DOCUMENT 00 90 00 ADDENDUM

ADDENDUM NO. [3] Date: August 1, 2019

RE: SCHOOL DISTRICT OF HOLMEN HIGH SCHOOL ADDITION AND REMODELING BID PKG #2 1001 McHUGH ROAD HOLMEN, WISCONSIN 54636 HSR 18061

FROM: HSR Associates, Inc 100 Milwaukee Street La Crosse, WI 54603 (608) 784-1830

To: Prospective Bidders

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated July 2019. Acknowledge receipt of this Addendum in the space provided on the bid form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of [6] pages, [4] specification sections and [34] 30 x 42 drawing.

CHANGES TO BIDDING REQUIREMENTS AND CONDITIONS OF THE CONTRACT:

- 1. Section 00 11 13 ADVERTISEMENT FOR BIDS
 - a. Change Bid Date from "August 8" to "August 15, 2019".

CHANGES TO SPECIFICATIONS:

- 2. Section 07 42 13.16 METAL PLATE WALL PANELS
 - a. 1.08, D: Finish warranty shall be 20 years
 - b. Add the following: Provide 10 year rain screen warranty. Warranty shall include installation of water resistive barrier by panel installer.
 - c. 2.03, A, 3: Change "0.125" to 0.080"

3. Section 07 91 00 PREFORMED JOINT SEALS

a. Delete section from Contract Documents. Refer to detail sheets in this addendum for basis of design joint covers to replace preformed seals.

4. Section 07 92 00 JOINT SEALANTS

- a. 2.04:
 - i. A, 2: Add: "Sherwin Williams, White Lightening Silicone."
 - ii. B, e: Delete "Stampede 100" and add "Loxon H1".
 - iii. C, 5: Add; "Sherwin Williams, Loxon S1".
- b. 2.05:
 - i. A, 5, d: Delete "Stampede 1SL" and add "Loxon SL1".
 - ii. A, 5, e: Delete "Stampede 2SL" and add "Loxon SL2".

- 5. Section 07 95 13 EXPANSION JOINT COVERS
 - a. Delete Article 2.02. Refer to detail sheets in this addendum for basis of design joint covers.
- 6. Section 08 16 13 FIBERGLASS DOORS
 - a. 2.02, B, 5: Change "hollow metal" to "fiberglass". Rated FG doors and frames shall have been tested as a system.
 - b. 2.06, S, 8, a: Finish shall be class II color anodized, Champagne.
- 7. Section 08 45 00 TRANSLUCENT WALL AND ROOF ASSEMBLIES
 - a. Roof skylights shall be gable style with ends having translucent panels.
- 8. Section 08 43 13 ALUMINUM FRAMED STOREFRONT
 - a. 2.02, B, 4: Change "54" to "50".
- 9. Section 08 71 00 DOOR HARDWARE
 - a. Group 7: Add Door E108.
 - b. Group 13: Move Door A110B to Group 16.
- 10. Section 08 80 00 GLAZING
 - a. 2.05, A: Glazing at GLT-25 locations under 100 sq. inches may use fire protective glazing meeting code requirements for this type of installation.

11. Section 09 67 00 FLUID APPLIED FLOORING

- a. 2.02, a, 1: Change "20-30 mils" to "50-60 mils". System shall be full broad cast to refusal.
- 12. Section 22 10 88 LIQUID PETROLEUM
 - a. Add Section attached hereto as part of Contract Documents.
- 13. Section 22 10 92 NATURAL GAS
 - a. Replace 2.06 with the following:
 - A. Based on product by Maxitrol (Appliance).
 - 1. Pietro Fiorentini Governor equals are acceptable.
 - 2. GR-1: (2 psig to 7-11" w.c.): Maxitrol 325-7A appliance regulator, lever acting design, 1 1/4" or 1 ½" size, (4 12", 10 22", 15 30", 1 2 psi) w.c. spring range, capable of delivering 600,000 Btu/hr with static inlet pressure of 2 psig and operating inlet pressure of 1 psi and outlet pressure regulated to 7" w.c. and 1.0" w.c. pressure drop. Includes the 12A09 automatic vent limiting device and positive shut-off type lockup characteristics. Ambient temperature limits -40° to 205°F (-40° to 96°C). Vent pipe connection size 1/2" NPT. Inlet pressures exceeding 5 psi require a vent line. Designed for multi-position mounting, but when using the vent limiting device, the regulator must be mounted in a horizontal upright position.
 - 3. GR-2: (2 psig to 7-11" w.c.): Maxitrol model no. 325-11 appliance regulator, lever acting design, 1 ½" or 2" size, (4 12", 10 22", 15 30", 1 2 psi) w.c. spring range, capable of delivering 4,450,000 Btu/hr with static inlet pressure of 2 psig and operating inlet pressure of 1 psi and outlet pressure regulated to 7" w.c. and 1.0" w.c. pressure drop. Vent pipe connection size 1/2" NPT. Tested for inlet pressures up to 10 psi. Inlet pressures exceeding 5 psi require a vent line. Designed for multi-position mounting, but when using the vent limiting device, the regulator must be mounted in a horizontal upright position.

4. GR-3: (2 psig to 7"-11" w.c.): Maxitrol model no. 325-3L appliance regulator, lever acting design, 1/2" size, (4 - 12", 10 - 22", 15 - 30", 1 - 2 psi) w.c. spring range, capable of delivering140,000 Btu/hr with static inlet pressure of 2 psig and operating inlet pressure of 1/2 psi and outlet pressure regulated to 7" w.c. and 1.0" w.c. pressure drop. Includes the 12A09 automatic vent limiting device and positive shut-off type lockup characteristics. Largest single appliance served by the regulator - 140,000 Btu/hr. Total load of all appliances combined - 250,000 Btu/hr. Ambient temperature limits -40° to 205°F (-40° to 96°C). Vent pipe connection size - 3/8" NPT. Tested for inlet pressures up to 10 psi. CSA and ANSI Z21.18 certified for 2 psi and 5 psi. Inlet pressures exceeding 5 psi require a vent line. Designed for multi-position mounting, but when using the vent limiting device, the regulator must be mounted in a horizontal upright position. GR-4: (10 psig to 2 psig.): Maxitrol model no. 210G(Z)(M): Line regulator, lock up type design, 2 1/2" size, w.c. spring range, capable of delivering 900,000 Btu/hr with static inlet pressure of 2 psig and operating inlet pressure of 1 psi and outlet pressure regulated to 7" w.c. and 1.0" w.c. pressure drop. Includes positive shutoff type lockup characteristics.

14. Section 22 30 56 WATER CONDITIONERS

a. Add Section attached hereto as part of Contract Documents.

15. Section 22 30 57 WATER HEATERS AND EQUIPMENT

a. 2.01, B: Change Model Number to "ATI-510C-N.

16. Section 22 66 59 WELDING SHOP SAFETY DEVICE SYSTEM

a. Add Section attached hereto as part of Contract Documents.

17. Section 23 35 15 WELDING FILTRATION SYSTEM

- 2.02 SOLDERING STATION HOOD
- A. Provide KEES Overhead Industrial Hood(s) Style A, constructed of 18 gauge type 304 stainless.
- B. All exterior seams shall be welded, liquid tight, and ground and polished to match original finish of the material.
- C. Suspend from ceiling per manufacturer's recommendations.

18. Section 23 37 00 GRILLES, REGISTERS AND DIFFUSERS

- a. 2.01, H: Add paragraph 10 as follows:
 - 10. Laminar 5000: Supply grilles shall be laminar flow perforated panels constructed on 304 stainless steel Pan and Face. Frame Style F23 Lay-In.

19. Section 23 73 23 CUSTOM AIR HANDLING UNITS

a. Section attached hereto replacing original section

CHANGES TO DRAWINGS

- 20. Sheet A003 COVER SHEET BID PACKAGE 2 VOL. 2 30 x 42 attached hereto
 - a. Revisions clouded on Drawing
- 21. Sheets A200, A201, A202 and A203 EXTERIOR ELEVATIONS
 - a. At Keynote 9 change panel length from "12 feet" to "8 feet"
- 22. Sheet A206 INTERIOR ELEVATIOINS 30 x 42 attached hereto
 - a. Revisions clouded on Drawing
- 23. Sheet A502 DETAILS 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
 - b. Revised expansion joint cover types.
- 24. Sheet A503 DETAILS 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
 - b. Revised expansion joint cover types
- 25. Sheet A504 DETAILS 30 x 42 attached hereto
 - a. Revisions clouded on Drawing
 - b. Revised expansion joint cover types
- 26. <u>Sheet A505 DETAILS</u> 30 x 42 attached hereto
 - a. Revisions clouded on Drawing
 - b. Revised expansion joint cover types
- 27. Sheet A506 DETAILS 30 x 42 attached hereto
 - a. Revisions clouded on Drawing
 - b. Revised expansion joint cover types
- 28. Sheet A602 DOOR SCHEDULE 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
- 29. Sheet S002 STRUCTURAL SCHEDULES 30 x 42 attached hereto
 - a. Revisions clouded on Drawing
- 30. Sheet S811 FRAMING DETAILS 30 x 42 attached hereto
 - a. Revisions clouded on Drawing
- 31. <u>Sheet P000 NOTES AND SCHEDULES</u> 30 x 42 attached hereto a. Revisions clouded on Drawing
- 32. <u>Sheet P105 UNDERFLOOR SEGMENT F</u> 30 x 42 attached hereto a. Revisions clouded on Drawing
- 33. <u>Sheet P111 FLOOR PLAN SEGMENT A</u> 30 x 42 attached hereto a. Revisions clouded on Drawing.
- 34. Sheet P112 FLOOR PLAN SEGMENT B 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
- 35. Sheet P113 FLOOR PLAN SEGMENT C & D 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.

- <u>Sheet P114 FLOOR PLAN SEGMENT E</u> 30 x 42 attached hereto
 a. Revisions clouded on Drawing.
- 37. <u>Sheet P115 FLOOR PLAN SEGMENT F</u> 30 x 42 attached hereto a. Revisions clouded on Drawing.
- <u>Sheet P200 DWV RISER ISOMETRIC SEGMENT A</u> 30 x 42 attached hereto
 a. Revisions clouded on Drawing.
- 39. <u>Sheet P201 DWV RISER ISOMETRIC SEGMENT B</u> 30 x 42 attached hereto a. Revisions clouded on Drawing.
- 40. <u>Sheet P202 DWV RISER ISOMETRIC SEGMENT E & F</u> 30 x 42 attached hereto a. Revisions clouded on Drawing.
- 41. <u>Sheet P210 WATER RISER ISOMETRIC SEGMENT A</u> 30 x 42 attached hereto a. Revisions clouded on Drawing.
- 42. <u>Sheet P211 WATER RISER ISOMETRIC SEGMENT B</u> 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
- 43. <u>Sheet P212 WATER RISER ISOMETRIC SEGMENT E & F</u> 30 x 42 attached hereto a. Revisions clouded on Drawing.
- 44. Sheet M102 MECHANICAL DUCT REMODEL PLAN SEG B 30 x 42 attached hereto
 - a. Revisions clouded on Drawing
 - b. Revisions to AHU-1 & AHU-2 duct connections
- 45. <u>Sheet M601 HVAC SCHEDULES</u> 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
 - b. Revisions to Unit Heater Schedule
 - c. Revisions to Exhaust Hoods Schedule
 - d. Revision to Air Distribution Devices Schedule
- 46. Sheet E100 LIGHTING PLAN SEGMENT A
 - a. Mezzanine plan 5E100: Provide type U8 light fixture located above stairs with light switch at bottom of stairs; provide light switch at top of stairs to control room lighting.
 - b. Mezzanine plan 6E100: Provide light switch at top of stairs to control room lighting.
- 47. Sheet E203- POWER PLAN SEGMENT D
 - a. Storage D102: provide branch circuit and equipment connections to destratifications fan control panel and temperature control panel, Add branch circuit LD-39.

48. Sheet E101 LIGHTING PLAN SEGMENT B 30 x 42 attached hereto

- a. Revisions clouded on Drawing.
- b. Added light fixture type D3E, Circuit D1E, Change OG fixture type to D1E, change fixture type HB1 to LB1 and add a row of LB1 light fixtures.

49. Sheet E102- LIGHTING PLAN SEGMENT C 30 x 42 attached hereto

- a. Revisions clouded on Drawing.
- b. Change fixture type LE12 to SLE12 and EM detailing to fixture.

50. Sheet E200- POWER PLAN SEGMENT A 30 x 42 attached hereto

- a. Revisions clouded on Drawing.
- b. Revised branch circuits to A/V equipment connections.
- c. Revised branch circuits.
- d. Added door hold smoke detectors.
- e. Added conduit sleeves for data cables
- 51. <u>Sheet E201- POWER PLAN SEGMENT B</u> 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
- 52. Sheet E202- POWER PLAN SEGMENT C 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
 - b. Revised branch circuits to A/V equipment connections.
 - c. Revised branch circuits.
 - d. Added Data WAP connections
- 53. <u>Sheet E204 POWER PLAN SEGMENT E</u> 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
 - b. Added Gas Panel and System to Metals Lab.
 - c. Added door hold smoke detectors.
 - d. Added conduit sleeves for data cables.
- 54. Sheet E501 COMMUNICATIONS RISER 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
 - b. Added Raceway detail.
- 55. Sheet E600 LIGHTING AND RELAY SCHEDULES 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
 - b. Revised Light Fixture Schedule.
- 56. Sheet E601 PANEL SCHEDULES 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
 - b. Revised Panelboard Schedule.

PRIOR APPROVALS

- 1. Section 09 64 29 WOOD ATHLETIC FLOORING
 - a. AACER Flooring: AacerFlex.
- 2. Section 11 61 13 STAGE RIGGING
 - a. Staging Concepts; Bravado Acoustical Shell System.

END OF DOCUMENT 00 90 00

SECTION 22 10 88

LIQUID PETROLEUM GAS SYSTEMS

PART 1: GENERAL

1.01 RELATED DOCUMENTS

- **A.** Conditions of the Contract and portions of Division One of this Project Manual apply to this Section as though repeated herein.
- **B.** The requirements of Section 22 05 00 apply to this Section.

1.02 WORK INCLUDED

- **A.** Work under this section shall include furnishing, installing and testing the complete piping system, excluding work provided by the gas supplier, including pipe, fittings, valves, together with all permanent components attached.
- **B.** Work under this section shall include furnishing, installing and testing gas piping to new & future water heaters, and removal or modification of existing gas piping as required.

1.03 RELATED WORK

- A. Fire Stopping: Section 07 84 00.
- **B.** General Provisions: Section 22 05 00.
- **C.** Tests: Section 22 05 93.
- D. Pipe/Valve Identification: Section 22 07 19.
- E. Pipe and Pipe Fittings: Section 22 10 01.
- **F.** Valves and Cocks (Manual): Section 22 10 02
- **G.** Piping Support Devices: Section 22 10 04.
- H. Packaged Boiler/Burner Units: Section HVAC.
- I. Modular Boiler/Burner Units: Section HVAC.
- **J.** Burners: Section HVAC.
- K. Furnaces: Section HVAC.
- L. Complete exterior L.P. Gas System furnished/installed by local L.P. gas supplier.

1.04 QUALITY ASSURANCE

A. Conform to state and local codes.

B. NFPA standards:

- 1. 37 Stationary Combustion Engines.
- 2. 54 National Fuel Gas Code.
- 3. 58 Liquefied Petroleum Gases, Storage and Handling.
- 4. 86A Ovens and Furnaces.
- **C.** Wisconsin Administrative Code, Department of Commerce, Chapter Comm 40 Gas Systems.
- **D.** Manufacturer's Instructions.
- E. Serving gas supplier regulations.

1.05 SUBMITTALS

A. Submit descriptive product data describing all material furnished under Part 2 of this Section.

1.06 PERMITS AND FEES

- **A.** The Contractor shall obtain all required permits and approvals from the state and local fire department, as well as pay for all permits associated with the installation of underground Liquid Petroleum Tanks (L.P.) and L.P. Gas Piping installed underground and above ground.
- **B.** The Contractor shall arrange for inspection by local authorities and serving gas supplier and pay all required inspection fees.
- **C.** The Contractor shall arrange for inspection by local authorities, and pay all required inspection fees prior to the tanks and piping being backfilled.

PART 2: PRODUCTS

2.01 LP GAS SUPPLY SYSTEM – EXISTING

A. Confirm pressure to building system. Anticipated to be about 10-11 psi.

2.02 LP GAS SUPPLY SYSTEM (By local gas supplier)

- A. Including all required storage tanks, vaporizers, shutoff valves, level gages, first stage regulator, second stage regulator outside Boiler Room wall, piping below grade to building and emergency generator, corrosion protection devices, State permits, safety relief devices, backflow check valves, steel support legs/saddles, concrete supports, pressure gages, etc. The entire installation shall be in compliance with N.F.P.A. standards. All miscellaneous accessories such as relief valves and etc., even if not specifically mentioned shall be furnished to provide a complete and code-complying installation.
- **B.** Coordinate final location with local L.P. gas supplier. (Outside building, above ground.)
- **C.** Supplier shall make final connection to building system at outside wall of Boiler Room.
- **D.** Supplier to furnish between 2 psi and 3 psi pressure to building system.

2.03 LP GAS STORAGE CYLINDERS

A. Work shall include furnishing, installing and testing the complete system, including pipe, fittings, valves, together with all permanent components attached.

- **B.** Conform to state and local codes, manufacturer's instructions, serving gas supplier regulations, and NFPA standards.
- **C.** The Contractor shall obtain all required permits and approvals from the state and local fire department, as well as pay for all permits associated with the installation of storage cylinders and piping.
- **D.** The Contractor shall arrange for inspection by local authorities and serving gas supplier and pay all required inspection fees.
- **E.** 1000 gallon capacity, ASME constructed, including all required shutoff valves, level gages, first stage regulator, safety relief devices, backflow check valves, steel support legs/saddles, pressure gages, etc. Horizontal type, color to be either white or silver over prime coat finish.
- **F.** Coordinate final location with local L.P. gas supplier.
- **G.** Supplier to furnish 10 psi pressure to the building.

2.04 UNDERGROUND L.P. GAS STORAGE TANKS

- A. Four (4) 1000 gallon capacity storage tanks, ASME constructed, with a design working pressure of 250 psig. Includes all required shutoff valves, level gauges, safety relief devices, backflow check valves, pressure gauges, etc.
- **B.** Tank shall be the Horizontal type.
- **C.** Tank shall include access collar to house the fill valve, liquid line check valve and other appurtenances with the collar. Collar shall be of sufficient length to extend from the top of the tank to a minimum of 12" above grade. Refer to tank detail on plan for installation requirements. Collar shall also be equipped with a hinged and lockable cover of same construction as the collar. Cover shall be of weather-proof design.
- **D.** Underground L.P. Storage Tank shall employ a corrosion protection system including electrical isolation of tank piping openings, tank coating (Bitumastic 50) and cathodic protection. Include U.L. label.
- E. Tank construction, accessories, fittings, valves, etc. shall be provided as required by N.F.P.A. Chapter 58.

2.05 TANK ANCHOR

- **A.** Hold down slabs for each tank shall be constructed of poured concrete of size indicated, with steel reinforcing rods, as per details on Drawings, work to be included under this Section.
- **B.** Tanks shall include tie down straps with steel angle anchors, bolted to concrete.
- **C.** Provide one anchor for each tank.

2.06 DIRECT-FIRED L.P. GAS VAPORIZER

A. RECOMMENDED SPECIFICATIONS FOR A POWER XPV PACKAGED VAPORIZER / MIXER SYSTEM

- **B.** The contractor shall furnish and install an XPV ______ Packaged Vaporizer/Mixer System as manufactured by ALGAS-SDI International LLC (ASDI). The unit shall have Factory Mutual System approval.
- C. The unit will provide a mixed gas which is used as a substitute for, or mixed with, natural gas. The mixed gas will have a heating value of _____ Btu/scf and specific gravity of _____ at a delivered pressure of _____ PSIG with a maximum capacity of _____ MMBtu/hr. The delivered pressure shall be adjustable between _____ to ____ PSIG at full load. The liquid propane pressure required to operate the mixer shall not be less than _____ PSIG. The unit must have 100% turndown capacity.
- **D.** The unit shall be a combination vertical electric vaporizer, venturi type mixer, and accumulator tank. The unit shall be completely piped, wired, and painted, ready to be placed on the foundation and receive contractor's interconnecting piping and wiring.
- E. The vaporizer shall be electric and consist of a vertical tubular pressure vessel(s) through which the LPG flows. The pressure vessel(s) shall be fabricated in accordance with the ASME code for pressure vessels for an internal working pressure of 250 PSIG. The pressure vessel(s) shall be equipped with a relief valve to prevent unsafe internal pressure. The relief valve shall be sized in accordance with NFPA Pamphlet #58. The pressure vessel(s) shall be covered with an insulating jacket to minimize radiant heat loss.
- **F.** The accumulator tank shall be fabricated in accordance with the requirements of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, and "U" stamped.
- **G.** The vaporizer shall be equipped with two independent direct monitoring high temperature safety shutdown devices and a float activated high liquid level safety switch to prevent passage of liquid propane downstream. The vaporizer shall be equipped with a liquid inlet solenoid shutoff valve. During a cold start, the unit shall not flow propane until it has warmed sufficiently to ensure adequate vaporization for the rated flow. In the event of a "high temperature shutdown," a "liquid carryover shutdown," or a "power interruption," the liquid inlet solenoid valve shall close and prevent liquid propane flow into the vaporizer and the heater elements will de-energize. The unit shall not restart while any safety device is in a failure mode. After the occurrence and correction of a safety shutdown situation, manual restarting of the unit shall be required.
- H. The mixer safety system shall provide safety shutdown under the following conditions:
 - Low LPG vapor pressure
 - High mixed gas pressure
- I. After the occurrence and correction of a safety shutdown situation, manual starting of the unit shall be required.
- J. The XPV Vaporizer/Mixer shall be designed for outdoor service and all wiring shall be Class I, Group D, Division 1 as defined by NFPA Pamphlet #58 and #70. Controls shall be located in an explosion-proof housing with external stop-start switches.
- K. Vaporizer shall be furnished with all necessary valves, controls, fittings, valves, and gauges. The vaporizer shall be fabricated to A.S.M.E. code for pressure vessels. Unit shall be equipped with NEMA 4 Control Box and be constructed in accordance to N.F.P.A. Chapter 58 and 70. All wiring shall be N.F.C. Class I, Division II, Group "D".

2.07 PIPING BELOW FLOOR/GRADE (SUBJECT TO STORAGE TANK PRESSURE)

- **A.** Schedule 80 black steel pipe extra strong steel weld fittings.
- **B.** Type K (soft) copper with copper wrought sweat fittings, employing 1000°F soldering or brazing filler material.
- C. Polyethylene (PE) gas pipe and tubing specified for gas main and service construction, suitable for use with LP gas and Permasert mechanical fittings. Material and marking meeting ASTM D2513 (Specification for Thermoplastic Gas Pressure Pipe, tubing and fittings). Resin to be PE 2406 compounds, Type II, Grade P24, Class B, with antioxidants of ASTM D1248. Measurements per ASTM D1238. Burst pressure testing per ASTM D1599. Apparent tensile strength testing per ASTM D2290. Sustained pressure testing per ASTM D1598. Yellow color. (To be protected from shearing action caused by backfill settlement). (Sizes ½" 1 ¼" and 2")

2.08 SECOND STAGE GAS REGULATOR

- A. Fisher, Rego or Maxitrol are acceptable.
- B. Comply with ANSI/UL 144 and install per ANSI/NFPA 58.
- **C.** Contractor shall be responsible to size/select the appropriate regulator for the application. He shall coordinate with the manufacturer and/or the supplier.
- **D.** Regulator shall have a pressure relief valve on low pressure side (see NFPA 58, table 2-5.8 for settings) or shut off device that shuts gas off at regulator inlet when downstream pressure reaches over pressure limits of 2-5.8 table and is only manually resetable.
- **E.** Regulator inlet pressure rating shall allow for no flow creep up from set point.
- **F.** Regulator shall be furnished with pressure gauge indicating regulated pressure.

2.09 RELIEF VALVES

- A. Fisher, Rego or Maxitrol are acceptable.
- **B.** Contractor shall be responsible to size/select the appropriate relief valves required for the application/installation. He shall coordinate with the manufacturer and/or the supplier.
- **C.** Adjustable relief range, maximum inlet pressure as required, set for the appropriate relief pressure.

2.10 METER

- A. Fisher, Rego or Maxitrol are acceptable.
- **B.** Contractor shall be responsible to size/select the appropriate meter assembly required for the installation. He shall coordinate with the manufacturer and/or the supplier.

2.11 GAS REGULATOR AND RELIEF VALVE

A. One high pressure regulator station designed to deliver gas at an outlet pressure of 2.0 psig. The regulator capacity shall be a minimum of 12.0 million BTUH.

- **B.** One low pressure regulator station designed to deliver gas at an adjustable range from 14" w.c. to 4" w.c. The regulator capacity must be a minimum of 12.0 million BTUH. Regulator shall be vented to the outside.
- **C.** L.P. gas pressure entering the building will be 2.0 psig and will be reduced to 11" w.c. within the boiler room before being supplied to the boiler burners, water heater or clothes dryers.

2.12 PIPING ABOVE FLOOR

- **A.** Schedule 40 black steel pipe with 150 psi steel weld fittings or 150 psi malleable iron screw fittings.
- **B.** Type L copper (hard) with copper wrought sweat fittings employing 1000°F soldering or brazing filler material.

2.13 GAS PIPE SLEEVE ABOVE FLOOR

A. Schedule 10 black steel ASTM A-53, plain end or roll grooved pipe and fittings.

2.14 GAS PIPE SLEEVE BELOW FLOOR/GRADE

A. Schedule 40 PVC DWV pipe and fittings.

2.15 STABILAIRE LPG PUMP SYSTEM

- An LPG liquid pump package shall be provided to furnish the required pressure and volume of LPG liquid to the vaporizer. The pump package shall be a ALGAS-SDI International LLC (ASDI) Stabilaire Model ______ and shall include a ______HP / _____Volt ____PH / _____Hz explosion-proof electric motor mounted on a single base with pump. All necessary bypass valves, back pressure regulator, check valves and required pipe fittings shall be furnished, factory assembled and tested.
- 2. Stabilaire package shall be built in accordance with NFPA 58 and FM Chapter 43.
- 3. The back pressure regulator shall be sized to relieve the entire capacity of the pump back to the storage tank.
- 4. The electric motor and electric start-stop station shall be pre-wired and tested. All wiring and electrical components shall comply with Class 1, Division 1, Group D specifications as defined in NFPA 58 and 70.
- 5. The contractor shall furnish and install necessary interconnecting electrical wiring and LPG piping in accordance with applicable codes and local regulations.

2.16 ROOF PIPE SUPPORT (OPTIONAL)

- A. Based on Product By Miro Industries.
- B. Miro Industries "Pillow Block Pipestand Model No. 02. Design absorbs thermal expansion and contraction of pipes, "V" cradle in polycarbonate resin seat, 6" square support base is rounded at edges & made of rigid polycarbonate resin, accommodate up to 2" pipes, guide holes at top for attaching tape to hold pipe and support together, four drainage ports to prevent ponding, max. load not to exceed 80 lbs. per pipestand, can be stacked to achieve desired height. To be installed on top of an additional layer of roofing membrane.

- **C.** Miro Industries "Pillow Block Pipestand Model No. 24-R. Design absorbs thermal expansion and contraction of pipes, nylon roller in polycarbonate resin seat with self-lubricating Teflon base, 7 1/2" square support base is rounded at edges & made of rigid polycarbonate resin, accommodate up to 4" pipes, guide holes at top for attaching tape to hold pipe and support together, two drainage ports to prevent ponding, max. load not to exceed 100 lbs. per pipestand, can be stacked to achieve desired height. To be installed on top of an additional layer of roofing membrane.
- D. Miro Industries "Pillow Block Pipestand Model No. 48-R. Design absorbs thermal expansion and contraction of pipes, 1/2" metal roller in a steel seat, support base is rounded at edges & made of 12 gauge steel, zinc plated, accommodate up to 11" pipes, "U" shaped cradle, guide holes at top for attaching tape to hold pipe and support together, drainage ports to prevent ponding, max. load not to exceed 200 lbs. per pipestand. To be installed on top of an additional layer of roofing membrane. Model No. 48-R-2 (2" high) or 48-R-6 (6" high).

PART 3: EXECUTION

3.01 GAS STORAGE CYLINDER

- A. Locate outside building above ground at location shown on drawings. Cylinder safety relief device shall be located 25 feet from nearest building and five feet from nearest source of ignition, direct vent openings or air intakes. The filling connection and vent from liquid level gages shall be not less than 10 feet from any source of ignition, direct vent openings or air intakes.
- **B.** Mount cylinders on masonry structural supports on concrete foundation using saddles. Bottom of cylinders shall not exceed five feet above ground.
- **C.** Protect cylinder installation from potential vehicle damage as required.

3.02 BURIED L.P. TANKS

- **A.** Located outside at location shown on drawings.
- **B.** Storage tanks shall be located a minimum of 50 feet from the building.
- **C.** Install per manufacturer's recommendations.
- **D.** Prior to tank installation, patch all marred surfaces of protective coating with Bitumastic 50.
- **E.** After installation of tanks in excavation, apply Bitumastic 50 to all bolts, piping, etc.

3.03 DIRECT-FIRED L.P. GAS VAPORIZER

- A. Install per manufacturer's recommendations.1. Provide concrete equipment pad to mount unit on.
- **B.** Direct-fired vaporizer shall be installed in location indicated on plan. Vaporizer shall be located a minimum of 25 feet from the building and 10 feet from the nearest L.P. storage tank.

3.04 METER

- A. Install where shown on drawing.
- **B.** Install in conformance with manufacturer's requirements.

- **C.** Install adequate support as required.
- **D.** Secure piping.

3.05 PIPING BELOW GRADE

- **A.** All underground gas piping shall be welded, soldered, brazed, unless PE tubing is used and assembled with Permasert mechanical fittings.
- **B.** Underground gas piping shall be installed a minimum of 18" below grade.
- **C.** Pipe Laying: Lay piping true to line with continuous bearing on the trench bottom which shall be cut to even grades. In ground that contains rock or gravel, bed the coated pipe on at least 4 inches of sand. Backfill around the pipe and for a depth of 6 inches above the pipe with earth free from stones or hard clods, or with sand, taking care not to damage the coating. Provide watertight plugs in openings for services and other branches and in end of piping laid when work is suspended. Under no conditions lay pipe in water. Blow out all lines before final connections are made.
- **D.** Fittings and Service Connections: Install proper fittings at all changes in direction, dead ends and branch connections. Provide suitable adaptors as needed for connections to valves and other appurtenances. From lines 3 inch and larger, service connections shall be taken off at the top of the pipe, using standard welding outlets.
- **E.** Pipe Coating: The exterior of all ferrous underground gas pipe, joints, couplings, fittings and valves shall be thoroughly cleaned and coated as follows:
 - 1. With Bituminous or Plastic Shop Coated Pipe. After pipe has been jointed over the trench and all leaks eliminated, wire brush and clean thoroughly all welded joints, couplings and fittings and apply one brush coat of Bitumastic #50 or clean, heat dry and prime as recommended by the manufacturer and wrap joints, couplings, fittings and valves with coaltar or plastic tape conforming to U.S. Navy Dept. Spec. No. 34Y or AWWA Spec. C-203. Lap the field coating at least 6 inches over the shop applied plastic or bituminous coating. Remove any kraft paper on bituminous coated pipe at these locations prior to field wrapping or coating. The coal-tar wrapping shall be hot applied with a torch as recommended by the manufacturer, and shall lap each spiral turn at least one-half the width of the tape. The plastic tape shall overlap the spiral turn at least 1/4 inch or more if recommended by the manufacturer. The minimum thickness shall be 10 mils. Repair all visible damage done to the coating in shipping and handling; cut out imperfections and apply field coating as specified.
 - 2. Test Coating. Prior to backfilling, the entire length of the finish coating shall be checked and all defects found shall be neatly and effectively repaired.
- **F.** All piping subject to tank pressure shall be Schedule 80 with 2000 pound forged steel fittings if used with threaded joints.

3.06 SETTING VALVES AND STOPS

A. Before setting, clean the interior of valves and stops; check plug valves for lubrication. Set at the exact locations shown and with stems plumb. Refer to Section 22 10 02 of this Division.

3.07 GAS REGULATORS

A. Install where shown on drawings.

- **B.** Extend vent from regulator to location outside of the building at area of low hazard potential, as shown on drawings. The vent size shall be at least the same size as the outlet of the pressure relieving device.
- **C.** Regulator vents shall not be vented into equipment flue or exhaust system.
- **D.** Venting of equipment regulators is not required when equipped with "vent limiting means" which limits the escape of gas from the vent opening in the event of diaphragm failure.
- E. Vent discharge shall be provided with cap designed to exclude water and insects.
- **F.** Install second stage regulators per ANSI/NFPA 58.

3.08 PIPING ABOVE FLOOR/GRADE

- **A.** All gas piping may be screwed, welded, soldered, or brazed. Joint compounds (pipe dope) shall be applied sparingly and only to the male threads of pipe joints. Thread compounds shall be resistant to the action of gas being used.
- **B.** Seamless welding fittings shall be used for all piping, except that welding nipples (Weldolets, Threadolets or Pipe-o-Lets, 250# minimum w.p.) may be used for branch take-offs up to one-half (1/2) the diameter of the main.
- **C.** No pipe bends will be allowed. Only where gas contains moisture shall gas piping grade 1/4 inch in 15 feet to drip pots at all low points. All changes in pipe sizes shall take place at branches. Take-offs to be at top or side of main.
- **D.** Gas piping shall be installed with swing joints or other positive means of expansion to relieve the thrust on the pipe at the point where it pierces the building wall. The annular space between the pipe and sleeve, where the pipe pierces building walls, shall be grouted watertight and filled with fiberglass insulation.
- **E.** Where the first floor of a building is slab-on-ground, all gas piping shall rise above the ground outside the building and shall enter the building above the first floor slab.
- **F.** No interior gas piping shall be concealed in solid partitions.
- **G.** Gas piping may be installed in concealed locations such as hollow partitions, walls and floors as long as unions, tubing fittings, running threads, right and left couplings, bushings, swing joints, and compression couplings are not made by a combination of fittings. Normal fittings using tapered pipe thread may be used. Tubing joints shall be brazed.
 - 1. When tubing is used, provide steel striker barriers not less than 0.0508 inch thick, or equivalent, between the tubing and the finished wall and extend at least 4" beyond concealed penetrations of plates, fire stops, wall studs, etc.
 - 2. Install tubing in single runs and do not secure rigidly.
- **H.** Gas piping may be installed above non-accessible and non-ventilated ceilings without sleeving as long as no valves or regulators are located in same space.
- I. All gas piping passing through walls shall be sleeved with annular spaced packed with fiberglass insulation.
- J. Gas piping shall not be located in or above exit corridors, unless a continuous steel sleeve is provided around piping passing through the space.

- **K.** Open ends of gas piping shall be capped until extension or connection to equipment can be completed.
- L. Extend from gas storage cylinder and connect to all equipment as required.
- **M.** Insulating (dielectric) union shall be provided in the above-ground gas piping at each gas service entrance.
- **N.** All exterior steel piping shall be protected from corrosion by first applying a metal primer to the pipe, fittings and supports, then a top coat of an enamel paint that matches the adjacent building surfaces.
- **O.** Spacing of pipe supports for 1/2", 3/4" and 1", and 1-1/4" piping and larger shall be 6, 8, and 10 feet, respectively.
- **P.** All piping, fittings, valves, etc. shall be of material, which is suitable for LP gas service.
- **Q.** Penetrations through the roof shall be flashed by the Roofing Contractor on all single membrane roofing systems.
- **R.** Seal openings around piping and pipe sleeves penetrating walls, floors and ceilings, including areas above suspended ceilings. Refer to Section 22 05 00.
- **S.** See Section 07 84 00 for requirements when penetrating into or through required fire-resistive assemblies, fire protective membranes, thermal barriers, or construction providing a finish rating as an alternative to a fire resistive assembly.

3.09 PIPING BELOW FLOOR

A. All piping below floor shall be welded, soldered or brazed and installed within sleeve. Seal both ends of sleeve airtight and extend a sleeve vent to the outside of the building as shown on drawing.

3.10 TESTING

- **A.** Prior to acceptance and operation, the entire piping system shall be pressure tested per Section 22 05 93. All necessary repairs shall be made and retested.
- **B.** Test medium shall be air or inert gas of nitrogen or carbon dioxide unless system operating pressure is 1/2 PSI or less, then fuel gas may be used. Oxygen shall never be used.
- **C.** Test pressure shall be at least 1-1/2 times the maximum system working pressure, but not less than 3 PSIG.
- **D.** Test duration shall be not less than 1/2 hour for each 500 cubic feet of pipe volume. System volumes of less than 10 cubic feet may be tested for 10 minutes. Systems with greater than 24,000 cubic feet shall be tested for 24 hours.

3.11 PURGING

A. Purge with gas to remove all air from the distribution system, which will be ready for service at the time of acceptance of the work. System purging shall not discharge within a confined space.

3.12 EQUIPMENT CONNECTIONS

- **A.** Provide shut-off cock (five feet above the floor), dirt leg and union at each equipment connection; install regulator furnished for equipment, as required. (Including food service equipment).
- **B.** Verify maximum inlet pressures to equipment and regulators to be connected/installed. Replace equipment regulator or install additional regulator as required.
- **C.** Extend vent from regulator to location outside of the building at area of low hazard potential. The vent size shall be at least the same size as the outlet of the pressure relieving device. The annular space between the wall and sleeve and also between the pipe and sleeve, where the pipe pierces the building wall, shall be neatly sealed watertight and filled with fiberglass insulation. Color of sealant to match new/existing exterior wall color.
- **D.** Equipment regulators shall be of the "vent limiting means" which limits the escape of gas from the vent opening in the event of diaphragm failure.
- E. Connect flexible hoses furnished by FEC. Coordinate.
- **F.** Install automatic gas shut-off safety valve furnished by FEC. Coordinate. Provide gas valve and union ahead of each valve.

END OF SECTION 22 10 88

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SECTION 22 30 56

WATER CONDITIONERS

PART 1: GENERAL

1.01 RELATED DOCUMENTS

- **A.** Conditions of the Contract and portions of Division 00 and 01 of this Project Manual apply to this Section as though repeated herein.
- **B.** The requirements of Section 22 05 00 apply to this Section.

1.02 RELATED WORK

- A. Equipment Insulation: Section 22 07 16.
- **B.** Pipe Insulation: Section 22 07 19.
- C. Domestic Water System and Equipment: Section 22 10 11.
- **D.** Deionized Water System: Section 22 10 84.
- E. Distilled Water System: Section 22 10 85.
- **F.** Reverse Osmosis System: Section 22 10 96.

1.03 SUBMITTALS

A. Submit descriptive product data describing all material furnished under Part 2 of this Section.

1.04 COMMISSIONING

- A. Witness all tests and compile all documentation including verification of the following:
 - 1. Start-up and testing of the entire system.
 - 2. Providing As-Built Drawings.
 - 3. Pressure/leak testing before joints are covered per Section 22 05 93.

PART 2: PRODUCTS

2.01 WATER SOFTENER

- **A.** Based on product by Culligan
 - 1. Capital, Custom Care Water Technologies, Diamond, Marlo, North Star, Rain Soft, Sta-Rite, Water Control Corp, Hellenbrand Water Soft Inc. equals are acceptable.
 - 2. The system specifications are based on Culligan International model CTM 450-PF 30in Duplex Tank with Prog. Flow and 2in Plumbing Adapter configured as a Duplex system with either Timeclock, Water Meter or Aqua Sensor device.

2.02 GENERAL DESCRIPTION

A. Each system shall include (2) tank(s). Each softener tank shall be 30 in. in diameter. The overall tank height (less base) shall be 72 in., sufficient to allow for a proper freeboard space above the resin bed for adequate expansion of the resin during backwashing.

- **B.** Tank(s) shall be manufactured of polyester reinforced by a continuous roving glass filament overwrap. The top opening will be 4"-8 UN threaded and the tank bottom will be supported on a molded structural base.
- C. The main operating valve shall be of a top mount design constructed of thermoplastic resistant to attack by substances found in natural water supplies. Inlet and outlet connections to be 1.5" or 2 inch NPTE. The Cv (flow coefficient) of the main operating valve shall be equal to/greater than 32.
- **D.** The main operating valve will be of the motor driven, mechanically activated design with 5 positions to accomplish the regeneration steps of backwash, brine draw/rinse, fast rinse and brine refill in addition to the service position. The internal seals will be of a modular design for ease of replacement and service.
- E. The backwash flow controller shall be a pressure-compensating orifice capable of providing and maintaining proper backwash flows over the entire listed operating pressure range of the system. The backwash flow controller shall be easily serviced without special tools and design so that service to the flow controller can be performed without disassembly of the valve body or the sequencing controller and without disconnecting existing inlet and outlet piping connections.
- **F.** A fully integrated programmable microprocessor driven electronic controller shall be provided to automatically cycle the main operating valve through the regeneration sequence. The electronic controller shall be designed and manufactured by the same manufacturer as the water treatment equipment.
- **G.** The controller shall include a sealed keypad, capable of programming all controller functions, located on the face of the controller. The controller display shall be a multi-line OLED display capable of full text readouts of operating status and codes. The firmware shall be capable of being updated to the latest version.
- H. Two Auxiliary Outputs: Two Auxiliary Outputs shall be integral to the controller circuit board. Each Output shall be capable of being programmed to provide power to a "Normally Open" or "Normally Closed" contact (user choice). These 24VAC outputs shall be used only for the purpose of energizing a relay coil.
- I. The ion exchange resin shall be virgin high capacity "standard mesh" of sulfonated polystyrene type stable over the entire pH range with good resistance to bead fracture from attrition or osmotic shock. Each cubic foot of resin will be capable of removing 30000.0 grains of hardness as calcium carbonate when regenerated with 15.0 pounds of salt. The resin shall be solid, of the proper particle size of 16x40 mesh, U.S. standard screen and will contain no agglomerates, shells, plates or other shapes that might interfere with the normal function of the water softener. The resin shall be manufactured to comply with the food additive regulation 21 CFR 173.25 as set forth by the USFDA.
- J. Provide a complete brine system consisting of a plastic tank, cover, salt platform, brine well, an automatic brine valve and all necessary fittings for operation with the water softening system. The system shall consist of a combined brine measuring and salt storage tank with salt platform. The recommended tank will be sized 24.0 in. x 50.0 in.; the system will include a total of one (1) brine tank(s). This brine tank can hold 2400 of salt which provides for 27 per salt fill.
- **K.** The brine tank will be equipped with a float operated non-corrosive field serviceable brine float valve for automatic control of brine withdrawal and fresh water refill.

L. These accessories are included: CTM-450-PF Softener with No Hard Water Bypass Brine System with 42" x 48" Tank, 3/4" Valve and 2700 lb Salt Capacity Standard Communication Cable CTM Plumbing Adapter, 2" NPT, Inlet/Outlet

Culligan GBE

2.03 INSTRUCTIONS

A. One (1) complete sets of installation, operating and maintenance manuals shall be provided.

2.04 FIELD SERVICE

A. The services of a factory authorized service representative can be made available to supervise, inspect and provide operator training as required for initial start-up and system operation. Contact your local Culligan dealer for service rates and scheduling.

2.05 WARRANTY

A. A single written warranty must be provided from the manufacturer of the water softener system covering workmanship and materials.

CTM MANUAL REFERENCE Installation Instructions : 01029401-A Smart Controller Communication: 0102151

PART 3: EXECUTION

3.01 WATER SOFTENER

- A. Install equipment, related components and accessories as recommended by manufacturer.
- **B.** Install and extend drain lines from softener to building sanitary drain as shown on drawings. Provide air gap at drain.
- **C.** Electrical connection under Division 26, Electrical.
- **D.** Electrical receptacle under Division 26, Electrical.
- **E.** Electrical receptacle for each water softener and additive flow controller, installation of factory provided wiring between brine recycle control (relay enclosure) and each respective regeneration controller (head), under Division 26, Electrical.
- **F.** Provide salt as required to properly adjust and set into operation.
- **G.** Arrange to have the manufacturer's trained personnel take water sample, analyze, record findings, set: regeneration, additive flow feature, & salt recycling systems accordingly. Softening system shall regenerate immediately. Each unit to regenerate independently of the other. Regeneration shall be based on the low salt setting. Instruct the Owner on the operating procedures, and provide A/E with written certification of the above upon completion, including the following information: Actual water hardness, actual iron content in water, adjusted grains per gallon of water setting, gallons of water used between regenerations, pounds of salt used per regeneration, brine tank float level setting, additive flow feature settings (flow rate setting, time period, etc), and salt recycling settings.

- **H.** Arrange to have the manufacturer's representative to take water sample, analyze, record findings, and set regeneration accordingly. Softening system shall regenerate immediately. Regeneration shall be based on the low salt setting. Instruct the Owner on the operating procedures, and provide A/E with written certification of the above upon completion.
- I. Arrange to have the manufacturer's representative perform all initial and final adjustments and efficiency settings, as well as to instruct the Owner on the operating procedures, and provide A/E with written certification of the above upon completion.
 - Efficiency Setting shall be based on an estimated usage of _____ gallons per regeneration assuming _____ grains per gallon water hardness and using _____ pounds of salt per regeneration. Set reset meter for _____ gallons. Determine actual water hardness prior to setting and re-adjust reset meter accordingly to maintain _____ grain exchange capacity.
 - Initial setting shall be based on an estimated usage of ______ gallons per week assuming grains per gallon water hardness. Modify brine maker/timeclock as required to obtain _____ grain mineral exchange capacity using ______ pounds of salt per regeneration. This may include an additional plug above the standard efficiency setting in brine tube/well. Set reset meter for _____ gallons. Determine actual water hardness prior to initial setting and re-adjust reset meter accordingly to maintain _____ grain exchange capacity.
 - 3. Final setting shall be based on actual water consumption over a three month period of time. Determine average weekly water consumption and readjust reset meter and brine maker/timeclock accordingly, to obtain a minimum of one regeneration per week.
 - a. If consumption is less than initially estimated, readjust reset meter and modify brine maker/timeclock to revised efficiency level/salt dosage.
 - b. If consumption is more than initially estimated and greater than _____ grains per week, re-adjust reset meter and set brine maker/timeclock to standard _____ grain efficiency setting.
- J. Provide complete water testing kit for conducting a soap test.
- K. All piping at softener shall be insulated. See Section 22 07 19.
- L. All piping at softener shall be properly supported and anchored to minimize excessive weight on unit and stress due to movement.
- **M.** Mineral tank, automatic reset meter and regeneration control valve shall be insulated with ½" Armaflex II sheet insulation and installed per manufacturer's recommendations.
- **N.** Install gravel and softening resin in mineral tank as required.
- **O.** Install "EDR" system in conformance to manufacturer's recommendations. Furnish appropriate wiring diagrams for field connections.
- **P.** Extend soft cold water to cold water inlet of the water tempering valve(s).
- **Q.** Install, start-up, test and adjust in accordance with manufacturer's recommendations.
- **R.** Install union at the outlet of the flow meter.
- **S.** Extend soft cold water to "Nortec NH Series" electrode steam humidifiers. Coordinate with HVC contractor.

- **T.** Extend soft cold water to the water tempering valve, water heaters, humidification boilers, heating boilers, and to kitchen.
- **U.** Provide full size valved bypass and valved inlet/outlet piping.

END OF SECTION 22 30 56

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Section 22 66 59 WELDING SHOP SAFETY DEVICE SYSTEM

PART 1 – GENERAL

1.1 SUMMARY:

A. Furnishings and installation of the Welding classroom Safety Device System as shown on the Drawings as herein specified.

1.2 SCOPE OF WORK:

- A. Provide a safety device system for the welding classroom as shown on the Drawings.
- B. Each system shall include a utility controller panel, solenoid valves and a remote emergency shut off button. The Plumbing Contractor shall provide all materials. Installation shall be in accordance with Part 3 of this section.

1.3 CODES AND REGULATIONS:

- A. NFPA 70, National Electrical Code.
- B. NFPA 72, National Fire Alarm Code.
- C. NFPA 90A, Installation of Air conditioning and Ventilation Systems.
- D. Americans with Disabilities Act.
- E. Uniform Building Codes (UBC).
- F. Local and State Building Codes.
- G. All requirements of the local Authority Having Jurisdiction.
- H. UL61010-1 3rd Edition Electrical Equipment for Measurement, control and Laboratory Use

1.4 WARRANTY:

- A. Provide a manufacturer's parts warranty covering 3 Years from date of completion.
- B. Refer to Division 01 section "Warranties"

1.5 MANUFACTURER:

- A. American Gas Safety is the basis of design. Approved equals meeting all specifications and drawing requirements are acceptable.
- B. Separate components by different manufactures may not be provided in lieu of the specified manufactured system.

1.6 SUBMITTALS:

- A. Comply with Division 01 Section "Submittals Procedures"
- B. Product Data:
 - 1. Manufacturer
 - 2. Model Number
 - 3. Catalog Data sheet with Photographs
 - 4. Wiring and equipment connection diagrams clearly showing factory equipment and field installed equipment.
- C. Provide all equipment, devices, conduit, operating power and other provisions for the Welding classroom Safety System.

- D. Shop Drawings
 - 1. Include plans, elevations, sections and mounting and attachments details.
 - 2. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Wiring Diagrams
 - a. Detail wiring for signal, power and control wiring
- E. Operation and Maintenance Data
 - 1. Include in Emergency, Operation and Maintenance manuals.
 - 2. Refer to Division 01 Section "Operation and Maintenance Data"
- F. Manufacturer's recommended detailed installation instructions.
- G. Equipment is not to be ordered without approved submittals

PART 2 – PRODUCTS

2.1 PRODUCTS IN THIS SECTION:

A. All Products and Devices for a complete Welding Classroom Safety Device System with all components designed to operate together as a system. The system shall and be UL listed and labelled and be as listed in the Equipment Schedule of the Section.

2.2 MERLIN UTILITY CONTROLLER: 1000SW+

A. In the Welding classroom and elsewhere as shown on Drawings, provide a Utility Controller with fascia panel mounted switches to activate remote solenoids and relays to control oxygen and Acetylene. Utility Controller shall comply with Underwriter's Laboratory UL61010-1 3rd Edition Standards. Controller shall have integrated printed circuit board and Microprocessor with adaptable programming features. Controller shall provide line voltage signals for output circuits. Controller shall provide inputs for remote EPO's. The Controller shall be equipped with an Authority Key Lock that restricts activation of output signals to the instructor or educator. Controller shall be provided with a fascia mounted EPO button. Output signals will require Key Lock authority for re-set.

2.3 SOLENOID VALVE:

A. At the Welding classroom and where shown on Drawings, provide UL approved solenoids for oxygen and Acetylene. All solenoids shall be normally closed and fail closed on loss of power. Number of solenoids, intended use and pipe sizes are as noted in Equipment Schedule or Drawings.

2.4 REMOTE PANIC BUTTON: AGS Systems model number EPOTW

A. Where shown on Drawings and where classroom size and configuration restricts clear path from work areas to Utility Controller, provide a wall mounted Remote Panic Button. Assembly shall be located as shown on Drawings and as stipulated in Equipment Schedule. Integrate assembly with low voltage input on Controller.

PART 3 - SYSTEM CONFIGURATION

3.1 SYSTEM CONFIGURATION:

A. Utility Controllers shall be factory configured to the standard configurations and shall be capable of field adjustments to meet specific project modification requirements. Configurations are limited to DIP switch adjustments on rear of fascia panel without the requirement of additional equipment.

B. Time-Out Function:

Each Controller be pre-set to shut down after either 2hrs, 4hrs 8hrs or have this function disabled. This configuration shall be adjusted via the DIP switches on the reverse side of the fascia panel.

- C. Panic Alarm Re-Set: Unless stated elsewhere on Drawings, The Controller shall only re-set from panic alarm after engagement of the authority key on fascia panel and after local panic alarm has been re-set.
- D. EPO's and Panic Buttons: Each Controller shall be configured so that pressing remote EPO or Panic Buttons will disable all utilities. Each Controller shall be configured so that Oxygen and Acetylene will automatically shut down in all alarm modes.

PART 4 – EXECUTION

4.1 INSTALLATION:

- A. Install in accordance with manufacturer's recommendations and instructions. Verify manufacturer's mounting heights to comply with ADA or other standards.
- B. Finish and install all devices as shown in Drawings and as specified herein. Where device is to be installed by other trades, furnish and then turn over to appropriate trade for installation.
- C. Furnish, install and make final connections to monitoring and remote EPO's and Panic Buttons as indicated on Drawings and specified herein.

4.2 ELECTRICAL:

A. Electrical Contractor shall furnish all conduit and wiring, making final wiring connections to all equipment as indicated by Drawings and specifications. Contractor shall be responsible for all system configurations, integration, test and start-up.

PART 5 – SYSTEM TEST AND START-UP

- A. Prior to placing the Utility Controller System into service, perform ALL Start-Up procedures and checklists as stated in Manufacturer's Operations and Maintenance Procedure
- B. Verify that all components and devices comply with manufacturer's requirements and recommendations and that all devices and installations conform to Drawings and specification requirements.
- C. Upon completion of ALL Start-Up tests, place the system into service. Complete all warranty registration documents. Submit originals with other project related closeout and O & M documentation. Review all operating procedures with a representative of the owner. Provide all System Authority Keys to the owner's representative.

PART 6 – EQUIPMENT SCHEDULE

Product	Model 1000SW+	Description	Remarks		
			EPOTW remote panic Button		

END OF SECTION

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CUSTOM AIR HANDLING UNITS

PART 1: GENERAL

1.01 RELATED DOCUMENTS

- A. Conditions of the Contract and portions of Division One of this Project Manual apply to this Section as though repeated herein.
- B. The requirements of Section 23 05 00 apply to this Section.

1.02 RELATED SECTIONS

- A. Section 23 05 13 Motors & VFDs
- B. Section 23 05 48 Vibration Isolation
- C. Section 23 07 13 Duct Insulation
- D. Section 23 09 00 Controls and Instrumentation
- E. Section 23 21 14 Hot Water Heating System
- F. Section 23 21 16 Hydronic Specialties
- G. Section 23 21 17 Air Control Devices

1.03 REFERENCES

- A. AMCA Publication 99 Standards Handbook.
- B. AMCA Publication 611 Certified Ratings Program Airflow Measurement Performance
- C. AMCA Standard 500-D Laboratory Methods of Testing Dampers for Rating.
- D. ANSI/ABMA Standard 9 Load Ratings and Fatigue Life for Ball Bearings.
- E. ANSI/AMCA Standard 204 Balance Quality and Vibration Levels for Fans.
- F. ANSI/AMCA Standard 610 Laboratory Methods of Testing Airflow Measuring Stations for Rating.
- G. ANSI/AHRI Standard 410 Forced Circulation Air-Cooling and Air-Heating Coils.
- H. ANSI/AHRI Standard 430 Central Station Air Handling Units.
- I. ANSI/AHRI Standard 1060 Rating Air-To-Air Energy Recovery Ventilation Equipment
- J.ANSI/ASHRAE Standard 52.2 Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
- K. ANSI/ASHARE Standard 62.1 Ventilation for Acceptable Indoor Air Quality.
- L. ANSI/ASHARE Standard 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings.
- M. ANSI/NEMA MG 1 Motors and Generators.
- N. ANSI/UL 900 Standard for Safety Air Filter Units.
- O. AHRI Standard 260 Sound rating of Ducted Air Moving and Conditioning Equipment.
- P. ASHRAE Standard 84 Method of Testing Air-to-Air Heat Exchangers.
- Q. ASHRAE Standard 111 Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems.
- R. ASTM B117 Standard Practice for Operation Salt Spray Apparatus.
- S. ASTM C1071 Thermal and Acoustic Insulation (Mineral Fiber, Duct Lining Material).

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- T. ASTM C1338 Standard Test Method for Determining Fungi Resistance of Insulation Material and Facings.
- U. ASTM E477 Standard Test Method for Measure Acoustical and Airflow Performance of Duct Liner Materials and Prefabricated Silencers.
- V. NFPA 70 National Electrical Code[®].
- W. NFPA 90A Standard for the Installation of Air Conditioning and Ventilation Systems.
- X. UL 1995 Standard for Safety Heating and Cooling Equipment.

1.04 QUALITY ASSURANCE

- A. Air Coils: Certify capacities, pressure drops and selection procedures in accordance with current AHRI Standard 410.
- B. Air handling units with fan sections utilizing single fans shall be rated and certified in accordance with AHRI Standard 430.
- C. Air handling units with fan sections utilizing multiple fans shall be rated in accordance with AHRI Standard 430 for airflow, static pressure, and fan speed performance.
- D. Airflow monitoring station: Certify airflow measurement station performance in accordance with AMCA 611.
- E. ISO 9001 Certification.

1.05 SUBMITTALS

- A. Submit in accord with Section 01 30 00.
 - 1. Shop drawings and descriptive product data describing all material furnished under Part 2 of this Section.
- B. AHU manufacturer shall provide the following information with each shop drawing/product data submission:
 - 1. Dimensioned arrangement drawings for each AHU including a plan and elevation view of the assembled unit with overall dimensions, lift points, unit shipping split locations and dimensions, installation and operating weights, and installation, operation and service clearances.
 - 2. All electrical, piping, and ductwork requirements, including sizes, connection locations, and connection method recommendations.
 - 3. Each component of the unit shall be identified and mechanical specifications shall be provided for unit and accessories describing construction, components, and options.
 - 4. All performance data, including capacities and airside and waterside pressure drops, for components.
 - 5. Fan curves shall be provided for fans with the design operating points indicated. Data shall be corrected to actual operating conditions, temperatures, and altitudes.
 - 6. For units with multiple fans, a fan curve shall be provided showing the performance of the entire bank of fans at design conditions. In addition, a fan curve shall be provided showing the performance of each individual fan in the bank of fans at design conditions. Finally, a fan curve shall be provide showing the performance of the bank of fans when one fan is down. The percent redundancy of the bank of fans with one fan down shall be noted on the fan curve or in the tabulated fan data.

- 7. A filter schedule must be provided for each air handling unit supplied by the air handling unit manufacturer. Schedule shall detail unit tag, unit size, corresponding filter section location within the AHU, filter arrangement (e.g. angled/flat), filter depth, filter type (e.g. pleated media), MERV rating, and filter quantity and size.
- 8. A schedule detailing necessary trap height shall be provided for each air handling unit. Schedule shall detail unit tag, unit size, appropriate trap schematic with recommended trap dimensions, and unit supplied base rail height. Contractor shall be responsible for additional trap height required for trapping and insulation beyond the unit supplied base rail height by adequate housekeeping pad.
- 9. A coil valve coordination schedule shall be provided for each air handling unit supplied by the air handling unit manufacturer. Schedule shall detail unit tag, coil type and corresponding section location within the AHU, valve style (e.g. global, ball), valve type (e.g. electronic 2-way/3-way), valve position (e.g. normally open/closed), size, flow coefficient (CV), and close-off pressure.
- 10.An electrical MCA MOP schedule shall be provided for each electrical circuit to which fieldpower must be supplied. Schedule to detail unit tag, circuit description, voltage/phase/hertz, Minimum Circuit Ampacity (MCA), and calculated Maximum Overcurrent Protection (MOP).
- 11.Sound data shall be provided using AHRI 260 test methods. Unit discharge, inlet, and radiated sound power levels in dB shall be provided for 63, 125, 250, 500, 1000, 2000, 4000, and 8000 Hz.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

PART 2 – PRODUCTS

2.01 CUSTOM AIR HANDLING UNITS

- A. Based on product by Haakon Industries.
 - 1. Trane and Johnson Controls equal is acceptable.
- B. Units to be of model, type, size and capacities listed in schedules on Drawings.

2.02 GENERAL

- A. The manufacturer shall provide factory assembled air handling unit in configuration as indicated on drawings. Unit shall include all specified components installed at the factory. Field fabrication of units and their components will not be accepted.
- B. The unit (AHU-1) shall be designed to be support by a roof curb and a structural support above the two roof elevations by the General Contractor. The material siding shall be continued down to conceal the structural support. The unit (AHU-2) shall be designed to be supported by a roof curb.
- C. Units too large to be legally shipped on the road may be shipped to site in sections. Otherwise units shall be shipped in one piece.

2.03 UNIT CASING

- A. Walls and roofs shall be constructed of 16 gauge galvanized steel 4" thick acoustic thermal panels. The inner liner shall be 22 gauge solid washdown galvanized steel. Insulation shall be 2" OR 4" thick 3 lbs density fiberglass. Insulation shall meet flame spread rating of less than 25 and a smoke developed rating of less than 50 when measured in accordance with ASTM E84. All permanently joined flanged panel surfaces shall be sealed with an individual strip of 1/8" x 3/8" tape sealer. Tape sealer shall be LEED qualified. Wall (and roof) seams shall be turned inward to provide a clean flush exterior finish. All panel seams shall be sealed during assembly to produce an airtight tight.
- B. Internal liner shall be suitable for washing with a pressure washer or steam cleaned without risk of wetting the insulation. The liner shall be installed over top of the panel flanges and each liner seam shall be sealed with a lap joint. The wall liner shall be installed over top of the base water dam such that any water run-off from the liner will drip into the water tight base rather into the wall panel. The roof liner shall be installed over top of the roof support so that water cannot enter the roof insulation.
- C. Outdoor units shall have roof panels broken outward to provide a lapped joint watertight seal. Outdoor roofs shall be sloped a minimum of 5/8" away from the access side.
- D. All insulation edges shall be joined on 8" centers using zinc plated TEK screws or metal clinches.
- E. All insulation edges shall be protected with metal lagging. Insulation systems using stickpins or adhesives are not acceptable.
- F. Stiffeners of angle steel shall be supplied as required to maintain casing deflection criteria of 1/200 at 1.5 times the working pressure. If panels cannot meet this deflection, add additional internal reinforcing.
- G. Acoustical Performance:
 - 1. The housing shall have been tested for acoustical performance by an independent laboratory that is accredited.
 - 2. Test methods and facilities used to establish sound transmission loss values shall conform explicitly with the ASTM designation E90-85 and E413-73.
 - 3. Sound Transmission Loss DB ASTM E-90 & E413-73

	1	2	3	4	5	6	7	8	
2" Walls	18	19	27	33	43	52	52	52	STC=37
4" Walls	20	20	28	41	51	56	55	57	STC=40

4. Test methods and facilities used to establish sound absorption values shall conform explicitly with the requirements of the ASTM Standard Test Method for Sound Absorption Coefficients by the Reverberation Method: ASTM C423-84A and E795-83.

18061 Holmen School District High School Addition/Remodeling Bid Pkg 2 Sound Absorption ASTM C423-84A & E795-83

	1	2	3	4	5	6	7	8	
2" Walls	.10	.23	.75	1.08	1.05	.99	.97	.95	STC=37
4" Walls	.40	.65	1.38	1.28	1.09	1.05	1.02	1.02	STC=40

Submit lab report for approval.

2.04 SERVICE CORRIDOR

- A. Supply and install a 54" wide high service corridor the entire length of the supply side of the unit. The corridor shall be a minimum of 87" tall if it houses electrical panel boards accessed from inside the corridor. Casing construction is the same as the rest of the air handler. Factory mount, wire, and pipe the fan motor VFD. Coil piping and insulation to be by mechanical contractor.
- B. Supply vapor proof fluorescent or LED lights complete with duplex receptacle and switch with indicator light. Mount the switch inside the unit. Factory wire from switch to all lights in EMT conduit. Electric power is 120 volt.
- C. Install access door to outside and inside access doors in a manner that does not interfere with the other components.
- D. Field installed hot water unit heater.
- E. Provide a 14x14 ventilation louver with 2 position damper complete with actuator.
- F. Provide a 115V sidewall exhaust fan to ventilate the corridor. The fan shall be complete with guarding, a backdraft damper, and shall be controlled by a thermostat which turns on the fan and opens the ventilation damper when the temperature exceeds the setpoint.
- G. Provide pipe/electrical chases complete with 22 gauge galvanized cover through the base including 1 ½" perimeter collar to maintain watertight integrity.

2.05 BASE CONSTRUCTION

- A. Units shall be constructed from structural steel C-channel iron around the perimeter of the unit, with intermediate channel and angle iron supports. Units less than or equal to 20' long shall have a minimum 4" channel, and units greater than 20' shall have a minimum 6" channel.
- B. A 12 gauge epoxy coated steel checker plate (0.12" thick aluminum checker plate) floor shall be installed on the base. Floor shall be flat reinforced from below, with all seams continuously welded. Drive screw attachment and caulking are not acceptable. Base shall be provided with lifting lugs, minimum four (4) per unit section. The base shall be insulated with 3" fiberglass insulation and sheeted with a 22 gauge galvanized steel liner. Floors that "oil can" are not acceptable.
- C. Provide a 1.5" perimeter collar around the entire unit, and around each floor opening to ensure the unit is internally watertight. The entire base shall act as an auxiliary drain pan and hold up to 1.5" of water.
- D. Provide auxiliary 1.25" drains in fan sections downstream of cooling coils, and in mixing sections.
- E. All drain connections on floor mounted air handling units shall terminate at the side of the unit onto roof.

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F. Maximum base deflection shall be ¼" on 240" unsupported span.

2.06 ACCESS DOORS

- A. Access doors shall be manufactured from 16 gauge galvanized steel. The doors shall be double wall construction with 22 gauge solid metal liner on the inside. Corners of the doors shall be continuously welded for rigidity. Two OR Four inch (2 OR 4") 3 lb/cu ft. density insulation shall be sandwiched between the 16 gauge outer layer and the 22 gauge inner layer. Doors must be the same thickness as the unit casing to maximize thermal and acoustical resistance. A 12" round hermetically sealed Double Glazed Laminated glass window shall be provided in each door. Hinges shall be continuous piano type stainless steel.
- B. Two polish finished copper-nickel plated high pressure cam-style latches operable from either side of the door shall be provided. The latches shall be provided with an integral (tool lock/keyed lock). Door opening shall be fully gasketed with continuous ½" closed cell hollow round black gasket with a metal encapsulated reinforcing backing that mechanically fastens to the door frame. Door frames shall be made from 16 gauge galvanized steel with the outside size of the door flush with the unit. Minimum door size shall be 24" x 70" (where height permits). Fan compartments must have a door of minimum width to remove the motor.
- C. All access doors must swing against the air pressure (i.e. positive pressure plenum doors must swing in).

2.07 ROOF CURBS

- A. Roof curbs shall be manufactured from 12 gauge galvanized steel and sections shall be designed to be bolted together.
- B. Roof curbs shall be 12" tall.
- C. A 2 x 4 pressure treated nailing strip shall be provided around the entire perimeter.
- D. Interior of the curb shall be insulated with 2" of 1.5 lb. neoprene coated fiberglass insulation.

2.08 NON-SCROLLED FANS – PLENUM TYPE

- A. Fans shall be manufactured by Haakon, Twin City, Barry Blower or Mechanovent. Fans shall be airfoil as indicated in the schedule or the fans shall be centrifugal plenum (plug) type, designed without a scroll type housing. Fans shall incorporate a wheel, heavy gauge reinforced steel inlet plate with removable spun inlet cone, structural steel frame, and shaft and bearings in AMCA Arrangement 3 configuration as an entire assembly.
- B. All fan wheels shall have tapered spun wheel cones or shrouds providing stable flow and high rigidity. The wheels shall be non-overloading type.
- C. The blades shall be continuously-welded, die-formed Airfoil type, designed for maximum efficiency and quiet operation. Partial welding will not be acceptable on airfoil blades.
- D. Impellers shall be statically and dynamically balanced and complete fan assembly shall be test balanced at the operating speed prior to shipment.
- E. Shafts to be sized for first critical speed of at least 1.43 times the maximum speed for the class.
- F. Fans are to be direct drive for use with VFD.
- G. Plenum fan assembly must have an enclosed safety screen as per OSHA Standards.

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- H. Fans shall have inlet OSHA approved inlet screens.
- I. Hoist Rail: Provide I beam hoist rail above fan section access doors to remove motors 25hp and above. An optional extendable arm to be provided to transport the motor to the unit exterior.

2.09 AIRFLOW MEASURING PROBES

- A. Provide on each fan air flow measuring probes capable of continuously monitoring the air handling capacity of the respective scrolled (plenum) fan.
- B. Each airflow probe shall contain multiple, averaged velocity pressure taps located symmetrically around the throat of the fan inlet and a single static pressure tap located on the fan housing. The entire airflow monitoring probe must be located outside the inlet throat as to not obstruct airflow.
- C. The probes shall be capable of producing steady, non-pulsating signal of the velocity pressure, independent of the upstream static pressure without adversely affecting the performance of the fan. The sensing probes shall be accurate $\pm 3\%$ of actual fan airflow. The fan inlet sensing rings shall be **FreeFlo Sensing Ring** as manufactured by Haakon Industries Ltd.

2.10 AIRFLOW DISPLAY

- A. Provide on indicated fans a method of displaying digitally, in real time, the fans current air flow.
- B. The display shall be capable of showing the airflow of two (2) independent fans simultaneously.
- C. For interaction with a controller, the display shall output one (1) 0-10VDC signal for each fan being monitored.
- D. The output signal shall be accurate to $\pm 0.5\%$ of Natural Span, including non-linearity, hysteresis and non-repeatability.
- E. The display must be water tight allowing for use in outdoor locations. If the display is not water tight it shall be enclosed in a weatherproof housing.

2.11 VIBRATION ISOLATION

- A. An integral all welded epoxy coated steel vibration isolation base shall be provided for the fan and motor.
- B. Isolators shall be free standing with sound deadening pads and leveling bolts.
- C. Spring diameter to compressed operating height ratio shall be 1 to 1.
- D. Spring deflection shall be a minimum of 2".

2.12 MOTORS AND DRIVES

- A. Fan motors to be mounted and isolated on the same integral base as the fan.
- B. Fan motors shall be heavy duty, Design B, premium efficiency open drip-proof, operable at 480 Volts, 60 Hz, 3-phase. Motors shall meet NEMA Premium standard MG 1 2006.
- C. Motors used with variable frequency drives shall be provided with motor shaft grounding devices, a minimum insulation class of F, and shall meet NEMA MG1 Part 31.

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2.13 COILS

- A. All coils shall meet or exceed all capacities specified on the mechanical schedule for the project. All coil performance shall be certified by the manufacturer in accordance with ARI Standard 410.
- B. Construct coils of configuration plate fins and seamless tubes. Aluminum fins shall have collars drawn, belled and firmly bonded to tubes by means of mechanical expansion of tubes. Do not use soldering or tinning in bonding process.
- C. Construct coil casings of minimum 16 gauge steel with formed end supports and top and bottom channels. Coils in cooling service shall have stainless steel casings and coils in heating-only service shall have galvanized steel casings.
- D. Coils shall be fully enclosed within casing and cooling coils shall be on mounted 304 stainless steel angle racks manufactured to allow coils to slide out individually. Heating coils shall be mounted on galvanized angle racks manufactured to allow coils to slide out individually.
- E. Removable coil access panels shall be provided to remove coils through casing wall. Coils shall be individually removable towards (away from) the access side. Coils must be individually racked, removable through the side access panels.
- F. Drain pans shall be continuously welded 304 stainless steel. Coil section must have intermediate drain pans and shall be interconnected with 1" drain lines. Drain pans shall be IAQ sloped and fully drainable.
- G. Pipe connections shall be on the same end, extended through the casing for ease of connection, employing a plate over the connection to minimize leakage, and shall be threaded.
- H. On staggered coils, pipe connections shall be extended to the exterior of the unit using schedule 40 pipe. The pipe shall be supported with structural stands and the pipe clamped to the stands with 1" thick thermally broken pipe clamps. For cooling coils, the support structure for the pipe extensions shall be made from stainless steel. Insulation of pipe extensions shall be provided by installer on site after installation.
- I. Water coils handling recently mixed air, or direct outside air, shall be drainable.
- J.Water cooling or Heating Coils
 - 1. Clearly label supply and return headers on outside of units such that direction of coil water-flow is counter to direction of unit air-flow.
 - 2. Coils shall be proof tested to 300 psig and leak tested to 200 psig air pressure under water.
 - 3. Construct headers of round copper pipe.
 - 4. Construct tubes of 5/8 inch O.D. minimum 0.020 inch thick copper and construct fins of 0.0075" thick aluminum.

2.14 FILTERS

- A. Prefilters: Filters shall be 30% efficient, MERV 8 pleated, disposable types. Each filter shall consist of a non-woven cotton and synthetic fabric media, media support grid and enclosing frame. The filter shall be listed by Underwriters' Laboratories as Class 2.
- B. Prefilters shall be installed in prefabricated channel rack.
- C. Prefilters shall be lift-out where access is available upstream of the filter, or slide out when access is not available.

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2.15 FINAL FILTERS

- A. Final filters shall be high performance, deep pleated, totally rigid and disposable type. Each filter shall consist of high density microfine glass fiber media, media support grid, contour stabilizer and enclosing frame.
- B. Final filter media shall be of high density microfine glass fibers that are laminated to a non-woven synthetic backing to form a lofted filter blanket. The filter media shall have an average efficiency of 90-95% on the ASHRAE Test Standard (52-76) and a MERV 14 rating. It shall have an average arrestance of not less than 99% on that standard. Filters shall be listed by Underwriters' Laboratories as Class 2.
- C. Holding Frames: Holding frames shall be factory fabricated of 16 gauge galvanized steel and shall be equipped with gaskets on all 4 sides of the filter and 2 heavy duty positive sealing fasteners. Each fastener shall be capable of withstanding 25 lbs. pressure without deflection and be attached or removed without the use of tools.
- D. Final filters shall be lifted out where access is available upstream of the filter, or side slideout when access is not available.

2.16 VARIABLE FREQUENCY DRIVES (VFDS)

- A. Variable frequency drives shall be provided under Section 23 05 13 Motors.
- B. Variable frequency drives shall be provided, mounted and wired by the AHU manufacturer as indicated on the schedule and drawings. All standard and optional features shall be included within the VFD enclosure, unless otherwise specified. The VFDs shall be UL listed. The listing shall allow mounting in plenum or other air handling compartments.
 - 1. Refer to Section 23 05 13 Motors for VFD specification.
- C. Provide bearing protection grounding rings to bleed current from the motor shaft to the motor casing. Product manufactured by Aegis SGR, Inpro/Seal CDR or equal.
- D. The VFD shall convert incoming fixed frequency three-phase AC power into a variable frequency and voltage for controlling the speed of three-phase AC motors. The motor current shall closely approximate a sine wave. Motor voltage shall be varied with frequency to maintain desired motor magnetization current suitable for centrifugal pump and fan control and to eliminate the need for motor derating.
- E. With the motor's rated voltage applied to the VFD input, the VFD shall allow the motor to produce full rated power at rated amps, RMS fundamental volts, and speed without using the motor's service factor. VFDs utilizing sine weighted/coded modulation (with or without 3rd harmonic injection) must provide data verifying that the motors will not draw more than full load current during full load and full speed operation.
- F. The VFD shall include an input full-wave bridge rectifier and maintain a fundamental power factor near unity regardless of speed or load.
- G. The VFD and options shall be tested to ANSI/UL Standard 508. The complete VFD, including all specified options, shall be assembled by the manufacturer, which shall be UL 508 certified for the building and assembly of option panels. Assembly of separate panels with options by a third-party is not acceptable. The appropriate UL stickers shall be applied to both the VFD and option panel, in the case where these are not contained in one panel.

- H. The VFD shall have DC link reactors on both the positive and negative rails of the DC bus to minimize power line harmonics. VFDs without DC link reactors shall provide a minimum 3% impedance line reactor.
- I. The VFDs full load amp rating shall meet or exceed NEC Table 430-150. The VFD shall be able to provide full rated output current continuously, 110% of rated current for 60 seconds and 160% of rated current for up to 0.5 second while starting.
- J. The VFD shall be able to provide full torque at any selected frequency from 28 Hz to base speed to allow driving direct drive fans without derating.
- K. An automatic energy optimization selection feature shall be provided standard in the VFD. This feature shall automatically and continually monitor the motor's speed and load and adjust the applied voltage to maximize energy savings and provide up to an additional 3% to 10% energy savings.
- L. Input and output power circuit switching shall be able to be accomplished without interlocks or damage to the VFD. Switching rate may be up to 1 time per minute on the input and unlimited on the output.
- M. An automatic motor adaptation test algorithm shall measure motor stator resistance and reactance to optimize performance and efficiency. It shall not be necessary to run the motor or de-couple the motor from the load to run the test.
- N. Galvanic and/or optical isolation shall be provided between the VFDs power circuitry and control circuitry to ensure operator safety and to protect connected electronic control equipment from damage caused by voltage spikes, current surges, and ground loop currents. VFDs not including either galvanic or optical isolation on both analog I/O and discrete I/O shall include additional isolation modules.
- O. The VFD shall minimize the audible motor noise through the use of an adjustable carrier frequency. The carrier frequency shall be automatically adjusted to optimize motor and VFD efficiencies while reducing motor noise.
- P. Protective Features
 - 1. Protection shall be provided against input transients, loss of AC line phase, output short circuit, output ground fault, overvoltage, under voltage, VFD over temperature and motor over temperature. The VFD shall display all faults as words. Codes are not acceptable.
 - 2. The VFD shall be protected from sustained power or phase loss. The VFD shall provide full rated output with an input voltage as low as 90% of the nominal. The VFD shall continue to operate with reduced output with an input voltage as low as 164 V AC for 208/230 volt units, 313 V AC for 460 volt units, and 394 volts for 600 volts units.
 - 3. The VFD shall incorporate a motor preheat circuit to keep the motor warm and prevent condensation build up in the stator.
 - 4. The VFD package shall include semi-conductor rated input fuses to protect power components.
 - 5. To prevent breakdown of the motor winding insulation, the VFD shall be designed to comply with IEC Part 34-17. Otherwise the AHU manufacturer shall ensure that inverter rated motors are supplied.
 - 6. The VFD shall include a "signal loss detection" circuit to sense the loss of an analog input signal such as 4 to 20 mA or 2 to 10 V DC, and shall be programmable to react as desired in such an instance.

- 7. The VFD shall function normally when the keypad is removed while the VFD is running and continue to follow remote commands. No warnings or alarms shall be issued as a result of removing the keypad.
- 8. The VFD shall catch a rotating motor operating forward or reverse up to full speed.
- 9. The VFD shall be rated for 100,000 amp interrupting capacity (AIC).
- *10.* The VFD shall include current sensors on all three output phases to detect and report phase loss to the motor. The VFD shall identify which of the output phases is low or lost.
- 11. The VFD shall continue to operate without faulting until input voltage reaches 300 V AC on 208/230 volt units, 539 V AC on 460 volt units, and 690 volts on 600 volt units.
- Q. Interface Features
 - Hand/Start, Off/Stop and Auto/Start selector switches shall be provided to start and stop the VFD and determine the speed reference. On units with bypass, a VFD/Off/Bypass selector switch shall be provided.
 - 2. The VFD shall be able to be programmed to provide a 24 V DC output signal to indicate that the VFD is in Auto/Remote mode.
 - 3. The VFD shall provide digital manual speed control. Potentiometers are not acceptable.
 - 4. A lockable, alphanumeric backlit display keypad shall be provided. The keypad shall be remotely mountable up to 10 feet away using standard 9-pin cable.
 - 5. The keypads for all sizes of VFDs shall be identical and interchangeable.
 - 6. To set up multiple VFDs, it shall be possible to upload all setup parameters to the VFDs keypad, place that keypad on all other VFDs in turn and download the setup parameters to each VFD. To facilitate setting up VFDs of various sizes, it shall be possible to download from the keypad only size independent parameters.
 - 7. The display shall be programmable to display in English, Spanish and French at a minimum.
 - 8. A red FAULT light, a yellow WARNING light and a green POWER-ON light shall be provided. These indications shall be visible both on the keypad and on the VFD when the keypad is removed.
 - *9.* A quick setup menu with factory preset typical HVAC parameters shall be provided on the VFD eliminating the need for macros.
 - 10. The VFD shall include a standard EIA-485 communications port and capabilities to be connected at a future date to a Johnson Controls N2 Metasys or Siemens FLN system at no additional cost to the owner. The connection shall be software selectable by the user.
 - 11.At a minimum, the following points shall be controlled and/or accessible:
 - a) VFD Start/Stop
 - b) Speed reference
 - c) Fault diagnostics
 - d) Meter points
 - 1) Motor power in HP
 - 2) Motor power in kW
 - 3) Motor kW-hr
 - 4) Motor current
 - 5) Motor voltage
 - 6) Hours run
 - 7) 2 Feedback signals
 - 8) DC link voltage

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- 9) Thermal load on motor
- 10) Thermal load on VFD
- 11) Heatsink temperature
- 12. Four additional Form C 230 volt programmable relays shall be available for field installation within the VFD
- 13. BACnet communication shall be available for factory or field installation within the VFD.
- 14. Two set-point control interfaces (PID control) shall be standard in the unit. The VFD shall be able to look at two feedback signals, compare with two set-points and make various process control decisions.
- 15. Floating point control interface shall be provided to increase/decrease speed in response to contact closures.
- 16. Four simultaneous displays shall be available. They shall include frequency or speed, run time, output amps and output power. VFDs unable to show these four displays simultaneously shall provide panel meters.
- 17. Sleep mode shall be provided to automatically stop the VFD when its speed drops below set "sleep" level for a specified time. The VFD shall automatically restart when the speed command exceeds the set "wake" level.
- 18. The sleep mode shall be functional in both follower mode and PID mode.
- 19. A run permissive circuit shall be provided to accept a "system ready" signal to ensure that the VFD does not start until dampers or other auxiliary equipment are in the proper state for VFD operation. The run permissive circuit shall also be capable of sending an output signal as a start command to actuate external equipment before allowing the VFD to start.
- 20. The following displays shall be accessible from the control panel in actual units: Reference Signal Value, Output Frequency in Hz or percent, Output Amps, Motor HP, Motor kW, kWhr, Output Voltage, DC Bus Voltage, VFD Temperature in degrees, and unit CFM.
- 21. The display shall be programmed to read in inches of water column (in-wg).
- 22. The VFD shall be able to be programmed to sense the loss of load and signal a no load/broken belt warning or fault.
- 23. If the temperature of the VFDs heat sink rises to 80°C, the VFD shall automatically reduce its carrier frequency to reduce the heat sink temperature. If the temperature of the heat sink continues to rise the VFD shall automatically reduce its output frequency to the motor. As the VFDs heat sink temperature returns to normal, the VFD shall automatically increase the output frequency to the motor and return the carrier frequency to its normal switching speed.
- 24. The VFD shall have temperature controlled cooling fans for quiet operation and minimized losses.
- 25. The VFD shall store in memory the last 10 faults and related operational data.
- 26. Eight programmable digital inputs shall be provided for interfacing with the systems control and safety interlock circuitry.
- 27. Two programmable relay outputs, one Form C 240 V AC, one Form A 30 V AC, shall be provided for remote indication of VFD status.
- 28. Three programmable analog inputs shall be provided and shall accept a direct-or-reverse acting signal. Analog reference inputs accepted shall include two voltage (0 to 10 V DC, 2 to 10 V DC) and one current (0 to 20 mA, 4 to 20 mA) input.

- 29. Two programmable 0 to 20 mA analog outputs shall be provided for indication of VFD status. These outputs shall be programmable for output speed, frequency, current and power. They shall also be programmable to provide a selected 24V DC status indication.
- 30.Under fire mode conditions, the VFD shall be able to be programmed to automatically default to a preset speed.
- R. Adjustments
 - 1. The VFD shall have an adjustable carrier frequency in steps of not less than 0.1 kHz to allow tuning the VFD to the motor.
 - 2. A minimum of sixteen preset speeds shall be provided.
 - *3.* Four acceleration and four deceleration ramps shall be provided. Accel and decel time shall be adjustable over the range from 0 to 3,600 seconds to base speed. The shape of these curves shall be automatically contoured to ensure no-trip acceleration and deceleration.
 - 4. Four current limit settings shall be provided.
 - 5. If the VFD trips on one of the following conditions, the VFD shall be programmable for automatic or manual reset: undervoltage, overvoltage, current limit and inverter overload.
 - 6. The number of restart attempts shall be selectable from 0 through 20 or infinitely and the time between attempts shall be adjustable from 0 through 600 seconds.
 - 7. An automatic "on delay" shall be selectable from 0 to 120 seconds.
- S. Service Conditions
 - 1. VFDs shall provide full output in an ambient temperature from -10 to 50°C (14 to 104°F).
 - 2. VFDs shall provide full output in a relative humidity from 0 to 95%, non-condensing.
 - 3. VFDs shall provide full output up to 3,300 feet elevation without derating.
 - 4. VFDs shall provide full output with an AC line voltage variation from -10 to +10% of nominal voltage.
 - 5. No side clearance shall be required for cooling of any units. All power and control wiring shall be done from the bottom.
- T. Warranty
 - 1. The VFD shall be warranted by the manufacturer for a period of 42 months from date of shipment, or 36 months from start-up, whichever occurs first. The warranty shall include parts, labor, travel costs and living expenses incurred by the manufacturer to provide factory-authorized on-site service.

2.17 FILTER GAUGES

A. Provide Dwyer 2000 (photohelic) magnehelic gauges.

Provide electronic filter gauges which have a digital display and a 4-20mA or 0-10VDC signal to indicate air pressure drop. Power the gauges from the lighting circuit.

- B. Magnehelic gauges shall be accurate to ±2% of full range.
- C. Magnehelic gauges shall be accurate to ±2% of full range.
- D. One gauge shall be provided for each filter bank.
- E. Gauges shall be recessed into cabinet casing.

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2.18 BELLMOUTH DISCHARGES AND INLETS

A. Where shown on the plans or where a discharge is 1500 fpm or more, discharges shall have a radiused curve equal to the thickness of the casing.

2.19 FINISH

A. Unit shall be finished painted with two components, etch bond primer and finish painted with alkyd enamel, as selected by Owner. All uncoated steel shall be painted with grey enamel. All metal surfaces shall be prepainted with vinyl wash primer to ensure paint bonds to metal. Outdoor unit shall be finish coated with polyurethane paint. Paint for outdoor units shall be tested to ATSM B117 for 5000hr salt spray endurance.

2.20 LOUVERS

- A. Louver blades shall be fixed on a 45° angle, and on 4" centers extruded aluminum construction.
- B. Frames shall be equal to extruded aluminum, minimum 4" wide.
- C. Birdscreen shall be galvanized mesh with 0.5" x 0.5" openings and shall be fixed to the rear with cadmium plated screws.
- D. Finish shall be natural mill finish.

2.21 UNIT MOUNTED SILENCERS

- A. Each silencer pod shall consist of radiused noses and tails, perforated metal panels, stiffened for flatness.
- B. Acoustic media shall be compressed and supported to minimized dusting and erosion. Mineral wool is not acceptable. (Encapsulate the insulation with Tedlar.)
- C. Performance and size to be as per schedule.
- D. Silencer pods shall be full height and full width of the plenum.
- E. Stacked duct type silencers are not acceptable.
- F. Silencer pods shall be manufactured by Haakon.

2.22 ALUMINUM AIRFOIL DAMPERS

- A. Aluminum airfoil frames and blades shall be a minimum of 12 gauge extruded aluminum.
 Blades shall be of a single unit airfoil design 6" wide.
- B. Frames shall be extruded aluminum channel with grooved inserts for vinyl seals. Standard frames: 2" x 4" x 5/8" on linkage side, 1" x 4" x 1" on the other 3 sides.
- C. Pivot rods shall be 7/8" hexagon extruded aluminum interlocking into blade section. Bearings shall be of a double sealed type with a Celcon inner bearing on a rod within a Polycarbonate outer bearing inserted into frame so that the outer bearing cannot rotate.
- D. Bearing shall be designed so that there is not metal-to-metal or metal-to-bearing riding surfaces. Interconnecting linkage shall have a separate Celcon bearing to eliminate friction in linkage.
- E. Blade linkage hardware shall be installed in frame out of air-stream. All hardware shall be on non-corrosive, reinforced material of cadmium plated steel.
- F. Damper seals shall be designed for minimum air leakage by means of overlapping seals.
- G. Jack shaft assemblies shall be provided for multiple damper installations.

2.23 DAMPER OPERATORS

- A. Damper actuators to be provide and installed by temperature controls contractor.
- B. Ensure operators are mounted in easily accessible sections of the air handling unit.

2.24 VIBRATION TESTING AND BALANCING

- A. Fans and motors shall be dynamically balanced to exceed a BV-5 criterion as per AMCA 204-96. The test shall be conducted after the fan and motor base assembly has been completed. The entire fan assembly including fan wheels, shafts, bearings, drives, belts, motors, isolation bases shall be tested. During the test, the fan and motor base shall be supported by its isolators which are set in the freely floating operating position. (In cases where a concrete inertia base is provided, the factory poured concrete shall be installed at the time of the vibration test).
- B. The required measurement points are as follows: one horizontal measurement and one vertical measurement shall be taken for each fan and motor bearing and one axial measurement shall be taken for each shaft. (A total of 10 points for a typical belt driven fanmotor assembly). The measurements shall be taken using calibrated, magnetically mounted accelerometers and a calibrated measuring instrument.
- C. Vibration measurement locations shall be as close as possible to the bearing or shaft centerlines. Measurements shall be taken from the bearing housings, bearing pedestals, or motor casings. Measurements shall not be taken from flexible covers or shields.
- D. Fans and motors shall be tested at the design RPM and the maximum overall filter-in vibration levels at each measurement point shall be less than or equal to 0.15 in/second peak velocity at the operating speed. If any measurements exceed the above criterion, the assembly shall be rebalanced and re-tested until the criterion is achieved.
- E. Certified measurements shall be provided to the consultant.

2.25 ELECTRICAL

- A. Factory wire and test all air handling units. Have units approved by CSA, ETL or UL.
- B. Supply one (1) single point 480V/60 Hz/3 Ph power connection for each unit. Wire all 120 V/208 V/60 Hz/1 Ph components such as lights, convenience outlet, controls, heaters, etc. from a panel with circuit breakers for each type of electric device. Panel for 120 V/208 V/60 Hz/3 Ph is fed from a separate service.
- C. Label and number code all wiring and electrical devices in accordance with the unit electrical diagram. Mount the devices in a control panel inside the unit's service enclosure or on the outside. Ensure the control panel meets the CSA, ETL or UL.

D. Provide a system of motor control including all necessary terminal blocks, motor contactors, motor overload protection, grounding lugs, auxiliary contactors and terminals for the connection of external control devices or relays. Individually fuse all fan and branch circuits. On fans designated to be operated by Variable Frequency Drives, provide VFDs rather than contactors.

Wire from the motors to the motor control in accordance with CSA, ETL or UL and contained by EMT conduit with liquid tight connections. Seal the casing penetrations in a manner that eliminates air leaks.

2.26 TEST PORTS

A. Provide 1" diameter test ports for unit air stream testing in each plenum section between each component within the AHU. Test ports shall have a tube that extends between the inside and outside of the unit and a screwed cap on the exterior to allow access. The test ports shall have been flanged on the exterior to allow air seal and shall be flanged on the interior to cover the penetration of the casing.

2.27 DRAINS

- A. Provide 1.25" capped floor drain connections on the side of the unit for complete drain ability of the base pan for the following sections:
 - 1. Fresh Air Plenums
 - 2. Humidifier Sections
 - 3. Service Corridors
 - 4. Fan Sections
 - 5. Section upstream and downstream of coils
 - 6. All sections if unit was washdown liner

2.28 SHIPPING

A. Units shall be cleaned and wrapped in a 10 mil shrink wrap prior to shipping.

2.29 INSTALLATION

- A. On units which are mounted on roof curbs, pre-insulate the inside of the roof curb prior to installing the units.
- B. Any floor penetrations are to be thoroughly sealed to ensure the water tightness and integrity of the entire floor.
- C. Install units on a flat surface level within 1/8" and of sufficient strength to support the units.
- D. Provide components furnished as per manufacturer's literature.
- E. Provide all water piping so water circuits are serviceable, without having to dismantle excessive lengths of pipe.
- F. Provide valves in water piping upstream and downstream of each coil for isolating the coils for maintenance and to balance and trim the system.
- G. Provide drain valves and vent cocks to each coil.
- H. Provide strainers ahead of all pumps and automatic modulating valves.
- I. Provide certified wiring schematics to the electrical division for the equipment and controls.

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23 73 23 - 16

- J. Provide all necessary control wiring as recommended by the manufacturer.
- K. Provide condensate traps in accordance with manufacturers recommendations.

PART 3: PART 3: EXECUTION

- 3.01 CUSTOM HAAKON AIR HANDLING UNITS
 - A. Install as recommended by manufacturer.
 - B. Install unit in the horizontal configuration on roof.
 - C. Wiring of units under Division 26, Electrical.
 - D. Return air smoke detector furnished and wired under Division 26, Electrical. Smoke detector installed under this Section.
 - E. Installation of control wiring shall be supervised by unit supplier.
 - F. Extend piping from condensate drain pans and install trap. Drain on roof.
 - G. Unit supplier shall provide check, test and start-up service.

END OF SECTION

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SCHOOL DISTRICT OF HOLMEN **HIGH SCHOOL ADDITION & REMODELING BID PACKAGE #2 1001 McHUGH ROAD HOLMEN, WI 54636**

18061

INDEX OF DRAWINGS

PROJE				FIRE PRO
PROJECT MANAGER:	DOUG RAMSEY		IFP100	FIRST FLOOR FIRE PR
PROJECT ARCHITECT:	MICHELLE MALAND			
JOB CAPTAIN:	MIKE LORENS			
PROJECT TECHNICIAN:	NEHA KHARB			
SPECIFICATIONS:	RON KNAPMILLER			PLUIVI
			P000	NOTES AND SCHEDUL
INTERIOR DESIGNER:	SARAH BRAATZ		P091	FIRST FLOOR REMOVA
			P101	UNDERFLOOR - SEGMI
PLUMBING ENGINEER:	RYAN JOHNSON		P102	UNDERFLOOR - SEGMI
			P103	UNDERFLOOR - SEGM
DECHANICAL ENGINEER:			P104	UNDERFLOOR - SEGM
PROJECT TECHNICIAN.	SHAUN LESCHER		P105	UNDERFLOOR - SEGM
FLECTRICAL ENGINEER	MIKE VILLAROSA		P111	FLOOR PLAN - SEGME
PROJECT TECHNICIAN:	CHRIS CRANDALL		P112	FLOOR PLAN - SEGME
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CONSTRUCTION ADMIN:	JESSICA BURCH			
CIVIL ENGINEER:	PARAGON ASSOCIATES		P115	
	Jeff Moorhouse		P200	DWV RISER ISOMETRI
	632 Copeland Ave		P201	DWV RISER ISOMETRI
	La Crosse, WI 54603		P202	DWV RISER ISOMETRI
	608-781-3110		P219	WATER RISER IS OME
			P211	WATER RISER ISOMET
STRUCTURAL ENG:	RA SMITH NATIONAL	<u> </u>	P212	WATER RISER ISOME
	Wayne Vandenburgh		P500	PLUMBING DETAILS
	5250 East Terrace Dr			
	Ste 108			
	Madison, WI 53718 608-421-5316			
			4	
FOOD SERVICE:	STEWART DESIGN ASSOC.			MECHAI
	ROCK Deering		M001	
	Rad Deering			
	2934 FISh Hatchery Road			OVERALL DOCTWORK
	Sle 212 Madison WI 52712		M091	OVERALL MECHANICA
	Madison, WI 53713		M100	MECHANICAL OVERAL
	000-271-0354		M101	MECHANICAL DUCT RE
			M102	MECHANICAL DUCT RE
	Phil Roealin		M103	MECH. DUCT REMODEL
	11629 W Dearbourn Avenue		M104	MECHANICAL DUCT RE
	Wauwatosa WI 53226		M105	MECHANICAL DUCT RE
	414-476-1011		M106	
THEATER EQUIP:	MAINSTAGE			
	Jeff Chesebro		M108	MECHANICAL PIPING R
	907 South 1st Street		M109	MECHANICAL PIPING R
	Milwaukee, Wi 53204		M110	MECHANICAL PIPING R
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			М200	ENLARGED EQUIPMEN
		7 III	M300	OVERALL FIRST FLOOD
		◢		

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JULY 2019







BID PKG 2- PHASE 1- VOL.2

AUDIOVISUAL

GENERAL AUDIOVISUAL INFORMATION **OVERALL FLOOR PLAN FLOOR PLAN - SEGMENT A FLOOR PLAN - SEGMENT A CATWALKS FLOOR PLAN - SEGMENT B FLOOR PLAN & RCP - SEGMENT C** FLOOR PLAN & RCP - SEGMENT D **REFLECTED CEILING PLAN - SEGMENT A AV ELEVATIONS - AUDITORIUM AV ELEVATIONS - AUDITORIUM STAGE AV SECTIONS - AUDITORIUM AV ELEVATIONS - AUDITORIUM SUPPORT SPACES AV ENLARGED PLANS & ELEVATIONS - AUDITORIUM AV ELEVATIONS & SECTIONS - BAND ROOM AV ELEVATIONS - WRESTLING ROOM AV ELEVATIONS - FITNESS CENTER AV ELEVATIONS - GYMNASIUM D AV SECTIONS - GYMNASIUM D AV PERSPECTIVE VIEWS - AUDITORIUM & BAND ROOM AV PERSPECTIVE VIEWS - WRESTLING, FITNESS, GYM D STANDARD AV DETAILS** STANDARD AV DETAILS STANDARD AV DETAILS ADA DETAILS EQUIPMENT RACK ELEVATIONS **PANEL ELEVATIONS & DETAILS PANEL ELEVATIONS & DETAILS PANEL ELEVATIONS & DETAILS** AUDIO TERMINATIONS WIRING **SCHEMATICS - AUDITORIUM AUDIO SCHEMATICS - AUDITORIUM AUDIO SCHEMATICS - AUDITORIUM AUDIO SCHEMATICS - AUDITORIUM AUDIO SCHEMATICS - AUDITORIUM INTERCOM SCHEMATICS - AUDITORIUM VIDEO SCHEMATICS - AUDITORIUM VIDEO & CONTROL SCHEMATICS - AUDITORIUM AV NETWORK SCHEMATICS - AV RACK POWER SCHEMATICS - BAND ROOM A134 SCHEMATICS - WRESTLING ROOM B101 SCHEMATICS - WRESTLING ROOM B101 SCHEMATICS - FITNESS CENTER C103 SCHEMATICS - GYMNASIUM D D103** AV POWER, BOX, & BUILDING LAN REQUIREMENTS **CLEAN POWER SCHEMATIC AV CONDUIT SPECIFICATIONS & DETAILS AV CONDUIT RISER - AUDITORIUM AV CONDUIT RISER - AUDITORIUM AV CONDUIT RISER - BAND ROOM A134 AV CONDUIT RISER - WRESTLING ROOM B101 AV CONDUIT RISER - FITNESS CENTER C103 AV CONDUIT RISER - FITNESS CENTER C103** AV917 AV CONDUIT RISER - GYMNASIUM D D103

THEATER

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INTERIOR ELEVATION RM A134 WEST

1/4" = 1'-0"





SOFFIT DETAIL 4 1 1/2" = 1'-0" MEMBRANE FLASHING- TURN CAVITY DRAINAGE MATERIAL WEEP / VENT AT 24" O.C **RECEIVER/ COUNTER** FLASHING MANUFACTURERS MEMBRANE (A11)-----TERMINATION BAR ROOFING MEMBRANE FLASHING SEE7A501 FOR SET IN BONDING ADHESIVE-TYPICAL NOTES EXTEND UP VERTICAL WALL MANUFACTURERS MEMBRANE EXPANSION TUBE _____ • • SEE1A501 FOR TYPICAL NOTES FILL VOID WITH **RIGID INSULATION** B2b EXISTING EXTERIOR WALL AND ROOF ROOF/ WALL DETAIL **ROOF/ WALL DETAIL** 8 1 1/2" = 1'-0" EXTRUDED ALUMINUM SILL WEEP / VENT AT 24" O.C MEMBRANE FLASHING-TURN INTO MORTAR JOINT CAVITY DRAINAGE MATERIAL WEEP / VENT AT 24" O.C. COUNTER/ RECEIVER FLASHING MANUFACTURERS MEMBRANE **TERMINATION BAR** SHIM TO LEVE C-CHANNEL UNIT D ROOF 113'-8" _____ SEE ROOF PLAN FOR ROOF SYSTEM NOTES . • A6

LINTEL-SEE STRUCTURAL PRFINISHED SHEET METAL CAP FLASHING WITH SLIP JOINT - EXISTING WALL-SEE STRUCTURAL FOR TEMPORARY - 2X WOOD BLOCKING SHORING AND LINTEL 1 1/2" EXTRUDED RIGID INSULATION - 1/2" PLYWOOD **⋎**∼• • ¥ ROOFING MEMBRANE FLASHING SET IN BONDING ADHESIVE-FIRE BLANKET - BASIS EXTEND UP VERTICAL WALL OF DESIGN - INPRO -FIRELINE 140 - 2HR mm LINTEL-SEE STRUCTURAL SHIM 113-A07 - SEALANT AT PERIMETER-EACH SIDE SEE ROOF PLAN FOR HM FRAME - GROUT SOLID GYP BOARD. - U415 ROOF SYSTEM NOTES A03 (PAINT) - DOOR AS SCHEDULED BOND BEAM LINTEL-SEE STRUCTURAL

1 2 PARAPET DETAIL 1 1/2" = 1'-0"

1 3 ROOF/ WALL DETAIL



SHIM

















							DOC	OR SCH	EDULE							
				D	OOR					FRA	ME					
		SIZE					U-CUT					DETAILS		-		
DOOR					DOOR		OR		FRAME					FIRE	HDWR	
NO. A100A	W 6' - 2"	H 7' - 0"	T 1 3/4"	MAT'L		GLT-12	LOUVER			DEPTH 6"	HEAD 15A506	JAMB	SILL	LABEL	2 GROUP	
A100B A100C	6' - 2" 6' - 2"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	ALUM ALUM	F F	GLT-12 GLT-12		ALUM ALUM		6" 6"	15A506 3A500		4A500		1 4	1,2,11 2
A100D A101A A101B	6' - 2" 6' - 2" 6' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	ALUM ALUM SCWD	F F D	GLT-12 GLT-4 GLT-4		ALUM ALUM HM	KK BB	6" 4 1/2" 8 3/4"	3A500 7A505 3A505		4A500		3 5 6	2,11 3 3
A103 A104	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	B A	GLT-4		HM HM	BB BB	8 3/4" 8 3/4"	3A505 3A505				7 7 7	
A105A A105B	3' - 0" 6' - 0"	7' - 2" 8' - 0"	1 3/4" 1 1/2"	FBRGL INSULATED SECTIONAL	A J			ALUM STL	AA	6"	9A503 4A501 SIM	8A505 5A501	19A501 SIM 6A501		8	POWERED
A105C A106 A107	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	HM SCWD SCWD	A A A			HM HM HM	BB BB BB	8 3/4" 8 3/4" 8 3/4"	3A505 3A505 3A505	4A505 4A505 4A505			7 31 11	
A108 A109	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	A A			HM HM	BB BB	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505			12 31	
A110A A110B	3' - 0" 6' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	A D	GLT-4		HM HM	BB BB	5 3/4" 5 3/4"	5A505 5A505					2
A112 A113	6' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	C B	GLT-4		HM HM HM	BB BB	8 3/4" 8 3/4"	3A505 3A505 3A505			A03	14 10	3
A114 A115	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	A A			HM HM	BB BB	8 3/4" 8 3/4"	3A505 3A505				10 10	
A116 A117 A118A	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 2"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD FBRGL	B B A	GLT-4 GLT-4		HM HM ALUM	BB BB AA	8 3/4" 8 3/4" 6"	5A505 9A503	8A505	19A501 SIM		10 12 9	
A118B A119	6' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	C B	GLT-4		HM HM	BB BB	5 3/4" 8 3/4"	5A505 3A505	4A505			14A 15	3
A120A A120B A121A	6' - 0" 6' - 0" 6' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD	D	GLT-4 GLT-4 GLT-4		HM HM HM	BB BB BB	8 3/4" 5 3/4" 8 3/4"	3A505 5A505 3A505	44505			16 17 16	3
A121B A123	6' - 0" 6' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	D C	GLT-4		HM HM	BB BB	5 3/4" 8 3/4"	5A505 3A505	4A505			17 14	3
A124A A124B	3' - 0" 12' - 0"	7' - 2" 10' - 0"	1 3/4" 2"	FBRGL INSULATED COILING	A G			ALUM STL	AA	6"	9A503 4A501	8A505 5A501	19A501 6A501		18	POWERED
A124C A125 A126A	12 - 0" 8' - 0" 3' - 0"	10' - 0" 10' - 0" 7' - 0"	2" 2" 1 3/4"	COILING COILING SCWD	G G A			STL STL HM	BB	5 3/4"	8A501 8A501 SIM 5A505	9A501 9A501 SIM	10A501	45 MIIN	13	POWERED/ALARM POWERED 3
A126B A126C	6' - 0" 6' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	C C			HM HM	BB BB	5 3/4" 5 3/4"	5A505 5A505				16 16	3 3
A127 A128A A128B	3' - 0" 6' - 2" 6' - 2"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	ALUM ALUM	A F F	GLT-12 GLT-4		HM ALUM ALUM	BB LL MM	8 3/4" 6" 4 1/2"	3A505 16A501 1A505	4A505 18A501	19A501		12 1A 3	1,4
A129A A129B	6' - 0" 6' - 4"	7' - 0" 8' - 0"	1 3/4" 2"	SCWD COILING	D	GLT-4		HM STL	BB	5 3/4"	5A505 8A501 SIM	9A501 SIM			14	HAND CHAIN
A130A A131A	6' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	D B	100 SQ. IN - GLT-25 GLT-4		HM HM	BB BB	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505		90 MIN	19 12	3
A131B A132 A133	3 - 0" 3' - 0" 3' - 0"	7'-0" 7'-0" 7'-0"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD SCWD	B B B	GLT-4 GLT-4 GLT-4		HM HM HM	BB BB	8 3/4 8 3/4" 8 3/4"	3A505 3A505 3A505	4A505 4A505 4A505			12 10 10	
A134A A134B	6' - 0" 6' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	D D	GLT-4 GLT-4		HM HM	BB BB	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505			21 21	3,6 3,6
A134C A135A A135B	3' - 0" 6' - 0" 6' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	ALUM SCWD	E D C	GLT-12 GLT-4		ALUM HM HM	NN BB BB	6" 8 3/4" 8 3/4"	16A500 3A505 3A505	18A501 SIM 4A505 4A505	19A501		18 20 20	3
A136 A137	6' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	D A	GLT-4		HM HM	BB HH	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505			20 21 22	6 6
A138 A139	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	A A			HM HM	HH HH	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505			22 22	6 6
A140 A141 A142	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD SCWD	A A A			HM HM HM	HH HH	8 3/4" 8 3/4" 8 3/4"	3A505 3A505 3A505	4A505 4A505 4A505			22 22 22	6 6
A143 A144A	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	A A			HM HM	BB HH	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505			12 22	6
A144B A145 A146	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD	A A A			HM HM HM	BB BB	8 3/4" 5 3/4" 5 3/4"	5A505 5A505 5A505	4A505			12 12 12	6
B101A B101B	6' - 0" 6' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	D D	GLT-4 GLT-4		HM HM	BB BB	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505			21 21	3 3
B101C B101D B101E	6' - 4" 6' - 4"	9' - 4" 9' - 4"	2" 2"	OVERHEAD SECTIONAL OVERHEAD SECTIONAL	K K	GLT-8 GLT-8		STL STL		0 3/4	1A504 SIM 1A504 SIM	2A504 SIM 2A504 SIM				10 10
B101F B102A B102B	6' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD	D A	GLT-4		HM HM	BB BB	8 3/4" 8 3/4" 8 3/4"	3A505 3A505 3A505	4A505 4A505			21 30	3 9
B104A B104B	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	FBRGL FBRGL	A A		{	FBRGL FBRGL	BB BB	8 3/4" 8 3/4"	9A502 9A502	10A502 10A502	11A502 11A502	90 MIN 90 MIN	24 24 24	5,9 5,9
B106 B107 B108	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD	B A	100 SQ. IN - GLT-25			BB BB BB	8 3/4" 8 3/4" 8 3/4"	19A505 3A505 3A505	4A505	11A502	90 MIN	25 27 27	5,9 9
B109A B109B	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	A A		<u> </u>	HM HM	BB BB	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505			31 10	9
B111 B112A B112B	8' - 11" 3' - 0" 3' - 0"	10' - 0" 7' - 0" 7' - 0"	1' - 2" 1 3/4"	FIRE DOOR SCWD	A			HM	BB	8 3/4" 8 3/4"	5A317 3A505	4A505		90 Minute Fire Rating	31	8, POWERED/ALARM
B116 B117	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	B A	GLT-4		HM HM	BB BB	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505			26 27	
B118 B119 B1204	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD	A B	100 SQ. IN - GLT-25		HM HM HM	BB BB BB	8 3/4" 8 3/4" 8 3/4"	3A505 9A502 4A502	4A505 5A506 4A505	11A502	90 MIN	27 28 29	9
B120A B120B B121A	3' - 0" 6' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD SCWD	A D	100 SQ. IN - GLT-25		HM HM HM	BB BB	8 3/4" 8 3/4"	3A505 4A502	4A505 4A505		90 MIN 90 MIN	10 34	5
B121B B121C B123	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD	A			HM HM	BB BB BB	8 3/4" 8 3/4" 6 3/4"	19A505 19A505	44505	11A502 11A502	90 MIN 90 MIN	29 29 11	9 9
B124 C100A	3' - 0" 6' - 2"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD ALUM	A F	GLT-12		HM ALUM	BB PP	6 3/4" 6"	3A505 16A500	4A505 18A501 SIM	19A501		11 5A	1,2
C100B C101 C103A	6' - 2" 3' - 0" 6' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	ALUM SCWD SCWD	F A F	GLT-12 GLT-4		ALUM HM HM	PP A03 BB RB	4 1/2" 8 3/4" 8 3/4"	7A505 3A505 3A505	4A505			4 32 21	2
C103B C103C	6' - 0" 6' - 2"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD ALUM	F F	GLT-4 GLT-4	_		RR VV	8 674"	3A505 3A505	4A505 4A505			21A 21B	2 4
C103D C103E C104	6' - 4" 6' - 4" 3' - 0"	10' - 0" 10' - 0" 7' - 0"	2" 2" 1 3/4"	OVERHEAD SECTIONAL OVERHEAD SECTIONAL SCWD	К К В	GLT-4 GLT-4 GLT-4	A03	STL	BB	6 3/4"	1A504 SIM 1A504 SIM 3A505	2A504 SIM 2A504 SIM 4A505			7	10 10
C105 C106A	3' - 0" 6' - 2"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD ALUM	B F	GLT-4 GLT-12		HM ALUM	BB UU	6 3/4" 6"	3A505 16A500	4A505 18A501	19A501		12 1A	1,4
C106B D100A D100B	6' - 2" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 2"	1 3/4" 1 3/4" 1 3/4"	ALUM SCWD FBRGL	F E A	GLT-4 GLT-4		ALUM HM ALUM	VV WW AA	4 1/2" 8 3/4" 6"	7A505 3A505 9A503	4A505 8A505	19A501		1A 35 37	2
D100C D101	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	HM SCWD	A A			HM HM	HH BB	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505			36 11	
D102A D102B D103A	6' - 0" 6' - 0" 6' - 0"	7' - 0" 9' - 4" 7' - 0"	1 3/4" 2" 1 3/4"	SCWD COILING SCWD	D G D	100 SQ. IN - GLT-25		HM STL HM	BB	8 3/4" 8 3/4"	3A505 8A501 3A505	4A505 9A501 4A505		90 MIN	38	3 POWERED
D103B D103C	6' - 0" 6' - 2"	7' - 0" 7' - 2"	1 3/4" 1 3/4"	SCWD FBRGL	D C	100 SQ. IN - GLT-25		HM ALUM	BB EE	8 3/4" 6"	3A505 9A503	4A505 8A505	19A501	90 MIN	19 39	3 4
D103D D103E	6' - 2" 10' - 0"	7' - 2" 10' - 0" 7' - 2"	1 3/4" 2"	FBRGL COILING	C			ALUM STL	EE	6"	9A503 5A503	8A505 6A503	19A501 11A502	90 MIN	39 40	4 POWERED/ALARM
D104A D104B D105A	6' - 0" 12' - 0"	7' - 0" 10' - 0"	1 3/4" 2"	SCWD COILING	C G			HM STL	BB	8 3/4"	3A505 8A501	4A505 9A501 SIM	19201		14	3 POWERED
D105B E100A	3' - 0" 6' - 2"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD ALUM	B F	GLT-4 GLT-12		HM ALUM	BB XX	8 3/4" 6"	3A505 16A500	4A505 STOREFRONT	19A501		32 1	1,2,11
E100B E101 E102A	6' - 2" 6' - 0" 6' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	ALUM SCWD SCWD	F D D	GLT-12 100 SQ. IN - GLT-25 GLT-18		ALUM HM HM	XX BB BB	4 1/2" 8 3/4" 8 3/4"	1A505 13A504 13A504	14A504 14A504	15A504 15A504	90 MIN 20 MIN	3 19 42	2,11 3
E102B E102C	3' - 0" 12' - 0"	7' - 0" 10' - 0"	1 3/4" 0"	ALUM OVERHEAD SECTIONAL	E K	GLT-12 INSULATED BY MANUFACTURER		ALUM STL	YY	6"	16A500 1A504	18A501 2A504	19A501 3A504		18	POWER
E103A E103B E104A	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	HM SCWD SCWD	A A A A A A A A A A A A A A A A A A A			HM HM HM	BB BB HH	8 3/4" 8 3/4" 8 3/4"	3A505 3A505 3A505	4A505 4A505 4A505			7 7 43	
E104B E104C	3' - 0" 12' - 0"	7' - 0" 10' - 0"	1 3/4" 0"	ALUM OVERHEAD SECTIONAL	E K	GLT-4 GLT-4		ALUM STL	YY	4 1/2"	7A505 1A504 SIM	2A504 SIM	3A504 SIM		44	10
E104D E104E E105A	12' - 0" 3' - 0" 3' - 0"	10' - 0" 7' - 0" 7' - 0"	0" 1 3/4" 1 3/4"	OVERHEAD SECTIONAL ALUM SCWD	K E E	INSULATED BY MANUFACTURER GLT-12 GLT-18		STL ALUM HM	YY ZZ	6" 8 3/4"	1A504 16A500 3A505	2A504 18A501 4A505	3A504 19A501	20 MIN	18	POWERED
E105B E105C	3' - 0" 12' - 0"	7' - 0" 10' - 0"	1 3/4" 0"	ALUM OVERHEAD SECTIONAL	E K	GLT-4 GLT-4		ALUM STL	YY	4 1/2"	7A505 1A504 SIM	2A504 SIM	3A504		44	10
E105D E106A E106B	o - U" 3' - O" 3' - O"	7' - 0" 7' - 0" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD SCWD	A A	າໜ ຣ໙. IN - GL1-25		rıvı HM HM	BB BB	8 3/4" 5 7/8" 8 3/4"	14A505 2A505 2A505	5A506 2A505 2A505		90 MIN	40 12 12	
E107 E108	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	B A	100 SQ. IN - GLT-25		HM HM	BB BB	8 3/4" 8 3/4"	3A505 2A505	5A506 2A505		90 MIN	43 7	
E109 E110 E114A	3 - 0" 3' - 0" 12' - 0"	7' - 0" 7' - 0" 9' - 4"	1 3/4" 1 3/4" 0"	SCWD SCWD OVERHEAD SECTIONAI	B A K	INSULATED BY MANUFACTURER		rıvı HM STL	вв HH	8 3/4" 8 3/4"	9A502 3A505 1A504 SIM	5A506 4A505 2A504 SIM	11A502 3A504 SIM	90 MIN	7	7, POWERED
E114B E300	3' - 0" 3' - 4"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD HM	A A			HM HM	HH	5 3/4" 5 3/4"	5A505 8A106	44505	9A106		7 49 47	ALTERNATE - SEE A107
F100 F101 F102	5' - 0" 3' - 0"	7' - 0" 7' - 4" 7' - 0"	1 3/4" 1 3/4" 1 3/4"	SCWD SCWD	6 A B	GLT-4		HM HM	JJ BB	8 3/4" 8 3/4" 8 3/4"	3A505 3A505 3A505	4A505 4A505 4A505			47 48 7	
F103 F104	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" 1 3/4"	SCWD SCWD	A A			HM HM	BB BB	8 3/4" 8 3/4"	3A505 3A505	4A505 4A505			11 12	















II II IV 2) PIERS TO BE CENTERED ON BUILDING GRID LINE(S), UNLESS NOTED OTHERWISE 3) #3 TIES TO BE PROVIDED BY REINFORCEMENT SUPPLIER. #9 GA TIES TO BE PROVIDED BY MASONRY CONTRACTOR. TIES TO BE LOCATED IN MORTAR AND SIZED TO MAINTAIN 3/4" COVER TO OUTSIDE FACE OF MASONRY. DETAIL TIES TO AVOID "STACKING" OF TIE BAR(S) MAKING UP THE CONFIGURATION. 4) POSITION VERTICAL BARS TO MAINTAIN 1/2" CLEAR TO INSIDE FACE OF MASONRY SURFACE.

5) WHERE NEW PIER IS TO BE INSTALLED ON EXISTING FOUNDATION WALL, PROVIDE (1) #6 BAR EPOXIED INTO FOUNDATION WALL w/ 1'-0" EMBEDMENT FOR EACH VERTICAL REINFORCEMENT BAR REQUIRED IN SCHEDULE.

	LOOSE STEEL LINTEL SCHEE								
WALL THICKNESS	CLEAR MASONRY OPENING WIDTH	SE							
ALL	AT FIRE EXTINGUISHER CABS AND DRINKING FOUNTAINS	1/4" PL							
4"	TO 5'-0"	ST 3 X 6.25							
4"	TO 7'-0"	PL 3/8 X 6 1/2 ON PL 3/8 X 3 1/2							
4"	TO 9'-0"	PL 3/8 X 7 1/2 ON PL 3/8 X 3 1/2							
6"	TO 5'-0"	(2) L 3 1/2 X 2 1/2 X 1/4 LLV							
6"	TO 7'-0"	WT 4 X 10.5							
6"	TO 9'-0"	WT 7 X 11							
8"	TO 5'-0"	(2) L 3 1/2 X 3 1/2 X 1/4							
8"	TO 7'-0"	(2) L 4 X 3 1/2 X 5/16 LLV							
8"	TO 9'-0"	WT 7 X 15							
10"	TO 7'-0"	W8 X 10 WITH PL 5/16 X 9							
10"	TO 10'-0"	W8 X 15 WITH PL 5/16 X 9							
12"	TO 5'-0"	(3) L 3 1/2 X 3 1/2 X 1/4							
12"	TO 7'-0"	W8 X 10 WITH PL 5/16 X 11							
12"	TO 10'-0"	W8 X 15 WITH PL 5/16 X 11							

LINTEL NOTES: 1. LINTELS CALLED OUT IN THIS SCHEDULE ARE FOR NON-LOAD BEARING MASONRY WALL AND FOR LOAD BEARING WALLS WHERE LOAD IS INTRODUCED ABOVE THE LINTEL AT A DISTANCE GREATER THAN THE LINTEL SPAN.

2. PROVIDE MINIMUM 8" BEARING AT EACH END OF LINTEL.

3. CENTER LINTELS IN WALL UNLESS NOTED OTHERWISE.

4. BOTTOM PLATES UNDER WIDE FLANGE SHAPES SHALL BE EXTENDED FULL LENGTH OF

LINTEL. 5. WELD LINTEL COMPONENTS INTO SINGLE UNIT.

6. NO LINTELS REQUIRED FOR 4" AND 6" NON-LOAD BEARING MASONRY WALLS WHERE

GROUTED HOLLOW METAL FRAMES HAVE A HEADSPAN OF 4'-0" OR LESS.

7. PROVIDE THESE LINTELS WHERE OTHER LINTELS ARE NOT SPECIFICALLY DETAILED. 8. GROUT BLOCK CORES SOLID MINIMUM (3) COURSES BELOW LINTEL BEARING.

	PRECAST PLANK SCHEDULE									
PLANK MARK	DESCRIPTION	ASSUMED DEAD LOAD $\#$ Including topping	SUPERIMPO DEAD LOA							
PP1	8" HOLLOW-CORE PLANK + 2" TOPPING	-	40 PSF							

ASSUMES "STANDARD" PLANK TYPE. "ULTRALIGHT" PLANK TYPE MAY BE SUBSTITUTED BY PLANK SUPPLIER WHERE SUCH PLANKS WILL SUPPORT THE LOADS INDICATED.



SNOW DRIFT PLAN





	_			
LINTEL MARK	DESCRIPTION	SECTION	END BEARING PLATES	REMARKS
L1	24" HIGH x 12" WIDE BOND BEAM w/ (2) #5 x CONT		NA	2,7,8
L2	8" HIGH x 8" WIDE BOND BEAM w/ (2) #5 x CONT	<u>l</u>	NA	2,7,8
L3	16" HIGH x 8" WIDE BOND BEAM w/ (2) #5 x CONT		NA	2,7,8
L4	24" HIGH x 8" WIDE BOND BEAM w/ (2) #5 x CONT		NA	2,7,8
L5	W16x36 W/BOTTOM PL3/8"x1'-3 1/2" x CONT		PL3/8"x7"x0'-8" W/(2) 1/2" DIA x 6" LONG HWS	1-6, 10
L6	W8x21 W/BOTTOM PL3/8"x1'-3 1/2" x CONT		PL3/8"x7"x0'-8" W/(2) 1/2" DIA x 6" LONG HWS	1-6
L7	W8x21 W/BOTTOM PL3/8"x1'-0" x CONT	1/4 3-9	PL3/8"x7"x0'-8" W/(2) 1/2" DIA x 6" LONG HWS	1-6
L8	W16x26 W/BOTTOM PL3/8"x0'-7" x CONT	1/4 3-9	PL3/8"x7"x0'-8" W/(2) 1/2" DIA x 6" LONG HWS	1-5
L9	W8x21 W/BOTTOM PL3/8"x0'-7" x CONT	1/4 3-9	PL3/8"x7"x0'-8" W/(2) 1/2" DIA x 6" LONG HWS	1-6
L10	60" HIGH x 16" WIDE BOND BEAM w/ (2) #6 x CONT		NA	16" BRG
L11	32" HIGH x 8" WIDE BOND BEAM w/ (2) #5 x CONT		NA	2,7,8
L12	HSS10X8X3/8 LSH W/ PL 3/8X11 1/2"			1-5
L13	W8x21 W/BOTTOM PL3/8"x0'-11" x CONT	1/4 3-9	PL3/8"x7"x0'-8" W/(2) 1/2" DIA x 6" LONG HWS	1-6

LINTEL SCHEDULE

W8; W10 W12; W14 W16 W18 W21; W24 W27 W30; W33

BEAM SIZE

ALL BOLTS TO BE 3/4" DIA A325. OTHERWISE.



OTHERWISE.

NOTES:

1) REFERENCE DETAIL 1/S900 FOR TYPICAL LINTEL BEARING REQUIREMENTS.

- 2) TYPICAL NOTES THAT APPLY UNLESS NOTED OTHERWISE; a) PROVIDE MINIMUM 8" BEARING AT EACH END OF LINTEL.
 - b) CENTER LINTELS IN WALL UNLESS NOTED OTHERWISE. c) BOTTOM PLATES WHERE CALLED FOR SHALL EXTEND FULL LENGTH OF LINTEL.
 - d) REFERENCE DETAIL X/SXXX FOR TYPICAL CMU WALL OPENING REINFORCEMENT REQUIREMENTS e) REFERENCE DETAILS XSXXX FOR TYPICAL CMU CONTROL JOINT REQUIREMENTS
- NOTCH FACE SHELL AS REQUIRED TO PLACE CMU.
- PROVIDE 1/2" DIA x 6" LONG HEADED WELDED STUDS (HWS) AT 24" OC ON TOP OF LINTEL. GROUT CMU
- CORE SOLID 8" (MIN) ABOVE TOP OF LINTEL AT HWS LOCATIONS.
- 5) PROVIDE ADJUSTABLE MASONRY ANCHORS AT 16" OC EACH SIDE OF WEB.
- 6) ALL LINTELS (INCLUDING BOTTOM PLATES) TO BE HOT-DIPPED GALVANIZED.
- 7) WIDTH OF BOND BEAM TO MATCH WIDTH OF WALL. 8) PROVIDE 1" BOTTOM CLEAR COVER.
- 9) SEE MISCELLANEOUS LINTEL SCHEDULE FOR BRICK SUPPORT IN FRONT OF CMU LINTELS.
- 10) BOTTOM PLATE MAY BE OMITTED WHERE EXTERIOR CLADDING MATERIAL IS EIFS, NOT BRICK.



COLUMN SCHEDULE NOTES

- 1. FASTEN STEEL COLUMN TO TOP OF CONCRETE USING ANCHOR RODS OF SIZE INDICATED WITH DOUBLE NUTS, BASE PLATE SETTING WASHERS AND 2" GROUT THICKNESS AS DESCRIBED IN THE BASE PLATE SCHEDULE
- 2. UNLESS NOTED OTHERWISE. BASE/CAP PLATES ARE ITEMIZED IN THE FOLLOWING ORDER: THICKNESS x WIDTH PARALLEL TO WEB x LENGTH PERPENDICULAR TO WEB. BASE PLATE SIZE MAY BE INCREASED AS REQUIRED TO ACCOMMODATE GUSSET PLATES AT CROSS BRACING.
- 3. UNLESS NOTED OTHERWISE, ANCHOR ROD SPACING IS ITEMIZED IN THE FOLLOWING ORDER: DISTANCE BETWEEN RODS PARALLEL TO WEB; DISTANCE
- BETWEEN RODS PERPENDICULAR TO WEB. 4. ALL 3/4" DIA ANCHOR RODS ARE TO MEET ASTM F1554, GRADE 36. ALL 1 1/4" DIA ANCHOR RODS ARE TO MEET ASTM 1554, GRADE 55, AND THE REQUIREMENTS OF
- THE SI SUPPLEMENT. 5. FASTEN COLUMN TO BASE PLATE BY WELDING AS DESCRIBED BELOW.





SINGLE PLATE SHEAR CONNECTION SCHEDULE

ROWS OF BOLTS	PLATE THICKNESS	WELD SIZE (a)			
2	3/8"	5/16"			
3	3/8"	5/16"			
4	3/8"	5/16"			
5	3/8"	5/16"			
6	3/8"	5/16"			
7	3/8"	5/16"			
8	3/8"	5/16"			
2 1/2" MAX	۱ ۲	2 1/2" MAX "a"	TYF		
-0					
0			-		
0		2			

BEAM TO COLUMN BEAM TO BEAM

SINGLE PLATE SHEAR CONNECTION NOTES:

2. CONNECTIONS SHOWN ARE MINIMUM CONNECTIONS UNLESS NOTED

3. ALL STEEL EXPOSED TO EXTERIOR CONDITIONS SHALL BE GALVANIZED.



BEAM TO COLUMN BEAM TO BEAM DOUBLE ANGLE CONNECTION NOTES: ALL BOLTS TO BE 3/4" DIA A325.

2. ANGLE LEGS TO BE A MIN OF 5/16" THICK. 3. SEE PLAN FOR COLUMN ORIENTATION. 4. CONNECTIONS SHOWN ARE MINIMUM CONNECTIONS UNLESS NOTED

5. CONNECTION ANGLES SHALL BE 36 ksi MININUM.

6. ALL STEEL EXPOSED TO EXTERIOR CONDITIONS SHALL BE GALVANIZED. 7. ALL STANDARD DOUBLE ANGLE CONNECTION SHALL BE IN ACCORDANCE WITH AISC STEEL CONSTRUCTION MANUAL, 13th EDITION & SHALL BE TYPE 2 FRAMING, UNO.

		BASE PLATE	SCHED	ULE							
MARK	PLATE SIZE					PLATE SIZE ANCHOR RODS TYPE DIMENSIONS					REM
		ANOHOICITODO		А	A B		D				
BP1	1"x14"x1'-2"	(4)3/4"Ø	-	5 1/2"	1 1/2"	5 1/2"	1 1/2"				
BP2	3/4"x11"x0'-11"	(5)3/4"Ø	II	4"	1 1/2"	4"	1 1/2"				
BP3	3/4"x10"x0'-10"	(4)3/4"Ø	Ι	3 1/2"	1 1/2"	3 1/2"	1 1/2"				
1) FASTEN	E NOTES: STEEL COLUMN TO TO	P OF CONCRETE US	ING (4)								
1) FASTEN F1554 36 A NUTS AT C ANCHOR F	E NOTES: STEEL COLUMN TO TO NCHOR RODS OF SIZE OLUMN BASE PLATE, A ODS AND 2" GROUT AT ODS WITH 6" PROJECT	P OF CONCRETE US INDICATED WITH DO ND 1 1/2" GROUT AT 1"Ø ANCHOR RODS, ION	ING (4) UBLE 3/4"Ø SET			075 1					
1) FASTEN F1554 36 A NUTS AT C ANCHOR F ANCHOR F	E NOTES: STEEL COLUMN TO TO NCHOR RODS OF SIZE OLUMN BASE PLATE, A ODS AND 2" GROUT AT ODS WITH 6" PROJECT	P OF CONCRETE US INDICATED WITH DO ND 1 1/2" GROUT AT 1"Ø ANCHOR RODS, ION.	ING (4) UBLE 3/4"Ø SET			STD N	— UT				
1) FASTEN F1554 36 A NUTS AT (ANCHOR F ANCHOR F	E NOTES: STEEL COLUMN TO TO NCHOR RODS OF SIZE OLUMN BASE PLATE, A ODS AND 2" GROUT AT ODS WITH 6" PROJECT	P OF CONCRETE US INDICATED WITH DO ND 1 1/2" GROUT AT ' 1"Ø ANCHOR RODS, ION.	ING (4) UBLE 3/4"Ø SET			STD N	— UT-\ 0				
1) FASTEN F1554 36 A NUTS AT C ANCHOR F ANCHOR F BASE PLAT	E NOTES: STEEL COLUMN TO TO NCHOR RODS OF SIZE COLUMN BASE PLATE, A ODS AND 2" GROUT AT ODS WITH 6" PROJECT	P OF CONCRETE US INDICATED WITH DO ND 1 1/2" GROUT AT 1"Ø ANCHOR RODS, ION.	ING (4) UBLE 3/4"Ø SET			STD N	 UT O*				

"L' TYPE I

	SPECIAL JOIST LOADING TABLE										
	REFERENCE		DIME	ENSION (FEET))		LOAD (Р		
WARK	PLAN END	S	а	b	с	d	W _{DL} *		WLL2	(LBS)₁	(1
28LH08SP1	NORTH	-	Ø	17	-	-	180	210	480	-	
14K3SP1	SOUTH	-	Ø	17	-	-	120	140	320	-	
16K3SP1	NORTH	-	Ø	14	-	-	120	140	265	-	
16K3SP2	NORTH	-	Ø	15	-	-	120	140	300	-	
28K7SP1	NORTH	-	Ø	13	-	-	120	140	240	-	
18K6SP1	EAST	-	Ø	15	-	-	120	140	300	-	
18K3SP1	EAST	-	Ø	15	-	-	120	140	300	-	

* JOIST SELF WEIGHT IS NOT INCULDED WITH THIS LOAD, AND MUST BE ADDED BY THE JOIST SUPPLIER



SPECIAL JOIST LOAD DIAGRAM

	CONTINUOUS FOOTING SCHEDULE								
	CONTINUOUS FOOTING DIMENSIONS								
MARK	WIDTH	THICKNESS	FOOTING REINFORCEMENT	REMARKS					
RW70	7'-0"	12"	(3) #5; B, CONT						
RW78	7'-8"	12"	(3) #5; B, CONT						
W18	1'-8"	12"	(2) #5; B, CONT						
W20	2'-0"	12"	(2) #5; B, CONT						
W30	W30 3'-0" 12" (3) #5; B, CONT								
W56	W56 5'-6" 16" (3) #5; B, CONT								

ISOLATED FOOTING SCHEDULE										
	ISOLATED FOOTING DIMENSIONS									
MARK	LENGTH	WIDTH	THICKNESS	FOOTING REINFORCEMENT	REMARKS					
F30	3'-0"	3'-0"	12"	(4) #5; B, EW						
F40	4'-0"	4'-0"	12"	(4) #5; B, EW						
F60	6'-0"	6'-0"	15"	(7) #5; B, EW						
F70	F70 7'-0" 7'-0" 15" (7) #5; B, EW									

NOTES:

1. B = BOTTOM, T = TOP, LW = LONG WAY, SW = SHORT WAY, EW = EACH WAY.

2. ALL REINFORCEMENT BARS TO BE BOTTOM BARS UNLESS NOTED OTHERWISE.

CONCRETE PIER SCHEDULE									
PIER DIMENSIONS PIER REINFORCEMENT									
MARK	Х	Y	TYPE	VERTICAL	TIES	REMARKS			
P1 16" 16" I (4)#6 #3@12"OC									
P2	P2 24" 24" II (8)#6 #3@12"OC								

1. PIERS TO BE CENTERED ON BUILDING GRID LINE(S), UNLESS NOTED OTHERWISE.

2. REFERENCE DETAIL 10/S800 FOR TYPICAL PIER INFORMATION.

3. CAST PIER MONOLITHICALLY WITH FOUNDATION WALL.

4. PIER TYPES:





Р (LBS)₂ -----



REMOVAL NOTES: REMOVE ALL EXISTING PLUMBING & FIRE PROTECTION PIPING. (INCLUDING PIPING IN WALLS BEING REMOVED, CHASES BEING REMOVED, OR ABOVE CEILINGS), FIXTURES, EQUIPMENT, DEVICES, ETC. WITHIN BUILDING. INCLUDING BUT NOT LIMITED TO THAT WHICH IS SHOWN. FIELD VERIFY LOCATION AND SIZE OF PIPING, FIXTURES, ETC.. AS REQUIRED. OTHER PIPING EXISTING, AND IS NOT SHOWN OR INDICATED TO BE RE-USED, SHALL BE REMOVED. DISPOSE OF ALL REMOVED MATERIAL OFF SITE. PIPING IN REMAINING WALLS OR CHASES CONNECTED TO PLUMBING FIXTURES OR EQUIPMENT REMAINING SHALL NOT BE REMOVED. SEE REMODELING PLAN FOR RECONNECTION. REMOVE THE LISTED PLUMBING FIXTURES OR EQUIPMENT AND RESPECTIVE WATER, WASTE, VENT, GAS, AND COMPRESSED AIR PIPING TO POINT OF RECONNECTION IN REMODELING OR TO MAIN. UNLESS PIPING IS BELOW FLOORS ON GRADE OR ABOVE NON-ACCESSIBLE CEILINGS, AND CAP/PLUG BELOW FLOOR, ABOVE CEILING AND/OR BEHIND REMAINING WALLS AS REQUIRED, OR AS OTHERWISE SHOWN OR INDICATED ON PLANS. PATCH TO MATCH EXISTING FINISHES, UNLESS OTHERWISE SHOWN OR INDICATED ON ARCHITECTURAL PLANS.

ALL FIXTURES AND RELATED EQUIPMENT (FAUCETS, DRAIN ASSEMBLIES, MIXING VALVES, CHAIR SUPPORTS, CONTROLS, ETC.) REMOVED SHALL BE FURNISHED TO THE OWNER OR DISPOSED OF AT THEIR DIRECTION. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO AVOID DAMAGE DURING FIXTURE REMOVAL, INCLUDING STALL TYPE URINALS. COORDINATE WITH THE OWNER.

	FIXTURE REMOVAL
TRIANGLE NUMBER	DESCRIPTION
1	SINK
2	FLOOR DRAIN
3	EMERGENCY EYE WASH
4	OVERFLOW STORM DRAIN
5	WALL HYDRANT
6	WALL CLEAN OUT
7	VALVE BOX
8	WATER COOLER

FD-2

HYD-1

LU-1

MB-

S-3

S-4

S-8

SD-1

SH-1

SH-2

SH-3

TD-1

TD-2

UR-1

UR-2

WB-1

WC-1

WC-2

Grand total: 167

	PLUMBING FIXTURE SCHEDULE			
		PI	PE CONNECTIO	NS
FIXTURE		SANITARY CONNECTOR	COLD WATER CONNECTOR	HOT WATER CONNECTOR
SYMBOL	DESCRIPTIION	DFU	CWFU	HWFU
BT-1	TRAINING ROOM SOAKING TUB	2	1	1
EWC-1	BI-LEVEL ELECTRIC WATER COOLER	0.5	0.25	0
FD-1	FLOOR DRAIN - 3" ROUND	3		
FD-2	FLOOR DRAIN - 3" SQUARE	3		
HYD-1	WALL HYDRANT - 3/4"	0	4	0
L-1	WALL HUNG CHINA LAVATORY	1	0.5	0.5
LU-1	LAUNDRY BOX	4	2	2
MB-1	MOP BASIN - 3"	3	2	2
S-1	1 COMPARTMENT STAINLESS STEEL DROP IN SINK	1	1	1
S-2	1 COMPARTMENT STAINLESS STEEL DROP IN SINK	1	1	1
S-3	3 COMPARTMENT STAINLESS STEEL (BY OTHERS)	3	1.5	1.5
S-4	WALL HUNG CHINA HAND WASH SINK	1	1.5	1.5
S-5	DISHWASHER TABLE WITH PRE RINSE SPRAYER AND DISPOSAL (BY OTHERS)	2	1.5	1.5
S-6	2 COMPARTMENT PREP SINK (BY OTHERS)	2	1.5	1.5
S-7	FOUR COMPARTMENT SINK WITH FAUCETS AND RINSE SPRAYER (BY OTHERS)	2	1.5	1.5
S-8	1 COMPARTMENT STAINLESS STEEL DROP IN SINK	1	1	1
S-9	3 COMPARTMENT STAINLESS STEEL (BY OTHERS)	2	1.5	1.5
SD-1	FLOOR DRAIN - 2" SQUARE	2		
SH-1	WALL HUNG MULTI USER SHOWER UNIT		2	2
SH-2	SHOWER	2	2	2
SH-3	SHOWER	2	2	2
TD-1	TRENCH DRAIN	3	0	0
TD-2	TRENCH DRAIN	3	0	0
UR-1	WALL HUNG URINAL	2	4	0
UR-2	WALL HUNG CHINA ADA HEIGHT URINAL	2	4	0
WB-1	WASHBASIN	1	1	1
WC-1	WALL HUNG CHINA WATER CLOSET	6	6.5	0
WC-2	WALL HUNG CHINA WATER CLOSET ADA HEIGHT	6	6.5	0

PLUMBING AND PIPING SYMBOLS

DEMO PIPING ACETYLENE COLD WATER COLD WATER-HARD COMPRESSED AIR HOT WATER HOT WATER RETURN NATURAL GAS OXYGEN PROPANE GAS STORM DRAIN/SEWER STORM DRAIN OVERFLOW SANITARY SEWER SANITARY VENT NEW CONNECTION

DISHWASHER TABLE WITH PRE F

FOUR COMPARTMENT SINK WITH

			PIPE SI	ZE		FIX	TURE UN	ITS
FIXTURE DESCRIPTION	COUNT	WASTE	VENT	CW	HW	DFU	CWFU	HWFU
TRAINING ROOM SOAKING TUB	2	2"	1 1/2"	1/2"	1/2"	4	2	2
BI-LEVEL ELECTRIC WATER COOLER	7	2"	1 1/2"	1/2"		3.5	1.75	0
FLOOR DRAIN - 3" ROUND	13	3"	1 1/2"			39	0	0
FLOOR DRAIN - 3" SQUARE	12	3"	2"			36	0	0
WALL HYDRANT - 3/4"	8			3/4"		0	32	0
WALL HUNG CHINA LAVATORY	19	1 1/2"	1 1/2"	1/2"	1/2"	19	9.5	9.5
LAUNDRY BOX	1					4	2	2
MOP BASIN - 3"	4	3"	1 1/2"	1/2"	1/2"	12	8	8
1 COMPARTMENT STAINLESS STEEL DROP IN SINK	3	1 1/2"	1 1/2"	1/2"	1/2"	3	3	3
1 COMPARTMENT STAINLESS STEEL DROP IN SINK	3	1 1/2"	1 1/2"	1/2"	1/2"	3	3	3
3 COMPARTMENT STAINLESS STEEL (BY OTHERS)	2	2"	1 1/2"	1/2"	1/2"	6	3	3
WALL HUNG CHINA HAND WASH SINK	3	2"	1 1/2"	1/2"	1/2"	3	4.5	4.5
TABLE WITH PRE RINSE SPRAYER AND DISPOSAL (BY OTHERS)	1	2"	1 1/2"	1/2"	1/2"	2	1.5	1.5
2 COMPARTMENT PREP SINK (BY OTHERS)	2	2"	1 1/2"	1/2"	1/2"	4	3	3
RTMENT SINK WITH FAUCETS AND RINSE SPRAYER (BY OTHERS)	1	2"	1 1/2"	1/2"	1/2"	2	1.5	1.5
1 COMPARTMENT STAINLESS STEEL DROP IN SINK	1	2"	1 1/2"	1/2"	1/2"	1	1	1
3 COMPARTMENT STAINLESS STEEL (BY OTHERS)	1	2"	1 1/2"	1/2"	1/2"	2	1.5	1.5
FLOOR DRAIN - 2" SQUARE	12	2"	2"			24	0	0
WALL HUNG MULTI USER SHOWER UNIT	10					0	20	20
SHOWER	4	0"	0"	1/2"	1/2"	8	8	8
SHOWER	5	0"	0"	1/2"	1/2"	10	10	10
TRENCH DRAIN	10					30	0	0
TRENCH DRAIN	2					6	0	0
WALL HUNG URINAL	4	2"	1 1/2"	3/4"		8	16	0
WALL HUNG CHINA ADA HEIGHT URINAL	3	2"	1 1/2"	3/4"		6	12	0
WASHBASIN	2	1 1/2"	1 1/2"	1/2"	1/2"	2	2	2
WALL HUNG CHINA WATER CLOSET	15	4"	2"	1"		90	97.5	0
WALL HUNG CHINA WATER CLOSET ADA HEIGHT	17	4"	2"	1"		102	110.5	0
						429.5	353.25	83.5

COMPRESSED AIR Α ABOVE FINISHED FLOOR AFF AFG ABOVE FINISHED GRADE BT BATHTUB CB CATCH BASIN CLEANOUT CO COLD SOFT WATER CS CSS CLINICAL/FLUSHING RIM SINK CW COLD WATER CWH COLD WATER HARD CWV CLEAR WATER VENT CWW CLEAR WATER WASTE DCV DOUBLE DETECTOR CHECK VALVE DI DEIONIZED WATER DSN DOWNSPOUT NOZZLE DW DISHWASHER EXISTING ELECTRICAL CONTRACTOR EC EEW EMERGENCY EYEWASH ESEW EMERGENCY SHOWER/EYEWASH FIRE PROTECTION WATER SERVICE FCO FLOOR CLEANOUT FPC FIRE PROTECTION CONTRACTOR NATURAL GAS GENERAL CONTRACTOR GC HB HOSE BIBB HVAC CONTRACTOR HC HOT WATER HW HWR HOT WATER RECIRCULATION IE INVERT ELEVATION LAVATORY LAUNDRY TRAY MA MEDICAL COMPRESSED AIR MAC MEDICAL AIR COMPRESSOR MB MOP BASIN MH MANHOLE MV MEDICAL VACUUM MVP MEDICAL VACUUM PUMP NITROGEN N NITROUS OXIDE NO NPC NON-POTABLE COLD WATER NPCS NON-POTABLE COLD SOFT WATER NPH NON-POTABLE HOT WATER NPR NON-POTABLE HOT RECIRULATION OX OXYGEN PC PLUMBING CONTRACTOR PRV PRESSURE REGULATING VALVE RO REVERSE OSMOSIS WATER RPBP REDUCED PRESSURE ZONE BACKFLOW PREVENTER S SINK SAN SANITARY SH SHOWER SPR SPRINKLER PIPING STORM ST TEMPERED WATER TMV THERMOSTATIC MIXING VALVE UR URINAL VENT VTR VENT THRU ROOF W DOMESTIC WATER SERVICE WAGD WASTE ANESTHETIC GAS DISPOSAL WC WATER CLOSET WCO WALL CLEAN OUT WF WASH FOUNTAIN WM WASHING MACHINE WALL BOX WH WALL HYDRANT WHA WATER HAMMER ARRESTOR WHR WATER HEATER WS WATER SOFTENER

YCO YARD CLEANOUT

ABBREVIATIONS

- - - -

DWV RISER DIAGRAM SEG B1

2

DWV RISER DIAGRAM SEG B

PIPING BELOW -FLOOR

DWV RISER DIAGRAM SEG E

Ч====== 1 1/2" ∨====== 3" VTR <u>S-3</u>

\3 DFU

3" VTR

DWV RISER DIAGRAM SEG F 7

WATER RISER DIAGRAM SEG A

WATER RISER DIAGRAM SEG E

								CONDESNI	NG BOII	ERS			
					INPUT	OUTPUT	NET RATING			THERMAL	PRESSURE RELIEF	OPERATIN	
UNIT NO.	SERVES	SERIES	MODEL	FUEL TYPE	MBH	MBH	MBH	HP (VOLT / PH)	MOD	EFF.	VALVE	G WEIGHT	REMARKS
B-4			EVCA-3000	GAS	3,000	2,910	2,530	2 HP (480V / 3PH)	7.0		30 PSI	3803 LBS	SELECTION BASED ON PRODUCT BY THERMAL SOLUTIONS
B-5			EVCA-3000	GAS	3,000	2,910	2,530	2 HP (480V / 3PH)	7.0		30 PSI	3803 LBS	SELECTION BASED ON PRODUCT BY THERMAL SOLUTIONS

					AIR DIST	RIBUTION DEVICES		
UNIT NO.	SYSEM CLASSIFICATION	SIZES	LOCATION	DAMPER	INLET SIZE	MODEL NUMBER	MOUNTING	COMMENTS
G-1	Supply Air	12"x12"	CEILING	-	6"Ø	SERIES PLQ 4-WAY	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-2	Supply Air	24"x24"	CEILING	-	6"Ø	SERIES PLQ 4-WAY	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-3	Supply Air	24"x24"	CEILING	-	8"Ø	SERIES PLQ 4-WAY	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-4	Supply Air	24"x24"	CEILING	-	10"Ø	SERIES PLQ 4-WAY	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-5	Supply Air	24"x24"	CEILING	-	12"Ø	SERIES PLQ 4-WAY	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-6	Supply Air	24' 24"	CEILING	-	14"Ø	SERIES PLQ 4-WAY	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-7	Supply Air	24"x24"	CEILING	-	8"Ø	5000 LAMINAR	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-9	Supply Air	48 x1"~	CEILING	-	12"Ø	DFL-10-1	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-10	Supply Air	48"x1"	CEILING	-	8"Ø	DFL-10-1	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-11	Supply Air A03	48"x1.5"	CEILING	-	10"Ø	DFL-15-1	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-12	Supply Air	24"x2.5"	CEILING	-	10"Ø	DFL-25-1	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-13	Supply Air	18"Ø	CEILING/DUCT	RADIAL	8"Ø	5MR2	SCREW/DUCT	SELECTION BASED ON PRODUCT BY KRUEGER
G-14	Supply Air	31-1/2"Ø	CEILING/DUCT	RADIAL	14"Ø	5RM2	SCREW/DUCT	SELECTION BASED ON PRODUCT BY KRUEGER
G-15	Exhaust Air	8"x8"	CEILING	-	6"x6"	S580H 3/4" FIXED DEFLECT 35 DEGREE DEFLECTION	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-16	Supply Air	10"x6"	DUCT MOUNTED	-	DUCT	5GMGDR	DUCT MOUNTED	SELECTION BASED ON PRODUCT BY KRUEGER
G-17	Supply Air	30"x12"	DUCT MOUNTED	-	DUCT DIAMETER	5GMGDR	DUCT MOUNTED	SELECTION BASED ON PRODUCT BY KRUEGER
G-18	Supply Air	10"x8"	SIDEWALL	OBD	8"x6"	580H 3/4" SINGLE DEFLECT	SCREW/DUCT	SELECTION BASED ON PRODUCT BY KRUEGER
G-19	Supply Air	20"x8"	DUCT MOUNTED	-	DUCT DIAMETER	5GMGDR	DUCT MOUNTED	SELECTION BASED ON PRODUCT BY KRUEGER
G-20	Supply Air	12"x8"	DUCT MOUNTED	-	DUCT DIAMETER	5GMGDR	DUCT MOUNTED	SELECTION BASED ON PRODUCT BY KRUEGER
G-21	Supply Air	20"x8"	SIDEWALL	-	18"x6"	DMGDR	SCREW	SELECTION BASED ON PRODUCT BY KRUEGER
G-22	Supply Air	14"x12"	SIDEWALL	OBD	12"x10"	580H 3/4" SINGLE DEFLECT	SCREW/DUCT	SELECTION BASED ON PRODUCT BY KRUEGER
G-23	Supply Air	10"x6"	SIDEWALL	OBD	8"x4"	580H 3/4" SINGLE DEFLECT	SCREW/DUCT	SELECTION BASED ON PRODUCT BY KRUEGER
G-24	Supply Air	60"x2"	CEILING	-	10"Ø	DFL-20-1	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-27	Return Air	24"x6"	CEILING	-	22"x4"	S80H 3/4" 35 DEGREE FIXED DEFLECT	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-28	Return Air	24"x12"	CEILING	-		S80H 3/4" 35 DEGREE FIXED DEFLECT	LAY-IN / SCREW	 SELECTION BASED ON PRODUCT BY KRUEGER COORDINATE WITH FLOOR PLAN FOR SURFACE MOUNT OR LAY-IN CEILING.
G-29	Return Air	24"x24"	CEILING	-	22"x22"	S80H 3/4" 35 DEGREE FIXED DEFLECT	LAY-IN / SCREW	 SELECTION BASED ON PRODUCT BY KRUEGER COORDINATE WITH FLOOR PLAN FOR SURFACE MOUNT OR LAY-IN CEILING.
G-32	Return Air	62"x28"	SIDEWALL	-	60"x26"	S480H 3/4" 35 DEGREE FIXED DEFLECT HEAVY DUTY	SCREW	SELECTION BASED ON PRODUCT BY KRUEGER
G-33	Return Air	50"x28"	SIDEWALL	-	48"x26"	S480H 3/4" 35 DEGREE FIXED DEFLECT HEAVY DUTY	SCREW	SELECTION BASED ON PRODUCT BY KRUEGER
G-34	Return Air	10"x6"	DUCT MOUNTED	-	-	S580H	DUCT MOUNTED	SELECTION BASED ON PRODUCT BY KRUEGER
G-35	Return Air	22"x12"	DUCT MOUNTED	-	20"x10"	S580H 3/4" FIXED DEFLECT	DUCT MOUNTED	SELECTION BASED ON PRODUCT BY KRUEGER
G-37	Return Air	14"x12"	SIDEWALL	-	12"x10"	S480H 3/4" 35 DEGREE FIXED DEFLECT HEAVY DUTY	SCREW	SELECTION BASED ON PRODUCT BY KRUEGER
G-38	Return Air	48"x24"	CEILING	-	46"x22"	S80H 3/4" 35 DEGREE FIXED DEFLECT	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-39	Return Air	32"x30"	SIDEWALL	-	30"x28"	S480H 3/4" 35 DEGREE FIXED DEFLECT HEAVY DUTY	SCREW	SELECTION BASED ON PRODUCT BY KRUEGER
G-40	Return Air	32"x60"	SIDEWALL	-	30"x58"	S480H 3/4" 35 DEGREE FIXED DEFLECT HEAVY DUTY	SCREW	SELECTION BASED ON PRODUCT BY KRUEGER
G-43	Return Air	44"x30"	SIDEWALL	-	42"x28"	S480H 3/4" 35 DEGREE FIXED DEFLECT HEAVY DUTY	SCREW	 SELELCTION BASED ON PRODUCT BY KRUEGER. GRILLE TO INCLUDE 1" FILTER FRAME.
G-44	Exhaust Air	24"x24"	CEILING	-	22"x22"	S80H	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-45	Exhaust Air	8"x8"	CEILING	-	6"x6"	S80H	LAY-IN	SELECTION BASED ON PRODUCT BY KRUEGER
G-46	Exhaust Air	8"x6"	DUCT MOUNTED	-	6"x4"	S80H 3/4" FIXED DEFLECT	DUCT MOUNTED	SELECTION BASED ON PRODUCT BY KRUEGER
G-47	Supply Air	13-1/2"Ø	CEILING/DUCT	RADIAL	6"Ø	5MR2	SCREW/DUCT	SELECTION BASED ON PRODUCT BY KRUEGER

					VAV BO	OXES (HOT WA	TER REHEA	. T)							
											COIL SI	ZING AND CAPACIT	Y DATA		
Mark	SERVES ROOM	MODEL NO.	MAX CFM	MINIMUM COOLING CFM	MINIMUM HEATING CFM	APD COOLINIG AIRFLOW (IN H20)	INLET DUCT SIZE	NC LEVEL (BOX) RADIATED	COIL TYPE	MAX GPM	COIL PRESSURE DROP	ENTERING HOT WATER TEMPERATURE	ENTERING AIR TEMPERATURE (DRY BULB)	TOTAL MBH INSTALLED	REMARKS
VAV-1	LOBBY A101	VCWF14	2315	690	1100	0.45	14"Ø	30	2 ROW	3.88	0.64 FT H20	140°F	55°F	44.49	
VAV-2	CONTROL A119	VCWF06	200	60	100	0.07	6"Ø	24	1 ROW	0.5	0.51 FT H20	140°F	55°F	4.00	1
VAV-3	REFER TO PLAN	VCWF08	890	260	200	0.39	8"Ø	30	2 ROW	0.75	0.05 FT H20	140°F	55°F	8.00	
VAV-4	STAGE A122	VCWF14	2625	780	780	0.55	14"Ø	30	2 ROW	4.11	0.71 FT H20	140°F	55°F	38.38	
VAV-5	REFER TO PLAN	VCWF10	1190	390	390	0.5	10"Ø	30	2 ROW	0.90	0.15 FT H20	140°F	55°F	14.10	
VAV-6	REFER TO PLAN	VCWF08	750	250	150	0.5	8"Ø	27	1 ROW	0.75	1.3 7FT H20	140°F	55°F	6.67	
VAV-7	BAND A134	VCWF12	1920	575	575	0.73	12"Ø	30	2 ROW	1.37	0.12 FT H20	140°F	55°F	20.10	
VAV-8	BAND A134	VCWF12	1920	575	575	0.73	12"Ø	30	2 ROW	1.37	0.12 FT H20	140°F	55°F	20.10	
VAV-9	REFER TO PLAN	VCWF08	280	105	105	0.05	8"Ø	19	1 ROW	0.50	0.68 FT H20	140°F	55°F	4.72	
VAV-10	REFER TO PLAN	VCWF06	320	100	100	0.110	6"Ø	26	1 ROW	0.50	0.51 FT H20	140°F	55°F	4.00	
VAV-11	COMMUNICATIONS E111	VCWF10	1025	310	310	0.39	10"Ø	27	2 ROW	1.2	0.26 FT H20	140°F	55°F	14.87	
VAV-12	REFER TO PLAN	VCWF10	1070	320	550	0.63	10"Ø	29	3 ROW	1.2	0.35 FT H20	140°F	55°F	22.25	
VAV-13	DESIGN & INNOVATION E105	VCWF12	1450	440	440	0.26	12"Ø	27	1 ROW	0.95	0.60 FT H20	140°F	55°F	11.23	
VAV-14	CORRIDOR E101	VCWF06	200	60	100	0.07	6"Ø	24	1 ROW	0.50	0.51 FT H20	140°F	55°F	3.99	
VAV-15	REFER TO PLAN	VCWF10	1070	320	320	0.42	10"Ø	29	2 ROW	0.77	0.11 FT H20	140°F	55°F	12.50	
VAV-16	REFER TO PLAN	VCWF08	810	250	250	0.58	8"Ø	29	2 ROW	0.95	0.08 FT H20	140°F	55°F	9.76	

UH-1 A105 1 24.8 HORIZONTAL S-A25 580 140°F 20°F 2.5 60°F 25 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-2 A104 1 8.0 HORIZONTAL S-A08 245 140°F 20°F 0.80 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-3 A125 1 18.4 HORIZONTAL S-A18 500 140°F 20°F 1.9 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-4 A124 1 35.9 HORIZONTAL S-A36 850 140°F 20°F 3.6 60°F 1/20 HP T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-5 A124 1 35.9 HORIZONTAL S-A36 850 140°F 20°F 3.6 60°F 1/20 HP T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-6 A200 1 8.0 HORIZONTAL S-A36 245 140°F 20°F </th <th>Mark</th> <th>ROOM NUMBER</th> <th>QUANTITY</th> <th>INSTALLED MBH</th> <th>TYPE</th> <th>MODEL NUMBER</th> <th>LOUVER FIN. DIFF.</th> <th>CFM</th> <th>ENTERING WATER TEMPERATURE (°F)</th> <th>WATER TEMPERATURE DROP</th> <th>GPM</th> <th>ENTERING AIR TEMPERATURE (DRY BULB)</th> <th>HORSEPOWER MOTOR / VOLT/PHASE</th> <th>TEMPERATURE CONTROL</th> <th>REMARKS</th>	Mark	ROOM NUMBER	QUANTITY	INSTALLED MBH	TYPE	MODEL NUMBER	LOUVER FIN. DIFF.	CFM	ENTERING WATER TEMPERATURE (°F)	WATER TEMPERATURE DROP	GPM	ENTERING AIR TEMPERATURE (DRY BULB)	HORSEPOWER MOTOR / VOLT/PHASE	TEMPERATURE CONTROL	REMARKS
UH-2 A104 1 8.0 HORIZONTAL S-A08 245 140°F 20°F 0.80 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-3 A125 1 18.4 HORIZONTAL S-A18 500 140°F 20°F 1.9 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-4 A124 1 35.9 HORIZONTAL S-A36 850 140°F 20°F 3.6 60°F 1/20 HP T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-5 A124 1 35.9 HORIZONTAL S-A36 850 140°F 20°F 3.6 60°F 1/20 HP T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-6 A200 1 8.0 HORIZONTAL S-A38 500 140°F 20°F 0.80 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-7 A201 1 8.4 HORIZONTAL S-A38 500 140°F 20°F 0.80 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. </td <td>UH-1</td> <td>A105</td> <td>1</td> <td>24.8</td> <td>HORIZONTAL</td> <td>S-A25</td> <td></td> <td>580</td> <td>140°F</td> <td>20°F</td> <td>2.5</td> <td>60°F</td> <td>25 WATTS</td> <td>T-STAT</td> <td>SELECTION BASED ON PRODUCT BY TRANE.</td>	UH-1	A105	1	24.8	HORIZONTAL	S-A25		580	140°F	20°F	2.5	60°F	25 WATTS	T-STAT	SELECTION BASED ON PRODUCT BY TRANE.
UH-3 A125 1 18.4 HORIZONTAL S-A18 500 140°F 20°F 1.9 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-4 A124 1 35.9 HORIZONTAL S-A36 850 140°F 20°F 3.6 60°F 1/20 HP T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-5 A124 1 35.9 HORIZONTAL S-A36 850 140°F 20°F 3.6 60°F 1/20 HP T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-6 A200 1 8.0 HORIZONTAL S-A36 850 140°F 20°F 0.80 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-7 A201 1 18.4 HORIZONTAL S-A18 500 140°F 20°F 1.9 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-7 A201 1 18.4 HORIZONTAL S-A18 500 140°F 20°F 0.9 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. </td <td>UH-2</td> <td>A104</td> <td>1</td> <td>8.0</td> <td>HORIZONTAL</td> <td>S-A08</td> <td></td> <td>245</td> <td>140°F</td> <td>20°F</td> <td>0.80</td> <td>60°F</td> <td>16 WATTS</td> <td>T-STAT</td> <td>SELECTION BASED ON PRODUCT BY TRANE.</td>	UH-2	A104	1	8.0	HORIZONTAL	S-A08		245	140°F	20°F	0.80	60°F	16 WATTS	T-STAT	SELECTION BASED ON PRODUCT BY TRANE.
UH-4A124135.9HORIZONTALS-A36850140°F $20°F$ 3.6 $60°F$ $1/20$ HPT-STATSELECTION BASED ON PRODUCT BY TRANE.UH-5A124135.9HORIZONTALS-A36850140°F $20°F$ 3.6 $60°F$ $1/20$ HPT-STATSELECTION BASED ON PRODUCT BY TRANE.UH-6A20018.0HORIZONTALS-A08245140°F $20°F$ 0.80 $60°F$ 16 WATTST-STATSELECTION BASED ON PRODUCT BY TRANE.UH-7A201118.4HORIZONTALS-A18500140°F $20°F$ 1.9 $60°F$ 16 WATTST-STATSELECTION BASED ON PRODUCT BY TRANE.UH-7A201118.4HORIZONTALS-A18500140°F $20°F$ 1.9 $60°F$ 16 WATTST-STATSELECTION BASED ON PRODUCT BY TRANE.UH-9D104124.8HORIZONTALS-A26580140°F $20°F$ $2.9°F$ 2.9	UH-3	A125	1	18.4	HORIZONTAL	S-A18		500	140°F	20°F	1.9	60°F	16 WATTS	T-STAT	SELECTION BASED ON PRODUCT BY TRANE.
UH-5A124135.9HORIZONTALS-A36850140°F $20°F$ 3.6 $60°F$ $1/20 HP$ T-STATSELECTION BASED ON PRODUCT BY TRANE.UH-6A20018.0HORIZONTALS-A08245 $140°F$ $20°F$ 0.80 $60°F$ 16 WATTST-STATSELECTION BASED ON PRODUCT BY TRANE.UH-7A201118.4HORIZONTALS-A18500 $140°F$ $20°F$ 1.9 $60°F$ 16 WATTST-STATSELECTION BASED ON PRODUCT BY TRANE.UH-7A20118.0NOBLONTALS-A18500 $140°F$ $20°F$ $0.9°F$ 16 WATTST-STATSELECTION BASED ON PRODUCT BY TRANE.UH-9D104124.8HORIZONTALS-A28580 $140°F$ $20°F$ $2.9°F$ $2.9°F$ $2.9°F$ $2.9°FF$ $2.5°FF$ $2.5°FFF$ $2.5°FFF$ $2.5°FFFF$ $2.5°FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF$	UH-4	A124	1	35.9	HORIZONTAL	S-A36		850	140°F	20°F	3.6	60°F	1/20 HP	T-STAT	SELECTION BASED ON PRODUCT BY TRANE.
UH-6A20018.0HORIZONTALS-A08245140°F20°F0.8060°F16 WATTST-STATSELECTION BASED ON PRODUCT BY TRANE.UH-7A201118.4HORIZONTALS-A18500140°F20°F1.960°F16 WATTST-STATSELECTION BASED ON PRODUCT BY TRANE.UH-9P10518.0NOPLONTALS-A18500140°F20°F0.060°F16 WATTST-STATSELECTION BASED ON PRODUCT BY TRANE.UH-9D104124.8HORIZONTALS-A28580140°F20°F2.560°F25 WATTST-STATSELECTION BASED ON PRODUCT BY TRANE.UH-10AHU-1 VESTIBULE18.0HORIZONTALS-A08245140°F20°F0.8060°F16 WATTST-STAT1. SELECTION BASED ON PRODUCT BY TRANE.UH-11AHU-1 VESTIBULE18.0HORIZONTALS-A08245140°F20°F0.8060°F16 WATTST-STAT1. SELECTION BASED ON PRODUCT BY TRANE.UH-11AHU-1 VESTIBULE18.0HORIZONTALS-A08245140°F20°F0.8060°F16 WATTST-STAT1. SELECTION BASED ON PRODUCT BY TRANE.UH-11AHU-218.0HORIZONTALS-A08245140°F20°F0.8060°F16 WATTST-STAT1. SELECTION BASED ON PRODUCT BY TRANE.UH-11VENTIONLE18.0HORIZONTALS-A08245140°F2	UH-5	A124	1	35.9	HORIZONTAL	S-A36		850	140°F	20°F	3.6	60°F	1/20 HP	T-STAT	SELECTION BASED ON PRODUCT BY TRANE.
UH-7 A201 1 18.4 HORIZONTAL S-A18 500 140°F 20°F 1.9 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-9 D104 1 24.8 HORIZONTAL S-A28 580 140°F 20°F 2.3 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-9 D104 1 24.8 HORIZONTAL S-A28 580 140°F 20°F 2.3 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-10 AHU-1 1 8.0 HORIZONTAL S-A08 245 140°F 20°F 0.80 60°F 16 WATTS T-STAT SELECTION BASED ON PRODUCT BY TRANE. UH-10 AHU-1 1 8.0 HORIZONTAL S-A08 245 140°F 20°F 0.80 60°F 16 WATTS T-STAT 1. SELECTION BASED ON PRODUCT BY TRANE. UH-11 AHU-2 1 8.0 HORIZONTAL S-A08 245 140°F 20°F 0.80 60°F 16 WATTS T-STAT 1. SELECTION BASED ON PRODUCT BY TRAN	UH-6	A200	1	8.0	HORIZONTAL	S-A08		245	140°F	20°F	0.80	60°F	16 WATTS	T-STAT	SELECTION BASED ON PRODUCT BY TRANE.
$UH-9$ $V = D104$ $I = 1$ 24.8 HORIZONTAL $S-A25$ $V = 580$ $I = 40^{\circ}F$ $2.0^{\circ}F$ 2.5° $60^{\circ}F$ $I = 51AT$ Selection Based on PRODUCT BY TRANE. $UH-10$ $AHU-1$ VESTIBULE18.0HORIZONTALS-A08245 $140^{\circ}F$ $20^{\circ}F$ 0.80 $60^{\circ}F$ 16 WATTS $T-STAT$ $S-STAT$ $S-STATLED in PRODUCT BY TRANE.UH-11AHU-2VESTIBULE18.0HORIZONTALS-A08245140^{\circ}F20^{\circ}F0.8060^{\circ}F16 WATTST-STATS-STATLED in VESTIBULE OF CUSTORUH-11AHU-2VESTIBULE18.0HORIZONTALS-A08245140^{\circ}F20^{\circ}F0.8060^{\circ}F16 WATTST-STAT1.SELECTION BASED ON PRODUCT BY TRANE.UH-11AHU-2VESTIBULE18.0HORIZONTALS-A08245140^{\circ}F20^{\circ}F0.8060^{\circ}F16 WATTST-STAT1.SELECTION BASED ON PRODUCT BY TRANE.UH-11AHU-2VESTIBULE18.0HORIZONTALS-A08245140^{\circ}F20^{\circ}F0.8060^{\circ}F16 WATTST-STAT1.SELECTION BASED ON PRODUCT BY TRANE.$	UH-7	A201		18.4 8.0		S-A18	\sim	245		20°F	1.9 0.00		16 WATTS		SELECTION BASED ON PRODUCT BY TRANE. SELECTION BASED ON PRODUCT BY TRANE.
UH-11 AHU-2 1 8.0 HORIZONTAL S-A08 245 140°F 20°F 0.80 60°F 16 WATTS T-STAT 1. SELECTION BASED ON PRODUCT BY TRANE.	UH-10	AHU-1 VESTIBULE	1	8.0	HORIZONTAL	S-A25 S-A08		245	140°F	20°F	0.80	60°F	16 WATTS	T-STAT	 3. SELECTION BASED ON PRODUCT BY TRANE. 1. SELECTION BASED ON PRODUCT BY TRANE. 2. UNIT TO BE INSTALLED IN VESTIBULE OF CUSTOM AHU HWS&R FROM MAIN PIPING TO AIR HANDLING UNIT.
VESTIBULE 2. UNIT TO BE INSTALLED IN VESTIBULE OF COST HWS&R FROM MAIN PIPING TO AIR HANDLING UNIT	UH-11	AHU-2 VESTIBULE	1	8.0	HORIZONTAL	S-A08		245	140°F	20°F	0.80	60°F	16 WATTS	T-STAT	 SELECTION BASED ON PRODUCT BY TRANE. UNIT TO BE INSTALLED IN VESTIBULE OF CUSTOM AHU HWS&R FROM MAIN PIPING TO AIR HANDLING UNIT.

	ROOM					FULL	RECESS	CAB	INET	FRONT PANEL				
UNIT NO.	NUMBER	QUANTITY	MBH	MODEL	SIZE	DEPTH	DEPTH	HEIGHT	LENGTH	SIZE	GPM	CFM	HP (VOLT/PHASE)	COMMENTS
CUH-1	C106	1	11.31	FFFB040	040	10.313"		27"	38.313"		0.5	360	0.13 HP (208V/1PH)	 SELECTION IS BASED ON PRODUCT BY TRANE. UNIT SHALL BE WALL HUNG
CUH-2	C100	1	11.31	FFFB040	040	10.313"		27"	38.313"		0.5	360	0.13 HP (208V/1PH)	 SELECTION IS BASED ON PRODUCT BY TRANE. UNIT SHALL BE WALL HUNG.
CUH-3	A100	1	14.57	FFEB060	060	11"		30"	47"		0.6	425	0.22 HP (208V/1PH)	 SELECTION IS BASED ON PRODUCT BY TRANE. UNIT SHALL BE RECESSED IN CEILING.
CUH-4	A100	1	14.57	FFEB060	060	11"		30"	47"		0.6	425	0.22 HP (208V/1PH)	 SELECTION IS BASED ON PRODUCT BY TRANE. UNIT SHALL BE RECESSED IN CEILING.
CUH-5	A128	1	10.29	FFEB030	030	11"		30"	33"		0.5	275	0.13 HP (208V/1PH)	 SELECTION IS BASED ON PRODUCT BY TRANE. UNIT SHALL BE RECESSED IN CEILING.
CUH-6	E100	1	10.86	FFFB030	030	10.313"		27"	33.313"		0.5	318	0.13 HP (208V/1PH)	 SELECTION IS BASED ON PRODUCT BY TRANE. UNIT SHALL BE WALL MOUNTED.

						LC	DUVERS						
			FREE AREA	MAX. STATIC	MODEL	TYPE OF		CONSTRUC	TION				
Mark	TYPE	SIZE	(SQ. FT)	PRESSURE	NUMBER	BLADE	GALVANIZED STEEL	ALUMINUM	OTHER	FRAME DEPTH	BIRDSCREEN	SERVES	REMARKS
L-1	INTAKE	114"x72"	30.28	0.02	EHM-601	DRAINABLE		YES		6"	YES	AHU-3	KYNAR CUSTOM COLOR
L-2	INTAKE	56"x34"	9.41	0.04	EHM-601	DRAINABLE		YES		6"	YES	MAU-2	KYNAR CUSTOM COLOR
L-3	INTAKE	40"x22"	2.28	0.04	EHM-601	DRAINABLE		YES		6"	YES	MAU-3	KYNAR CUSTOM COLOR
L-4	INTAKE	84"x36"	9.41	0.04	EHM-601	DRAINABLE		YES		6"	YES	AHU-5	KYNAR CUSTOM COLOR

					PUMPS					
			۲`	YPE				0.77	HORSEPOWE	
UNIT NO.	LOCATION	SERVES	INLINE	FLOOR MOUNTED	MODEL	GPM	TOTAL HEAD	SIZE IMPELLER	VOLT/PHASE	COMMENTS
CWP-1	EXIST MECH. ROOM	CWS		YES	1510	900 GPM	180	8"	75 HP (460V/3PH)	
CWP-2	EXIST MECH. ROOM	CWS		YES	1510	900 GPM	180	8"	75 HP (460V/3PH)	
HWP-1	EXIST MECH. ROOM	HWS		YES	1510	783 GPM	105	11.375"	30 HP (460V/3PH)	
HWP-2	EXIST MECH. ROOM	HWS		YES	1510	783 GPM	105	11.375"	30 HP (460V/3PH)	

						EXHAUS1	T HOODS		
UNIT NO.	SERVES SYSTEM	TYPE	Model	CFM	THROAT SIZE	HOOD SIZE WxD	HEIGHT	HOOD CONSTRUCTI ON	COMMENTS
H-1	FOUNDRY FURNACE AREA	OVERHEA D HOOD	STYLE A	200	8"Ø	5'x5'	40"	STAINLESS STEEL	 SELECTION BASED ON PRODUCT BY KEES. INCLUDE BLAST GATE FOR DISCHARGE DUCT. MECHANICAL CONTRACTOR SHALL COORDINATE AND VERIFY FINAL LOCATION & SIZE OF FOUNDRY.
H-2	WELD TABLE	OVERHEA D HOOD	STYLE A	100	6"Ø	5'x5'	40"	STAINLESS STEEL	 SELECTION BASED ON PRODUCT BY KEES. INCLUDE BLAST GATE FOR DISCHARGE DUCT. MECHANICAL CONTRACTOR SHALL COORDINATE AND VERIFY FINAL LOCATION OF TABLE WITH OWNER ALONG WITH WELD TABLE DIMENSION.
H-3	PLASMA / OFC	OVERHEA D HOOD	STYLE A	100	6"Ø	5'x5'	40"	STAINLESS STEEL	 SELECTION BASED ON PRODUCT BY KEES. INCLUDE BLAST GATE FOR DISCHARGE DUCT. MECHANICAL CONTRACTOR SHALL COORDINATE AND VERIFY FINAL LOCATIONS OF EQUIPMENT WITH OWNER ALONG WITH DIMENSIONS.
H-4	CNC PLASMA	OVERHEA D HOOD	STYLE A	100	6"Ø	6'x4'	40"	STAINLESS STEEL	 SELECTION BASED ON PRODUCT BY KEES. INCLUDE BLAST GATE FOR DISCHARGE DUCT. MECHANICAL CONTRACTOR SHALL COORDINATE AND VERIFY FINAL LOCATIONS OF EQUIPMENT WITH OWNER ALONG WITH DIMENSIONS.
H-5	SHOP TABLE	OVERHEA D HOOD	STYLE A	200	6"Ø	6'x6'	40"	STAINLESS STEEL	 SELECTION BASED ON PRODUCT BY KEES. INCLUDE BLAST GATE FOR DISCHARGE DUCT. MECHANICAL CONTRACTOR SHALL COORDINATE AND VERIFY FINAL LOCATIONS OF TABLES WITH OWNER ALONG WITH WORK TABLE DIMENSIONS.
H-6	SHOP TABLE	OVERHEA D HOOD	STYLE A	200	6"Ø	6'x6'	40"	STAINLESS STEEL	 SELECTION BASED ON PRODUCT BY KEES. INCLUDE BLAST GATE FOR DISCHARGE DUCT. MECHANICAL CONTRACTOR SHALL COORDINATE AND VERIFY FINAL LOCATIONS OF TABLES WITH OWNER ALONG WITH WORK TABLE DIMENSIONS.

 FIRST FLOOR LIGHTING PLAN SEGMENT 'B'

 1/8" = 1'-0"

 PROJECT NORTH

0	GENERAL NOTES :
Α	PROVIDE GROUND CONDUCTOR IN ALL RACEWAYS.
В	PROVIDE FIRE STOPPING AND SMOKE DRAFT STOPPING AT ALL CONDUIT PENETRATIONS. REFER TO SPECIFICATION SECTION 07 84 00 FOR FIRE RESISTIVE AND NON-FIRE RESISTIVE ASSEMBLIES.
С	THE WORD "PROVIDE" MEANS TO FURNISH AND INSTALL
D	CIRCUIT NUMBERS INDICATED ON DRAWINGS ARE FOR REFERENCE. ELECTRICAL CONTRACTOR TO ARRANGE BRANCH CIRCUITS AS REQUIRED FOR WIRING AND LOAD BALANCING. INDICATE ACTUAL PANELBOARD CIRCUIT NUMBERS ON AS- BUILT DRAWINGS.
E	SEE ARCHITECTURAL SHEETS FOR RELEVANT INTERIOR ELEVATIONS, SECTIONS AND MISCELLANEOUS BUILDING INFORMATION REQUIRED TO COMPLETE THE ELECTRICAL INSTALLATION.
F	NOTE: SEE SHEET E600 FOR LOW VOLTAGE LIGHTING RELAY CONTROL SCHEDULES.
G	CONNECT BATTERY EXIT SIGNS AND EGRESS LIGHTING TO ADJACENT EMERGENCY LIGHTING CIRCUIT AHEAD OF ALL SWITCHING.
н	ALL RECESSED FIXTURES WHICH PENETRATE THE BUILDING ENVELOPE (FROM HEATED SPACE TO A NON HEATED SPACE) SHALL BE PROPERLY SEALED OR BOXED OUT TO ELIMINATE AIR PASSING THROUGH TO ANOTHER SPACE.
	PROVIDE AUXILIARY RELAY FOR ALL OCCUPANCY SENSOR FOR VENTILATION/EXHAUST FANS. REFER TO MECHANICAL.
J	PROVIDE A CONTINUOUS LENS FOR ALL RECTANGULAR FIXTURES.
κ	ALL OCCUPANCY/VACANCY SENSORS SHOWN TO BE TYPE 'D' UNLESS INDICATED OTHERWISE.
L	PROVIDE BODINE #B50ST EMERGENCY BATTERY FOR FIXTURES INDICATED TO BE ON EMERGENCY; PROVIDE BODINE #B74CST FOR DOWNLIGHTS.
М	GENERALLY ALL LIGHTING IS CONTROLLED VIA A ROOM CONTROLLER AND WITH DIMMING.
N	STORAGE ROOMS , ETC. ARE CONTROLLED VIA ROOM CONTROLLER WITH ON/OFF SWITCHING.
0	BATHROOMS AND LOCKER ROOMS ARE TO BE CONTROLLED VIA OCCUPANCY SENSOR .
Ρ	CORRIDOR LIGHTING, EXTERIOR PARKING LOT LIGHTS, BOLLARDS AND BUILDING MOUNTED LIGHTS TO BE CONTROLLED THROUGH A LOW VOLTAGE LIGHTING RELAY PANEL.

KEY NOTES LIGHTING (#)

 ROOM LIGHTING IS CONTROLLED ON AND OFF BY FUNCTION OF OCCUPANCY SENSOR.
 LIGHT FIXTURE TO BE ON 24 HOURS, UNSWITCHED.
 PROVIDE REMOTE LIGHTING HEAD FOR EXTERIOR EGRESS LIGHT, CIRCUIT TO ADJACENT EXIT LIGHT.

Y ED. R IT.




ROOM CONTROLLER WIRING NTS

3







1/8" = 1'-0"

KEY NOTES LIGHTING (#)

ROOM LIGHTING IS CONTROLLED ON AND OFF BY FUNCTION OF OCCUPANCY SENSOR. LIGHT FIXTURE TO BE ON 24 HOURS, UNSWITCHED. PROVIDE REMOTE LIGHTING HEAD FOR EXTERIOR EGRESS LIGHT, CIRCUIT TO ADJACENT EXIT LIGHT.

GENERAL NOTES

- A PROVIDE GROUND CONDUCTOR IN ALL RACEWAYS. B PROVIDE FIRE STOPPING AND SMOKE DRAFT STOPPING AT ALL CONDUIT PENETRATIONS. REFER TO SPECIFICATION SECTION 07 84 00 FOR FIRE RESISTIVE AND NON-FIRE RESISTIVE ASSEMBLIES.
- \mathbb{C} THE WORD "PROVIDE" MEANS TO FURNISH AND INSTALL CIRCUIT NUMBERS INDICATED ON DRAWINGS ARE FOR REFERENCE. ELECTRICAL CONTRACTOR TO ARRANGE BRANCH CIRCUITS AS REQUIRED FOR WIRING AND LOAD BALANCING. INDICATE ACTUAL PANELBOARD CIRCUIT NUMBERS ON AS-BUILT DRAWINGS.
- SEE ARCHITECTURAL SHEETS FOR RELEVANT INTERIOR ELEVATIONS, SECTIONS AND MISCELLANEOUS BUILDING INFORMATION REQUIRED TO COMPLETE THE ELECTRICAL INSTALLATION.
- NOTE: SEE SHEET E600 FOR LOW VOLTAGE LIGHTING RELAY CONTROL SCHEDULES.
- CONNECT BATTERY EXIT SIGNS AND EGRESS LIGHTING TO ADJACENT EMERGENCY LIGHTING CIRCUIT AHEAD OF ALL SWITCHING. ALL RECESSED FIXTURES WHICH PENETRATE THE BUILDING
- ENVELOPE (FROM HEATED SPACE TO A NON HEATED SPACE) SHALL BE PROPERLY SEALED OR BOXED OUT TO ELIMINATE AIR PASSING THROUGH TO ANOTHER SPACE.
- PROVIDE AUXILIARY RELAY FOR ALL OCCUPANCY SENSOR FOR VENTILATION/EXHAUST FANS. REFER TO MECHANICAL. PROVIDE A CONTINUOUS LENS FOR ALL RECTANGULAR
- FIXTURES. K ALL OCCUPANCY/VACANCY SENSORS SHOWN TO BE TYPE 'D' UNLESS INDICATED OTHERWISE.
- PROVIDE BODINE #B50ST EMERGENCY BATTERY FOR FIXTURES INDICATED TO BE ON EMERGENCY; PROVIDE
- BODINE #B74CST FOR DOWNLIGHTS. GENERALLY ALL LIGHTING IS CONTROLLED VIA A ROOM
- CONTROLLER AND WITH DIMMING. N STORAGE ROOMS , ETC. ARE CONTROLLED VIA ROOM
- CONTROLLER WITH ON/OFF SWITCHING.
- BATHROOMS AND LOCKER ROOMS ARE TO BE CONTROLLED VIA OCCUPANCY SENSOR .
- CORRIDOR LIGHTING, EXTERIOR PARKING LOT LIGHTS, BOLLARDS AND BUILDING MOUNTED LIGHTS TO BE CONTROLLED THROUGH A LOW VOLTAGE LIGHTING RELAY

LightLEEDer-EVO

Distributed Lighting Controls Simplified

4 Zone Class With Dimming

















1/8" = 1'-0"









FIRST FLOOR POWER PLAN - SEGMENT 'B'













5.8

- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL A 1" EMT CONDUIT TO NEAREST CABLE TRAY.

- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL IN 1" EMT CONDUIT A MULTI-ELEMENT (SMART) DOOR ACCESS CABLE FROM JUNCTION BOX TO CABLE TRAY. SMART CABLE SHALL INCLUDE THE FOLLOWING: 1-#22/6 O.A.S. FOR CARD READER 1-#18/4 D.A.S. FOR ELECTRIC STRIKE 1-#22/4 O.A.S. FOR REQUEST TO EXIT 1-#22/2 O.A.S. FOR DOOR CONTACT SWITCH

-ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL A 10"x 10"x 4" DEEP NEMA 1 JUNCTION BOX LOCATED ABOVE SUSPENDED CEILING

- ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL A #22/6 O.A.S. CABLE IN 1/2" RACEWAY. - ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL

A #18/4 O.A.S. CABLE IN 1/2" RACEWAY ROUTED INSIDE DOOR FRAME FOR ELECTRIC STRIKE. ---- MAGNETIC CONTACT SWITCH PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.

> -CARD READER MOUNTED 48" CENTERED ABOVE FINISHED FLOOR. PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE A SINGLE-GANG JUNCTION BOX.

ELECTRIC DOOR STRIKE IN DOOR
 FRAME. PROVIDED & INSTALLED BY
 DOOR HARDWARE SUPPLIER. ELECTRICAL
 CONTRACTOR TO MAKE FINAL CONNECTION.
 ELECTRICAL CONTRACTOR SHALL COORDINATE
 WITH DOOR HARDWARE SUPPLIER.

1815-E-DOOR READ-DTL





	C	GEN	NERAL NOTES :
	A	PRO\	/IDE GROUND CONDUCTOR IN ALL RACEWAYS.
	В	PRO\ BRAN	/IDE SEPARATE NEUTRAL CONDUCTORS FOR EACH
-	C D	THE V SEE I FOR A	VORD "PROVIDE" MEANS TO FURNISH AND INSTALL MOTOR, EQUIPMENT, HEAT PUMP SCHEDULES SHEE ALL PANEL DESIGNATIONS, AND CIRCUIT NUMBERS, A
-	E	CIRC REFE CIRC INDIC	UIT NUMBERS INDICATED ON DRAWINGS ARE FOR RENCE. ELECTRICAL CONTRACTOR TO ARRANGE BE UITS AS REQUIRED FOR WIRING AND LOAD BALANCIN ATE ACTUAL PANELBOARD CIRCUIT NUMBERS ON AS
-	F	BUILT SEE / ELEV INFO	<u>F DRAWINGS.</u> ARCHITECTURAL SHEETS FOR RELEVANT INTERIOR 'ATIONS, SECTIONS AND MISCELLANEOUS BUILDING RMATION REQUIRED TO COMPLETE THE ELECTRICAL
-	G		ALLATION. RDINATE ALL HVAC WITH MECHANICAL CONTRACTOR
	Н	ALL 2 SHAL	20 AMP, 125 AND 250 VOLT NONLOCKING TYPE RECEP L BE LISTED TAMPER-RESISTANT RECEPTACLE.
		ALL I ISOL∕ Ø E ₩	BRANCH CIRCUITS ASSOCIATED WITH PANEL 'AA' TO ATED GROUND CONDUCTOR AND ISOLATING GROUN CES/RECERTACLES:
- J	J		DATA WIRING' RUN IN OPEN STRUCTURE AREAS TO BE CEALED IN CONDUIT TO DATA ROOM OR ACCESSIBLE NG SPACE. VERIFY ALL ROUTING TO DATA RACKS.
<u>3</u> [°]	7		
		S	ECURITY CAMERA KEY :
		"1"	SAMSUNG OND-601 ORN (INDOOR) (22 TOTAL)
		"2"	SAMSUNG PNM-9020V (INDOOR) (2 TOTAL)
		"3" "4"	AXIS M3105L (INDOOR) (3 TOTAL) AXIS P3225-VE-MKII (OUTDOOR) (7 TOTAL)
		"5"	AXIS Q3708-PVE (OUTDOOR) (3 TOTAL)
			ALL CABLING FEEDS TO NEAREST DATA RACK IN AF
		KE	
		1. 2.	REFER TO AV DRAWINGS FOR LOCATI DATA RACK TO BE WALL MOUNTED 7'
		3.	FEED TO MAIN DATA RACK A112. WALL MOUNTED TRANSFORMER 8' AF
		4. 5	DATA CABLES. REFER TO DOOR ACCESS DETAIL 2E2
		6.	PROVIDE INTERCONNECTING RACEWAY/WIRING BETWEEN
		7.	PUSH STATIONS. HARDWARE TO AV RACK.
		8.	LOCATE ON AV RACK.
		9. 10.	NO WORK THIS AREA. PROVIDE LOCAL 30AMP NEMA 3R
		11.	PROVIDE WIRING TO OVERHEAD DOO MOTOR, PROVIDE TOGGLE DISCONNE
			PROVIDE ALL RACEWAYS AND WIRING REQUIRED FOR SAFETY SENSORS AN LIMIT SWITCHES.
		12.	COORDINATE INSTALLATION OF EMERGENCY LIGHTING CIRCUITS TO A CHAIR LIGHTING. PROVIDE ALL RELAY
		13.	REQUIRED. PROVIDE ROOF MOUNTING BRACKETS FOR CAMERAS. MATCH EXISTING TYU
		14.	USED AT SCHOOL. PROVIDE CONNECTION AT TANKLESS WATER HEATRERS. PROVIDE WIRING
		15.	CIRCULATING PUMP AND AQUASTAT. PROVIDE LOCKABLE COVER FOR
		16.	RECEPTACLES, P & S #WP26-L. REFER TO PLUMBING SHEETS FOR GA
		17.	MOUNT 60" CENTERED AFF.
		18.	PROVIDE WIRING TO PLATFORM AIR HANDLING UNIT LIGHTING AND RECEPTACLES; EXTEND CIRCUIT TO U
		19.	SERVE AS DISCONNECT. CORE DRILL EXISTING WALL AND PRO 4" CONDUIT THROUGH FIRE WALL FOF DATA AND OTHER CABLES PROVIDE
		20.	STOPPING. PROVIDE 4" CONDUITS THROUGH FIRE WALL FOR DATA AND OTHER CABLES. PROVIDE FIRE STOPPING.







FIRST FLOOR POWER PLAN- SEGMENT 'E'

1/8" = 1'-0"

Metal ShopNew Metals LiNew MuttipurpoNew Metals LiNew MuttipurpoNew MuttipurpoNew MuttipurposeNew MuttipurpoNew MuttipurpoNew MuttipurpoNew Office (Metals/MuttipurposeNew Fab LaiNew Fab LaiNew Fab LaiNew F	Oxy Fuel Gas Welding Quad Station SMAW Welding Booths GMAW Welding Booths Grinder Bench Work Bench Chop Saw Bench Output Work Table Pedistal Grinder Spot Welder Crucible Furnace	1 7 3 1 1 1 1 1 1 1 1	HOOD 1PH/ 220V 1PH/ 220V 120V 120V 120V 120V 120V	JUNCTION BO 6-50R ENEMA 6-50R ENEMA Duplex Duplex																																																																																																																																																																																																																		
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Blaster</td><td>1</td><td>1200</td><td></td></tr> <tr><td>New Metals LiNew MultipurposeNew MultipurposeNew MultipurpoNew Fab LaiSaszSaszSaszNew Fab LaiNew Fab Lai<</td><td>Horizontal Band Saw</td><td>1</td><td>1PH/ 220V</td><td></td></tr> <tr><td>New Metals LiNew MultipurposeNew MultipurposeNew MultipurpoNew Office (Metals/MultipurposeCurrent Room 332332332332Metals LaNew Fab LaiNew Fab Lai<</td><td>Hydraulic Pipe Bender</td><td>1</td><td>120V</td><td>Duplex</td></tr> <tr><td>New Metals LiNew Metals LiNew Metals LiNew Metals LiNew Metals LiNew Metals LiNew MultipurposeNew MultipurposeNew MultipurpoNew Office (Metals/MultipurposeCurrent Room 332Stays332332 OfficeNew Fab LalNew Fab Lal<td>Hydraulic Shears</td><td> 1</td><td>1PH/ 220V</td><td>6-50R ENEMA</td></td></tr> <tr><td>New Metals LiNew Metals LiNew Metals LiNew Metals LiNew Metals LiNew MultipurposeNew MultipurposeNew MultipurpoNew Office (Metals/MultipurposeCurrent Room 332Stays332332 OfficeNew Fab LalNew Fab Lal<</td><td>Oxy 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44"</td><td>1</td><td>110V</td><td>Duplex</td></tr> <tr><td>New Fab La</td><td></td><td>1</td><td>110V</td><td>Duplex</td></tr> <tr><td>New Fab La</td><td>Laptop Cart 16 computers Sandusky Lee</td><td>20</td><td>120V</td><td>QuadPlex</td></tr>	Crucible Furnace	1	120V	Duplex	New Metals La New Multipurpose New Multipurpose New Multipurpose New Multipurpose New Multipurpose New Multipurpose New Office (Metals/Multipurpose New Office (Metals/Multipurpose Current Room 332 stays 332 332 3332 332 3332 New Fab La New Fab La New Fab La New Fab La New Fab La N		1	120V	Duplex	New Metals LaNew MultipurpaNew MultipurpaNew MultipurpaNew MultipurpaNew MultipurpaNew MultipurpaNew MultipurpaNew Office (Metals/Multipurpase)New Office (Metals/Multipurpase)Stays332332 OfficeNew Fab LaNew Fab La <td>Floor Model Drill Presses</td> <td>1</td> <td>1201/</td> <td>Duplex</td>	Floor Model Drill Presses	1	1201/	Duplex	New Metals LNew MultipurposeNew MultipurposeNew MultipurpoNew MultipurpoNew MultipurpoNew 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Lal	Projector	1	110V Ceiling	QuadPlex	New MultipurposeNew MultipurposeNew MultipurposeNew MultipurposeNew MultipurposeNew MultipurposeNew Office (Metals/MultipurposeNew Office (MetalsNoffice (Metals/Multipurpose332Stays332Stays332Stays332New Fab LalNew Fab Lal	Electrical Retractable Cord Reel 12-3, 50 ft, 3 tap	6	120 V	QuadPlex	New MultipurpoNew MultipurpoNew MultipurpoNew MultipurpoNew MultipurpoNew MultipurposeCurrent Room 332Stays332332 OfficeNew Fab LalFab LabNew Fab LalNew Fab Lal	e Hann Open Work Bench	3	120V	QuadPlex	New MultipurperNew MultipurperNew MultipurperNew MultipurperNew MultipurperNew Office (Metals/MultipurposeCurrent Room 332Stays332332332Stays <t< td=""><td>e Projector</td><td>1</td><td>110V Ceiling</td><td>QuadPlex</td></t<>	e Projector	1	110V Ceiling	QuadPlex	New MultipurpoNew MultipurpoNew MultipurpoNew MultipurpoNew Office (Metals/MultipurposeCurrent Room 332Stays332332332 OfficeNew Fab LalFab LabNew Fab LalNew Fab Lal	e Bench Top Drill Press	1	120V	Duplex	New 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S5	1	110V	Duplex	New Fab La	3D Printer Afinia H800	2	110V	Duplex	New Fab La	Laser Engraver Universal	1	110V	Duplex	New Fab Lal	Laser Engraver Universal (current)	1	110V	Duplex	New Fab La	Cannon Pro 4400 44"	1	110V	Duplex	New Fab La		1	110V	Duplex	New Fab La	Laptop Cart 16 computers Sandusky Lee	20	120V	QuadPlex
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VAPORIZER HE-10,12,14 UIIXER HE-22,24,26 LE2-1 GFI____ WP

MIXER

_____ ACC-1 \mathcal{N} \mathcal{N} ACC-2

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NORTH



RECOMMENDATIONS. PROVIDE NEMA 3R SAFETY SWITCH TO SERVE AS DISCONNECT FOR LIGHTING AND POWER.

AIR CHILLERS PAD

LOCATIONS.

FEED ACC-1 AND ACC-2 FROM EXISTING SWITCHBOARD REFER TO SHEET E500

PROPANE PLANT

1/8" = 1'-0"

GENERAL NOTES A PROVIDE GROUND CONDUCTOR IN ALL RACEWAYS. PROVIDE SEPARATE NEUTRAL CONDUCTORS FOR EACH BRANCH CIRCUIT. THE WORD "PROVIDE" MEANS TO FURNISH AND INSTALL SEE MOTOR, EQUIPMENT, HEAT PUMP SCHEDULES SHEET E600 FOR ALL PANEL DESIGNATIONS, AND CIRCUIT NUMBERS, AND BREAKER SIZES. CIRCUIT NUMBERS INDICATED ON DRAWINGS ARE FOR REFERENCE. ELECTRICAL CONTRACTOR TO ARRANGE BRANCH CIRCUITS AS REQUIRED FOR WIRING AND LOAD BALANCING. INDICATE ACTUAL PANELBOARD CIRCUIT NUMBERS ON AS-BUILT DRAWINGS. SEE ARCHITECTURAL SHEETS FOR RELEVANT INTERIOR ELEVATIONS. SECTIONS AND MISCELLANEOUS BUILDING INFORMATION REQUIRED TO COMPLETE THE ELECTRICAL INSTALLATION. COORDINATE ALL HVAC WITH MECHANICAL CONTRACTOR REFERENCE HVAC DRAWINGS. H ALL 20 AMP, 125 AND 250 VOLT NONLOCKING TYPE RECEPTACL SHALL BE LISTED TAMPER-RESISTANT RECEPTACLE. ALL BRANCH CIRCUITS ASSOCIATED WITH PANEL 'AA' TO HAVE ISOLATED GROUND CONDUCTOR AND ISOLATING GROUND TYPE DEVICES/RECERTACLES. $\rightarrow \sim$ ALL DATA WIRING'RUN IN OPEN STRUCTURE AREAS TO BE INCEALED IN CONDUIT TO DATA ROOM OR ACCESSIBLE SEQURE YER AMERAGKEYA RACKS. "1" SAMSUNG QND-601 ORN (INDOOR) (22 TOTAL) "2" | SAMSUNG PNM-9020V (INDOOR) (2 TOTAL) "3" AXIS M3105L (INDOOR) (3 TOTAL) 4" AXIS P3225-VE-MKII (OUTDOOR) (7 TOTAL) AXIS Q3708-PVE (OUTDOOR) (3 TOTAL) ALL CABLING FEEDS TO NEAREST DATA RACK IN AREA.

SHEET NOTES

- ALL DATA WIRING TO RACK IN EXISTING DATA ROOM, REFER TO SHEET 502
- PROVIDE DROP CORD WITH QUAD RECEPTACLE "SO" CORD WITH STRAIN RELIEF GRIPS FOR CORD.

KEY NOTES POWER (#)

- 1. REFER TO AV DRAWINGS FOR LOCATIONS. DATA RACK TO BE WALL MOUNTED 7' AFF. FEED TO MAIN DATA RACK A112. WALL MOUNTED TRANSFORMER 8' AFF. 4. PROVIDE 1" CONDUIT RACEWAY FOR DATA CABLES. REFER TO DOOR ACCESS DETAIL 2E202. 6. PROVIDE INTERCONNECTING RACEWAY/WIRING BETWEEN HANDICAPPED DOOR OPERATORS AND PUSH STATIONS. HARDWARE TO AV RACK. LOCATE ON AV RACK. 8. 9. NO WORK THIS AREA. 10. PROVIDE LOCAL 30AMP NEMA 3R DISCONNECTS. TYPICAL. 11. PROVIDE WIRING TO OVERHEAD DOOR MOTOR. PROVIDE TOGGLE DISCONNECT PROVIDE ALL RACEWAYS AND WIRING REQUIRED FOR SAFETY SENSORS AND LIMIT SWITCHES. 12. COORDINATE INSTALLATION OF EMERGENCY LIGHTING CIRCUITS TO AISLE CHAIR LIGHTING. PROVIDE ALL RELAYS REQUIRED. 13. PROVIDE ROOF MOUNTING BRACKETS FOR CAMERAS. MATCH EXISTING TYUPE USED AT SCHOOL. 14. PROVIDE CONNECTION AT TANKLESS WATER HEATRERS. PROVIDE WIRING TO $\sqrt{-1}$ CIRCULATING PUMP AND AQUASTAT. 15. PROVIDE LOCKABLE COVER FOR RECEPTACLES, P & S #WP26-L. 16. REFER TO PLUMBING SHEETS FOR GAS SOLENOID LOCATIONS. MOUNT 60" CENTERED AFF. 17 18. PROVIDE WIRING TO PLATFORM AIR HANDLING UNIT LIGHTING AND RECEPTACLES; EXTEND CIRCUIT TO UNIT HEATER: PROVIDE TOGGLE SWITCH TO SERVE AS DISCONNECT. 19 CORE DRILL EXISTING WALL AND PROVIDE 4" CONDUIT THROUGH FIRE WALL FOR DATA AND OTHER CABLES. PROVIDE FIRE STOPPING.
 - PROVIDE 41 CONDUITS THROUGH FIRE WALL FOR DATA AND OTHER CABLES. PROVIDE FIRE STOPPING.

/ A03`

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	COMMUNICATIONS/DATA SCHEDULE												
DESIGNATION	DESCRIPTION	TYPE	REMARKS										
T25	25 PAIR	CAT. 3	PROVIDE TELEPHONE CABLES FROM MECH ROOM A112 TO ROOM 202 HIGH SCHOOL INTERCOM EQUIP.*										
FO6	6 SINGLE-MODE	FIBER OPTIC	PROVIDE FIBER CABLES FROM ROOM 201A TO ROOMS 104 AND 135.*										
> *	4 PAIR CONDUCTOR	CAT. 6	PROVIDE HORIZONTAL DATA CABLES FROM RACK TO EACH LOCATION INDICATED ON DRAWINGS.*										
WAP	4 PAIR CONDUCTOR	CAT. 6	PROVIDE (1) HORIZONTAL DATA CABLE FROM RACK TO EACH LOCATION INDICATED ON DRAWINGS										
	4 PAIR CONDUCTOR	CAT. 6	PROVIDE (1) HORIZONTAL DATA CABLE FROM RACK TO EACH LOCATION INDICATED ON DRAWINGS.										
			* REFER TO DRAWINGS AND DATA SYMBOLS LIST FOR TYPES OF DATA OUTLETS AND QUANTITIES.										



DATA RISER DIAGRAM





Туре			IGHT FIXTURE SCHEDULE		Mou	nting*		Lam
	Manufacturer	Catalog	Description	Voltage	ws	^ P 0	Watt	p Remark Num
B1	Columbia Lighting	CFP24-4140	Recessed Troffer I FD- 2' x 4'	277			31 VA	1 FD 10
B1E	Columbia Lighting	CFP24-4140	Recessed Linear LED Troffer - 2' x 4'	277			31 VA	LED 11
B2	Columbia Lighting	CFP24-5540	Recessed Linear LED Troffer - 2' x 4'	277			31 VA	LED 12
B3	Columbia Lighting	CFP22-4040	Recessed Troffer LED - 2' x 2'	277			40 VA	LED 13
B3E	Columbia Lighting	CFP22-4040	Recessed Troffer LED - 2' x 2'	277			40 VA	LED 14
CW4	Columbia Lighting	LCL-4-40-ML-ED-U	4' STRIP LIGHT WITH 5000 LUMEN for catwalk	277			52 VA	LED 15
D1	PRESCOLITE	LF6SL-6LFSL-15L-40K-8	Recessed LED Downlight 6in - 1500 Lumen	277			20 VA	LED 16
D1E	LITHONIA	ELM2.LED	Recessed LED Downlight 4in	277			20 VA	LED 17
D2	PRESCOLITE	LC6HL-DM1-6LCHL-45L-40K-8	Recessed LED Downlight 6in - 4500 Lumen	277			100 VA	LED 18
D2E	PRESCOLITE	LF6SL-DM1-6LCHL-45L-40K-8-LIFEGEAR	Recessed LED Downlight 6in - 4500 Lumen	277			100 VA	LED 19
D3	PRESCOLITE	LF4SL-DM1-4LFSL-11L-40K	Recessed LED Downlight 4in - 1100 Lumen	277			20 VA	LED 20
D3E	PRESCOLITE	LF4SL-DM1-4LFSL-11L-40K	Recessed LED Downlight 4in - 1100 Lumen	277			20 VA	LED 21
D4	Lightolier	FRAME:C2I 09DI 935RZ10U, TRIM: C2I DI I SBKET	Recessed I ED Downlight1.75 in 900I M	120			20 VA	1 FD 22
DW4	LUMIUM	03.3-RAM-4-30K-HO-HO-UNV-10D-SC-MF-6-4CPF-XX	Oxygen 3.3 3"x 4ft 6" Rotational Arm Mount 1190lm/ft(10w/ft) 1160lm/ft(277			11 VA	LED 23
λ/4Δ		03-RAM-4-30K-HOLUNV-10D-SC-ME-6-4CPE-XX	Oxygen 3.0.3"x 4ft 6" Rotational Arm Mount 1190lm/ft(10w/ft)	277			11 \/Δ	LED 24
		EVHC-12-L06		277			5.1/4	LED 24
	Columbia Lighting			277			130 \/A	LED 26
	Columbia Lighting			277			139 VA	LED 20
P1	Visa Lighting	CP2024-L40K-L40K-MVOLT-WIDE-BRNZ-RMB-W4"-X 55-5/8"	4in. x 40" Pendant	120			50 VA	LED 28
	ETC		LED Bondont fixture Audium	120			10.\/A	
	EOCAL POINT	ESM6L_EL_1000L_40K_1C_LINV_L11_XEN_W/H		120			52 VA	LED 30
R		FSM6L-FL-1000L-40K-1C-UNV-L11-XFN-WH	Recessed Linear LED 6" x 48"	120			52 VA	LED 30
	Hubbell Lighting	SAF-104-P-I PA-8-08-SOF-C1-40K-130-8D-D01-2C-UNV	Suspended Linear LED 8 ft	277			02 VA	LED 31
SI 12	Hubbell Lighting	SAE-104-P-I PA-12-SOE-C1-40K-130-8D-D01-2C-UNV	Suspended Linear LED 12ft- Direct/Indirect	277	X		33 VA 73 VΔ	LED 32
SI E12	Hubbell Lighting	SAE-104-P-I PA-12-SOE-C1-40K-130-8D-D01-2C-UNV	Suspended Linear LED 12ft-Direct/Indirect EM Circuit	277			73 V/A	LED 34
T1	Cooper Industries Inc	L-805-LRG-FL-8-40-P-277		277			62 VA	LED 35
W2	Hubbell Lighting	67-W-D-02-DM-C1-40K-D100-D01-1C	2' STRIP LIGHT WITH 1500 LUMEN	277			83 V/A	LED 36
	Hubbell Lighting	67-P-D-02-DM-01-35K-D150-D01-1C-U-FA2	4' STRIP LIGHT WITH 4000 LUMEN	277			31 \/A	LED 37
W/8	Hubbell Lighting	67-W-D-08-DM-C1-40K-D150-D01-1C	8' STRIP LIGHT WITH 6000 LUMEN	277			50 \/A	LED 38
	Hubbell Lighting	67 P D 08 DM C1 35K D150 D01 1C U EA2	Suspended Linear LED 8ft	277	V			LED 30
	Cooper Lighting	EEL 7L 50 LINIV BW/C	Welding Light with Wirequard	277			93 VA	LED 40
		67 W D 08 DM C1 40K D150 D01 1C		277			50 VA	LED 40
		67-W-D-08-DIVI-C 1-40K-D 150-D0 1-1C		211			21 VA	LED 41
			4 STRIP LIGHT WITH 4000 LOWEN	277			51 VA	LED 42
	Columbia Lighting		2' 4' and 9' Industrial I ED	277			56 VA	LED 43
04	Columbia Lighting		2,4 and 0 industrial LED	277			50 VA	LED 44
08				2//				LED 45

LOW VOLTAGE LIGHTING RELAY SHEDULE PANEL LVP1, ELECTRICAL ROOM A11

RELAY NUMBER	ROOM NUMBER(S) SERVED	FIXTURES CONTROLLED	REMARKS
е	VEST. A100 AND LOBBY A101	TYPE "R6E, AND "D2E" FIXTURES	1,2
f	LOBBY A101	TYPE "R6, "P1" & "D2" FIXTURES	1,2
g	VEST. A100 AND LOBBY A101	TYPE "R6, "P1" & "D2" FIXTURES	1,2
h	EXTERIOR PARKING LOT	TYPE "OB" FIXTURES	3
i	EXTERIOR BOLLARD LIGHTS	TYPE "OD" FIXTURES	3
j	EXTERIOR PARKING LOT	TYPE "OC-2" FIXTURES	3
k	ENTRANCE	TYPE "OE" AND "OG" FIXTURES	3
I	EXTERIOR BUILDING LIGHTS	TYPE "OA" FIXTURES	3
w	CORRIDORS A110, A126 & A130	TYPE "B1" FIXTURES	2,4
z	CORRIDORS A110, A126 & A130	TYPE "B1E" FIXTURES	2,5
SPARE	FUTURE USE		
SPARE	FUTURE USE		
			l

1.INTERFACE LIGHTING WITH THEATRICAL CONTROL, REFER TO SHEET QT205. 2.RELAYS MAYBE CONTROLLED FROM MULTIPLE SWITCH LOCATIONS, REFER TO DRAWINGS FOR LOCATIONS AND QUANTITIES.

3. LIGHTING TO BE INITIATED "ON" BY PHOTCELL AND "OFF" BY TIME CLOCK FUNCTION. 4. LIGHT FIXTURES TO BE OPERATED BY CORRIDOR OCCUPANCY SENSORS.5. LIGHT FIXTURES TO BE OPERATED BY SWITCH ON AND OFF BY TIME CLOCK FUNCTION.

LOW VOLTAGE LIGHTING RELAY SHEDULE PANEL LVP2, STORAGE ROOM D102

ELAY IMBER	ROOM NUMBER(S) SERVED	FIXTURES CONTROLLED	REMARK
r1	EXTERIOR BUILDING LIGHTS	TYPE "OA" FIXTURES	3
r2	ENTRANCE	TYPE "O2" AND "OG" FIXTURES	3
у	CORRIDORS B110, B121 & C102	TYPE "B1" FIXTURES	2,4
z	CORRIDORS B110, B121 & C102	TYPE "B1E" FIXTURES	2,5
PARE	FUTURE USE		
PARE	FUTURE USE		
REMARKS	6		1

1.INTERFACE LIGHTING WITH THEATRICAL CONTROL, REFER TO SHEET QT205.

2.RELAYS MAYBE CONTROLLED FROM MULTIPLE SWITCH LOCATIONS, REFER TO DRAWINGS FOR LOCATIONS AND QUANTITIES.

3. LIGHTING TO BE INITIATED "ON" BY PHOTCELL AND "OFF" BY TIME CLOCK FUNCTION. 4. LIGHT FIXTURES TO BE OPERATED BY CORRIDOR OCCUPANCY SENSORS. 5. LIGHT FIXTURES TO BE OPERATED BY SWITCH ON AND OFF BY TIME CLOCK FUNCTION.

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AC-1	ŀ
ACC-1 ACC-2	ŀ
AHU-1	ŀ
AHU-2	ŀ
AHU-3	ļ
AHU-4	ŀ
AHU-5	A
в-4 В-5	E
BC-1	E
BC-2	E
BCP-4	E
CP-1	
CP-2	(
	0
CWP-1 CWP-2	
CWP-1 CWP-2 DHRC-1	
CWP-1 CWP-2 DHRC-1 EF-1	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 FF-8	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-6 EF-7 EF-8 EF-9	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-6 EF-7 EF-8 EF-9 HCP-1	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-6 EF-7 EF-8 EF-9 HCP-1	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-3	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-3 HCP-4	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-3 HCP-4 HCP-5	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-3 HCP-4 HCP-5 HWP-1	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-2 HCP-3 HCP-4 HCP-5 HWP-1 HWP-2	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-3 HCP-4 HCP-5 HWP-1 HWP-2 MAU-1 MAU-2	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-3 HCP-4 HCP-5 HWP-1 HWP-2 MAU-1 MAU-2 MAU-2 MAU-2	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-2 HCP-3 HCP-4 HCP-5 HWP-1 HWP-2 MAU-1 MAU-3 ML-1	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-2 HCP-3 HCP-4 HCP-5 HWP-1 HWP-2 MAU-1 MAU-2 MAU-3 ML-1 ML-2	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-2 HCP-3 HCP-4 HCP-3 HCP-4 HCP-5 HWP-1 HWP-2 MAU-1 MAU-2 MAU-3 ML-1 ML-2 MS-2 RE-4	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-2 HCP-3 HCP-3 HCP-4 HCP-5 HWP-1 HWP-1 HWP-2 MAU-1 MAU-2 MAU-3 ML-1 ML-2 RF-4 RF-5	
CWP-1 CWP-2 DHRC-1 EF-1 EF-2 EF-3 EF-4 EF-5 EF-6 EF-7 EF-8 EF-9 HCP-1 HCP-2 HCP-2 HCP-3 HCP-3 HCP-4 HCP-3 HCP-4 HCP-5 HWP-1 HWP-1 HWP-2 MAU-1 MAU-2 MAU-3 ML-1 ML-2 RF-4 RF-5 RTU-1	

PLBG/HVAC EQUIP. No.

Motor Schedule

						cuur		1						
Equipment Description		Motor	Rating		Dis	sconnect	Ву	5	Starter By		By	Wiring Siz	ze	Remark
Equipment Description	Location	HP/AMP	Volt	PH.	MECH.	ELEC.	** TYPE	MECH.	ELEC.	*** TYPE	MECH. ELEC.	Conductors	EGC	Number
JH-1	HALLWAY B111		120	1		Х	TG	X			X	2 #12	#12	
JH-2 V. 3	ENTRY B112	1 1/2	120	1 1		X X	TG TG	X			X X	2 #12 2 #12	#12 #12	
V. 2	BOYS RESTROOM B114		120	1		X	TG	X			X	2 #12	#12	
V. 1	BOYS LOCKER ROOM B115		120	1		Х	TG	X			x	2 #12	#12	
JH-3	VEST. E113		120	1		X	TG	X			X	2 #12	#12	
/-4	AUTO CLASSROOM		120	1		X	IG	X			X	2 #12	#12	
			120	1		X		X			X	2 #12	#12 #12	
JH-?	VESTIBULE E 100 VESTUBLE C106		120	1		X	TG	X			X	2 #12	#12	
-1 HOOP LIFT	GYMNASIUM D D103		120	1		X	TG	X			X	2 #12	#12	
	MULTI-		120	1			TC	×			×	2 #12	#12 #12	
~ 1000	LAB E102		120	1		^	10	^			^	2 #12	#12	
UV	E109		120	1		Х	TG	X			X	2 #12	#12	
DOD #17B	KITCHEN F100		208	3		X	TG	X			X	3 #12	#12	
1-1	A112		120	1		X	TG	X			X	2 #12	#12	
1-2	A105		120	1		X	TG	X			X	2 #12	#12	
H-3	JANITOR A104		120	1		X	TG	X			X	2 #12	#12	
1-4 1-5	RECEIVING A124		120	1		X	TG	X			X	2 #12	#12	
H-6	RECEIVING A124		120	1		X	TG	X			X	2 #12	#12	
1-2 8	WRESTLING B101		120	1		X X	TG	X X			X X	2 #12 2 #12	#12 #12	
-9	WRESTLING B101		120	1		X	TG	X			X	2 #12	#12	
<i>(</i> 11	WRESTLING B101 WRESTLING B101		120	1		X X	TG	X X			X X	2 #12 2 #12	#12 #12	
-12	WRESTLING B101		120	1		Х	TG	X			X	2 #12	#12	
13 14	WRESTLING B101 WRESTLING B101		120 120	<u>1</u> 1		X X	TG TG	X X			X	2 #12 2 #12	#12 #12	
-10	WRESTLING B101		120	1		X	TG	X			X	2 #12	#12	
6 3	GYMNASIUM D D103		120	1		X X	TG	X			X X	2 #12 2 #12	#12 #12	
	GYMNASIUM D D103		120	1		X	TG	X			X	2 #12	#12	
5 1	GYMNASIUM D D103		120	1		X X	TG	X			X X	2 #12 2 #12	#12 #12	
3	GYMNASIUM D D103		120	1		X	TG	X			X	2 #12	#12	
l-? Ⅰ-?	STORAGE D105		120	1		X	TG	X			X	2 #12	#12 #12	
F-15	BAND A134		120	1		X	TG	X			X	2 #12	#12	
16 17	BAND A134		120	1		X	TG	X			X	2 #12	#12 #12	
JH-?	VESTUBLE C106		120	1		X	TG	X			X	2 #12	#12	
H-1	VESTIBULE A100		120	1		X	TG	X			X	2 #12	#12	
JH-1	CORRIDOR E101		120	1		X	TG	X			X	2 #12	#12	
DOD #17B	JAN. F104		208	3	v	Х	TG	X			X	3 #12	#12 #12	
R COMPRESSOR		10 HP	480	3	X		VFD	X		VFD	X	3 #12	#12	
r cooled chiller		497 MCA	480	3	X		VFD	X		VFD	X	SEE DRWGS		
R HANDLING UNIT		21 MCA	480	3	X		VFD	X		VFD	X	3 #10	#10	
R HANDLING UNIT	GIRLS LOCKER ROOM	27 MCA	480	3	Х		VFD	х		VFD	x	3 #8	#8	
R HANDI ING UNIT	EQUIPMENT PLATFORM	77 MCA	480	3	x		VED	x		VFD	x	3 #3	#6	
R HANDLING UNIT	A200	77 MCA	480	3	X		VFD	X		VFD	x	3 #3	#6	
R HANDLING UNIT	PRACTICE A141	25 MCA	480	3	Х		VFD	X		VFD	X	3 #10	#12	
DILER		2 HP 2 HP	480	3	X X		VFD VFD	X X		VFD VFD	X X	3 #12 3 #12	#12 #12	
C-1	STORAGE D102	1 HP	480	3	Х		VFD	Х		VFD	X	3 #12	#12	
C-2	B105	3 HP	480	3	Х		VFD	x		VFD	x	3 #12	#12	
		2 HP	208	1		X	TG	X			X	2 #12	#12	
RCULATING PUMP- DHRC		1/2 HP	208	1		X	TG	X			X	2 #12	#12	
RCULATING PUMP- DHRC		1/2 HP	208	1	N	Х	TG	X			X	2 #12	#12	
HILLED WATER PUMP		75 HP 75 HP	480	3	X		VFD	X X		VFD	X	3 #1	#6	
EDICATED HEAT RECOVERY		104 MCA	480	3	Х		VFD	х		VFD	x	3 #1	#6	
(HAUST FAN	TOILET D101	1/15 HP	120	1		Х	TG	X			X	2 #12	#12	
(HAUST FAN	GIRLS A115	1/15 HP	120	1		X	TG	X			X	2 #12	#12	
(HAUST FAN	GIRLS RESTROOM B104	1/15 HP	120	1		X	TG	X			X	2 #12	#12	
(HAUST FAN	JANITOR A104	1/15 HP	120	1		Х	TG	Х			X	2 #12	#12	
(HAUST FAN	E109	1/15 HP	120	1		Х	TG	X			X	2 #12	#12	
(HAUST FAN	DESIGN AND INNOVATION E105	2 HP	208	3		Х	TG		x	FVNR	x	3 #12	#12	MAGNETIC STARTER
(HAUST FAN	MULTI-	1/15 HP	120	1		Х	TG	x			x	2 #12	#12	
(HAUST FAN	METALS LAB E102	1/15 HP	120	1		Х	TG	X			X	2 #12	#12	
OT WATER CIRC. PUMP-		1/4 HP	120	1		Х	TG	х			x	2 #12	#12	
DT WATER CIRC. PUMP-	GIRLS LOCKER ROOM	1/4 HP	120	1		x	TG	×			x	2 #12	#12	
HU-2 OT WATER CIRC. PUMP-	B103 MECHANICAL/DATA		120				10	X					# 1 2	
	A112	1/4 HP	120	1		X	TG	X			X	2 #12	#12	
ירע water CIRC. PUMP- 1U-4_	OFFICE A138	1/4 HP	120	1		X	TG	X			X	2 #12	#12	
OT WATER CIRC. PUMP-	PRACTICE A139	1/4 HP	120	1		Х	TG	Х			X	2 #12	#12	
DT WATER PUMP		30 HP	480	3	Х		VFD	X		VFD	X	3 #8	#8	
		30 HP	480	3	X			X			X	3 #8	#8	
	METALS LAB E104	1 1/2 HP	480	3	X		VFD	X		VFD	X	3 #12	#12 #12	
AKE UP AIR UNIT	MULTI- LAB F102	1 1/2 HP	480	3	x		VFD	Х		VFD	X	3 #12	#12	
ATT LIFT	GYMNASIUM D D103	1 1/2 HP	480	3	Х		VFD	X		VFD	X	3 #12	#12	
ATT LIFT S-1	GYMNASIUM D D103 CORRIDOR 4110	1 1/2 HP	480 208	3	X		VFD	X		VFD	X	3 #12	#12	
ELIEF FAN	CORRIDOR A126	7.5 HP	480	3	Х		VFD	X		VFD	X	3 #12	#12	
	HALL A144 DESIGN AND	1.5 HP	480	3	X		VFD	X		VFD		3 #12	#12	
JOF TOP UNIT	INNOVATION F105	22 MCA	480	3	X		V⊦D	X		VFD	X	3 #10	#10	

SEE REMARKS *** (CB) CIRCUIT BREAKER; (CS) COMBINATION STARTER/DISCONNECT; (F) FUSED SAFETY SWITCH; (NF) NOT FUSED SAFETY SWITCH; (TG) TOGGLE SWITCH(FVNR) FULL VOLTAGE NON-REVERSING MAGNETIC STARTER; (FVR) FULL VOLTAGE REVERSING MAGNETIC STARTER; (MS) MANUAL STARTER-WITH OVERLOAD PROTECTION; (MSW) MANUAL SWITCH-WITHOUT OVERLOAD PROTECTION; (MCC) MOTOR CONTROL CENTER; (PB) PUSH BUTTON STARTER; (VFD) VARIABLE FREQUENCY DRIVE

MOTOR SCHEDULE REMARKS:.

VARIABLE FREQUENCY DRIVE UNIT IS FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR.



ΓA	NEL:	LA								P/	ANEL	
LOCAT	FION:	ELEC A111			EL	EC. SE	RVICE:	208Y/120, 3 PH, 4 WIRE			CATION:	_
MFGR.		SQ D			M	AIN RA	TING:	225 A		MF	GR.	
TYPE					M	AIN TYF	PE:	MLO		TYF	'E	
SIZE:	WIDTH DEPTH				M	OUNTIN	IG:	Surface		SIZ		ГН TH
СКТ			Trip	Poloo		Doloo	Trip	Circuit Description	СКТ	CK.	•	_
				Foles	АВС	Foles						
LA-1 R	Rec. A100,A7	115,A116 114	20 A	1		1	20 A 20 A	Rec.	LA-2	LB-	Rec. A12	.9
LA-5 M	lens Sink A1	109	20 A	1		. 1	20 A	Electric Water Cooler EWC A110	LA-6	LB-	NEMA R	ec
LA-7 V	Vomens Sinl	< A106	20 A	1		1	20 A	Rec. A101, A118 SOUTH	LA-8	LB-	7 Rec. A13	6
LA-9 R	Rec. A117		20 A	1		1	20 A	Rec. A122 SOUTH, A126	LA	LB-9	Rec. A13	<u>4</u>
	Rec. A122 NO	JRTH,ATZ7 125 FXT	20 A	1		. 1	20 A 20 ∆	REC. A122 NURTH Rec. A104 A1044 A118 NORTH FYT	LA	LB	. κec. A12 Rec Δ14	12
LA R	Rec. A123	120,LAT.	20 A	1		1	20 A	Receptacle	LA	I B		~
LA R	Rec. A118,SF	POT LIGHT NORTH	20 A	1		. 1	20 A	Rec. A101,A103,105,EXT	LA	LB.	. Rec. B10)1
LA R	Rec. A118, A	119, SPOT LIGHT SOUTH	20 A	1		1	20 A	JBOX A105 DOOR OPENER	LA	LB.	. Rec. B10)1
LA R		e Dianlaue	20 A	1		1	20 A	Rec. Wrestling Displays	LA	LB.		
	ec. vvrestiin	Ig Displays	20 A	1		. 1	20 A	HECEPTACIE	LA	LB	. DF-7-14 Snare	vv
LA F	IRE ALARM	PANELS- LOBBY, JAN A104	20 A	1			20 A 20 A	UNIT HEATER - 1 MECH A112	LA	LB.	. Spare	
LA H	IAND DRYE	R MENS A109	20 A	1		. 1	20 A	HAND DRYER WOMENS A106	LA	LB.	. Spare	
LA A	ISLE LIGHT	ING SOUTH	20 A	1		1	20 A	AISLE LIGHTING NORTH	LA	LB.		
LA L	obby Lightin	g "f"	20 A	1		1	20 A	Lobby Lighting "e"	LA	LB.		
	uditorium Ca	ig g at Walk "d"	20 A	1		1	20 A 20 A	OverHead Door Opener- North Recieving		LD		
LA P	owered Har	ndicap Door Opener-Lobby	20 A	1		1	20 A	OverHead Door Opener- West Recieving	LA	LB.		
LA C	VerHead Do	oor Opener- South Recieving	20 A	1					LA	LB.		
LA H	ICP-3		20 A	1		3	20 A	Phase, 4 Wires, Wye	LA			
LA S	pare		20 A	1		1	20.4	Spara	LA	Not	es:	
LA S	spare		20 A	1		1	20 A 20 A	Spare				
LA S	spare		20 A	1		1	20 A	Spare	LA			
LA R	Rec MECH M	1EZ GENERAL	20 A	1		. 1	20 A	120-single phase	LA			
LA	IS-1		20 A	2		2	20 A	MS-2	LA			
LA	20v-Sinale F	Phase	20 A	1		1	20 A	Recentacle				
LA R	Receptacle	1400	20 A	1		1	20 A	Receptacle	LA			
LA R	Receptacle		20 A	1		1	20 A	Receptacle	LA			
LAR	Receptacle		20 A			. 1	20 A	Receptacle	LA			
LA R	Receptacle		20 A	1					LA			
LA									LA			
LA									LA			
LA									LA			
LA									LA			
LA									LA			
Notes:			1				II					

		PAN	ELE	BOAF	RD	S(CHEI	DULE			PA	NEL	BOA	ARD SC	HED	ULE		
PA	NEL:	LE								PANEL	LE2					,		
LOCA	TION:	METALS LAB E104			EL	EC. S	SERVICE	: 208Y/120 , 3 PH, 4 WIRE		LOCATION:	METALS LAB E104			ELEC. S	ERVICE:	208Y/120 , 3 PH, 4	WIRE	
MEGR		SOD			M			400 A		MFGR.	SQD			MAIN R	ATING:	400 A		
TVDE	•																	
TTPE								400 AMP MAIN BREAKER/SHUNT TRIP			•					0.1		
SIZE	WIDTH				MC	DUNT	ING:	Surface		SIZE:	1			MOUNT	ING:	Surface		
U.E.E.	DEPTH									DEPT	H							
СКТ	C	rcuit Description	Trip	Poles A	вС	Pole	es Trip	Circuit Description	СКТ	СКТ	Circuit Description	Trij	p Poles	A B C Pole	s Trip	Circuit D	escription	СКТ
LE-1 LE-3	V5 Metals La	b	30 A	. 2		2	30 A	W6 Metals Lab	LE-2 LE-4	LE Propane F	Plant Rec. e computers Design Labs	20 /	A 1 A 1	1	20 A F	Propane Plant Lightir	ng	LE
LE-5	V1 Metals La	b	20 A	2		2	20 A	W2 Metals Lab	LE-6	LE 120v-Sing	le Phase	20	A 1 A 1	3	20 A E	F-Y	$\checkmark \checkmark \checkmark$	LEXA
LE-9	V7 Metals La	b	30 A	2		2	30 A	W8 Metals Lab	LE	LE EF-8		20	A 1	k 1 1	20 A	Gas Panel and Syste	m k	
										IF Snare		201				Spare	$ \rightarrow $	
	V12 Metals L	ab	30 A	. 2		2	30 A	W9 Metals Lab		I.F., Spare		20 /	A 1		20 A S	Spare		
LE	V11 Metals L	ab	20 A	2		2	20 A	W10 Metals Lab	LE	LE		201						LE
						-								-				
	lydro Shears	Metals	20 A	2		2	20 A	Floor Grinder Metals Lab	LE	LE				-				LE
LE ,	/ ··· · · · · · · · · · · · · · · · · ·		00.4						LE	LE				-				LE
LE V	ertical Mill M	etals Lab	30 A	2		2	20 A	Horizontal Band Saw Metals Lab	LE	LE								LE
LE C	Chop Saw		20 A	<u>\</u> 1		. 2	20 A	Lathe Metals Lab	LE	LE								LE
LE	athe Metals	ab	20 A	2		 _	20 7		LE	LE								LE
			2071			2	20 A	Lathe Metals Lab	LE					-				
	Sarage Door	Opener Metals	20 A			· —												
	orill press Mu	lti-l ab	20 A			2	20 A	Plasma Metals Lab		IF				-				
	NC Plasma		20 A			1	20 A	Hydro Bender Metal I ab	I F	LE				-				LE
LE S	Sand Blaster	Metal Lab	20 A	<u> </u>		1	20 A	Floor Drill Press Metals Lab	LE									
LE F	oundry/ Furn	ance Metal Lab	20 A	1		1	20 A	Spot Welder Metal Lab	LE	Notes:								
LE F	Proj. Multi-Lat)	20 A	1		. 1	20 A	Bench Grinder Metal Lab	LE									
LE (CNC Compute	er Metal Lab	20 A	<u>\ 1</u>		1	20 A	Drop Cords Multi-Lab	LE									
LEF	Receptacle M	ulti-Lab	20 A	1		1	20 A	Drop Cords Multi-Lab	LE									
	prop Cords P	odium Metals Lab	20 A			. 1	20 A	Drop Cord Podium, Rec. Multi-Lab & Ext.	LE									
	keceptacle O		20 A	1			20 A	Proj. Metals Lab		L								
	Aitor Box	etais Lab	20 A			1	20 A	Receptacie Multi-Lab										
		ni Lau Ar Design Lab	20 A			1	20 A	Drop Cords Metals Lab										
	azer Eriyiave Acontacia Di	si Design Lab	20 A				20 A	Miter Box Multi Lab										
	Receptacle an	ad Proi Design Lab	20 A				20 A	Door Opener Metals/Multi Labs										
	Receptacle Si	or., Drop Cord Podium Desi	20 A	$\frac{1}{1}$			20 A	Lazer Engraver Design Lab	LF.									
	Robot cart De	sign Lab	30 A	1			20 A	Drop Cords Design Lab	LE									
LE F	ormat Printe	r Design Lab	20 A	1		. 1	20 A	Receptacle Design Lab	LE									
LE 3	D Printer De	sign Lab	20 A	1		1	30 A	Vintl Cutter Design Lab	LE									
LE C	oor Opener	Metals/Design Labs	20 A	1		1	20 A	3D Printer Design Lab	LE									
LE F	Receptacle Vi	deo Control	20 A	1		. 1	20 A	Receptacle Video Control	LE									
LE F	Receptacle Vi	deo Lab	20 A	<u> </u>		1	20 A	ReceptacleVideo Lab and Ext.	LE									
LE V	V6 120V		20 A			1	20 A	Drop Cords Video Lab	LE									
LE F	ower - Gene	ral	20 A	<u> 1 </u>		. 1	20 A	W5 120v	LE									
Notes:																		
PROVI	DE 400 MAII	N MAIN CIRCUIT BREAER WI	TH SH	IUNT TRIF	P CON	INEC	T TO EM	ERGENCY SHUT OFF SWITCH.										

PANELBOARD SCHEDULE

AGE A129				EL	EC. SE	RVICE	208Y/120 , 3 PH, 4 WIRE					
				MA	IN RA	FING:	225 A					
				MA	JN TYF	E:	MLO					
				MC	UNTIN	IG:	Surface					
escription	Trip	Poles	ΑE	B C	Poles	Trip	Circuit Description	СКТ				
	20 A	1	1		1	20 A	Rec. A129 WASHER	LB-2				
120	20.4	2			1	20 A	Rec. A130,A132	LB-4				
4129	20 A	2			1	20 A	Rec. A133,A137	LB-6				
	20 A	1	1		1	20 A	Rec. A130,A135	LB-8				
	20 A	1	·		1	20 A	ReC. A126,A134 ELECTRIC WATER	LB				
	20 A	1			1	20 A	Rec. A137,A139,A140,A141	LB				
	20 A	1			1	20 A	Rec. B101 WEST/PROJ.,B121	LB				
			1		1	20 A	Rec. B101 EAST/PROJ., B121	LB				
PROJ.	20 A	1						LB				
OJ.	20 A	1			1	20 A	DF-16,17,18	LB				
								LB				
	20 A	1			1	20 A	Spare	LB				
	20 A	1			1	20 A	Spare	LB				
	20 A	1	·		1	20 A	Spare	LB				
	20 A	1						LB				
								LB				
								LB				
								LB				

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		PA	NELB	OAF	RD	SC	HE	
PA	NEL:	LC						
LOCA	TION:	ELEC/DATA C105			EL	EC. SE	RVICE	: :
MFGR)	SQ D			M/	AIN RAT	TING:	
YPE					M/	AIN TYP	PE:	
SIZE:	WIDTH DEPTH				MC	JUNTIN	G:	
	I	1						
кт	(Circuit Description	Trip	Poles A	ВC	Poles	Trip	-
	Rec. C101, (C104, C105	20 A	1		1	20 A	R
2-5 F	Rec. C103		20 A	1		. 1	20 A	R
2-7							00 A	
2-9 2 S	Spare		20 A	1		. 1	20 A 20 A	S
C 8	Spare		20 A	1		1	20 A	12
								-
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n ^		PA	INCLB		۲IJ	36		U
۲A	NEL:	AA						
LOCA	TION:	ELEC A111			El	_EC. SE	RVICE	:
MFGF	ર.	SQ D			M		TING:	
TYPE					M		PE:	
SIZE:	WIDTH				M	OUNTIN	IG:	
	DEPTH							
скт		Circuit Description	Trip	Poles A	ВС	Poles	Trip	
AA-1	Band Proi	• * *	20 A	1		1	20 A	B
4A-3	Receptacle		20 A	1		1	20 A	R
AA-5	Receptacle	Control Rm	20 A	1		. 1	20 A	R
4A-7 AA-9	Receptacle	South AV Rack A129	20 A 20 A	1		1	20 A 20 A	R
AA	Receptacle	North west - Wrestling	20 A	1		. 1	20 A	R
4A	Receptacle	East - Fitness	20 A	1		1	20 A	R
-√A -∖A	Receptacle	Spot Lights -Control Rm	20 A	1	••••	. 1	20 A 20 A	
4A	Receptacle	Lobby video Display	20 A	1		1	20 A	A
4A	AV Rack A1	12	20 A	1			00.4	
чА 4А	Rec. Stage AV Rack A1	12	20 A 20 A	1		. 1	20 A 20 A	
4A	AV Rack A1	12	20 A	1		1	20 A	A
AA	AV Rack A1	12	20 A	1		. 1	20 A	A
чА АА	opare Spare		20 A 20 A	1 1		1	20 A 20 A	S S
AA	Receptacle		20 A	1		1	20 A	R
AA	Receptacle		20 A	1		1	20 A	R
AA	Receptacle		20 A	1		1	20 A	R
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Notes:

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PANELBOARD SCHEDULE													
PANEL: K (KITCHEN) MOUNTING: FLUSH	VOLTS: PANEL	VOLTS: 208 PHASE: 3 WIRE: 4 MA PANEL TYPE: SQ. D QO MA			IN CAPACITY: <u>400</u> AMPS			NEL: K UNTING: FLUSH	VOLTS: 208 PHASE: 3 PANEL TYPE: SQ. D QO	IS: 208 PHASE: 3 WIRE: 4 MAIN CAPACITY: <u>400</u> AMPS EL TYPE: SQ. D QO MAIN CONNECTION: LUGS			
CKT. ITEM OR AREA SERVE	O/C PROT	REMARKS	REMARKS	O/C PROT.	ITEM OR AREA SERVED	СКТ.	CKT	ITEM OR AREA SERVED	O/C PROT. REMARKS	REMARKS	O/C PROT.	ITEM OR AREA SERVED CK	
1 3 ITEM 82A 5 BOOSTER HEATER	125/3		A B	70/3	ITEM 82 DISH WASHER	2 4	73 75 77	ITEM 21	20/1 SHUNT TRIP	A SHUNT TRIP	20/1	ITEM 25 74 76 ITEM 25 78	
7 9 ITEM 50	30/3		A B	20/3	ITEM 15	8 10	79 81	ITEM 24	20/1 SHUNT TRIP	A B SHUNT TRIP	20/1	ITEM 25 80 ITEM 25 82	
11 10100 0111 0111 13 15 ITEM 50	30/3		C A B	20/3	ITEM 60	12 14 16	83 85 87	ITEM 4D FEEZER ALARM ITEM 4E FEEZER OUTLET	20/1 20/1	C A B	20/1 20/1	ITEM 34 WORK TABLE 86 ITEM 34 WORK TABLE 88	
17 TURBO CHEF OVEN	20/2		C A	20/2	SOFT SERVE MACHINE	18 20	89 91	ITEM 8D COOLER ALARM ITEM 8E COOLER OUTLET	20/1 20/1 20/1	C A	20/1 20/1	ITEM 34 WORK TABLE 90 ITEM 34 WORK TABLE 92	
21 TIEM 89 23 DISPOSER 25	20/3		C A	20/3	ICE CREAM CASE	22 24 26	93 95 97	ITEM 13 PREP. TABLE ITEM 13 PREP. TABLE ITEM 17 EXHAUST HOOD	20/1 20/1 20/1	C A	20/1 20/1 20/1	ITEM 37 BEVERAGE CART 94 ITEM 37 BEVERAGE CART 96 ITEM 37 BEVERAGE CART 98	
27 ITEM 81 29 SCRAP DISPOSER	20/3		B	20/2	HEATED PASS THRU CAB. ITEM 39 HEATED FOOD SHELVES	28 30	99 101	ITEM 18 FIRE SUPPRESSION ITEM 18 FIRE SUPPRESSION	20/1 20/1	B C	20/1 20/1	ITEM 37 BEVERAGE CART 100 ITEM 45 COLD FOOD WELL 102	
31 ITEM 41 33 AIR CURTAIN MERCH. 35 ITEM 44	20/2		B C	20/2	ITEM 39 HEATED FOOD SHELVES	32 34 36	103 105 107	ITEM 22 BRAISING PAN ITEM 23 CHARBROILER ITEM 24 RANGE	20/1 20/1 20/1	B C	20/1 20/1 20/1	ITEM 45 COLD FOOD WELL 102 ITEM 49 UC REFRIG. 106 ITEM 52 ROLL IN FRIG. 108	
37 HOT FOOD WELL 39 ITEM 48 44 HEATED DOLL IN CARL	20/2		AB	20/2	ITEM 41 AIR CURTAIN MERCH.	38 40	109 111	ITEM 25 CONVECTION OVEN ITEM 25 CONVECTION OVEN	20/1 20/1	A B	20/1 20/1	ITEM 57 COLD FOOD WELL 110 ITEM 57 COLD FOOD WELL 112 ITEM 57 COLD FOOD WELL 112	
 41 HEATED ROLL-IN CABI 43 ITEM 72 POS SYSTEM 45 ITEM 72 POS SYSTEM 	20/1 20/1		A	60/3	ITEM 3 RACK SYSTEM	42 44 46	113 115 117	ITEM 25 CONVECTION OVEN ITEM 28 WORKTABLE REC. ITEM 28 WORKTABLE REC.	20/1 20/1	A B	20/1 20/1 20/1	ITEM 57 COLD FOOD WELL 114 ITEM 57 COLD FOOD WELL 116 ITEM 62 HOT BEVERAGE 118	
47 ITEM 82 COND. HOOD 49 ITEM 4A	20/1 20/1		C A	20/3	MAU-1	48 50	119 121	ITEM 28 WORKTABLE REC. ITEM 28 WORKTABLE REC.	20/1 20/1	C A	20/1 20/1	ITEM 67 MILK COOLER 120 ITEM 67 MILK COOLER 122	
51 53 ITEM 4B	20/2		B	20/2	SPARE	52 54	123 125	ITEM 29 MIXER ITEM 33 REFRIG CABINET	20/1 20/1 20/1	B C	20/1 20/1	ITEM 67 MILK COOLER 124 SPARE 126 SPARE 126	
57 ITEM 4B 59 EF-4	20/2		B	20/1 20/1	ITEM 8A ITEM 8B	58 60	127 129 131	SPARE	20/1	B C	20/1	SPARE 120 SPARE 130 132 132	
61 63 EXHAUST HOOD 17B	20/3		A B	20/1 20/1	SPARE SPARE	62 64	133 135			AB		134 136	
65 67 SPARE 69 SPARE	20/1		C A			66 68 70	137 139			C A B		138	
71 71	20/1		C			70	141			C		14.	





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