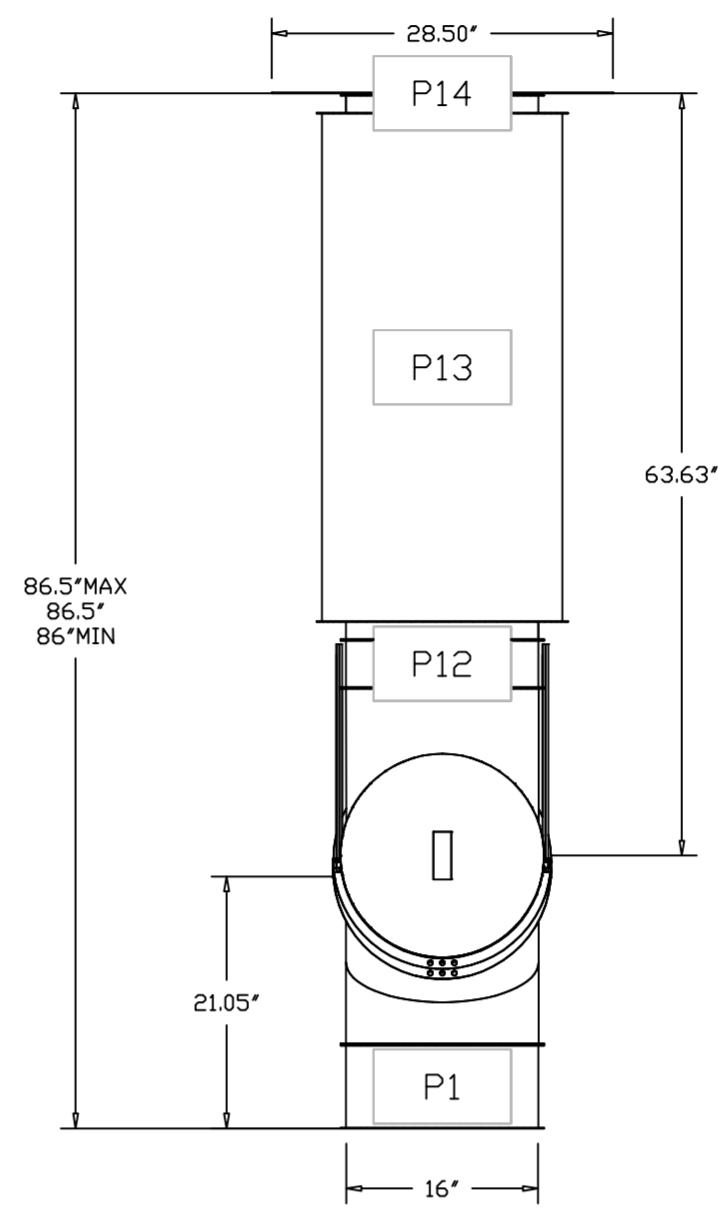
- ALL DUCTWORK IS REQUIRED TO BE INSTALLED WITH THE MAXIMUM SUPPORT SPACING LISTED BELOW.
- FOR A COMPLETE LIST OF APPROVED SUPPORT METHODS, SEE THE ENTIRE INSTALLATION AND OPERATION MANUAL.
- DUCTWORK SHALL SLOPE NOT LESS THAN 1/16" PER LINEAR FOOT TOWARDS THE HOOD OR AN APPROVED GREASE COLLECTION RESERVOIR.
- WHERE HORIZONTAL DUCTS EXCEED 75 FEET IN LENGTH, THE SLOPE SHALL NOT BE LESS THAN 3/16" PER LINEAR FOOT.

HORIZONTAL	
DUCT DIAMETER	SUPPORT SPACING (FT)
5'	7'
6'	7'
7'	7'
8'	7'
10'	7'
12'	7'
14'	7'
16'	7'
18'	5'
20'	5'
22'	5'
24'	5'
26'	5'
28'	5'
30'	5'
32'	5'
34'	5'
36'	5'

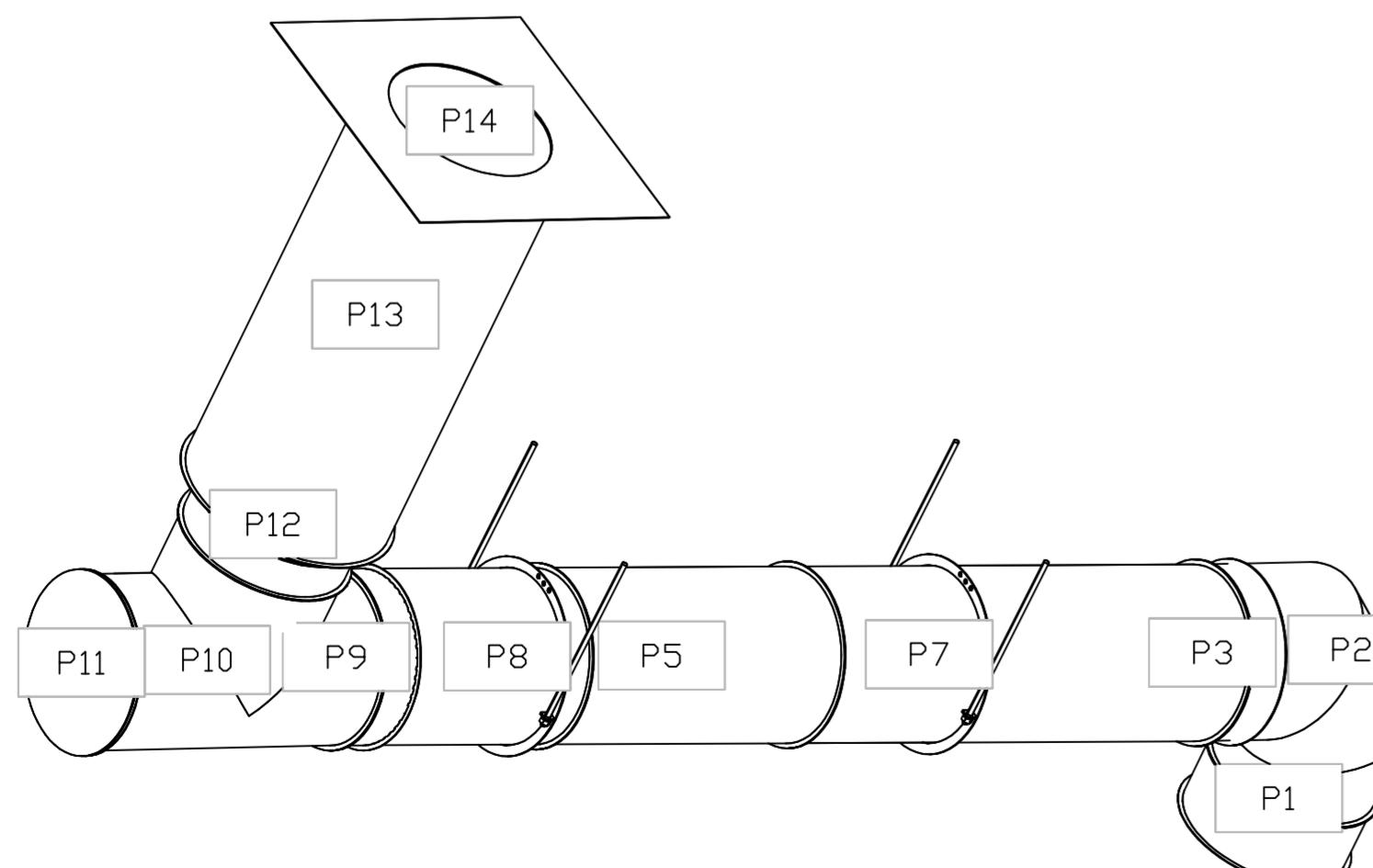
VERTICAL			
TYPE	WALL SUPPORT (FT)	CURB SUPPORT (FT)	FLOOR SUPPORT (FT)
2R & 2R HT (5"-16")	20'	24'	24'
2R (18")	18'	24'	24'
3R & 3Z (5"-24")	10'	24'	24'
3Z (26" -36")	10'	20'	20'

DO NOT LEAK TEST USING SMOKE BOMBS CONTAINING CHLORINES/CHLORIDES. CONSULT WITH CAPTIVEAIRE FOR PROPER LEAK TESTING METHODS.

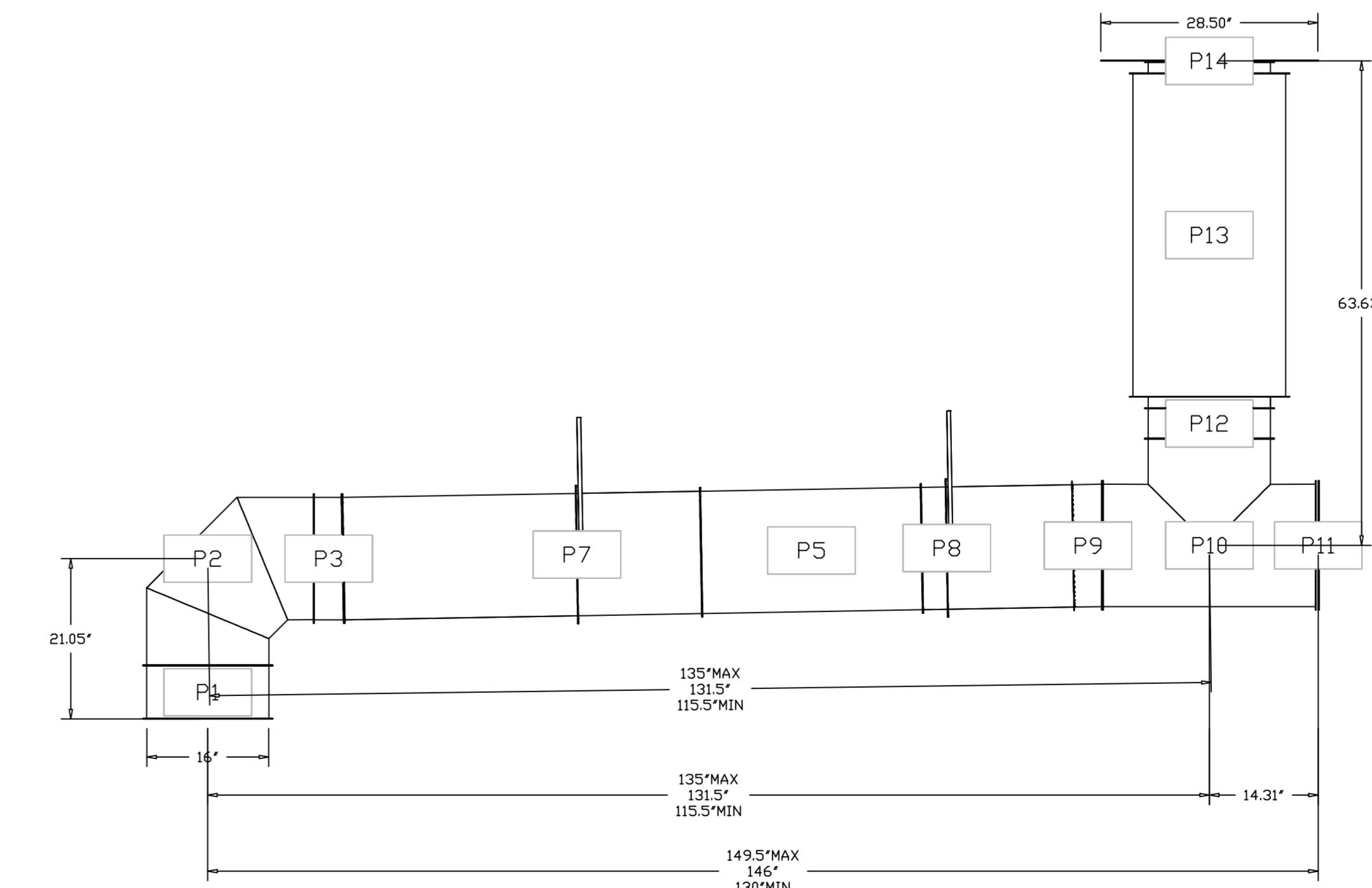
DUCTWORK #1 FRONT VIEW



DUCTWORK #1 SE VIEW



DUCTWORK #1 SIDE VIEW



Noor International Academy
879 W Auburn Rd,
Rochester Hills, MI, 48307

DATE: 7/13/2022
DWG.#: 5555672

DRAWN BY: DKC

SCALE:
3/4" = 1'-0"

MASTER DRAWING

SHEET NO.

KETTECH

www.muckertech.com

Michigan Office

REVISIONS

DESCRIPTION	DATE:
△	
△	
△	
△	



© KETTECH

2022

www.muckertech.com

Michigan Office

3676 East Paris Ave SE, Suite 18, Grand Rapids, MI, 49512 PHONE: (616) 442-9881 FAX: (616) 227-5984 EMAIL: ns@ketttech.com