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PBS NORTH CAROLINA

HVAC REPLACEMENT DURHAM, NC 27703 BID DOCUMENTS MARCH 31, 2023 McKIM & CREED PROJECT # 05394-0011 SCO ID: 22-24543-01







Venture IV Building, Suite 500 1730 Varsity Drive Raleigh, North Carolina 27606 Phone: (919)233-8091, Fax: (919)233-8031 NC License# F-1222 www.mckimcreed.com

MECHANICAL/ELECTRICAL ENGINEERS

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CONSTRUCTION DOCUMENTS
COVER SHEET
C001

2018 APPENDIX B **BUILDING CODE SUMMARY** FOR ALL COMMERCIAL PROJECTS (EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES) (Reproduce the following data on the building plans sheet 1 or 2)

Name of Projec	et: PBS North	Carolina HVAC	C Replaceme	nt	
Address: 10 T	W. Alexander Drive. D	urham, NC.		Zip Code	27703
Owner/Authori	zed Agent: Fred Engel	Phone $\#(9)$	19) 549 -	7035 E-Mail f	enael@pbsnc.ora
Owned By [.]	\Box Cit	v/County		Private	State
Code Enforcem	ent Iurisdiction: 🗌 Cit	y, county		County	State
		y		county	• State
CONTACT					
CUNIACI: _	Dane J. Wallin	NAME	LICENSE #	TELEDIIONE #	— —
Architectural	PIKWI		LICENSE π	$\left(\begin{array}{c} 412 \end{array}\right) 246 4801$	E-MAIL
Civil			<u>14851</u>	(412) 240 - 4001	
Electrical	McKim & Creed	Jesse C. Alonzo, Jr.	053121	(919) 233 - 8091	ialonzo@mckimcreed.com
Fire Alarm	McKim & Creed	Jesse C. Alonzo, Jr.	053121	(<u>919</u>) <u>233 - 8091</u>	ialonzo@mckimcreed.com
Plumbing	N/A		N/A	()_N/A	N/A
Mechanical	McKim & Creed	Dane J. Wallin	046612	(<u>919</u>) <u>233 - 8091</u>	dwallin@mckimcreed.com
Sprinkler-Standp	pipe <u>N/A</u>	N/A	N/A	<u>N/A</u>	<u>N/A</u>
Structural	N/A	N/A	N/A	<u>N/A</u>	<u>N/A</u>
Retaining Walls	>5' High <u></u>	<u>N/A</u>	<u>N/A</u>	_ ()_ <u>N/A</u>	<u>N/A</u>
Other	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	_ ()_ <u>N/A</u>	<u>N/A</u>
("Others" should	include firms and individu	als such as truss, j	precast, pre-eng	ineered, interior desi	gners, etc.)
2018 NC EXIS CONS RENO RISK CATEG	TRUCTED:(date)19 VATED: (date)20 GRY (table 1604.5)	Fime Interior Co Il/Core sed Construction ovation DE: □ Prescrip n: ✓ Level I □ Historic 90 ORIGIN 014 CURRE Current: □ Proposed: □	mpletion m – Shell/Core otive ■ R Property NAL OCCUPA I □ II I □ II	epair	Chapter 14 Level III Change of Use Business Business I IV I V
BASIC BUILI Construction T (check all that a Sprinklers: Standpipes: Fire District: Special Inspect	DING DATA Fype: I-A apply) I-B No Partial I Y No Yes Class No Yes (Primar ions Required: No	□ II-A □ II-B Yes ☑ NF s ☑ I □ II y) □ Yes	III-A III-B PA 13 N III V Flood Hazar	☐ IV NFPA 13R ☐ NFI Vet ☑ Dry rd Area: ☑ No	□ V-A □ V-B PA 13D □ Yes

2018 NC Administrative Code and Policies

CODE SUMMARY

A003

[/] Scale: 1/32" = 1'-0"



Appendix B for Building

		Gross Buildi	ng Area:	
Floor	Existing (sq ft)	NEW (SQ FT)	RENO/ALTER (SQ.FT)	SUB-TOTAL
^{5th} Floor	N/A	N/A	N/A	N/A
th Floor	N/A	N/A	N/A	N/A
th Floor	N/A	N/A	N/A	N/A
rd Floor	N/A	N/A	N/A	N/A
nd Floor	18,566	N/A	1,786	18,566
Iezzanine	N/A	N/A	N/A	N/A
st Floor	43,255	N/A	875	N/A
lasement	N/A	N/A	N/A	43,255
TOTAL	61,821	N/A	2,661	61,821
Educational Factory Hazardous Institutional	F-1 Moderate H-1 Detonate [I-1 Condition [1-2 Condition [1-3 Condition [☐ F-2 Low ☐ H-2 Deflagrate ☐] 1 ☐ 2] 1 ☐ 2] 1 ☐ 2] 1 ☐ 2] H-3 Combust \Box H-4 F	Iealth 🗌 H-5 HPM
Mercantile Residential Storage	1-4 R-1	2-3 □ R-4 □ S-2 I	.ow High-piled	
Mercantile Residential Storage Utility and Mise	1-4 R-1 R-2 F S-1 Moderate Parking Garage [cellaneous F	R-3 □ R-4 □ S-2 I □ Open □ Enclos	Low High-piled sed Repair Garage	
Mercantile Residential Storage Utility and Misc	1-4 R-1 R-2 R S-1 Moderate Parking Garage [cellaneous cy Classification(s)	2-3 □ R-4 □ S-2 I □ Open □ Enclos :A-3 (unchang	Low High-piled sed Repair Garage	
Mercantile Mercantile Residential Storage Utility and Misc ccessory Occupanc cidental Uses (Tabl	1-4 R-1 R-2 R S-1 Moderate Parking Garage [cellaneous cy Classification(s) le 509):	2-3 □ R-4 □ S-2 I □ Open □ Enclos :A-3 (unchang	Low High-piled sed Repair Garage	
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Mercantile Mercantile Residential Storage Utility and Miso ccessory Occupanc cidental Uses (Table ecial Uses (Chapter ecial Provisions: (C	1-4 R-1 R-2 R S-1 Moderate Parking Garage [cellaneous cellaneou	2-3 □ R-4 □ S-2 I □ Open □ Enclos :A-3 (unchang ions) de Sections):	Low High-piled sed Repair Garage	
Mercantile Mercantile Residential Storage Utility and Misc ccessory Occupanc cidental Uses (Table becial Uses (Chapter becial Provisions: (C ixed Occupancy:	1-4 R-1 R-2 R S-1 Moderate Parking Garage [cellaneous cy Classification(s) le 509): r 4 – List Code Sect Chapter 5 – List Code No	R-3 □ R-4 □ Open □ Enclos :A-3 (unchang ions) de Sections): I Yes Separatio	Low High-piled sed Repair Garage ged)	
Mercantile Residential Storage Utility and Misc ccessory Occupanc ccidental Uses (Table becial Uses (Chapter becial Provisions: (C ixed Occupancy: Non-Separater The required the for each of the determined, sl Separated Use See below for ratios of the ac Actual Are	1-4 R-1 □ R-2 □ R S-1 Moderate Parking Garage [cellaneous □ cy Classification(s) le 509): r 4 - List Code Sect Chapter 5 - List Code O No [No [No [No [No [No [No] No] No [Sector 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	R-3 □ R-4 □ S-2 I □ Open □ Enclos :A-3 (unchang ions) de Sections): I Yes Separatio for the building shall b ncies to the entire build ire building. or each story, the area of ach use divided by the +Actual Area	Low High-piled sed Repair Garage ged) n: Hr. Exception: be determined by applying the ling. The most restrictive ty of the occupancy shall be succupated allowable floor area for each allowable floor area for each	the height and area limitation performance of construction, so that the sum of the nuse shall not exceed 1

Existin	g Building - Un	changed			
STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2 ⁴ AREA	(C) AREA FOR FRONTAGE INCREASE ^{1,5}	(D) ALLOWABLE AREA PER STORY OR UNLIMITED ^{2,3}
1st Floor	Business	43,255	Unlimited	32,441	Unlimited
2nd Floor	Business	18,566	Unlimited	13,924	Unlimited
Frontage a a. Peri b. Tot	trea increases from Se imeter which fronts a al Building Perimeter in $(F/P) =$	ction 506.3 are com public way or open = 10 (F/P)	nputed thus: space having 20 f 80 (P)	feet minimum width = $\frac{1}{2}$	(F)

c. Ratio (F/P) = (F/P)d. W = Minimum width of public way = $_{30}$ (W)

² Unlimited area applicable under conditions of Section 507. ³ Maximum Building Area = total number of stories in the building x D (maximum 3 stories) (506.2). ⁴ The maximum area of open parking garages must comply with Table 406.5.4 ⁵ Frontage increase is based on the unsprinklered area value in Table 506.2.

Existing Building - Unchang	ged ALLOWABLE H	EIGHT	
	ALLOWABLE (TABLE 503)	SHOWN ON PLANS	CODE REFERENCE
Building Height in Feet (Table 504.3)	180	45	
Building Height in Stories (Table 504.4)	12	2	
 Provide code reference if the "Show on 1 The maximum height of air traffic control The maximum height of open parking ga 	Plans" quantity is not base of towers must comply with arages must comply with T	ed on Table 504.3 or 504.4. th Table 412.3.1 Fable 406.5.4	

2018 NC Administrative Code and Policies

Appendix B for Building

2018 NC Administrative Code and Policies

CLASSIFICATIONS AND OCCUPANCY

ltem	Requirement
Classification of Work	Level 1 Alteration
Construction Type	IB, Unchanged
Use and Occupancy Classification	Business Group B, unchanged
Exit Access Distance	300ft Max, unchanged
Square Footage Existing	61,821 sq, unchanged
Renovation Area	2,661 sq, no additional sq. added

Compliant with Chapters 7 of NC Existing Building Code, alterations do not result in the building being less safe than its existing condition.

Plumbing fixtures unchanged, no additional occupant load.





e. Percent of frontage increase $I_f = 100 [F/P - 0.25] \times W/30 = _____{75}$ (%)

Appendix B for Building



SECTION 01 73 29 CUTTING AND PATCHING

1. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

2. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

3. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

4. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

5. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

6. Temporary Support: Provide temporary support of Work to be cut.

7. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

8. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

9. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

10. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

11. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

12. Flame Cutting: Do not use cutting torches.

13. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

14. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

15. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

16. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

17. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces. Repaint entire wall after.

18. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an evenplane surface of uniform appearance.

19. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

SECTION 02 41 19 SELECTIVE DEMOLITION

20. Contractor is responsible for demolition necessary to complete Work as indicated on the Contract Documents.

21. 101. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

22. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

23. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

24. Remove, replace, patch and repair materials and surfaces cut or damaged during selective demolition by methods and with materials so as not to void existing warranties.

25. Regulatory Requirements: Comply with the UNC Guidelines and City of Durham regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

26. Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

27. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

SECTION 03 39 00 CONCRETE SEALING

28. Basis of Design: Subject to compliance with requirements, provide one of the follow products, or comparable product acceptable to Architect:

a. Euclid Chemical Company, Everclear VOX. b. L&M Construction Chemicals, Lumiseal WB Plus. c. WR Meadows, Vocomp-25. d. NoxCrete, Eco-Seal XC.

29. Verify existing curing compounds have been removed, and surface has been properly prepared for application prior to application.

30. Apply according to manufacturer's written requirements.

SECTION 07 62 00 SHEET METAL FLASHING AND TRIM

31. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal[or manufactured item] unless otherwise indicated.

32. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming and performance required, with smooth surface. Clear anodic finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

33. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.

34. Sealants: a. Elastomeric ASTM C920 of classifications required to seal joints in sheet metal flashing and trim and remain watertight. b. Butyl: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement

c. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

35. Coping and Counterflashing at roof: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and interior leg. Miter corners, fasten and seal, solder or weld watertight. Shop fabricate interior and exterior corners. Shop fabricate interior and exterior corners. Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.

SECTION 07 84 13 PENETRATION FIRESTOPPING

36. Work includes through-penetration fire-stopping systems for penetrations through the following fire-resistance-rated assemblies, including both empty openings and openings containing penetrating items: a. Floors.

b. Walls and partitions

37. Available Manufacturers: Manufacturer's products will be considered subject to compliance with requirements of the fire-rated assemblies indicated. Manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. A/D Fire Protection Systems Inc.
- b. DAP Inc. c. Firestop Systems Inc.
- d. Hilti Construction Chemicals, Inc.
- e. Instant Firestop Mfg. Inc.
- f. International Protective Coatings Corp. g. Isolatek International.
- h. 3M Fire Protection Products.
- i. United States Gypsum Company.

38. Compatibility: Provide through-penetration firestop systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through- penetration firestop system manufacturer based on testing and field experience.

39. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with fire-rating requirements. Use only components specified by through-penetration firestop system manufacturer and approved by the qualified testing and inspecting agency for firestop systems indicated.

40. Install fill materials for firestop systems by proven techniques to produce the following results:

41. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.

42. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.

43. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

SECTION 07 92 00 JOINT SEALANTS

44. Silicone Sealant: FS TT-S-001543, Type II, Class A.

45. Acrylic Latex Sealant: ASTM C-834. Sealant shall be paintable.

46. Polyurethane Sealant: Sealants used on exterior of project, including inside surface of exterior joints, shall be multi-component polyurethane base, ASTM C 920. Type M, Grad NS, Class 25.

47. Fire-Stopping Sealant: UL approved, conforming to ASTM E 814 and formulated for use in a through-penetration fire-stop system for sealing openings around cables, conduit, pipes and similar penetrations through walls.

48. Primer: Where required, shall be used as recommended, in writing by the manufacturer. The primer shall have been tested for non-staining characteristics and durability on samples of actual surfaces to be sealed.

49. Back-up materials and preformed joint fillers shall be non-staining, compatible with sealant and primer, and of a resilient nature, such as closed cell polyethylene rod, closed cell urethane or Neoprene rod, or elastomeric tubing or rod (Neoprene, butyl, or EPDM). Materials impregnated with oil bitumen or similar materials shall not be used. Size and shape shall be indicated by joint details on drawings and shall be as recommended by sealant manufacturer in writing. Sealant shall not adhere to back-up material.

50. Follow sealant manufacturer's instructions regarding mixing (if required), surface preparation, priming, application life, and application procedure.

51. Provide caulking at the following locations. This schedule is not to be construed to be complete. Provide sealant at other areas as indicated.

- b. Perimeter of exterior door frames: Polyurethane Sealant.
- c. Perimeter of window frames, interior and exterior: Polyurethane Sealant.
- e. Perimeter of Plumbing fixtures: Silicone Sealant.
- joints: Fire-stopping Sealant.

a. Perimeter of interior door frames: Acrylic Latex Sealant.

d. Perimeter of louvers and grilles, interior and exterior: Polyurethane Sealant.

f. At joints created by penetrations in rated wall or floor assembly and fire resistant

52. Provide non-sag sealant complying with requirements of federal specifications TTS-1543 or FS TT-S-280 Type "II", Class "A." Provide acoustical sealant which shall be non-hardening, non- drying synthetic rubber sealing compound with minimum 90% solids. Use at all interior joints at inner sections between planes. Around door and window frames primer shall be made or recommended by sealant manufacturer for the specific conditions and substrates.

53. Surfaces shall be adequately cleaned and prepared in accordance with manufacturer's written instructions prior to installation.

SECTION 09 29 00 GYPSUM BOARD

54. Gypsum Wallboard, Type X: ASTM C 1396/C 1396M. Thickness: 5/8 inch. Tapered.

55. Interior Trim ASTM C1047.

- 56. Joint treatment: Comply with ASTM C 475/C 475M.
- 57. Finish: Level 3 at mechanical rooms, Level 4 at rooms exposed to public view.

SECTION 09 65 13 RESILIENT BASE

58. Molded rubber cove base top set type shall be 4" high x 1/8" thick.59. Type TS (rubber, vulcanized thermoset.)

60. Lengths: Coils in manufacturer's standard length but not less than 30 feet.

- 61. Outside Corners: Job formed.
- 62. Inside Corners: Job formed.
- 63. Finish, Colors and Pattern: Match existing

products and substrate conditions indicated.

64. Installation Materials: a. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated. b. Adhesives; Water-resistant type recommended by manufacturer to suit resilient

65. Install resilient base in lengths as long as practicable without gaps and seams and with tops of adjacent pieces aligned.

66. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrate. Gaps in transitions are not acceptable.

67. Do not stretch resilient base during installation.

SECTION 09 27 23 RESINOUS FLOORING

68. Provide abrasion-, impact- and chemical-resistant, high-performance, resin-based, monolithic floor surfacing designed to produce a seamless floor high-performance epoxy flooring with polyurethane coating.

69. Submit for Review:

- a. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- b. Samples: For each type of exposed finish required. Submit samples in "medium" texture for verification. Samples will set aesthetic standard.
- i. 6-inch square floor sample. ii. 12-inch long cove sample.
- c. Maintenance Data: For resinous flooring to include in maintenance manuals.

70. Source limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

71. Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

72. Basis-of-Design Product: Subject to compliance with requirements, provide the Tennant 25 HTS, 25 mil Satin Urethane System as manufactured by Tennant or comparable product acceptable to Architect.

a. Eco-MPE Primer. Apply at 5 mils wet/dry film.

b. Eco-MPE Build Coat. Apply at 19 mils wet/dry film. c. Eco-HTS 100 Topcoat. Apply at 3 mils wet/dry film.

73. Patch and Fill materials: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

74. Provide 6-inch cove base at all walls adjacent to flooring.

75. Provide accessories required for a complete, crack-free installation. Telegraphing control joints are not acceptable.

76. Do not begin preparation or installation until moisture test results satisfactory to manufacturer's written requirements are achieved. Provide manufacturer's recommended moisture vapor control coating if required.

77. Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry substrate for resinous flooring application.

78. Surface Preparation:

- a. Prepare concrete surface in accordance with manufacturer's instructions. b. Remove dirt, dust, debris, oil, grease, curing agents, bond breakers, paint, coatings, sealers, silicones, and other surface contaminants which could adversely
- affect application of resinous system. c. Steel shot blast concrete to a minimum surface profile of ICRI 310.2R, CSP 5.
- d. Key-cut termination points with 1/4-inch (6-mm) by 1/4-inch (6-mm) cut. e. Patch depressions, divots, and cracks in concrete in accordance with
- manufacturer's instructions.
- f. Mechanically remove loose, delaminated, and damaged concrete and repair in accordance with manufacturer's instructions.

81. Install resinous system in accordance with manufacturer's instructions and approved submittals at locations indicated on the Drawings.

82. Broadcast traction aggregate in accordance with manufacturer's instructions. Broadcast traction aggregate into wet overlay.

84. Seal coat:

PAINTING

86. Provide materials for use within each paint system that are compatible with one another, and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

89. Interior Surfaces: a. Interior Galvanized-Metal Substrates (Electrical conduits, interior sheet metal): Latex over Waterborne Primer System, select topcoat to match gloss of adjacent surfaces, MPI system INT 5.3J.

9.2A.

79. Joints: Fill joints in accordance with manufacturer's instructions.

80. Protect adjacent surfaces and adjoining walls from contact with resinous system materials

83. Cove:

- a. Apply cove primer and cove in accordance with manufacturer's instructions at locations indicated on the Drawings.
- b. Apply cove to height and shape as indicated on the. c. Apply cove to create seamless, smooth transition between flooring and walls.
- Apply seal coat in accordance with manufacturer's instructions. b. Apply seal coat over traction aggregate.

85. Allow resinous system to dry according to manufacturer's written requirements. Allow system to dry a minimum of 1 week before cleaning by mechanical means.

SECTION 09 91 00

87. Colors: As selected by Architect.

88. Prepare surfaces according to MPI standards.

- i. Prime Coat: Primer, galvanized, water based, MPI #134.
- ii. Intermediate Coat: Latex, interior, matching topcoat.

iii. Topcoat: Latex, interior, (Gloss Level 2), MPI #44 or (Gloss Level 3), MPI #52 or (Gloss Level 4), MPI #43 or (Gloss Level 5), MPI #54. b. Interior Ferrous Metal: Doors and door frames and other miscellaneous interior

ferrous metal (Do not paint factory or shop painted doors and door frames): High Performance Architectural Latex System: Semi-gloss, MPI system INT 5.1R. i. Prime Coat: Primer, alkyd, guick dry, for metal, MPI #76.

ii. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat iii. Topcoat: Latex, interior, high performance architectural, (Gloss Level 4),

MPI#140. c. Interior Gypsum Board Substrates: Latex System: Egg-shell, MPI system INT

i. Prime Coat: Primer sealer, latex, interior, MPI #50.

ii. Intermediate Coat: Latex, interior, matching topcoat.

iii. Topcoat: Latex, interior, eggshell, (Gloss Level 3), MPI #52. iv. Topcoat (where indicated): Latex, interior, semi-gloss, (Gloss Level 5), MPI #54

SECTION 09 96 00 HIGH PERFORMANCE COATINGS

90. Provide materials for use within each paint system that are compatible with one another, and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

91. Colors: Match existing louver/grill colors.

92. Basis of Design: Subject to compliance with requirements, provide the following system, or comparable system subject to Architect's review:

- a. Exterior ferrous metal surfaces:
- i. Prime Coat: Primer, Sherwin Williams Pro Industrial Pro-Cryl Primer. ii. Intermediate Coat: Acrylic Urethane, match topcoat

iii. Topcoat: Acrylic, Sherwin Williams Pro Industrial Waterbased Acrolon 100, B65-700 Series.

93. Prepare surface to receive High Performance Coatings according to SSPC-10, Near White Blast Cleaning and coating manufacturer's written requirements.











	2018 AP	PENDIX	β	CON	ITROLS
	NC MECHAN MECHANICAL SYSTEMS. SF	NCAL SUMMAR	r DEQUIPMENT		ANALOG POINT
Climat	te Zone	4A			DIGITAL POINT
Therm	nal Zone	FXISTING			CARBON DIOXIDI
	summer dry bulb	EXISTING			CONTROL POINT
Interio	or design conditions winter dry bulb	70° F			
	summer dry bulb	75° F			CONTROL RELAT
Duildir	relative humidity	EXISTING			CONTROL WIRIN
Buildir	ng nealing load	EXISTING		CS	CURRENT SWITC
Mecha	anical Spacing Conditioning System			СТ	CURRENT TRANS
	Unitary			DP	DIFFERENTIAL PI
	Description of unit heating efficiency		N/A	帰	ELECTRO-PNEUN
	cooling efficiency		N/A N/A		EMERGENCY ST
	cooling output of unit		N/A		
	Boiler total boiler output. If oversized, state rea	ason.	EXISTING	ES	
	Chiller total chiller capacity. If oversized, state	reason	SEE EQUIPMENT SCHEDULES	(ES)	ENTHALPY SELE
				FS FS	FLOW SWITCH
List ec	quipment efficiencies			FT	FLOW TRANSMIT
				FZ	FREEZESTAT
	MECHANICAL		/IATIONS	НТ	HIGH TEMPERAT
JAV	AUTOMATIC AIR VENT		HEAT EXCHANGER	 нs	HUMIDITY SWITC
DJ	ADJUSTABLE OR ADJUSTMENT	IND			
.I	ANALOG IN ANALOG OUT	IWC	INCHES WATER COLUMN		
.FF	ABOVE FINISHED FLOOR	LAT	LEAVING AIR TEMPERATURE		LEVEL SWITCH
.FG	ABOVE FINISHED GRADE	LPC	LOW PRESSURE CONDENSATE	LM	LIGHT METER
'HU		LPS	LOW PRESSURE STEAM	M	MOTOR OPERATI
.PD .FF	AIRSIDE PRESSURE DROP BEI OW FINISHED EI OOR	LWI MAV	LEAVING WATER TEMPERATURE	MS	MOTOR STARTEF
LDG	BUILDING	MC	MECHANICAL CONTRACTOR		OCCUPANCY SET
MP	BOILER MANAGEMENT PANEL	MPC	MEDIUM PRESSURE CONDENSATE		
FM	CUBIC FEET PER MINUTE	MPS	MEDIUM PRESSURE STEAM		OVERRIDE SWITC
	COMMAND CONDENSATE DRAINAGE	MTD N/A	NONTH TO DATE	(02)	OXYGEN SENSOF
V	CONSTANT VOLUME	NC	NORMALLY CLOSED	PS	PRESSURE SWIT
;WMU	COLD WATER MAKEUP UNIT	NIC	NOT IN CONTRACT	PT	PRESSURE TRAN
HWR		NO		SD	SMOKE DETECT
HVVS SWS	CHILLED WATER SUPPLY	OCC	OCCUPANT OR OCCUPANCY		SPACE RELATIVE
WS	CONDENSER WATER RETURN	OA	OUTSIDE AIR		
	DIGITAL IN	PC	PLUMBING CONTRACTOR		SPACE TEMPERA
0		PSI	POUNDS PER SQUARE INCH	TS	TIME SWITCH
N	DOWN EXHAUST AIR	RA RAD-X	RETURN AIR RETURN AIR DIFFUSER - TYPE		DUCT TEMPERAT
AD-X	EXHAUST AIR DIFFUSER - TYPE	RTU	ROOF TOP UNIT	VFD	VARIABLE FREQU
AT	ENTERING AIR TEMPERATURE	SA	SUPPLY AIR		VELOCITY PRES
C	ELECTRICAL CONTRACTOR	SAD-X	SUPPLY AIR DIFFUSER - TYPE		
.SP TR	EXISTING TO REMAIN	sc s/s	SAFETY CIRCUIT START/STOP	SC	
WT	ENTERING WATER TEMPERATURE	STM COND	STEAM CONDENSATE RETURN		
ΞX	EXISTING	ТАВ	TEST AND BALANCE		
ACP	FIRE ALARM CONTROL PANEL	TEMP]
CU PM	FAN CUIL UNIT	TYP	TYPICAL		ļ ļ
SC	GENERAL CONTRACTOR	UH	UNIT HEATER		Į ,
₽M	GALLONS PER MINUTE	VEL	VELOCITY		-
WS	HEATING HOT WATER SUPPLY	VAV			I
INK IP	HEATING HUT WATER RETURN	VP WPD	VIKTUAL POINT WATERSIDE PRESSURE DROP		
 IPC	HIGH PRESSURE CONDENSATE	XFMR	TRANSFORMER		-
	HIGH PRESSURE STEAM				

	ITROLS LEGEND	MECHAN	ICAL LEGEND
0	ANALOG POINT		LIMITS OF DEMOLITION
	DIGITAL POINT	\bullet	POINT OF CONNECTION TO EXISTING
	CARBON DIOXIDE SENSOR		
OINT NAME	CONTROL POINT		
CR	CONTROL RELAY	BEACON STROBE LIGHT	
	CONTROL WIRING	SYSTEMS.	
CS	CURRENT SWITCH		
(ст)	CURRENT TRANSMITTER		HORIZONTAL FIRE DAMPER
(DP)	DIFFERENTIAL PRESSURE TRANSMITTER		
5 5	ELECTRO-PNEUMATIC TRANSDUCER	3 BOX	
	EMERGENCY STOP SWITCH		- CFM - SIZE
ES	END SWITCH	2 BOX	DIFFUSER/GRILLE TAG
(ES)	ENTHALPY SELECTOR		- SIZE AIRFLOW DIRECTION
FS	FLOW SWITCH	<u></u>	SUPPLY REGISTER OR GRILLE
(FT)	FLOW TRANSMITTER	∽	EXHAUST OR RETURN GRILLE
FZ	FREEZESTAT	<u>ل 10x10</u>	RECTANGULAR DUCTWORK
шэс Гнт]	HIGH TEMPERATURE SWITCH		
нѕ	HUMIDITY SWITCH		ROUND DUCTWORK
Ш Ш			EXISTING DUCTWORK
			DUCTWORK TO BE DEMOLISHED
			FLEXIBLE DUCTWORK (INSULATED)
			DUCT ACCESS DOOR
			SUPPLY DUCT (UP & DOWN)
(US)			EXHAUST DUCT (UP & DOWN)
₽os			RETURN DUCT (UP & DOWN)
			COMBINATION FIRE SMOKE DAMPER (PNEUMATIC - \bigtriangledown ELECTRIC - \blacktriangledown)
			MOTORIZED SMOKE DAMPER
(PI)			SOUND ATTENUATOR TAG - MARK (X)
SD	SMOKE DETECTOR		AIRFLOW MEASURING STATION
(H)	SPACE RELATIVE HUMIDITY TRANSMITTER		SMOKE DETECTOR
			EXISTING PIPING TO REMAIN
TS	TIME SWITCH		PIPING TO BE DEMOLISHED
	DUCT TEMPERATURE TRANSMITTER		
VFD	VARIABLE FREQUENCY DRIVE		
(VP)	VELOCITY PRESSURE TRANSMITTER		GATE VALVE
H20 SC	WATER DETECTION SWITCH		CHECK VALVE
FOU			BUTTERFLY VALVE
		or B	BALL VALVE
ـــــــــــــــــــــــــــــــــــــ	р FAN POWERED	K) or 📾	BALANCING VALVE
	↓ VAV BOX	ß	RELIEF VALVE
	HYDRONIC COIL	凸	WYE STRAINER
	PRESSURE GAUGE		BOILER DRAIN VALVE
	TUEDNONETED		
	IHERMOMETER		
			TEST PLUG (PRESSURE/TEMPERATURE)
DRA	WING SYMBOLS	H G	PIPING DOWN
<u>FPV 1-1</u>	- EQUIPMENT TAG	ю	PIPING UP
#		ю	TEE UP
(#)	- NEW WORK KEYED NOTE	H C H	TEE DOWN
\sim			CAPPED PIPING
M1.1			IN LINE TRIPLE DUTY VALVE
			AUTOMATIC AIR VENT
A M1.1	DRAWING NUMBER		

GE	ENERAL NOTES			OWNER
1.	THE DRAWINGS SHALL NOT BE SCALED FOR CONSTRUCTION PURPOSES. THE SCALE, WHEN INDICATED IS INTENDED FOR GENERAL		LACK OF MC'S CONFIRMATION SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.	
2.	REFERENCE ONLY. THE MECHANICAL CONTRACTOR SHALL MAKE A COMPLETE REVIEW OF THE PROJECT PLANS, SCHEDULES, AND DETAILS PRIOR TO INSTALLATION OF THE MECHANICAL SYSTEMS AND REVIEW ANY CONFLICTS WITH THE ENGINEER.	26.	ALL FIRE DAMPERS AND U.L. FIRE STOPS SHALL BE INSTALLED IN COMPLETE ACCORDANCE WITH MANUFACTURER'S U.L. LISTING AND INSTALLATION INSTRUCTIONS. REGARDLESS OF DUCT SIZE, FIRE DAMPERS SHALL BE MINIMUM 12"x12" OR 12"Ø IN SIZE. TRANSITION BEYOND ACCESS DOOR AS REQUIRED TO MATCH ACTUAL DUCT SIZE.	PBS NORTH POWERED BY THE UNC SYSTEM
3.	ALL WORK SHALL CONFORM TO ALL LOCAL, STATE, AND NATIONAL CODES, INCLUDING THE 2018 NORTH CAROLINA MECHANICAL CODE. EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS. ANY EQUIPMENT OR	<u>PIPING</u> 27.	FLEXIBLE PIPE CONNECTIONS SHALL BE PROVIDED AT ALL HYDRONIC PIPING CONNECTIONS AT ROTATING EQUIPMENT, INCLUDING AIR HANDLING UNITS. BASE-MOUNTED PUMPS. CHILLERS. ETC.	
	MATERIAL DEVIATIONS FROM THAT SPECIFIED OR DETAILED ON THIS DRAWING SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT/ENGINEER. ALL PROPOSED EQUIPMENT DEVIATIONS	<u>INSULA</u> 28.	ATION ANY INSULATION DAMAGED DURING THE PROJECT SHALL BE REPAIRED	ENGINEER
	SUBMITTED SHALL BE SIMILAR BOTH IN QUALITY AND CAPACITY TO THAT EQUIPMENT SPECIFIED.	BUILDI	AND ALL VAPOR BARRIERS RESTORED. NG AUTOMATION SYSTEM (CONTROLS)	
4.	DESIGN IS BASED ON THE MANUFACTURER AND MODEL SCHEDULED OR THE FIRST MANUFACTURER LISTED IN THE DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL BEAR ANY AND ALL COSTS FOR ALTERING ANY OTHER CONTRACT OR SUB-CONTRACT RESULTING FROM THE USE OF ANY MANUFACTURER OR MODEL OTHER THAN THE DESIGN DASIS INCLUDING LISTED FOUND S	29.	SOME VIRTUAL POINTS ARE SHOWN ON THE CONTROL POINTS LISTS. THESE POINTS ARE INTENDED TO SHOW MAJOR VIRTUAL POINTS BUT IS NOT AN ALL-ENCOMPASSING LIST. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING FINAL POINT COUNTS AND SHALL ENSURE THAT THE CONTROLLERS PROVIDED ARE CAPABLE OF HANDLING ANY ADDITIONAL	Venture IV Building, Suite 500 1730 Varsity Drive Raleigh, North Carolina 27606 Phone: (919) 233-8091, Fax: (919) 233-8031
5.	PRIOR TO CONSTRUCTION, FABRICATING DUCTWORK, ORDERING EQUIPMENT, ETC., THE CONTRACTOR SHALL FIELD VERIFY SPACE LIMITATIONS AT THE JOB SITE AND COORDINATE WITH OTHER TRADES.	30.	VIRTUAL POINTS THAT MAY BE NEEDED TO PROVIDE A FULLY FUNCTIONAL SYSTEM. MOTOR CONNECTIONS AT MOTOR TERMINALS SHALL NOT BE MADE UNTIL ROTATION, HORSEPOWER, PHASE RATINGS, AND RATINGS OF	NC License# F−1222 www.mckimcreed.com
6.	ALL MATERIALS, EQUIPMENT AND PRODUCTS INCORPORATED IN THE WORK UNDER THE CONTRACT SHALL BE NEW, OF A SUITABLE GRADE		ANY REQUIRED THERMAL HEATERS HAVE BEEN VERIFIED AND APPROVED AS CORRECT FOR THE INSTALLATION BY THE MC.	ARCHITECT
	STANDARD PRODUCTS OF THE VARIOUS MANUFACTURES EXCEPT WHERE SPECIAL CONSTRUCTION OR PERFORMANCE FEATURES ARE CALLED FOR. THEY SHALL BE INSTALLED IN ACCORDANCE WITH THE	31.	INSTALL THERMOSTATS AT THE SAME HEIGHT AS THE LIGHT SWITCH WHERE INSTALLED ADJACENT AND NO HIGHER THAN PERMITTED BY ADA GUIDELINES. PROVIDE INSULATED PLATES BEHIND THERMOSTATS INSTALLED ON EXTERIOR WALLS. COORDINATE LOCATION OF WALL	
7.	MANUFACTURER'S REQUIREMENTS. ALL MATERIALS AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.		MOUNTED THERMOSTATS, TEMPERATURE SENSORS, WALL SWITCHES, ETC. WITH OTHER CONTRACTORS TO AVOID CONFLICTS WITH DRAWING BOARDS, ELECTRICAL DEVICES, TACK BOARDS, ETC. ALL WIRING TO WALL MOUNTED DEVICES SHALL BE CONCEALED IN WALL UNLESS	Strada
8.	THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED BY THEIR ACTIONS. SUCH DAMAGE SHALL BE RETURNED TO	COORE	NOTED OTHERWISE.	Juada
9.	THE OWNER AND ENGINEER, WITHOUT EXTRA COST TO ACCEPTANCE OF THE OWNER AND ENGINEER, WITHOUT EXTRA COST TO THE OWNER. THE MECHANICAL CONTRACTOR SHALL KEEP THEIR WORK SITE AND ALL ACCESS POINTS OF THE BUILDING FREE OF RUBBISH AND WASTE	32.	ALL SHUTDOWNS SHALL BE COORDINATED AND APPROVED THROUGH THE OWNERS' REPRESENTATIVE AND WILL REQUIRE ADVANCE NOTICE OF ONE WEEK MINIMUM. THIS TIME/LENGTH MAY BE LONGER OR SHORTER FOR SOME SHUTDOWNS AND SHALL BE AT THE OWNER'S	
	MATERIAL. ALL ROOF OPENINGS IN THE BUILDING REQUIRED FOR THE MECHANICAL CONTRACT SHALL BE PROVIDED BY THE GENERAL CONTRACTOR, ALL FRAMING ABOUND OPENINGS SHALL BE BY THE	33.	DISCRETION. ALL ROOF MOUNTED UNITS SHALL BE CAREFULLY COORDINATED WITH	
	GENERAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL COORDINATE SIZE OF OPENINGS AND LOCATION OF OPENINGS WITH THE GENERAL CONTRACTOR. ALL ROOF CURBS AND ROOF SUPPORT		THE STRUCTURE. MC AND GC SHALL COORDINATE ROOF STEEL PLACEMENT AND ROOF OPENINGS WHICH SHALL MATCH UP WITH THE ACTUAL UNIT OPENING LOCATION, SIZE, WEIGHTS AND DIMENSIONS. NO WORK SHALL OCCUR UNTIL CONTRACTOR HAS APPROVED SHOP	Care State 00
	RAILS FOR MECHANICAL EQUIPMENT INSTALLED ON THE ROOF SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.	DEMOL	DRAWINGS. <u>.ITION</u>	046612
10.	ALL OPENINGS IN WALLS AS REQUIRED BY THE MECHANICAL SYSTEM IN THE BUILDING SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. IT	34.	THESE DRAWINGS DEFINE THE BASIC AREA OF DEMOLITION AND ARE AS ACCURATE AS WAS POSSIBLE FROM SITE INVESTIGATIONS MADE	NGINEER IN WALT
11.	IS THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS WITH THE GENERAL CONTRACTOR AT THE JOB SITE IN A TIMELY MANNER. REFER TO ARCHITECTURAL DRAWINGS, AS AVAILABLE, FOR LOCATIONS		EQUIPMENT ARE SHOWN. ANY MECHANICAL MATERIALS AND EQUIPMENT ARE SHOWN. ANY MECHANICAL MATERIALS AND EQUIPMENT THAT ARE NOT BEING USED AFTER THE RENOVATION SHALL BE REMOVED WHETHER SHOWN OR NOT. NO MATERIALS OR	
	OF ALL RATED WALL AND FLOOR ASSEMBLIES. PROVIDE FIRE DAMPERS AND/OR U.L. LISTED ASSEMBLIES AND/OR SEALANTS PER DRAWINGS,	25	EQUIPMENT SHALL BE ABANDONED IN PLACE UNLESS OTHERWISE NOTED.	
12.	SPECIFICATIONS, AND APPLICABLE CODES AT ALL PENETRATIONS. THE MECHANICAL CONTRACTOR SHALL FURNISH ACCESS DOORS FOR ALL GYPSUM BOARD CEILINGS AT VOLUME DAMPERS, EQUIPMENT, MOTOR OPERATED DAMPERS, FIRE DAMPERS, BALANCING DEVICES OR	33.	ALL EQUIPMENT TO BE REUSED IS TO BE CLEANED. ANY EQUIPMENT FOUND TO BE NON-FUNCTIONING SHALL BE DOCUMENTED AND BROUGHT TO THE ATTENTION OF THE OWNER PRIOR TO COMMENCEMENT OF DEMOLITION. IF PROPER NOTIFICATION IS NOT	
	OTHER ITEMS REQUIRING BALANCING OR SERVICE. ACCESS DOORS SHALL BE INSTALLED BY THE GENERAL CONTRACTOR. SEE PLANS AND GENERAL CONSTRUCTION SPECIFICATIONS FOR ACCESS DOOR REQUIREMENTS.	36.	BE MADE AT NO ADDITIONAL COST TO THE OWNER. THE MECHANICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, FEES, AND INSPECTIONS REQUIRED FOR HIS WORK. ALL	
13.	MECHANICAL CONTRACTOR SHALL PROVIDE 6" HIGH HOUSEKEEPING PADS UNDER MAJOR MECHANICAL EQUIPMENT (I.E. CHILLERS) AND 4" HIGH HOUSEKEEPING PADS UNDER ALL OTHER FLOOR MOUNTED EQUIPMENT UNLESS NOTED OTHERWISE, PADS SHALL EXTEND BEYOND		MATERIALS REQUIRED FOR TESTING (E.G SMOKE GENERATORS) SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT. IF A PROJECT FAILS AN INSPECTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL COSTS ASSOCIATED WITH	REV REVISION DESCRIPTION DATE
14.	EQUIPMENT BY THE SAME DIMENSION AS THE HEIGHT OF THE PAD, UNLESS NOTED OTHERWISE. ALL PIPING AND DUCTWORK (EXCEPT IN MECHANICAL ROOMS, BOILER	37.	THE RE-INSPECTION. ANY EQUIPMENT OR MATERIAL DEVIATIONS FROM THAT SPECIFIED OR DETAILED ON THIS DRAWING SHALL BE SUBJECT TO THE APPROVAL OF THE ARCHITECT/ENGINEER, ALL PROPOSED FOUIPMENT DEVIATIONS	
15.	ROOM, ETC.) SHALL BE CONCEALED UNLESS OTHERWISE SHOWN OR NOTED. DO NOT INSTALL PIPING OR DUCTWORK OVER ANY ELECTRICAL SWITCHGEAR: SEE MECHANICAL DETAIL SHEET(S).	38.	SUBMITTED SHALL BE SIMILAR BOTH IN QUALITY AND CAPACITY TO THAT EQUIPMENT SPECIFIED. ALL MECHANICAL EQUIPMENT SHALL BE LISTED AND LABELED BY	
16.	MC SHALL BLANK OFF UNUSED PORTIONS OF LOUVERS WITH DOUBLE WALL INSULATED PANELS.	39.	APPROVED THIRD PARTY LISTING AGENT. THE MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL THEIR OWN SUPPORT FOURMENT, SUPPORT ALL FOURMENT FROM	
17. DUCTU	REFER TO SPECIFICATIONS FOR EQUIPMENT STARTUP PROCEDURES AND REQUIREMENTS.		STRUCTURAL MEMBERS, UNLESS NOTED OTHERWISE. LOCATIONS SHALL BE COORDINATED WITH ALL CONTRACTORS PRIOR TO	
<u>DUCTM</u> 18.	DUCT SIZES SHOWN ON PLANS ARE FREE AREA DIMENSIONS.	40.	INSTALLATION. DUCTWORK AND PIPING LAYOUTS AND LOCATIONS ARE SCHEMATIC. DO	
19.	ACCOMMODATE LINING, IF SPECIFIED. BEFORE FABRICATING OR INSTALLING DUCTWORK, COORDINATE DUCT LOCATIONS WITH THE ELECTRICAL CONTRACTOR'S PANELS, CONDUIT		PIPING MUST BE DETERMINED IN THE FIELD. ALL DIMENSIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR BY ACTUAL MEASUREMENT AND OBSERVATION BEFORE ORDERING OR FABRICATING ANY DUCTWORK, PIPING OR FOUIPMENT, ANY DISCREPANCIES BETWEEN THE	υĘ
	AND RECEIVED LIGHT FIXTORES, FLOWBING FIFING, AND ALL STRUCTURAL MEMBERS. THESE DRAWINGS ARE DIAGRAMMATIC AND ARE NOT SHOP DRAWINGS. ALL OFFSETS AND TRANSITIONS REQUIRED FOR THIS PROJECT MAY NOT BE SHOWN ON THESE DRAWINGS; HOWEVER, THEY SHALL BE PROVIDED WITHOUT CHANGE TO THE RID.		REQUIREMENTS OF THE CONTRACT DOCUMENTS AND THE EXISTING CONDITIONS OR DIMENSIONS SHALL BE REPORTED TO THE ENGINEER BEFORE THE PERFORMANCE OF ANY WORK. FAILURE TO VERIFY AND REPORT SHALL CONSTITUTE THE CONTRACTOR'S ACCEPTANCE OF THE	A E
20.	CONTRACTS. BEFORE FABRICATING OR INSTALLING DUCTWORK, COORDINATE FINAL LOCATION OF CEILING GRILLES, REGISTERS AND DIFFUSERS WITH	41.	EXISTING CONDITIONS AS FIT FOR THE PROPER EXECUTION OF THEIR WORK. DUCTWORK AND PIPING SHALL BE KEPT AS CLOSE AND HIGH AS	Ξ Z
21. 22	REFLECTED CEILING PLANS AND ELECTRICAL LIGHTING PLANS. ALL SURFACES SEEN THOUGH GRILLES AND DIFFUSERS SHALL BE PAINTED MATTE BLACK. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO KEEP		AVAILABLE TO THE BUILDING WALLS, CEILING AND FLOOR AND ROOF STRUCTURE IN ORDER THAT THE MAXIMUM AMOUNT OF SPACE IS AVAILABLE. ADDITIONAL OFFSETS, FITTINGS, ETC. NOT SHOWN BUT REQUIRED TO MAINTAIN MAXIMUM CLEARANCE SHALL BE PROVIDED AT	
<i></i> .	ACCESS TO THE VOLUME DAMPERS WITHIN THE LAY-IN CEILING OR EXPOSED AREAS.	42.	NO ADDITIONAL COST. THE MECHANICAL CONTRACTOR SHALL COORDINATE RESPONSIBILITY FOR ALL PATCHING AND CLEANING ASSOCIATED WITH THIS PROJECT	
23. 24.	PROVIDE FLEXIBLE CONNECTIONS TO ALL AIR MOVING EQUIPMENT. INSTALL DIFFUSERS WITH 3-WAY OR 2-WAY THROW AS REQUIRED TO AVOID BLOWING DIRECTLY ON THERMOSTATS	43.	WITH THE GENERAL CONTRACTOR. EXISTING FLOOR DRAINS SHOULD BE COVERED DURING DEMOLITION	
25.	MC SHALL CONFIRM ALL CEILING TYPES, HARD OR LAY-IN, INCLUDING NARROW TEE AND REGULAR, PRIOR TO SUBMITTAL OF SHOP DRAWINGS TO ENGINEER. ANY AIR DEVICES REQUIRING REPLACEMENT DUE TO		AND NEW WORK CONSTRUCTION.	"
				SCO ID: 22-24543-01A CODE: 42112 ITEM: 301
				DATE 2023-03-31
				M&C PROJ. # 05394-0011 DRAWN ILA

M&C PRUJ. #	05594-001
DRAWN	IL
DESIGNED	IL
CHECKED	DJV
PROJ. MGR.	DJV

CONSTRUCTION DOCUMENTS

MECHANICAL LEGEND, SYMBOLS, AND ABBREVIATIONS

M001

\\MCKIMCREED.COM\NASUNI\DATA\PROJ\05394\0011\ENG\80-DRAWINGS\86-DESIGN\86H-HVAC DESIGN\M001.DWG 04/02/2023 10:04:36 DANE WALLIN







PHASE	TASK	DESCRIPTION	CONSTRUCTION START	CONSTRUCTION STOP	DRAWINGS
LEMS	1	VALVE OFF CHWS/R AND CWS/R AND DRAIN ENTIRE SYSTEM. DEMOLISH CHW AND CDW PIPING AND EQUIPMENT AS SHOWN ON PLANS.			M203, M300
	2	INSTALL NEW CHILLERS, COOLING TOWERS AND PIPING. RE-CONNECT TO EXISTING PIPING AT LOCATIONS SHOWN.			M204, M301
SYS ⁻ SVS ⁻ DWN	3	DEMOLISH AHU ISOLATION VALVES AND INSTALL NEW ISOLATION VALVES. RE-CONNECT FINAL PIPING CONNECTIONS TO EXISTING AHUS.			M200, M201, M202
HASE	4	INSTALL NEW REFRIGERANT MONITORING SYSTEM AND VENTILATION FAN. WIRE TO EXISTING BUILDING AUTOMATION SYSTEM.	10/02/2023 12/08/2023 N		M204, M502
N & C SH	5	INSTALL NEW CONTROL DEVICES AND WIRE TO EXISTING BUILDING AUTOMATION SYSTEM.			M502, M503
CHO	NOTE	WHEN COMPLETED, INSULATE NEW PIPING AND REPAIR INSULATION ON EXISTING PIPING. RE-OPEN SHUTOFF VALVES. TEST AND BALANCE CHW AND CDW SYSTEMS AND VERIFY FLOWS ARE RETURNED TO ORIGINAL VALUES.			
PHASE 1B HHW SYSTEM SHUTDOWN	1	VALVE OFF HHWS/R AND DRAIN ENTIRE SYSTEM. DEMOLISH HHW PIPING AS SHOWN ON PLANS.	10/02/2023 12/08/2023		M200, M203, M300
	2	INSTALL NEW PIPING. RE-CONNECT TO EXISTING PIPING AT LOCATIONS SHOWN.			M200, M204, M301
	NOTE	WHEN COMPLETED, INSULATE NEW PIPING AND REPAIR INSULATION ON EXISTING PIPING. RE-OPEN SHUTOFF VALVES. TEST AND BALANCE HHW SYSTEMS AND VERIFY FLOWS ARE RETURNED TO ORIGINAL VALUES.			
	1	DEMOLISH EXISTING UNITS AHU-1, 2 ALONG WITH ASSOCIATED RETURN FANS (F-1, F-2). DUCTWORK SHALL BE DEMOLISHED BACK TO POINTS SHOWN ON PLAN. DEMOLISH CHW AND HHW PIPING BACK TO NEW SHUTOFF VALVES INSTALLED DURING PHASE 1.	12/08/2023 01/19/2024		M201
ASE 2 IANICAI M 2075	2	INSTALL NEW UNITS AHU-1,2, AND F-1,2. MAKE NEW DUCTWORK CONNECTIONS TO EXISTING DUCT MAINS WITHIN MECHANICAL ROOM. PROVIDE NEW CHW/HHW PIPING AND PIPING ACCESSORIES TO MAKE FINAL CONNECTIONS TO SHUTOFF VALVES.			M202
ROO ROO	3	INSTALL NEW CONTROL DEVICES AND WIRE TO EXISTING BUILDING AUTOMATION SYSTEM.			M500
2	NOTE	WHEN COMPLETED, INSULATE NEW DUCTWORK AND REPAIR INSULATION ON EXISTING DUCTWORK. RE-OPEN CHW AND HHW SHUTOFF VALVES. TEST AND BALANCE SYSTEMS AND VERIFY FLOWS ARE RETURNED TO ORIGINAL VALUES.			
1	1	DEMOLISH EXISTING UNITS AHU-4,5 ALONG WITH ASSOCIATED RETURN FANS (F-9, F-10). DUCTWORK SHALL BE DEMOLISHED BACK TO POINTS SHOWN ON PLAN. DEMOLISH CHW PIPING BACK TO NEW SHUTOFF VALVES INSTALLED DURING PHASE 1.	01/22/24 03/08/2024		M200
ASE 3 IANICAI M 1072	2	INSTALL NEW UNITS AHU-4,5 AND F-9,10. MAKE NEW DUCTWORK CONNECTIONS TO EXISTING DUCT MAINS WITHIN MECHANICAL ROOM. PROVIDE NEW CHW PIPING AND PIPING ACCESSORIES TO MAKE FINAL CONNECTIONS TO SHUTOFF VALVES.			M200
PH. AECF ROO	3	INSTALL NEW CONTROL DEVICES AND WIRE TO EXISTING BUILDING AUTOMATION SYSTEM.			M501
2	NOTE	WHEN COMPLETED, INSULATE NEW DUCTWORK AND REPAIR INSULATION ON EXISTING DUCTWORK. RE-OPEN CHW AND HHW SHUTOFF VALVES. TEST AND BALANCE SYSTEMS AND VERIFY FLOWS ARE RETURNED TO ORIGINAL VALUES.			

GENERAL NUTES.

- OWNER IN ADVANCE.

PHASE	AL
	M-
IEMS	M-
EIA SYSI DWN	M-
PHASE CHW & CDW SHUTD0	NO

FIRST FLOOR

MECHANICAL PHASING PLAN 1 M002 Scale: 1/32" = 1'-0"

1. ALL WORK SHALL BE PHASED IN ACCORDANCE WITH THE PHASING SCHEDULE TABLE.

2. ANY WORK RESULTING IN THE SHUTDOWN OF A SYSTEM (CHW, AHU, ETC.) SHALL BE COORDINATED WITH THE

3. WORK SHALL ONLY BE PERFORMED ON MONDAYS THROUGH THURSDAYS.

MECHANICAL ALTERNATES SCHE	DULE		
DESCRIPTION	CONSTRUCTION START	CONSTRUCTION STOP	DRAWINGS
DEMOLISH EXISTING CHW PRIMARY PUMPS AND INSTALL NEW PRIMARY PUMPS PER SCHEDULE ON M701.			M204
DEMOLISH EXISTING CHW SECONDARY PUMPS AND INSTALL NEW SECONDARY PUMPS PER SCHEDULE ON M701.			M204
PROVIDE NEW TOWER FILTRATION SYSTEM WITH ASSOCIATED PUMPS, PAD, PIPING, CONTROL VALVES, AND CONTROL PANEL.			M204
PROVIDE LINE ITEM COST TO OWNER FOR EACH ALTERNATE LISTED ABOVE. WORK DESCRIBED IN ALTERNATE SHALL ONLY BE CONSIDERED PART OF THE SCOPE OF WORK IF ADDITIONAL COST IS ACCEPTED BY OWNER.	1/24/2023	3/27/2023	

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ENGINEER				
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MECH ROOM 1072 UPPER LEVEL NEW WORK PLAN 4 M200 / Scale: 1/4" = 1'-0"

NEW WORK KEY NOTES <#>

- PROVIDE NEW AHU AS SCHEDULED. INSTALL ON EXISTING CONCRETE PAD WITH NEW 6" BASE RAIL.
- PROVIDE NEW RETURN FAN AS SCHEDULED. INSTALL ON EXISTING CONCRETE PAD 2. WITH NEW 6" BASE RAIL.
- PROVIDE NEW SUPPLY/RETURN DUCTWORK AS REQUIRED TO CONNECT NEW UNIT/RETURN FAN TO EXISTING DUCTS. SEE UPPER LEVEL PLAN FOR POINTS OF CONNECTION.
- OFFSET DUCT AS REQUIRED TO CONNECT TO EXISTING DUCT ABOVE. SEE UPPER 4. LEVEL PLAN FOR CONTINUATION.
- PROVIDE DUCT REINFORCEMENT AS REQUIRED IN SMACNA'S DUCT CONSTRUCTION 5. STANDARDS.
- ROUTE NEW CONDENSATE P-TRAP AND PIPING TO EXISTING FLOOR DRAIN. 6. DISCHARGE WITH 1" AIR GAP MINIMUM. REFER TO DETAILS FOR P-TRAP DIMENSIONS.
- PROVIDE NEW CHW PIPING AND ACCESSORIES TO CONNECT EXISTING CHW PIPING 7. TO NEW AHU. REFER TO CHW COIL PIPING DETAIL FOR MORE INFORMATION. SEE UPPER LEVEL PLAN FOR POINTS OF CONNECTION.

- PROVIDE NEW HHW PIPING TEE AND BRANCH PIPING. VALVES TO BE INSTALLED 8. DURING THE HHW SYSTEM SHUTDOWN.
- PROVIDE NEW CHW ISOLATION VALVES FAR ENOUGH FROM THE UNIT TO ALLOW 9. CHW SYSTEM ISOLATION DURING AHU REPLACEMENT. VALVES TO BE INSTALLED DURING THE CHW SYSTEM SHUTDOWN.
- 10. EXISTING DUCT SMOKE DETECTOR LOCATED IN DUCTWORK. CONTROLS CONTRACTOR SHALL CONFIRM THAT NEW FANS ARE INTERLOCKED WITH ITS RESPECTIVE EXISTING SMOKE DETECTORS AND SHUT DOWN UPON THE DETECTION OF SMOKE.
- 11. PROVIDE NEW MOTOR-OPERATED DAMPERS IN DUCTWORK.
- 12. RE-CONNECT DOMESTIC WATER HEATER AND DOMESTIC WATER PIPING. 13. RE-CONNECT PNEUMATIC LINES TO CONTROL PANEL AFTER INSTALLATION OF NEW **RETURN FAN F-9 IS COMPLETE.**

1/4"=1'-0"

14. UNIT ACCESS SECTION SHALL BE POSITIONED OVER FLOOR DRAIN TO ALLOW ACCESS TO DRAIN THROUGH BOTTOM OF UNIT.

SHEET NOTES

- MEANS OF REMOVING EXISTING UNITS AND ADDING NEW UNITS SHALL BE THROUGH THE LOUVERED EXTERIOR WALL. REFER TO ARCHITECTURAL PLANS FOR SCOPE OF WORK.
- COORDINATE DEMOLITION REQUIREMENTS WITH OTHER 2. DISCIPLINES AS REQUIRED TO COMPLETE THE SCOPE SHOWN ON THIS DRAWING.

DEMOLITION KEY NOTES

- DEMOLISH AHU CONTROL PANEL AND ALL ASSOCIATED WIRING 1. TO EXISTING AHU.
- DEMOLISH MINIMUM OA DAMPER, ECONOMIZER DAMPER, AND 2. ASSOCIATED CONTROLS.
- DEMOLISH AHU AND ASSOCIATED PIPING, DUCTS, CONTROLS, 3. SUPPORTS, AND ISOLATION VALVE SUFFICIENT TO FACILITATE INSTALLATION OF NEW UNIT. CONCRETE PAD TO REMAIN. DEMOLISH SUPPLY/RETURN DUCT CONNECTION SUFFICIENT TO 4.
- MAKE CONNECTION TO NEW UNIT. DEMOLISH RETURN FAN AND ASSOCIATED SUPPORTS AND 5.
- DUCT SUFFICIENT TO FACILITATE CONNECTION TO NEW UNIT. EXISTING CHW ISOLATION VALVES TO BE DEMOLISHED AND 6. REPLACED DURING THE CHW SYSTEM SHUTDOWN. PIPING AND
- ACCESORIES BETWEEN ISOLATION VALVES AND UNIT TO BE DEMOLISHED AT THE TIME OF UNIT DEMOLITION. DEMOLISH AHU-1 & 2 MIXING PLENUMS BACK TO THE AHU-1 & 2 7.
- RETURN DUCTS. RETURN AIR DAMPERS TO REMAIN. EXISTING HHW ISOLATION VALVES TO BE DEMOLISHED AND 8. REPLACED DURING THE HHW SYSTEM SHUTDOWN. PIPING AND ACCESORIES BETWEEN ISOLATION VALVES AND UNIT TO BE DEMOLISHED AT THE TIME OF UNIT DEMOLITION.

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SHEET NOTES

- MEANS OF ADDING NEW UNITS SHALL BE THROUGH LOUVERED 1. EXTERIOR WALL. REFER TO ARCHITECTURAL PLANS FOR SCOPE OF WORK.
- 2. COORDINATE INSTALLATION OF NEW SCOPE SHOWN WITH OTHER DISCIPLINES AS REQUIRED.

KEY NOTES <₩>

- PROVIDE NEW AHU AS PER SCHEDULE, MODIFY EXISTING 1. DUCTWORK AND HYDRONIC PIPING TO MAKE UNIT CONNECTIONS.
- PROVIDE NEW RETURN FANS AS PER SCHEDULE, MODIFY 2. EXISTING DUCTWORK TO MAKE UNIT CONNECTIONS.
- PROVIDE NEW ISOLATION VALVES ON CHW SYSTEM DURING 3. CHW SYSTEM SHUTDOWN, RELOCATE AS SHOWN ON PLAN. EXTEND CONCRETE EQUIPMENT PAD TO SUPPORT NEW UNIT 4.
- LENGTH. IF FLOOR REFINISHING ALTERNATE IS ACCEPTED, PAD EXTENSION TO BE PERFORMED PRIOR TO REFINISHING. PROVIDE NEW MOTOR-OPERATED OUTSIDE AIR DAMPER. 5.
- 6. PROVIDE NEW ISOLATION VALVES ON HHW BRANCH PIPING DURING HHW SYSTEM SHUTDOWN IN ACCESSIBLE LOCATION.

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GENERAL NOTES:

1. MECHANICAL CONTRACTOR SHALL CAPTURE ANY REFRIGERANT FROM DEMOLISHED EQUIPMENT. CAPTURED REFRIGERANT SHALL BE RECLAIMED BY AN EPA CERTIFIED RECLAIMER PER NCMC SECTION 1102.2.2.

DEMOLITION NOTES:

- 1. DEMOLISH CHILLER AND ASSOCIATED POWER, CONTROLS, ETC. EQUIPMENT PAD TO REMAIN.
- 2. DEMOLISH COOLING TOWER AND ASSOCIATED POWER CONTROLS, ETC.
- CONCRETE EQUIPMENT RAILS TO REMAIN. 3. DEMOLISH CONDENSER WATER PUMP AND ASSOCIATED POWER. PROVIDE
- STEEL COVER OVER OPENING TO SUMP. 4. SECTION OF CHWS/R & HWS/R PIPE TO BE ABANDONED IN PLACE AND FILLED
- WITH FLOWABLE FILL. 5. DEMOLISH CONDENSER WATER PIPING BACK TO THE EXTERIOR OF THE
- BUILDING. DEMOLISH ASSOCIATED HEAT TRACE.
- 6. DEMOLISH REFRIGERANT MONITORING SYSTEM. 7. DEMOLISH CHW AND HW SUFFICIENT TO MAKE NEW CONNECTIONS TO NEW ABOVE GROUND PIPING. FILL ABANDONED PIPING IN COOLING TOWER YARD WITH FLOWABLE FILL AND THEN CAP INSIDE MECHANICAL ROOM.
- 8. DEMOLISH COOLING TOWER BYPASS LINE SUFFICIENT TO MAKE NEW
- CONNECTION. 9. DEMOLISH EXISTING REFRIGERATION DETECTION AND ASSOCIATED SAMPLING POINTS.
- 10. EXISTING DE-COMMISIONED CHEMICAL TREATMENT STATION TO BE REMOVED BY OWNER TO PROVIDE CLEAR WALL SPACE FOR INSTALLATION OF VFD
- DURING RENOVATION WORK. 11. DEMOLISH EXISTING STROBE/SIREN FROM EXISTING REFRIGERANT
- MONITORING SYSTEM. 12. DEMOLISH COOLING TOWER BYPASS PIPING DOWN TO FLOOR. FILL
- ABANDONED CONDENSER WATER PIPING BELOW GRADE WITH FLOWABLE FILL AND CAP PIPING AT FLOOR. 13. EXISTING CONDENSER WATER BELOW GRADE IN COOLING TOWER YARD SHALL BE ABANDONED IN PLACE AND FILLED WITH FLOWABLE FILL. REMOVE
- BELOW GRADE SHUT ISOLATION VALVES AND PROVIDE FLANGE CAP AT ACCESS VAULT AND SUMP PITS. 14. EXISTING MAKEUP WATER ASSEMBLY AND PIPING TO REMAIN.
- 15. DEMOLISH AUXILIARY TOWER MAKEUP PIPING (MANUAL FILL) AND SHUTOFF
- VALVE SUFFICIENT FOR INSTALLATION OF NEW COOLING TOWER. 16. PATCH OPENINGS IN WALL AFTER DEMOLISHING PIPING. RE-FINISH TO MATCH SURROUNDING WALL.
- 17. EXISTING MOTORIZED ISOLATION VALVE LOCATED ON CDWR PIPING TO BE RE-LOCATED TO NEW CDWS PIPING AS PART OF NEW WORK SCOPE. 18. DEMOLISH EXISTING VENTILATION FAN AND ASSOCIATED MOTOR-OPERATED
- DAMPER. EXISTING WALL OPENING TO REMAIN. SEE NEW WORK PLAN FOR INSTALLATION OF NEW FAN AND DAMPER.

UTILITY BUILDING DEMOLITION PLAN

M203 Scale: 1/4" = 1'-0"

		OWNER
		PBS NORTH POWERED BY THE UNC SYSTEM
		ENGINEER
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(#) <u>NEW WORK NOTES</u>:

1. INSTALL NEW COOLING TOWER ON EXISTING CONCRETE SUPPORTS. PROVIDE MANUFACTURER'S RECOMMENDED VIBRATION ISOLATION.

- 2. PROVIDE NEW VENTILATION FAN F-16 AS SCHEDULED. MODIFY EXISTING WALL OPENING AS REQUIRED TO INSTALL NEW FAN. PROVIDE NEW MOTOR-OPERATED DAMPER ON FAN INLET SIDE.
- 3. NEW HHW PIPING ROUTED THROUGH WALL ABOVE VENTILATION FAN. NEW CHW PIPING TO DROP DOWN TO GROUND SUPPORT BEFORE WALL PENETRATION AND ROUTE THROUGH WALL BELOW VENTILATION FAN.
- NEW CDW PUMPS TO BE INSTALLED ON NEW 4" EQUIPMENT PAD.
 INSTALL NEW WATER-COOLED CHILLERS ON EXISTING EQUIPMENT PAD. MAKE NEW PIPING CONNECTIONS. REFER TO MECHANICAL DETAILS FOR MORE INFORMATION.
- 6. INSTALL NEW REFRIGERANT MONITORING SYSTEM. LOCATE REFRIGERANT DETECTION SENSORS AND PERFORM SYSTEM TESTING AS RECOMMENDED BY MANUFACTURER. REFER TO CONTROLS DRAWINGS FOR MORE INFORMATION.
- 7. ALTERNATE M-1,2: PROVIDE NEW PRIMARY (ALTERNATE M-1) AND SECONDARY (ALTERNATE M-2) CHWP AS SCHEDULED ON DRAWING M701 IF ALTERNATE IS ACCEPTED BY OWNER. CONTRACTOR SHALL MAKE NEW ELECTRICAL CONNECTIONS TO EXISTING MOTOR STARTER/VFDS. DEMOLISH AND INSTALL NEW PIPING CONNECTIONS, ISOLATION VALVES AND PIPING ACCESSORIES PER PUMP DETAIL.
- INSTALL COOLING TOWER FAN VFD'S (PROVIDED BY OWNER) ON INTERIOR WALL.
- 9. PROVIDE LOCAL DISCONNECT FOR COOLING TOWER FANS AND INSTALL ON EXTERIOR WALL.
- 10. ALTERNATE M-3: PROVIDE NEW 4" TALL PAD THAT EXTENDS 8" PAST EDGE OF EQUIPMENT.
- 11. ALTERNATE M-3: NEW TOWER BASIN FILTRATION SYSTEM INSTALLED ON 4" TALL PAD.
- ALTERNATE M-3: INSTALL TOWER BASIN FILTRATION MANUFACTURER'S CONTROL PANEL.
 ALTERNATE M-3: INSTALL MOTOR-OPERATED VALVES PROVIDED BY
- TOWER BASIN FILTRATION MANUFACTURER AS PART OF MULTI-TOWER KIT.
- 14. INSTALL NEW STROBE AND SIREN FOR NEW REFRIGERANT MONITORING

UTILITY BUILDING NEW WORK PLAN

M204 Scale: 1/4" = 1'-0"

SYSTEM. ROUTE CONTROL WIRING FROM REFRIGERANT MONITORING CONTROL PANEL TO NEW DEVICES AS REQUIRED.

15. PROVIDE AND INSTALL CHROMALOX INTELLITRACE COMMERCIAL HEAT TRACE CONTROLLER.

 TIE EXISTING MOTOR-OPERATED DAMPER INTO CONTROL SYSTEM. REFER TO DRAWING M502 FOR CONTROL SEQUENCE OF OPERATION.
 EXISTING MAKEUP WATER ASSEMBLY AND PIPING TO REMAIN.

18. PROVIDE NEW INSULATION ON EXISTING TO REMAIN PIPING AFTER MAKING NEW PIPING CONNECTIONS.

19. PROVIDE NEW MOTORIZED ISOLATION VALVE ON CHWR PIPING TO CHILLERS. REFER TO CONTROL SCHEMATICS AND MECHANICAL DETAILS.

20. RELOCATE EXISTING MOTORIZED ISOLATION VALVE FROM DEMOLISHED
 21. ROUTE REFRIGERANT PURGE PIPING FROM ASSOCIATED CHILLERS

RELIEF VALVE(S) UP THRU ROOF. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR SIZING AND PIPING

INFORMATION/ACCESSORIES. VENT SHALL TERMINATE A MINIMUM OF 15' ABOVE ADJACENT GRADE AND NOT LESS THAN 20 FEET FROM ANY BUILDING OPENING PER NCMC SECTION 1105.7.

22. SECONDARY PUMP VARIABLE SPEED CONTROLLERS ARE EXISTING TO REMAIN.

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VARIABLE AIR VOLUME AIR HANDLING UNIT CONTROL SCHEMATIC - (AHU-1 & 2)

THE SUPPLY FAN SHALL BE ENABLED WHEN THE UNIT IS IN RUN STATUS AND WHENEVER:

- THE OUTSIDE AND SUPPLY AIR DAMPER STATUS'S ARE PROVEN (IF PROVIDED), AND
- THE EMERGENCY AND MANUAL SHUTDOWN MODE ARE NORMAL, AND
- THE HIGH STATIC SWITCH (IF PROVIDED) IS NORMAL, AND
- THE FREEZESTAT SWITCH(ES) ARE NORMAL.

THE SUPPLY FAN STATUS SHALL INDICATE THE UNIT IS ENERGIZED WHEN THE VFD CURRENT SWITCH IS MADE. THE SUPPLY FAN VFD CURRENT SWITCH SHALL HAVE A TIMED DELAY OF 15 SECONDS (ADJ.) AFTER WHICH THE UNIT SHALL BE IN 'RUN' MODE. THE UNIT SHALL SHUT DOWN THE FAN IF STATUS IS NOT PROVED AND CHANGE THE UNIT STATUS TO 'EMERGENCY SHUTDOWN'.

SUPPLY FAN CONTROL (UNOCCUPIED MODE):

- THE SUPPLY FAN SHALL BE ENABLED WHEN THE UNIT IS IN RUN STATUS AND WHENEVER:
- THE HIGH STATIC SWITCH IS NORMAL, AND
- THE LOW STATIC SWITCH IS NORMAL, AND
- THE FREEZESTAT SWITCH(ES) ARE NORMAL.

THE CONTROLLER SHALL MEASURE THE SUPPLY AIRFLOW CFM. THE SUPPLY FAN VFD SPEED SHALL BE MODULATED TO VARY THE AIRFLOW FROM 50% TO 100% (AS LISTED ON THE AHU SCHEDULE) IN ORDER TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.

RETURN FAN CONTROL:

THE RETURN FAN SHALL BE ENABLED WHEN THE UNIT IS IN RUN STATUS. THE RETURN AIR FAN SHALL MODULATE TO MAINTAIN THE RETURN AIR FLOW SETPOINT. THE RETURN FAN AIRFLOW SHALL UTILIZING A ROLLING 5 MINUTE (ADJ.) AVERAGE SUPPLY AIR CFM TO ESTABLISH RETURN AIRFLOW RATE. TAB CONTRACTOR SHOULD SET THE INITIAL OFFSET SO THAT THE SPACE IS 0.01" W.C. POSITIVE TO THE EXTERIOR DURING INSTALLATION.

SECONDS (ADJ.) AFTER WHICH SHALL SHUT DOWN THE FAN IF STATUS IS NOT PROVED AND CHANGE THE UNIT STATUS TO 'EMERGENCY SHUTDOWN'.

SPACE TEMPERATURE CONTROL THROUGH RA TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE AND SHALL MODULATE THE SUPPLY AIR TEMPERATURE AND VOLUME TO MAINTAIN THE RETURN AIR TEMPERATURE SETPOINT. WHEN THE UNIT IS AT MINIMUM AIRFLOW, THE FIRST STAGE OF COOLING SHALL BE TO DRIVE THE SA TEMPERATURE DOWN TO 55°F (ADJ.). WHEN THE SA TEMP IS 55°F AND THE RA TEMPERATURE REMAINS ABOVE SETPOINT, THE SUPPLY AIRFLOW SHALL BE GRADUALLY INCREASED TO MAINTAIN SETPOINT. AS THE RA TEMPERATURE DROPS BELOW SETPOINT, THE REVERSE SHALL OCCUR.

IF THE UNIT IS AT MINIMUM AIRFLOW AND THE RETURN AIR TEMPERATURE REMAINS BELOW SETPOINT, THE SUPPLY AIR TEMPERATURE SHALL BE GRADUALLY INCREASED UP TO A MAXIMUM OF 90°F (ADJ.). IF THE SA TEMPERATURE IS 90°F AND THE RA TEMPERATURE REMAINS BELOW SETPOINT, THE AIRFLOW SHALL BE GRADUALLY INCREASED TO MAINTAIN SETPOINT. AS THE RAT TEMPERATURE INCREASES ABOVE SETPOINT, THE REVERSE SHALL OCCUR.

DEHUMIDIFICATION:

DEHUMIDIFICATION MODE SHALL BE ENABLED WHEN THE RETURN AIR RELATIVE HUMDIITY RISES TO 58% (ADJ) FOR A MINIMUM OF 15 MIN. AND DISABLED WHEN IT FALLS TO 54% (ADJ). WHILE IN DEHUMIDIFICATION MODE, CALCULATE SETPOINT USING A LINEAR RESET BLOCK WITH THE UPPER SETPOINT LIMIT FROM THE OUTPUT OF THE ABOVE CALCULATION AND THE LOWER LIMIT OF 55°F (ADJ).

COOLING COIL VALVE CONTROL:

THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE COOLING COIL VALVE TO MAINTAIN ITS COOLING SETPOINT.

- THE COOLING SHALL BE ENABLED WHENEVER:
- MANUAL SHUTDOWN MODE IS NOT ACTIVE.

HEATING COIL VALVE CONTROL:

THE CONTROLLER SHALL MEASURE THE RETURN AIR TEMPERATURE AND MODULATE THE HEATING COIL VALVE TO MAINTAIN 80°F (ADJ.).

- HEATING SHALL BE ENABLED WHENEVER:
- OUTSIDE AIR TEMPERATURE IS LESS THAN 50°F (ADJ.), AND
- COOLING IS NOT ACTIVE, AND MANUAL SHUTDOWN MODE IS NOT ACTIVE.
- DEMAND CONTROL VENTILATION:

VENTILATION AIR SHALL BE MODULATED BY DEMAND CONTROL. CO2 SHALL BE MEASURED IN THE RETURN AIR DUCT. FOR CO2 LEVELS BELOW 700 PPM, THE OUTSIDE AIR DAMPER SHALL REMAIN AT THE MINIMUM POSITION ESTABLISHED BY TAB CONTRACTOR TO MEET THE MINIMUM OA FLOW SCHEDULED. AS THE CO2 INCREASES ABOVE 700 PPM, A LINEAR RESET SHALL OPEN THE OUTSIDE AIR DAMPER FROM THE MINIMUM POSITION AT 700 PPM TO 100% OPEN AT 1000 PPM.

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										PBS NORTH POWERED BY THE UNC SYSTEM
										ENGINEER
										Venture IV Building, Suite 500 1730 Varsity Drive Raleigh, North Carolina 27606 Phone: (919) 233–8091, Fax: (919) 233–8031
										NC License# F−1222 www.mckimcreed.com
SUPPLY AIR TO VAV'S										ARCHITECT Strada
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STAGE

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ON RISING CHILLED WATER DIFFERENTIAL PRESSURE, THE VFD'S SHALL STAGE OFF AS

THE CHILLED WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET BASED ON OUTSIDE AIR

CHILLED WATER TEMPERATURE MONITORING:

ALARMS SHALL BE PROVIDED AS FOLLOWS FOR BOTH COOLING TOWERS:

THE CONTROLLER SHALL MODULATE THE COOLING TOWER FAN SPEED TO MAINTAIN A CONDENSER WATER SUPPLY TEMPERATURE SETPOINT. THE CONDENSER WATER SUPPLY TEMPERATURE SETPOINT SHALL BE RESET TO EQUAL THE MEASURED OUTDOOR WET BULB TEMPERATURE PLUS 7°F (ADJ.). THE VFD'S MINIMUM SPEED SHALL NOT DROP BELOW 30% (ADJ.).

<u>COOLING TOWER VFD FAN - CONDENSER WATER TEMPERATURE CONTROL:</u> THE COOLING TOWER FAN SHALL ONLY BE ENABLED WHEN THE BYPASS VALVE IS FULLY CLOSED (OPEN TO THE TOWER) AND BOTH COOLING TOWER ISOLATION VALVES ARE OPEN.

COOLING TOWER BYPASS VALVE CONTROL: THE COOLING TOWER BYPASS VALVE SHALL MODULATE TO MAINTAIN A MINIMUM CONDENSER WATER SUPPLY TEMPERATURE SETPOINT OF 65°F (ADJ.), OR AS RECOMMENDED BY THE CHILLER MANUFACTURER. THE COOLING TOWER BYPASS VALVE SHALL FULLY BYPASS THE TOWER AT THE LOW LIMIT SETPOINT AND SHALL BE FULLY OPEN TO THE TOWER AT THE LOW LIMIT PLUS 3°F (ADJ.).

CONDENSER WATER PUMP RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON

CONDENSER WATER PUMP FAILURE: COMMANDED ON, BUT THE STATUS IS OFF

ALARMS SHALL BE PROVIDED AS FOLLOWS:

THE DELAY TIMES SHALL BE SET APPROPRIATELY TO ALLOW FOR ORDERLY CONDENSER WATER SYSTEM START-UP, SHUTDOWN AND SEQUENCING.

- AND A USER ADJUSTABLE DELAY ON STOP
- A USER ADJUSTABLE DELAY ON START

SHALL STOP ONLY AFTER THE CHILLER IS DISABLED. THE CONDENSER WATER PUMP SHALL THEREFORE HAVE:

THE CONDENSER WATER PUMP SHALL START PRIOR TO THE CHILLER BEING ENABLED AND

RUN.

CONDENSER WATER PUMP OPERATION: THE CONDENSER WATER PUMP SHALL RUN ANYTIME THE ASSOCIATED CHILLER IS CALLED TO

AND RESET AT THE BAS.

MANUAL RESET OF COOLING TOWERS SHALL BE PERFORMED ONCE THE ALARM IS ADDRESSED

<u>COOLING TOWER VIBRATION SWITCH:</u> THE COOLING TOWER SHALL BE HARDWIRED TO SHUT DOWN RECEIVING A VIBRATION SWITCH STATUS. THE BAS SHALL MONITOR THE VIBRATION SWITCH AND GENERATE AN ALARM UPON ITS STATUS ACTIVATION.

THE DELAY TIMES SHALL BE SET APPROPRIATELY TO ALLOW FOR ORDERLY SYSTEM START-UP, SHUTDOWN AND SEQUENCING.

• AND A USER ADJUSTABLE DELAY ON STOP.

A USER ADJUSTABLE DELAY ON START.

VALVE SHALL THEREFORE HAVE:

AND SHALL CLOSE ONLY AFTER THE CHILLER IS DISABLED. THE CONDENSER WATER ISOLATION

ASSOCIATED CHILLER IS DISABLED OR TURNS OFF DUE TO FAILURE. THE CONDENSER WATER ISOLATION VALVE SHALL OPEN PRIOR TO THE CHILLER BEING ENABLED

CALLED TO RUN. THE CONDENSER WATER ISOLATION VALVE SHALL CLOSE WHEN THE

CONDENSER WATER ISOLATION VALVE:

THE CONDENSER WATER ISOLATION VALVE SHALL OPEN ANYTIME THE ASSOCIATED CHILLER IS

ENABLED AND THE ASSOCIATED CHILLER IS ON.

THE COOLING TOWERS SHALL BE ENABLED TO RUN WHENEVER THE CHILLED WATER SYSTEM IS VFD ALARM

COOLING TOWER - RUN CONDITIONS:

CONDENSER WATER TEMPERATURE MONITORING:

• CT-1 CONDENSER WATER SUPPLY.

CT-1 CONDENSER WATER RETURN.

CT-2 CONDENSER WATER SUPPLY.

CT-2 CONDENSER WATER RETURN.

EQUIPMENT CROSSOVER CONTROL:

ALARMS SHALL BE PROVIDED AS FOLLOWS:

THE FOLLOWING TEMPERATURES SHALL BE MONITORED:

TEMPERATURE IS GREATER THAN 90°F (ADJ.).

TEMPERATURE IS LESS THAN 60°F (ADJ.).

COOLING TOWER, OR EITHER COOLING TOWER PUMP.

- FAILURE: COMMANDED ON, BUT THE STATUS IS OFF

HIGH CONDENSER WATER SUPPLY TEMPERATURE: IF THE CONDENSER WATER SUPPLY

LOW CONDENSER WATER SUPPLY TEMPERATURE: IF THE CONDENSER WATER SUPPLY

IN THE EVENT OF EQUIPMENT FAILURE OR EQUIPMENT MAINTENANCE, THE BAS SHALL HAVE THE

ABILITY TO OPERATE A GIVEN CHILLER WITH EITHER PRIMARY CHILLED WATER PUMP, EITHER

A SIMPLIFIED TABLE SHALL BE PROVIDED ON THE BAS GRAPHICS TO ALLOW THE USER TO PUT

COOLING TOWER PUMP TO OPERATE IN THIS MANUAL CROSSOVER MODE. MANUAL ISOLATION

VALVES AND CROSSOVER VALVE SHALL BE ADJUSTED BY FACILITIES STAFF DURING TEMPORARY

THE SYSTEM IN A MANUAL CROSSOVER MODE (GIVEN THE CORRECT ADMINISTRATIVE PRIVILEGES FOR THE USER). IN THIS TABLE, THE USER SHALL BE ABLE TO MANUALLY SELECT

(ONE OF EACH) WHICH CHILLER, PRIMARY CHILLED WATER PUMP, COOLING TOWER, AND

SHUTDOWN OF SYSTEM AND RUN ON USER COMMAND FROM FROM BAS.

- RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT

- SEQUENCE OF OPERATION

CT CWS TEMP 2

CONDENSER WATER CONTROL SCHEMATIC

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OWNER FURNISHED EQUIPMENT SHALL BE FURNISHED WITHOUT	
CONTROLS. THE CONTROLS CONTRACTOR SHALL PROVIDE ALL	
CONTROLS, EXCEPT WHERE NOTED TO BE EXISTING.	

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	AIR HANDLING UNIT SCHEDULE																																				
						SUPI	PLY FAN DAT	A											COOLING COIL D	ATA									HOT WATER	PREHEAT CO	DIL DATA				FILT	ER DATA	
TAG	TYPE	TOTAL CFM	MIN. OA CFM	STATIC ESP	C (IN. WG.) TSP	HP	BHP	RPM	TYPE	SIZE	CLASS	VOLTS/ PHASE	MAX FACE VEL. (FPM)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	MAX APD (IN. WG.)	CAP. (MBH) TOTAL/SENS	MAX ROWS	MAX FPI	GPM	MAX WPD (FT. WG.)	FLUID VEL (FPS)	MAX FACE VEL. (FPM)	EAT (°F)	LAT (°F)	MAX APD (IN. WG.)	CAP. (MBH)	MAX ROWS	MAX FPI	GPM	MAX WPD (FT. WG.)	FLUID VEL (FPS)	PRE&FI EFF/MERV	NAL FILTER	- MANUFACTURER/ - MODEL#
AHU-1	BUILT-UP CHW/HHW	25000	1250	0.90	2.92	25.0	19.60	1159	DIRECT	365-12	11	460/3	473	72.0	59.3	49.8	48.6	0.52	708/595	6	11	117	13.6	3.9	473	60.0	82.8	0.04	618	1	8	30.0	7.9	4.0	MERV 8/11	0.24 / 0.34	YORK/XTI-75x129
AHU-2	BUILT-UP CHW/HHW	20000	1070	0.90	2.85	15.0	14.06	1184	DIRECT	330-9	11	460/3	471	72.0	59.3	49.9	48.7	0.51	561/474	6	11	94	11.7	3.4	471	60.0	82.7	0.04	493	1	8	24.0	6.4	3.4	MERV 8/11	0.24 / 0.34	YORK/XTI-72x114
AHU-4	BUILT-UP CHW	13000	650	2.50	4.24	15.0	12.81	1524	DIRECT	270-12	II	460/3	473	80.0	66.0	57.2	54.9	0.34	415/305	5	8	68	9.5	3.3	-	-	-	-	-	-	-	-	-	-	MERV 8/11	0.24 / 0.34	YORK/XTI-66x84
AHU-5	BUILT-UP CHW	23000	2500	3.00	5.14	30.0	27.81	1494	DIRECT	330-12	11	460/3	557	81.0	66.6	57.3	55.0	0.51	800/578	5	9	129	11.2	4.0	-	-	-	-	-	-	-	-	-	-	MERV 8/11	0.35 / 0.49	YORK/XTI-66x120
NOTES		•	•	•	•	•	•	•	•	•	S	JITABLE FOR	LISE WITH VED	PROVIDE :	Sol id sh	AFT GROUNI		G TO PREVEN	IT FLUTING	·	•	•												<u>.</u>	<u>.</u>	<u> </u>	·

NOTES

CHILLED WATER COILS SELECTED FOR EWT/LWT = 42°F/54°F HOT WATER COILS SELECTED FOR EWT/LWT = 180°F/140°F

1. AHU'S ARE OWNER-FURNISHED AND CONTRACTOR-INSTALLED. THIS SCHEDULE IS PROVIDED FOR INFORMATION ONLY. REFER TO SPECIFICATIONS FOR INFORMATION REGARDING DELIVERY DATES AND SCHEDULE IMPACTS. AS A PART OF THIS CONTRACT, THE MECHANICAL CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR COORDINATING WITH JOHNSON CONTROLS INC. REGARDING THE FINAL DELIVERY AND OFFLOADING OF THE AHU'S.

2. SEE SPECIFICATIONS FOR UNIT CONSTRUCTION. SEE PLANS FOR UNIT ARRANGEMENT.

3. PROVIDE THREE (3) SETS OF PRE-FILTERS AND FINAL FILTERS AS REQUIRED FOR AIR HANDLING UNIT. UNIT TOTAL SP SHALL INCLUDE "FULL LOADED" AIR PRESSURE DROP OF FILTERS WHICH IS NOT INCLUDED AS PART OF ESP.

4. PROVIDE INTERNAL VIBRATION ISOLATION FOR SUPPLY FANS.

5. COIL CAPACITIES DO NOT INCLUDE HEAT FROM FAN MOTOR.

6. PROVIDE INDIVIDUALLY REMOVABLE COOLING AND HEATING COILS.

7. PROVIDE NEMA PREMIUM EFFICIENCY MOTORS WITH RATINGS STAMPED ON NAMEPLATE. MOTORS SHALL BE INVERTER DUTY RATED,

WATER-COOLED CENTRIFUGAL CHILLER SCHEDULE

			E	EVAPORATC)R				CONDENSE	R			COMPRES	SOR DATA		INPUT	MIN	MAX		
TAG	TONS	GPM	EWT (°F)	LWT (°F)	PD (FT.)	FOULING	GPM	EWT (°F)	LWT (°F)	PD (FT.)	FOULING	NUMBER	VOLTS	PHASE	NPLV	POWER (KW)	CIRCUIT AMPS	CIRCUIT AMPS	MANOFACTORER/ MODEL #	REFRIGERANT
CRM-1	210	419 E	EA	40	10.1	0.000100	640.9	95	04.2	7.01	0.000250	1	460	2	0.2705	107.5	210	250	YORK	D 10227D(E)
CRM-2	210	410.5	54	42	10.1	0.000100	040.0	00	94.5	7.91	0.000250		400	5	0.3795	127.5	210	350	YZ-MA024AN022P033HA	R-12332D(E)

NOTES:

1. CHILLERS ARE OWNER-FURNISHED AND CONTRACTOR-INSTALLED. THIS SCHEDULE IS PROVIDED FOR INFORMATION ONLY. CHILLERS ARE ALREADY IN OWNER'S POSSESSION AT A LOCAL STORAGE YARD AND PROCUREMENT WILL NOT AFFECT THE SCHEDULE. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE STORAGE YARD FOR

DELIVERY TO THE SITE.

MARK	SERVING	LOCATION	TYPE	SERVICE	GPM	TOTAL FT. HEAD	RPM	EFF. (%) MIN.	SUCTION (IN.)	DISCH. (IN.)	IMPELLER SIZE (IN.)	BHP	MIN. HP	LECTRICA VOLTS	ø	MANUFACTURER/ MODEL NO.	NOTES
P-10, P-11	CONDENSER	CONDENSER	END SUCTION	CONDENSER WATER	630	60	1646	85.3	5	4	9.25	11.2	15	460	3	BELL & GOSSET SERIES e-1510 MODEL 4BD	1 THRU 7
NOTES																	

NOTES:

GENERAL: SEE SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.

MANUFACTURER TO PROVIDE PERFORMANCE CURVES INDICATING ALL OPERATING POINTS OF PUMPING SYSTEM.

2. MOTORS SHALL BE NON-OVERLOADING THROUGHOUT THE PUMP CURVE, PREMIUM EFFICIENCY TYPE.

3. PROVIDE BRONZE FITTED, INTERNALLY SELF FLUSHING MECHANICAL SEALS.

4. PROVIDE NEMA PREMIUM EFFICIENCY MOTOR WITH RATING STAMPED ON NAMEPLATE.

5. PROVIDE WITH BRONZE WEAR RINGS.

6. PROVIDE WITH MECHANICAL SEAL KIT AND CASING GASKET.

7. PROVIDE VFD WITH NEMA 1 ENCLOSURE, FUSED DISCONNECT, AND THREE-CONTACTOR BYPASS. 100KA SCCR

	FAN SCHEDULE														
MARK	TYPE	AREA SERVED	LOCATION	CFM	T.S.P. (" W.G.)	FAN SPEED	MAX. NOISE LEVEL (INLET SONES)	FAN WHEEL	FAN TYPE	MIN. HP	ELECTRICAL VOLTS	Ø	BASIS OF DESIGN/ MODEL	REMARKS (NOTES)	
F-1	RETURN	AHU-1	MECH. ROOM 2075	23750	1.92	1251	-	SWSI	DDP	15.0	460	3	YORK XTI-66x114	1 - 7, 8	
F-2	RETURN	AHU-2	MECH. ROOM 2075	19000	1.50	951	-	DWDI	DDP	10.0	460	3	YORK XTI-66x114	1 - 7, 8	
F-9	RETURN	AHU-4	MECH. ROOM 1072	12350	1.90	1693	-	DWDI	BELT	10.0	460	3	YORK XTI-57x90	1 - 7, 8	
F-10	RETURN	AHU-5	MECH. ROOM 1072	21000	2.00	1069	-	DWDI	DDP	15.0	460	3	YORK XTI-66x114	1 - 7, 8	
F-16	EXHAUST	UTILITY BUILDING	UTILITY BUILDING	2650	0.50	1467	19.8	PROP	DDP	1.0	460	3	GREENHECK AER-20-02-0615-VG	1 - 7, 9,10	

NOTES:

OF THE SCHEDULE IS PROVIDED FOR INFORMATION ONLY. REFER TO SPECIFICATIONS FOR INFORMATION REGARDING DELIVERY DATES AND SCHEDULE IMPACTS. AS A PART OF THIS CONTRACT, THE MECHANICAL CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR COORDINATING WITH JOHNSON CONTROLS INC. REGARDING THE FINAL DELIVERY AND OFFLOADING OF THE AHU'S/FANS.

1. <u>F-1, F-2, F-9, AND F-10 ARE OWNER-FURNISHED AND CONTRACTOR-INSTALLED AS A</u> PART OF THE AHU'S (F-16 IS CONTRACTOR FURNISHED AND INSTALLED). THIS PORTION 3. PROVIDE ALL FANS WITH UNIT MOUNTED UL LISTED STARTER/DISCONNECT SWITCHES. 8. BASIS OF DESIGN IS YORK AND GREENHECK; EQUALS BY COOK AND TWIN CITY ARE ACCEPTABLE. 4. UNITS SHALL BEAR AMCA SEAL AND U.L. LABEL. 9. PROVIDE VFD WITH NEMA 1 ENCLOSURE FOR MOTOR CONTROL 5. PROVIDE BACKDRAFT DAMPER AND INSULATED CASING. 10. PROVIDE ECM MOTOR WITH SPEED ADJUSTMENT FOR MOTOR CONTROL. PROVIDE UNVERSAL MOUNTING BRACKETS WITH SPRING ISOLATORS. PROVIDE DIAL ON MOTOR CONTROL. 11. F-16: PROVIDE MANUFACTURER'S WALL HOUSING, WALL GUARD, AND WEATHER HOOD

2. ALL FANS MOTORS SHALL BE NON-OVERLOADING.

SUITABLE FOR USE WITH VFD. PROVIDE SOLID SHAFT GROUNDING RING TO PREVENT FLUTING. 8. PROVIDE DIFFERENTIAL PRESSURE GAUGES WITH COPPER TUBING ACROSS FILTER SECTION, COOLING COIL, AND SUPPLY FAN.

9. PROVIDE COOLING COIL WITH STAINLESS STEEL CASING.

10. PROVIDE COOLING COIL MODULE WITH ALL STAINLESS STEEL INCLUDING SUPPORTS, STANDS, ENGLES, INSIDE SKIN, BULKHEAD,

FLASHING, FASTENERS, ETC. 11. PROVIDE TEST PORTS IN ALL ACCESS DOORS.

12. PROVIDE 6" TALL BASE RAIL.

13. PROVIDE ACCESS MODULES AS SHOWN ON PLANS. MINIMUM ACCESS DOOR SIZE SHALL BE 10" WIDE.

14. REFER TO INDIVIDUAL PLANS FOR MAXIMUM UNIT DIMENSIONS.

15. PROVIDE EXTENDED GREASE LEADS FOR FAN BEARINGS TO AHU EXTERIOR.

16. BASIS OF DESIGN SHALL BE JCI. EQUALS BY CARRIER AND TRANE ARE ACCEPTABLE.

17. COOLING COIL WATER VELOCITY SHALL BE SELECTED FOR 4-6 FPS AT DESIGN CONDITIONS.

PUMP SCHEDULE

18. DIFFERENTIAL PRESSURE GAUGES SHALL BE MOUNTED ON THE EXTERIOR OF THE AHU AT A FIXED LOCATION, NOT INTO THE AHU HOUSING OR ONTO DOORS.

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MARK		SERVING	
P-1, P	-2	CHILLER	
P-3, P	9-4	BLDG LOAD	
<u>NOT</u> GEN	<u>'ES:</u> IERA	L: PROVIDE ADDITIO	NAL ALTER
1. MA		- NUFACTURER TO PR	OVIDE PER
2.	MO	TORS SHALL BE NON	I-OVERLOA
3.	PRO	OVIDE BRONZE FITTE	ED, INTERN
4.	PRO	OVIDE NEMA PREMIL	IM EFFICIEI
5. PR(OVIDE WITH BRONZE	WEAR RIN
6.	PRO	OVIDE WITH MECHAN	NCAL SEAL
7.	PRO	OVIDE MOTOR STAR	TER FOR N

COOLING TOWER SCHEDULE

			E WE				FAN	N		SUMP HEATE	RS			UNIT DIMENSION
TAG	TYPE	GPM	(°F)	(°F)	WB	QTY	HP	VOLTS/Ø	KW/HTR.	#/HTRS.	VOLTS/Ø	LENGTH	WIDTH	HEIGHT
CT-1		630	05	95	70	1	2	460/2	c	2	460/2	10:01/0"	0! E 2/4"	101 5 7/0"
CT-2	CRUSS FLOW	630	95	85	78		3	460/3	0	Z	460/3	18-0 1/2*	8-5 3/4	12-57/8

NOTES:

- COOLING TOWERS ARE OWNER-FURNISHED AND CONTRACTOR-INSTALLED. THIS SCHEDULE IS PROVIDED FOR INFORMATION ONLY. COOLING TOWERS ARE ALREADY IN OWNER'S POSSESSION AT A LOCAL STORAGE YARD AND PROCUREMENT WILL NOT AFFECT THE SCHEDULE. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE STORAGE YARD FOR DELIVERY TO THE SITE.
- COOLING TOWER AND ASSOCIATED VFD'S SHALL BE OWNER-FURNISHED AND INSTALLED BY CONTRACTOR. REFER TO MANUFACTURER'S INSTRUCTIONS 6. THE MECHANICAL CONTRACTOR SHALL PROVIDE AN OUTDOOR RATED DISCONNECT FOR THE 120V MOTOR HEATERS. FOR INSTALLATION INFORMATION.
- 3. THE MECHANICAL CONTRACTOR SHALL PROVIDE A FUSED DISCONNECT FOR THE TOWER HEATERS.

4. THE MECHANICAL CONTRACTOR SHALL WIRE EACH IMMERSION HEATER FROM CONTROL PANEL (TYPICAL OF 4).

5. THE MECHANICAL CONTRACTOR SHALL PROVIDE AN INTERPOSING RELAY FOR EACH TOWER FAN MOTOR HEATER.

7. ALTERNATE M-2: PROVDE TOWER BASIN FILTRATION SYSTEM WITH 4" TALL EQUIPMENT PAD, MULTI-TOWER KIT, AND CONTROL PANEL. BASIS OF DESIGN IS LAKOS TCI-0200.

ALTERNATE M-1,2 PUMP SCHEDULE

LOCATION	TYPE	SERVICE	GPM	TOTAL FT. HEAD	RPM	EFF. (%) MIN.	SUCTION (IN.)	DISCH. (IN.)	IMPELLER SIZE (IN.)	BHP	E MIN.	LECTRICA VOLTS
MECHANICAL BUILDING	HZT SPLIT CASE	PRIMARY CHW	504	40	1200	76.2	6	4	11.125	6.34	10	460
MECHANICAL BUILDING	HZT SPLIT CASE	SECONDARY CHW	504	65	1200	78.4	6	4	12.402	9.98	15	460

ERNATE COST TO OWNER FOR REPLACEMENT OF PRIMARY AND SECONDARY CHILLED WATER PUMPS. SEE SPECIFICATIONS FOR SPECIFIC REQUIREMENTS.

ERFORMANCE CURVES INDICATING ALL OPERATING POINTS OF PUMPING SYSTEM.

OADING THROUGHOUT THE PUMP CURVE, PREMIUM EFFICIENCY TYPE.

RNALLY SELF FLUSHING MECHANICAL SEALS.

IENCY MOTOR WITH RATING STAMPED ON NAMEPLATE.

RINGS.

AL KIT AND CASING GASKET.

NEW PRIMARY PUMPS.

NS		
_	WEIGHT (LBS) OPERATING	MANUFACTURER/ MODEL #
	18,190	BAC XES3E-8518-07G-2
		NOTES
×		
3	BELL & GOSSET SERIES e-HSC 4x6x	13 1 THRU 6
3	BELL & GOSSET SERIES e-HSC 4x6x	12 1 THRU 6

OWNER	
PBS NORTH POWERED BY THE UNC S	INA SYSTEM
	\equiv
ENGINEER	
Venture IV Building, Suite 500 1730 Varsity Drive Raleigh, North Carolina 27606 Phone: (919) 233–8091, Fax: (919 NC License# F-1222 www.mckimcreed.com	EED 9) 233-8031
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GENERAL	DEMOL	ITION	NOTES

- 1. CONTRACTOR SHALL REMOVE ALL LIGHTING FIXTURES, FIRE ALARM DEVICES, AND ASSOCIATED WIRING AND CONDUIT WITHIN THE AREA TO BE DEMOLISHED OR AS REQUIRED TO FACILITATE NEW CONSTRUCTION. WIRING AND CONDUIT SHALL BE REMOVED BACK TO SOURCE. AT PANELS, REMOVE CONDUCTORS COMPLETELY AND REMOVE CONDUIT BACK TO CEILING SPACE DIRECTLY ABOVE PANEL AND CAP. ABANDONED CIRCUIT BREAKERS SHALL BE TURNED OFF AND LABELED AS SPARE. CONDUIT/RACEWAYS THAT ARE TO BE REUSED FOR THIS MODIFICATION MAY REMAIN IF FOUND TO BE EQUAL TO NEW INSTALLATION. AFFECTED WIRING CONNECTED TO REMOVED/DEMO'ED DEVICES, FIXTURES, ETC. SHALL BE REMOVED BACK TO SOURCE ELECTRICAL PANEL AND REPLACED WITH NEW WIRE TO FEED NEW DEVICES, FIXTURES, ETC. 2. EXISTING DEVICES TO REMAIN SHALL BE RE-FED AS REQUIRED TO MAINTAIN OPERATION.
- 3. COORDINATE REMOVAL AND FINAL DISPOSITION OF EQUIPMENT WITH OWNER.
- 4. ALL ABANDONED FLUSH JUNCTION BOXES SHALL HAVE BLANK STAINLESS STEEL COVERS INSTALLED.

GENERAL NEW WORK NOTES:

- 1. ALL WORK SHALL BE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL CODES AND THE NATIONAL ELECTRICAL CODE (2020 EDITION, AND AMENDMENTS, IF ANY) AS A MINIMUM. ELECTRICAL CONTRACTOR SHALL SECURE AND PAY FOR ALL LICENSES, FEES, PERMITS, AND UTILITY CHARGES.
- 2. ALL WORK SHALL CONFORM TO BEST ELECTRICAL PRACTICE AND SHALL BE GUARANTEED AGAINST DEFECTS IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION.
- 3. UNLESS OTHERWISE INDICATED, ALL MATERIAL SHALL BE NEW. MATERIAL SHALL BE LISTED BY THE UNDERWRITERS LABORATORIES, INC. FOR THE USE INTENDED WHERE A STANDARD FOR SUCH MATERIAL AND USE EXISTS. SWITCHES AND OTHER DEVICES SHALL BE SPECIFICATION GRADE.
- 4. IN GENERAL, MOUNTING HEIGHTS OF DEVICES ARE NOTED ON THE PLAN DRAWINGS. SCHEDULES AND NOTES SPECIFY "STANDARD" MOUNTING HEIGHTS FOR THESE ITEMS. STUDY CAREFULLY ELEVATIONS OF ALL WALLS AND EXISTING WORK AND LOCATE NEW EQUIPMENT INTO SPACE TO AVOID CONFLICTS. 5. TYPICAL 20A RATED BRANCH CIRCUIT WIRE SIZING SHALL BE IN ACCORDANCE WITH THE FOLLOWING

TABLE:				
VOLTS	DISTANCE	HOME RUN	REMAINDER OF CIRCUIT	
120/208	0' - 50' 50' - 100' 100' - 150'	#12 #10 # 8	#12 #12 #10	
277/480	0' - 125' 125' - 220' 220' - 330'	#12 #10 # 8	#12 #12 #10	

- 6. ALL WIRING LUGS THROUGHOUT THE PROJECT, INCLUDING BUT NOT LIMITED TO BREAKERS, PANELBOARD/SWITCHBOARD LUGS, SAFETY SWITCH LUGS, AND TRANSFORMER LUGS, SHALL BE RATED FOR USE WITH 75°C CONDUCTORS SIZED IN ACCORDANCE WITH NEC TABLE 310-15(B)(16).
- 7. ALL RACEWAYS SHALL BE ELECTRICAL METAL TUBING UNLESS SPECIFICALLY NOTED OR APPROVED OTHERWISE. ANY RACEWAY IN POURED CONCRETE SHALL BE RIGID METAL (HEAVY WALL). ALL CIRCUITS SHALL BE IN RACEWAYS. CONCEAL ALL CABLE AND RACEWAYS IN FINISHED AREAS OF BUILDING. SET SCREW OR INDENTER TYPE CONNECTOR OR COUPLING FITTINGS SHALL NOT BE PERMITTED. PROVIDE COMPRESSION GLAND TYPE FITTINGS MADE OF MALLEABLE, GALVANIZED, OR SHERARDIZED STEEL. POT-METAL OR CAST-TYPE FITTINGS SHALL NOT BE PERMITTED ON THIS PROJECT.
- 8. CONTRACTOR SHALL TEST ALL "LIFE SAFETY" EQUIPMENT AND SYSTEMS FOR PROPER FUNCTION AND OPERATION. UPON SUCCESSFUL COMPLETION OF TESTS, CONFIRMATION SHALL BE SENT TO THE ENGINEER IN THE FORM OF A LETTER STATING THE TESTS PERFORMED, THE RESULTS, AND THE DATE TESTS WERE SUCCESSFULLY COMPLETE. "LIFE SAFETY" EQUIPMENT AND SYSTEMS CONSIST OF THOSE AS SPECIFIED IN NFPA 101, NFPA 99, AND THE STATE BUILDING CODE (FIRE ALARM AND EMERGENCY POWER SYSTEMS).
- 9. ALL CONDUCTORS SHALL BE COPPER U.O.N. MINIMUM SIZE SHALL BE #12 AWG. INSULATION FOR CONDUCTORS SHALL BE 75°C MINIMUM, EXCEPT GROUNDING CONDUCTORS AND CONNECTIONS TO EQUIPMENT REQUIRING HIGHER TEMPERATURE RATING. SPLICES TO BE IDEAL "WIRE NUTS," AT EQUIPMENT. WITH IDEAL "WING NUTS" OR T&B "PIGGY" CONNECTORS FOR #10 AND SMALLER WIRES AND APPROVED MECHANICAL CONNECTORS PLUS GUM FRICTION OR PLASTIC TAPE FOR #8 AND LARGER WIRES.
- 10. ALL CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:

208Y/120V,	3-PHASE, 4-WIRE	480Y/277V, 3-PHASE, 4-WIRE		
PHASE A	BLACK	PHASE A	BROWN	
PHASE B	RED	PHASE B	ORANGE	
PHASE C	BLUE	PHASE C	YELLOW	
NEUTRAL	WHITE	NEUTRAL	GRAY	
GROUND	GREEN	GROUND	GREEN	

- 11. A NEATLY TYPEWRITTEN DIRECTORY SHALL BE PROVIDED IN THE PANELS TO PROPERLY INDICATE ALL CIRCUITS. SPARES AND SPACES SHALL BE WRITTEN IN PENCIL.
- 12. CONTRACTOR SHALL PROVIDE THE OWNER WITH A SET OF NEAT AND LEGIBLE AS-BUILT DRAWINGS.
- 13. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND/OR MANUFACTURER'S DATA TO THE ENGINEER AND OWNER FOR APPROVAL BEFORE WORK SHALL BEGIN. SHOP DRAWINGS/ MANUFACTURER'S DATA SHALL HAVE A CONTRACTORS STAMP OF APPROVAL BEFORE THE ENGINEER'S REVIEW. REVIEW OF THE SHOP DRAWINGS/MANUFACTURER'S DATA DOES NOT RELIEVE THE CONTRACTOR FROM THE REQUIREMENTS SET FORTH IN THE CONTRACT DOCUMENTS. SUBMITTALS SHALL CONTAIN INFORMATION ON THE FOLLOWING:

CONDUIT, CONDUCTORS, PANELBOARDS, DISCONNECTS, AND OUTLET BOXES.

- 14. COLOR STAINLESS STEEL COVERPLATES. ELECTRICAL CONTRACTOR SHALL VERIFY COLOR FOR DEVICES WITH ENGINEER PRIOR TO ORDERING.
- 15. ELECTRICAL CONTRACTOR SHALL REMOVE AND MAKE SAFE ALL CIRCUITS ABANDONED UNDER THIS PROJECT. REMOVE ALL CONDUCTORS NOT USED BACK TO SOURCE PANELBOARD. CHANGE EQUIPMENT DIRECTORY TO REFLECT NEW SPARES. WHERE EXISTING HOMERUNS AND ASSOCIATED WIRING ARE NOTED TO BE REUSED, EXTRA CARE SHALL BE TAKEN TO ENSURE THAT THESE EXISTING RUNS REMAIN AFTER THE DEMOLITION PHASE HAS BEEN COMPLETED.

- 5. ITEMS REMOVED WITHIN DEMOLITION AREA THAT ARE PART OF, BUT NOT LIMITED TO, FIRE LIGHTING, POWER DISTRIBUTION, GENERATOR, SECURITY OR COMMUNICATIONS SHALL BE OVER TO OWNER OR DISPOSED OF, AS DIRECTED BY OWNER.
- 6. REMOVE ALL CONDUIT, WIRING, DEVICES, LIGHTING FIXTURES, EQUIPMENT AND ANY OTHEF APPURTENANCES RENDERED USELESS OR ABANDONED DUE TO CONSTRUCTION. REMOVA ABANDONED AND USELESS WIRING SHALL BE BACK TO THE SOURCE, EVEN IF OUTSIDE LIMIT CONSTRUCTION.
- 7. CONTRACTOR SHALL MAINTAIN CIRCUITS RUNNING THROUGH THE AREA BEING DEMOLISHEI AREA OF NEW CONSTRUCTION.
- 8. AN ATTEMPT HAS BEEN MADE TO SHOW WITH HATCHING LIGHT FIXTURES, FIRE ALARM DEVI OTHER MISC, DEVICES LOCATED IN THE AFFECTED AREAS THAT ARE TO BE REMOVED. IT IS CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL ITEMS SHOWN. OTHER SYSTEMS AND DEVICES (FOR EXAMPLE SPEAKERS) ARE NOT TO BE REMOVED AND ARE TO BE REINSTALLE REQUIRED UNLESS NOTED OTHERWISE.
- 16. PENETRATIONS OF REQUIRED SMOKE TIGHT PARTITIONS SHALL BE SEALED USING METHOD UNDER THE STATE BUILDING CODE. COORDINATION WITH THE OWNER AND ENGINEER SHAL MAINTAINED TO ENSURE THAT THIS SMOKE STOPPING IS ACCOMPLISHED.
- 17. WHERE PENETRATIONS ARE MADE THROUGH A REQUIRED FIRE-RESISTIVE WALL, FLOOR, O FOR THE PURPOSE OF RUNNING RACEWAY CARRYING ELECTRICAL, TELEPHONE, TELEVISIC COMMUNICATION AND/OR SIGNALING CIRCUITS, THE OPENING AROUND THE RACEWAY SHAL STOPPED PER THE STATE BUILDING CODE CHAPTER 7. COORDINATION WITH THE OWNER A SHALL BE MAINTAINED TO ENSURE THAT THIS FIRE STOPPING IS ACCOMPLISHED. FIRE STO PENETRATIONS IN RATED WALLS AND FLOORS SHALL BE ACCOMPLISHED IN ACCORDANCE
- CONDUIT PENETRATIONS OF 1 OR 2 HOUR GYPBOARD WALLS U.L.#WL1001 CONDUIT PENETRATIONS OF 1 OR 2 HOUR CONCRETE OR BLOCK WALLS - U.L.#CAJ1001 CONDUIT PENETRATIONS OF 1 OR 2 HOUR CONCRETE FLOORS - U.L.#CAJ1001
- 18. IN REQUIRED FIRE RATED WALLS AND PARTITIONS, OPENINGS FOR INSTALLATION OF BOXES GREATER THAN 16 SQUARE INCHES SHALL BE PROTECTED AS REQUIRED BY U.L. COORDIN WITH THE OWNER AND ENGINEER TO ENSURE THE INTEGRITY OF THE U.L. RATING IS MAINT BOXES OF 16 SQUARE INCHES OR LESS SHALL BE INSTALLED IN ACCORDANCE WITH U.L. "F RESISTANCE RATINGS - ANSI/UL263 (BXUV) FOR WALL AND PARTITION ASSEMBLIES."
- 19. EXISTING CONDUIT RUNS AND OUTLET LOCATIONS HAVE BEEN TAKEN FROM EXISTING DRAY FURNISHED BY THE OWNER AND SHALL BE VERIFIED ON THE JOB BY THE ELECTRICAL CONT 20. THE EXISTING PORTIONS OF THIS FACILITY WILL REMAIN IN OPERATION DURING THIS CONST
- CONTRACTOR SHALL COOPERATE FULLY WITH THE ADMINISTRATION IN ORDER TO CAUSE DISRUPTION AS POSSIBLE TO THE FUNCTIONING OF THE FACILITY, AND TO MAINTAIN THE CO SAFETY OF ALL PERSONNEL AND STAFF.
- 21. ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES AND EQUIPMENT SHALL BE LABEL AND NORTH CAROLINA APPROVED THIRD PARTY TESTING AGENCY.
- 22. EXISTING CIRCUIT NUMBERS LISTED ON POWER PLANS ARE BASED ON EXISTING INFORMAT INFORMATION WAS OBTAINED THROUGH EXISTING PANELBOARD DIRECTORIES, EXISTING DF AND GENERAL FIELD SURVEY. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXISTING POWER IN ALL AREAS OF WORK PRIOR TO DEMOLITION OR AS DEMOLITION OCCURS, THE EI CONTRACTOR SHALL DETERMINE THE EXISTING CIRCUIT THAT SERVES THE DEVICE BEING I RELOCATED OR TO REMAIN. THIS INFORMATION SHALL BE INCORPORATED INTO THE FINAL DIRECTORIES FOR THE PANELBOARDS AFFECTED BY THIS PROJECT. EXISTING INDIVIDUAL E CIRCUITS HAVE NOT BEEN INDIVIDUALLY TRACED OUT PRIOR TO CONSTRUCTION.
- 23. THE STATE CONSTRUCTION OFFICE IS THE AUTHORITY HAVING JURISDICTION (AHJ) FOR THE INSPECTIONS ON THIS PROJECT. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACT THE STATE PROPERTY ELECTRICAL INSPECTORS IN THE CONSULTING SERVICES SECTION CONSTRUCTION OFFICE, TO SCHEDULE THE REQUIRED INSPECTIONS. NO WORK WILL BE C UNTIL AFTER THE INSPECTION HAS BEEN COMPLETED AND APPROVED BY AN AUTHORIZED INSPECTOR. ALL ELECTRICAL INSPECTIONS WITH THE SCO ELECTRICAL INSPECTOR SHALL SCHEDULED FOR MONDAY THROUGH FRIDAY UNLESS SPECIFICALLY EXEMPTED AND APPROV
- 24. ALL TESTING, TROUBLESHOOTING, AND VERIFICATION OF DE-ENERGIZATED SYSTEMS IS TO BE DONE IN ACCORDANCE WITH NFPA 70E, INCLUDING ESTABLISHING, AND ISOLATING IF NEEDED, SHOCK PROTECTIVE AND ARC FLASH PROTECTIVE APPROACH BOUNDARIES AND DONNING PERSONAL PROTECTIVE EQUIPMENT APPROPRIATE FOR THE HAZARD.
- 25. SAFETY SWITCHES SHALL BE HEAVY-DUTY TYPE, NEMA 1 FOR INDOOR AND NEMA 3R FOR OUTDOOR UNLESS OTHERWISE NOTED. SAFETY SWITCHES SHALL BE FUSED OR NON-FUSED TYPE AS INDICATED. ALL FUSED DISCONNECT SWITCHES SHALL BE EQUIPPED WITH REJECTION CLIPS AS SPECIFIED BY THE MANUFACTURER. FUSED TYPE SHALL BE EQUIPPED WITH EITHER CLASS "RK1", "RK5" OR "J" FUSES AS INDICATED.
- 26. PANELBOARDS SHALL BE DEAD FRONT SAFETY TYPE WITH SWITCHING AND PROTECTIVE DEVICES IN NUMBER, RATING, TYPE AND ARRANGEMENT SHOWN. PROVIDE WITH SOLDERLESS PRESSURE TYPE WITH CONNECTORS, WITH A MINIMUM OF 75° CONDUCTORS AND APPROVED FOR COPPER CONNECTORS, WITH BOLT-IN MOLDED CASE CIRCUIT BREAKERS. PROVIDE "SWITCHING DUTY" RATED BREAKERS THAT CONTROL LIGHTING. PROVIDE SHEET STEEL NEMA TYPE 1 ENCLOSURES. NEW CIRCUIT BREAKERS IN EXISTING PANELBOARDS SHALL MATCH THE EXISTING PANELBOARDS CIRCUIT BREAKERS IN MANUFACTURER TYPE AND KAIC RATING PANEL BOARDS SHALL BE SQUARE-D GENERAL ELECTRIC WESTINGHOUSE, CUTLER-HAMMER, OR APPROVED EQUAL WITH NEUTRAL AND GROUND BAR.
- 27. VFD CABLE SHALL BE 600V/1000V RATED, WITH STRANDED TINNED COPPER CONDUCTORS, SHIELDED, SUITABLE FOR USE WITH VARIABLE FREQUENCY DRIVES AND UL LISTED FOR THE PURPOSE. THE INSULATION SHALL BE RATED FOR 90° CELSIUS WET/DRY OPERATING TEMPERATURE CABLE SHALL BE SUITABLE FOR USE IN WET/DRY LOCATIONS INDOORS AND OUTDOORS FOR USE IN CONDUITS AND IN UNDERGROUND DUCTS. THE CONDUCTOR SHALL BE ANNEALED STRANDED TINNED COPPER PER ASTM B3, B8, AND B33.THE INSULATION THICKNESS SHALL HAVE A MINIMUM AVERAGE WALL THICKNESS OF 30 MILS. THE INSULATION MATERIAL SHALL BE XLPE WITH A XHHW-2 LISTING PER UL 44. EACH INSULATED CONDUCTOR SHALL BE IDENTIFIED BY COLOR CODE. THE INSULATED CONDUCTORS ARE TO BE CABLED TOGETHER WITH THREE (3) GROUND WIRES SYMMETRICALLY PLACED IN THE INTERSTICES BETWEEN THE PHASE CONDUCTORS EACH WITH EACH ONE TOUCHING THE SHIELD. FILLERS SHALL BE INCLUDED AS NECESSARY TO MAKE THE CABLE ROUND. THE CABLED ASSEMBLY SHALL BE SHIELDED BY APPLYING HELICALLY TWO 2-MIL COPPER TAPES. THE SHIELD SHALL PROVIDE 100% COVERAGE OVER THE ASSEMBLY. ALL CABLES SHALL HAVE A CONTINUOUS OVERALL OUTER SHEATH OF POLYVINYL CHLORIDE (PVC), SUITABLE FOR 90°C USE. THE JACKET SHALL HAVE IDENTIFICATION WITH PERMANENT MARKINGS THAT SHALL BE CLEARLY EMBOSSED OR PRINTED AT APPROXIMATELY 2 FOOT INTERVALS ON THE OUTER JACKET FOR THE ENTIRE L ENGTH OF THE CABLE AS FOLLOWS: MANUFACTURER'S NAME AND OR TRADE
- 28. ANY RECONNECTED FIRE ALARM DEVICES SHALL BE TESTED AND DOCUMENT THE TESTING.

TYPE (XHHW-2); VOLTAGE RATING ACCORDING TO LOAD SERVED.

MARK; NUMBER OF CONDUCTORS AND SIZE (-- AWG); TYPE OF INSULATION OR NEC LISTED CONDUCTOR

	ABBREVIATIONS						
А	AMPS	GND	GROUND				
AFF	ABOVE FINISHED FLOOR	IG	ISOLATED GROUND				
AF	AMP FRAME RATING	MAX	MAXIMUM				
AT	AMP TRIP RATING	МСВ	MAIN CIRCUIT BREAKER				
AIC	AMPS INTERRUPTING CAPACITY	MIN	MINIMUM				
С	CONDUIT	MLO	MAIN LUGS ONLY				
CLG	CEILING	(N)	NEW				
(E)	EXISTING	NEC	NATIONAL ELECTRICAL CODE				
FLA	FULL LOAD AMPS	NF	NON-FUSED				
(F)	FUTURE	NTS	NOT TO SCALE				
GFI	GROUND FAULT INTERRUPTER	WP	WEATHER PROTECTED				

	LOAD SUMMARY				
	LOAD DESCRIPTION	CALCULATED LOAD (kVA) DEMAND FACTOR	DEMAND LOAD (kVA)	
	Existing AHU-1	22.4	1.00	22.4	
	Existing AHU-2	17.4	1.00	17.4	
	Existing AHU-4	22.4	1.00	22.4	
ITEMS REMOVED WITHIN DEMOLITION AREA THAT ARE PART OF, BUT NOT LIMITED TO, FIRE ALARM,	Existing AHU-5	28.2	1.00	28.2	
OVER TO OWNER OR DISPOSED OF, AS DIRECTED BY OWNER.	Existing CHILLER-1	188.1	1.00	188.1	
REMOVE ALL CONDUIT, WIRING, DEVICES, LIGHTING FIXTURES, EQUIPMENT AND ANY OTHER ELECTRICAL	Existing CHILLER-2	188.1	1.00	188.1	
APPURTENANCES RENDERED USELESS OR ABANDONED DUE TO CONSTRUCTION. REMOVAL OF ABANDONED AND LISELESS WIRING SHALL BE BACK TO THE SOLIDCE, EVEN IF OUTSIDE LIMITS OF	Existing P-10	17.4	1.00	17.4	
CONSTRUCTION.	Existing P-11	17.4	1.00	17.4	
CONTRACTOR SHALL MAINTAIN CIRCUITS RUNNING THROUGH THE AREA BEING DEMOLISHED AND THE	Existing F-1 (AHU-1)	17.4	1.00	17.4	
AREA OF NEW CONSTRUCTION.	Existing F-2 (AHU-2)	11.6	1.00	11.6	
AN ATTEMPT HAS BEEN MADE TO SHOW WITH HATCHING LIGHT FIXTURES, FIRE ALARM DEVICES AND	Existing F-9 (AHU-4)	9.1	1.00	9.1	
OTHER MISC. DEVICES LOCATED IN THE AFFECTED AREAS THAT ARE TO BE REMOVED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL ITEMS SHOWN. OTHER SYSTEMS AND SYSTEM	Existing F-10 (AHU-5)	17.4	1.00	17.4	
DEVICES (FOR EXAMPLE SPEAKERS) ARE NOT TO BE REMOVED AND ARE TO BE REINSTALLED AS	Existing F-16 (Utility BLDG)	2.5	1.00	2.5	
REQUIRED UNLESS NOTED OTHERWISE.	Existing COOLING TOWER -1	11.6	1.00	11.6	
	Existing COOLING TOWER-2	11.6	1.00	11.6	
	Existing P-1(Primary CHW) Alternate	9.1	1.00	9.1	
	Existing P-2(Primary CHW) Alternate	9.1	1.00	9.1	
	Existing P-3(Secondary CHW) Alternate	17.4	1.00	17.4	
PENETRATIONS OF REQUIRED SMOKE TIGHT PARTITIONS SHALL BE SEALED USING METHODS APPROVED UNDER THE STATE BUILDING CODE. COORDINATION WITH THE OWNER AND ENGINEER SHALL BE MAINTAINED TO ENSURE THAT THIS SMOKE STOPPING IS ACCOMPLISHED.	Existing P-4(Secondary CHW) Alternate	17.4	1.00	17.4	
	NEW AHU-1	28.2	1.00	28.2	
WHERE PENETRATIONS ARE MADE THROUGH A REQUIRED FIRE-RESISTIVE WALL, FLOOR, OR PARTITION FOR THE PURPOSE OF RUNNING RACEWAY CARRYING ELECTRICAL. TELEPHONE. TELEVISION. OR LOCAL	NEW AHU-2	17.4	1.00	17.4	
COMMUNICATION AND/OR SIGNALING CIRCUITS, THE OPENING AROUND THE RACEWAY SHALL BE FIRE	NEW AHU-4	17.4	1.00	17.4	
SHALL BE MAINTAINED TO ENSURE THAT THIS FIRE STOPPING IS ACCOMPLISHED. FIRE STOPPING OF	NEW AHU-5	33.2	1.00	33.2	
PENETRATIONS IN RATED WALLS AND FLOORS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH NORTH CAROLINA STATE BUILDING CODE CHAPTER 7 USING APPROVED ASSEMBLIES SUCH AS THE FOLLOWING:	NEW CHILLER-1	127.5	1.00	127.5	
	NEW CHILLER-2	127.5	1.00	127.5	
CONDUIT PENETRATIONS OF 1 OR 2 HOUR GYPBOARD WALLS - U.L.#WL1001 CONDUIT PENETRATIONS OF 1 OR 2 HOUR CONCRETE OR BLOCK WALLS - U.L.#CAJ1001	NEW P-10	17.4	1.00	17.4	
CONDUIT PENETRATIONS OF 1 OR 2 HOUR CONCRETE FLOORS - U.L.#CAJ1001	NEW P-11	17.4	1.00	17.4	
IN REQUIRED FIRE RATED WALLS AND PARTITIONS, OPENINGS FOR INSTALLATION OF BOXES THAT ARE	NEW F-1 (AHU-1)	17.4	1.00	17.4	
WITH THE OWNER AND ENGINEER TO ENSURE THE INTEGRITY OF THE U.L. RATING IS MAINTAINED.	NEW F-2 (AHU-2)	11.6	1.00	11.6	
BOXES OF 16 SQUARE INCHES OR LESS SHALL BE INSTALLED IN ACCORDANCE WITH U.L. "FIRE RESISTANCE, RATINGS - ANSI/UL263 (BXLIV) FOR WALL AND PARTITION ASSEMBLIES "	NEW F-9 (AHU-4)	11.6	1.00	11.6	
	NEW F-10 (AHU-5)	17.4	1.00	17.4	
EXISTING CONDULT RUNS AND OUTLET LOCATIONS HAVE BEEN TAKEN FROM EXISTING DRAWINGS FURNISHED BY THE OWNER AND SHALL BE VERIFIED ON THE JOB BY THE ELECTRICAL CONTRACTOR.	NEW F-16 (Utility BLDG)	1.7	1.00	1.7	
THE EXISTING PORTIONS OF THIS FACILITY WILL REMAIN IN OPERATION DURING THIS CONSTRUCTION	NEW Cooling Tower -1 (CT-1)	4.0	1.00	4.0	
CONTRACTOR SHALL COOPERATE FULLY WITH THE ADMINISTRATION IN ORDER TO CAUSE AS LITTLE	NEW Cooling Tower-2 (CT-2)	4.0	1.00	4.0	
DISRUPTION AS POSSIBLE TO THE FUNCTIONING OF THE FACILITY, AND TO MAINTAIN THE COMFORT AND SAFETY OF ALL PERSONNEL AND STAFF.	NEW CT-1 Immersion Heaters(2 @ 6kW each)	12.0	1.00	12.0	
	NEW CT-2 Immersion Heaters(2 @ 6kW each)	12.0	1.00	12.0	
NORTH CAROLINA APPROVED THIRD PARTY TESTING AGENCY.	NEW P-1(Primary CHW) Alternate M-1	11.6	1.00	11.6	
EXISTING CIRCUIT NUMBERS LISTED ON POWER PLANS ARE BASED ON EXISTING INFORMATION. THIS	NEW P-2(Primary CHW) Alternate M-1	11.6	1.00	11.6	
INFORMATION WAS OBTAINED THROUGH EXISTING PANELBOARD DIRECTORIES, EXISTING DRAWINGS,	NEW P-3(Secondary CHW) Alternate M-2	17.4	1.00	17.4	
POWER IN ALL AREAS OF WORK PRIOR TO DEMOLITION OR AS DEMOLITION OCCURS, THE ELECTRICAL	NEW P-4(Secondary CHW) Alternate M-2	17.4	1.00	17.4	
CONTRACTOR SHALL DETERMINE THE EXISTING CIRCUIT THAT SERVES THE DEVICE BEING REMOVED, RELOCATED OR TO REMAIN. THIS INFORMATION SHALL BE INCORPORATED INTO THE FINAL PANELBOARD DIRECTORIES FOR THE PANELBOARDS AFFECTED BY THIS PROJECT. EXISTING INDIVIDUAL BRANCH	NEW Heat Trace	2.0	1.00	2.0	
CIRCUITS HAVE NOT BEEN INDIVIDUALLY TRACED OUT PRIOR TO CONSTRUCTION.		625 6	1 25	701 5	
THE STATE CONSTRUCTION OFFICE IS THE AUTHORITY HAVING JURISDICTION (AHJ) FOR THE ELECTRICAL		102.0	1.20	, j-+, j _107 0	۲ ۸ ۵ ۵۲۱_ ۱ ۵ ۵۲۱_
INSPECTIONS ON THIS PROJECT. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO NOTIFY THE STATE PROPERTY ELECTRICAL INSPECTORS IN THE CONSULTING SERVICES SECTION OF THE STATE	$\frac{1}{1000} = \frac{1}{1000} = 1$	- 102.9		-102.5	-123.0 /
CONSTRUCTION OFFICE, TO SCHEDULE THE REQUIRED INSPECTIONS. NO WORK WILL BE COVERED UP		J.U 07.0		0,0	۲ U.U ۱۱۱۰ م
INSPECTOR. ALL ELECTRICAL INSPECTIONS WITH THE SCO ELECTRICAL INSPECTOR SHALL BE SCHEDULED FOR MONDAY THROUGH FRIDAY UNITES SPECIFICALLY EXEMPTED AND APPROVED BY SCO	INCREASED LOADS (DASE + ALTERINATE 1)	-37.3		-37.3	-117.87

NOTE: EXISTING SERVICE PEAK KW DEMAND TOTAL ON 'HSB' AND 'BMP' IS 449 KW (499 KVA BASED ON ESTIMATED 0.9 PF) FOR THE PREVIOUS 12 MONTHS PER INFORMATION PROVIDED BY OWNER. NEW EQUIPMENT DECREASES THE LOAD ON THE MAIN DISTRIBUTION SWITCHBOARD 'HSB' AND 'BMP'. THEREFORE, THE EXISTING 1600A AND 1200A SWITCHBOARD WITH 100% RATED MAINS HAVE SUFFICENT CAPACITY FOR THESE UPGRADES.

	POWER
	480/277 VOLT PANELBOARD, FLUSH AND SURFACE MOUNTED RESPECTIVELY. DESIGNATION AS INDICATED. REFER TO PANELBOARD SCHEDULES FOR EXACT REQUIREMENTS.
	208Y/120 OR 120/240 VOLT PANELBOARD, FLUSH AND SURFACE MOUNTED RESPECTIVELY. DESIGNATION AS INDICATED. REFER TO PANELBOARD SCHEDULES FOR EXACT REQUIREMENTS.
15	MOTOR ASSEMBLY. MECHANICAL CONTRACTOR TO PROVIDE LOAD SIDE WIRING FROM CONTROLLER TO MOTOR UNLESS OTHERWISE INDICATED. ELECTRICAL CONTRACTOR TO PROVIDE LINE SIDE WIRING FROM CONTROLLER TO SOURCE UNLESS OTHERWISE INDICATED.
	ENCLOSED CIRCUIT BREAKER. FRAME SIZE AND TRIP RATING AS INDICATED ON PLANS. SUBSCRIPT 'WP' INDICATES IN NEMA 3R ENCLOSURE.
	MANUAL MOTOR STARTER. STARTER TYPE AND SIZE AS INDICATED ON PLANS. SUBSCRIPT 'WP' INDICATES IN NEMA 3R ENCLOSURE.
	NON-FUSED SAFETY SWITCH. FRAME SIZE AS INDICATED ON PLANS. SUBSCRIPT 'WP' INDICATES IN NEMA 3R ENCLOSURE.
	FUSED SAFETY SWITCH. FRAME SIZE AND TRIP RATING AS INDICATED ON PLANS. PROVIDE FUSES PER NAMEPLATE OF EQUIPMENT SERVED UNLESS OTHERWISE INDICATED. SUBSCRIPT 'WP' INDICATES IN NEMA 3R ENCLOSURE.
⊠⊓	COMBINATION MOTOR STARTER & DISCONNECT. FRAME SIZE, TRIP RATING, AND STARTER SIZE AS INDICATED ON PLANS. SUBSCRIPT 'WP' INDICATES IN NEMA 3R ENCLOSURE.
	ELECTRIC PUSH BUTTON IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED OR REQUIRED BY SITE CONDITIONS.
1	EMERGENCY STOP MUSHROOM TYPE BUTTON IN SURFACE MOUNTED BOX. MOUNT 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED OR REQUIRED BY SITE CONDITIONS.
Sм	MOTOR RATED CONTACT SWITCH IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED OR REQUIRED BY SITE CONDITIONS. HUBBELL 1221 SERIES, NO EXCEPTIONS.
	125 VOLT, 3 WIRE DUPLEX RECEPTACLE IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 18-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED. HUBBELL 8300 SERIES OR EQUIVALENT.
	125 VOLT, 3 WIRE DUPLEX RECEPTACLE IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46" ABOVE FINISHED FLOOR, 4" ABOVE DESK/COUNTERTOP, OR 2" ABOVE BACKSPLASH UNLESS OTHERWISE INDICATED.
	TWO (2) 125 VOLT, 3 WIRE DUPLEX RECEPTACLE IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 18-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED. HUBBELL 8300 SERIES OR EQUIVALENT.
====	TWO (2) 125 VOLT, 3 WIRE DUPLEX RECEPTACLE IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46" ABOVE FINISHED FLOOR, 4" ABOVE DESK/COUNTERTOP, OR 2" ABOVE BACKSPLASH UNLESS OTHERWISE INDICATED.
	125 VOLT, 3 WIRE DUPLEX OR QUAD RECEPTACLE IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX CONNECTED TO ESSENTIAL POWER BRANCH CIRCUIT. HUBBELL 8300 SERIES OR EQUIVALENT.
$\xrightarrow{\longrightarrow}_{GF} \xrightarrow{\oplus}_{GF}$	125 VOLT, 3 WIRE GROUND FAULT TYPE DUPLEX OR QUAD RECEPTACLE. MOUNTING AS INDICATED. HUBBELL 8300 SERIES OR EQUIVALENT.
	125 VOLT, 3 WIRE GROUND FAULT TYPE DUPLEX OR QUAD RECEPTACLE WITH WHILE-IN-USE WEATHERPROOF COVER. MOUNTING AS INDICATED.
	SPECIAL EQUIPMENT CONNECTION. SUBSCRIPT INDICATES NEMA CONFIGURATION, IF APPLICABLE. SEE EQUIPMENT CONNECTION SCHEDULE FOR EXACT REQUIREMENTS.
J	JUNCTION BOX MOUNTED ABOVE CEILING OR FLUSH IN FINISHED CEILING UNLESS INDICATED OTHERWISE. SIZE PER NEC REQUIREMENTS.
J	FLUSH WITH COVER JUNCTION BOX IN FINISHED FLOOR. SIZE PER NEC REQUIREMENTS.
J	WALL MOUNTED JUNCTION BOX, SIZE PER NEC OR AS INDICATED. MOUNTING HEIGHT AS INDICATED. MOUNT FLUSH IN FINISHED SPACES OR SURFACE IN UNFINISHED SPACES UNLESS OTHERWISE INDICATED.
⊜	125 VOLT, 3 WIRE DUPLEX RECEPTACLE MOUNTED ABOVE CEILING OR FLUSH IN FINISHED CEILING UNLESS OTHERWISE INDICATED.
\bigcirc	125 VOLT, 3 WIRE DUPLEX RECEPTACLE IN FLUSH, FLOOR-MOUNTED OUTLET BOX UNLESS OTHERWISE

		OWNER
	DATA OUTLET IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT	
	18-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.	DRS NORTH
	INDICATED. DATA OUTLET IN FLUSH, FLOOR-MOUNTED OUTLET BOX UNLESS OTHERWISE INDICATED.	POWERED BY THE UNC SYSTEM
Τν	TELEVISION CABLE OUTLET IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 18-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.	
S	FLUSH MOUNTED CEILING COMMUNICATION SYSTEM SPEAKER. SUBSCRIPT, WHEN SHOWN, INDICATES ZONE.	ENGINEER
CR	FLUSH MOUNTED ACCESS CONTROL CARD READER MOUNTED 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.	
КР	FLUSH MOUNTED ACCESS CONTROL KEY PAD MOUNTED 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.	Venture IV Building, Suite 500
DC	ACCESS CONTROL DOOR CONTACTS. SUBSCRIPT, WHEN SHOWN, INDICATES ZONE.	1730 Varsity Drive Raleigh, North Carolina 27606 Phone: (919) 233–8091, Fax: (919) 233–8031 NC Licenseff F-1222 www.mc/imcreed.com
PP	ACCESS CONTROL PUSH PANEL FOR HANDS FREE DOOR OPERATION. SUBSCRIPT, WHEN SHOWN, INDICATES ZONE.	
НS	ACCESS CONTROL INFRARED HAND SENSOR FOR HANDS FREE DOOR OPERATION. SUBSCRIPT, WHEN SHOWN, INDICATES ZONE.	ARCHITECT
	SECURITY SYSTEM CAMERA, SUBSCRIPT, WHEN SHOWN, INDICATES PAN, TILT, ZOOM (PTZ) CAPABILITY.	
	FIRE ALARM	Ctrada
F	MANUAL FIRE ALARM PULL STATION IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.	Slad
<u>v</u>	FIRE ALARM SYSTEM VISUAL SIGNAL LIGHT IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX 80-INCHES ABOVE FLOOR OR 6-INCHES BELOW CEILING,	
AV>	FIRE ALARM SYSTEM COMBINATION AUDIOVISUAL SIGNAL SPEAKER AND LIGHT IN CEILING-MOUNTED FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. FIRE ALARM SYSTEM COMBINATION AUDIOVISUAL SIGNAL SPEAKER AND LIGHT IN FLUSH (FINISHED SPACES)	
	OR SURFACE (UNFINISHED SPACES) OUTLET BOX 80-INCHES ABOVE FLOOR OR 6-INCHES BELOW CEILING, WHICHEVER IS LOWER. FIRE ALARM SYSTEM COMBINATION AUDIOVISUAL SIGNAL CHIME AND LIGHT IN FLUSH (FINISHED SPACES)	WITH CARO
	OR SURFACE (UNFINISHED SPACES) OUTLET BOX 80-INCHES ABOVE FLOOR OR 6-INCHES BELOW CEILING, WHICHEVER IS LOWER.	SEAL
	FLUSH MOUNTED CEILING FIRE ALARM SYSTEM SMOKE DETECTOR.	053121 3/29/23
	FLUSH MOUNTED CEILING FIRE ALARM SYSTEM SMOKE DETECTOR FOR ELEVATOR RECALL.	ALONDINI
	FLUSH MOUNTED CEILING FIRE ALARM SYSTEM DUCT DETECTOR REMOTE ALARM INDICATING LAMP (RAIL).	
	FIRE ALARM SYSTEM RELAY. SUBSCRIPT, WHEN SHOWN, INDICATES ZONE.	
	FIRE ALARM SYSTEM DUCT DETECTOR WITH REMOTE ALARM LAMP. FURNISHED AND WIRED BY ELECTRICAL	
	FIRE ALARM SYSTEM MAGNETIC DOOR HOLD OPEN DEVICE.	
FS	FIRE ALARM SYSTEM FIRE WATER FLOW MONITORING SWITCH.	
(TS)	FIRE ALARM SYSTEM FIRE WATER TAMPER MONITORING SWITCH.	REV REVISION DESCRIPTION DATE
	SOLID LINES INDICATE CONDUIT RUN CONCEALED IN WALL OR ABOVE CEILINGS, EXPOSED IN UNFINISHED	
	AREAS. DASHED LINES INDICATE CONDUIT RUN BELOW GRADE OR BELOW FINISHED FLOOR. RUN PARALLEL OR PERPENDICULAR TO STRUCTURE OR WALL.	
L1-4	HOMERUN TO PANELBOARD. QUANTITY OF ARROWS INDICATES NUMBER OF CIRCUITS.	
		S C
	SURFACE METAL RACEWAY, MOUNTING AND CONFIGURATION AS SPECIFIED.	
(P)	ELECTRICAL POWER POLE, MOUNTING AND CONFIGURATION AS SPECIFIED.	ΞΞ
	SURFACE, RECESSED, OR WALL MOUNTED LIGHTING FIXTURE CONNECTED TO NORMAL BRANCH CIRCUIT.	ŽŽ
	SEE LIGHTING FIXTURE SCHEDULE FOR EXACT REQUIREMENTS.	່ວຼີ
	LETTER INDICATES TYPE. SEE LIGHTING FIXTURE SCHEDULE FOR EXACT REQUIREMENTS.	
	CEILING MOUNTED EXIT SIGN, SHADED AREA INDICATES FACE WITH DIRECTIONAL ARROWS AS SHOWN. SEE LIGHTING FIXTURE SCHEDULE FOR EXACT REQUIREMENTS. CONNECT UNSWITCHED TO INDICATED BRANCH	
l <u>e</u> t ⊽	CIRCUIT. WALL MOUNTED EXIT SIGN, SHADED AREA INDICATES FACE WITH DIRECTIONAL ARROWS AS SHOWN. SEE LIGHTING FIXTURE SCHEDULE FOR EXACT REQUIREMENTS. CONNECT UNSWITCHED TO INDICATED BRANCH	SCO ID: 22-24543-01A CODE: 42112 ITEM: 301
	EMERGENCY BATTERY PACK UNIT WITH NUMBER OF LAMPS AS INDICATED. LETTER (WHERE SHOWN) INDICATES TYPE. SEE LIGHTING FIXTURE SCHEDULE FOR EXACT REQUIREMENTS. CONNECT UNSWITCHED	DATE 2023-03-31
S	SINGLE-POLE SWITCH IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED OR REQUIRED BY SITE CONDITIONS. HUBBELL 1221 SERIES. OR APPROVED FOLIVALENT	M&C PROJ. # 05394-0011 DRAWN JCA DESIGNED ICA
S ₃	THREE-WAY SWITCH IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED OR REQUIRED BY SITE CONDITIONS. HUBBELL 1223 SERIES, OR APPROVED EQUIVALENT.	DEGINED JCA CHECKED ADS PROJ. MGR. DJW
SD	DIMMER CONTROL SWITCH IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46" ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED. LUTRON NTSTV-DV, OR APPROVED EQUIVALENT.	
\$3\$3 \$\$	BI-LEVEL SWITCHES IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46-INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED OR REQUIRED BY SITE CONDITIONS. HUBBELL 1223 SERIES, OR APPROVED EQUIVALENT.	
Sos	SWITCH WITH INTEGRATED OCCUPANCY SENSOR IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) OUTLET BOX. MOUNT 46" ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED.	ELECTRICAL LEGEND, SYMBOLS, AND
OS	LINE VOLTAGE DUAL TECHNOLOGY OCCUPANCY SENSOR IN FLUSH (FINISHED SPACES) OR SURFACE (UNFINISHED SPACES) CEILING-MOUNTED OUTLET BOX.	ABBREVIATIONS
PC	LIGHTING PHOTOCELL. MOUNT PHOTOCELL FACING NORTHWEST UNLESS OTHERWISE INDICATED.	E001

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GENERAL DEMOLITION NOTES:

- ELECTRICAL CONTRACTOR SHALL FIELD VERIFY AND COORDINATE ALL EXISTING CONDITIONS, LOCATIONS, AND CIRCUITING OF ALL EXISTING ELECTRICAL EQUIPMENT LOCATED IN THE AREAS OF CONSTRUCTION INCLUDING EQUIPMENT LOCATED IN ADJACENT AREAS SERVED BY THE CIRCUITING LOCATED IN THESE SPACES. CONTRACTOR SHALL TRACE CIRCUITS UTILIZING CIRCUIT TRACERS FOR ALL CIRCUITS IN THE AREA OF WORK. CONTRACTOR SHALL DOCUMENT EXISTING CIRCUITING IN PREPARATION FOR DEMOLITION WORK AND TO FACILITATE NEW WORK INCLUDING UPDATED LABELING AS REQUIRED PER THE SPECIFICATIONS.
- CONTRACTOR SHALL MAINTAIN THE CIRCUITS THAT ARE RUNNING THROUGH THE AREA BEING DEMOLISHED AND THE AREA OF NEW CONSTRUCTION.
- DEMOLITION WORK SHALL BE COMPLETED IN FULL. ALL CONDUIT AND WIRING SHALL BE DEMOLISHED BACK TO SOURCE UNLESS OTHERWISE NOTED. PANELS SCHEDULES SHALL BE UPDATED WHERE APPLICABLE. NO RACEWAY SHALL BE ABANDONED IN PLACE UNLESS SPECIFICALLY NOTED ON DRAWINGS.
- ALL EXISTING EQUIPMENT AND DEVICES (EX. FIRE ALARM, TELECOM, DATA, ETC.) TO REMAIN (I.E. NOT CALLED OUT FOR DEMOLITION SHALL BE PROTECTED FROM CONTRACTOR DEBRIS IN AREAS OF CONSTRUCTION.
- CONTRACTOR SHALL REPORT ANY POSSIBLE ASBESTOS CONTAINING MATERIAL TO OWNER FOR DETERMINATION OF ASBESTOS CONTENT.

KEYED DEMOLITION NOTES:

EXISTING AIR HANDLERS, ASSOCIATED EQUIPMENT, AND RETURN FANS SHALL BE DEMOLISHED BY MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL ALSO DEMOLISH THE EXISTING DISCONNECT, LOAD SIDE CONDUIT AND EQUIPMENT CONNECTION IN ADDITION TO THE OTHER ITEMS NOTED IN MECHANICAL DOCUMENTS. ELECTRICAL CONTRACTOR SHALL DISCONNECT LINE SIDE WIRING AND DEMOLISH THE LINE SIDE CONDUIT AND WIRING COMPLETELY BACK TO 'MCC-1'. ELECTRICAL CONTRACTOR SHALL PREPARE EACH BUCKET IN 'MCC-1' FOR RECONNECTION. SEE 'MCC-1' ON E500 FOR 'MCC-1' SCHEDULES.

GENERAL NEW WORK NOTES:

- 2. REFER TO DRAWING E500 FOR MODIFIED MCC SCHEDULES AND ELEVATIONS.
- **KEYED NEW WORK NOTES:**
- MCC-1. SEE E500 FOR MODIFIED MCC SCHEDULES AND ELEVATIONS.
- RETURN FANS. SEE E500 FOR MODIFIED MCC SCHEDULES AND ELEVATIONS.

1. REFER TO DRAWING E001 FOR GENERAL PROJECT NOTES, SYMBOLS & ABBREVIATIONS

3. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY AND COORDINATE ALL EXISTING CONDITIONS, LOCATIONS, AND CIRCUITING OF ALL EXISTING ELECTRICAL EQUIPMENT LOCATED IN THE AREAS OF CONSTRUCTION INCLUDING EQUIPMENT LOCATED IN ADJACENT AREAS SERVED BY THE CIRCUITING LOCATED IN THESE SPACES. CONTRACTOR SHALL TRACE CIRCUITS UTILIZING CIRCUIT TRACERS FOR ALL CIRCUITS IN THE AREA OF WORK. CONTRACTOR SHALL DOCUMENT EXISTING CIRCUITING IN PREPARATION FOR DEMOLITION WORK AND TO FACILITATE NEW WORK INCLUDING UPDATED LABELING AS REQUIRED PER THE SPECIFICATIONS. 4. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY ANY FIRE RATED FLOORS AND WALLS THAT WILL BE PENETRATED PRIOR TO DOING SO AND INFORM ENGINEER.

ELECTRICAL CONTRACTOR SHALL PROVIDE NEW PROTECTIVE DEVICES, CONTROL WIRING, AND OTHER NECESSARY CONNECTIONS FOR AHU-4, FAN F-9, AHU-5, AND FAN F-10 IN THEIR RESPECTIVE MCC BUCKETS IN

2. NEW AIR HANDLERS, ASSOCIATED EQUIPMENT, AND RETURN FANS BY MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL ALSO PROVIDE THE NEW LOAD SIDE CONDUIT, WIRING, AND EQUIPMENT CONNECTION IN ADDITION TO OTHER ITEMS NOTED IN MECHANICAL DOCUMENTS. ELECTRICAL CONTRACTOR SHALL PROVIDE NEW PROTECTIVE DEVICES IN 'MCC-1'. ELECTRICAL CONTRACTOR SHALL ALSO PROVIDE CONDUIT AND WIRING FROM NEW CIRCUIT BREAKER IN THE RESPECTIVE BUCKETS IN 'MCC-1' TO LINE SIDE OF NEW AIR HANDLES AND

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SMOKE PARTITION

4' 2' 0

1/4"=1'-0"

GENERAL DEMOLITION NOTES:

- 1. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY AND COORDINATE ALL EXISTING CONDITIONS, LOCATIONS, AND CIRCUITING OF ALL EXISTING ELECTRICAL EQUIPMENT LOCATED IN THE AREAS OF CONSTRUCTION INCLUDING EQUIPMENT LOCATED IN ADJACENT AREAS SERVED BY THE CIRCUITING LOCATED IN THESE SPACES. CONTRACTOR SHALL TRACE CIRCUITS UTILIZING CIRCUIT TRACERS FOR ALL CIRCUITS IN THE AREA OF WORK. CONTRACTOR SHALL DOCUMENT EXISTING CIRCUITING IN PREPARATION FOR DEMOLITION WORK AND TO FACILITATE NEW WORK INCLUDING UPDATED LABELING AS REQUIRED PER THE SPECIFICATIONS.
- 2. CONTRACTOR SHALL MAINTAIN THE CIRCUITS THAT ARE RUNNING THROUGH THE AREA BEING DEMOLISHED AND THE AREA OF NEW CONSTRUCTION.
- 3. DEMOLITION WORK SHALL BE COMPLETED IN FULL. ALL CONDUIT AND WIRING SHALL BE DEMOLISHED BACK TO SOURCE UNLESS OTHERWISE NOTED. PANELS SCHEDULES SHALL BE UPDATED WHERE APPLICABLE. NO RACEWAY SHALL BE ABANDONED IN PLACE UNLESS SPECIFICALLY NOTED ON DRAWINGS.
- 4. ALL EXISTING EQUIPMENT AND DEVICES (EX. FIRE ALARM, TELECOM, DATA, ETC.) TO REMAIN (I.E. NOT CALLED OUT FOR DEMOLITION SHALL BE PROTECTED FROM CONTRACTOR DEBRIS IN AREAS OF CONSTRUCTION. 5. CONTRACTOR SHALL REPORT ANY POSSIBLE ASBESTOS CONTAINING MATERIAL TO OWNER FOR

KEYED DEMOLITION NOTES:

DETERMINATION OF ASBESTOS CONTENT.

- 1. EXISTING AIR HANDLERS, ASSOCIATED EQUIPMENT, AND RETURN FANS SHALL BE DEMOLISHED BY MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL ALSO DEMOLISH THE EXISTING DISCONNECT, LOAD SIDE CONDUIT AND EQUIPMENT CONNECTION IN ADDITION TO THE OTHER ITEMS NOTED IN MECHANICAL DOCUMENTS. ELECTRICAL CONTRACTOR SHALL DISCONNECT LINE SIDE WIRING AND DEMOLISH THE LINE SIDE CONDUIT AND WIRING COMPLETELY BACK TO 'MCC-2'. ELECTRICAL CONTRACTOR SHALL PREPARE EACH BUCKET IN 'MCC-2' FOR RECONNECTION. SEE 'MCC-2' ON E500 FOR 'MCC-2' SCHEDULES.
- 2. EXISTING LIGHT SWITCHES, RECEPTACLES, WALL MOUNTED LUMINARIES, AND ASSOCIATED WIRING AND CONDUITS TO BE REMOVED BY ELECTRICAL CONTRACTOR WHILE WORK IS DONE ON AHU-1 AND AHU-2. ELECTRICAL CONTRACTOR SHALL DISCONNECT LINE SIDE WIRING AND MAKE SAFE FOR RECONNECTION AFTER NEW AHU-1 AND AHU-2 ARE INSTALLED.

GENERAL NEW WORK NOTES:

- 1. REFER TO DRAWING E001 FOR GENERAL PROJECT NOTES, SYMBOLS & ABBREVIATIONS
- 2. REFER TO DRAWING E500 FOR MODIFIED MCC SCHEDULES AND ELEVATIONS.
- 3. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY AND COORDINATE ALL EXISTING CONDITIONS, LOCATIONS, AND CIRCUITING OF ALL EXISTING ELECTRICAL EQUIPMENT LOCATED IN THE AREAS OF CONSTRUCTION INCLUDING EQUIPMENT LOCATED IN ADJACENT AREAS SERVED BY THE CIRCUITING LOCATED IN THESE SPACES. CONTRACTOR SHALL TRACE CIRCUITS UTILIZING CIRCUIT TRACERS FOR ALL CIRCUITS IN THE AREA OF WORK. CONTRACTOR SHALL DOCUMENT EXISTING CIRCUITING IN PREPARATION FOR DEMOLITION WORK AND TO FACILITATE NEW WORK INCLUDING UPDATED LABELING AS REQUIRED PER THE SPECIFICATIONS.
- 4. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY ANY FIRE RATED FLOORS AND WALLS THAT WILL BE PENETRATED PRIOR TO DOING SO AND INFORM ENGINEER.

KEYED NEW WORK NOTES:

- CONTRACTOR SHALL PROVIDE NEW PROTECTIVE DEVICES, CONTROL WIRING, AND OTHER NECESSARY CONNECTIONS FOR FAN F-2, AHU-2, FAN F-1, AND AHU-1 IN THEIR RESPECTIVE MCC BUCKETS IN MCC-2.SEE E500 FOR MODIFIED MCC SCHEDULES AND ELEVATIONS.
- 2. NEW AIR HANDLERS, ASSOCIATED EQUIPMENT, AND RETURN FANS BY MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL ALSO PROVIDE THE NEW LOAD SIDE CONDUIT, WIRING, AND EQUIPMENT CONNECTION IN ADDITION TO OTHER ITEMS NOTED IN MECHANICAL DOCUMENTS. ELECTRICAL CONTRACTOR SHALL PROVIDE NEW PROTECTIVE DEVICES IN 'MCC-2'. ELECTRICAL CONTRACTOR SHALL ALSO PROVIDE CONDUIT AND WIRING FROM NEW CIRCUIT BREAKER IN THE RESPECTIVE BUCKETS IN 'MCC-2' TO LINE SIDE OF NEW AIR HANDLES AND RETURN FANS. SEE E500 FOR MODIFIED MCC SCHEDULES AND ELEVATIONS.
- 3. ELECTRICAL CONTRACTOR TO RECONNECT LIGHT SWITCHES, RECEPTACLES, AND WALL MOUNTED LUMINARIES AS NEEDED AFTER THE INSTALLATION OF AHU-1 AND AHU-2.

2' **E201** 1/4"=1'-0"

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2-HOUR FIRE BARRIER

3-HOUR FIRE BARRIER

SMOKE PARTITION

4'

				MC	DIF	IED		PANE	LBC)AR[)	EP											
	SERVED FROM	:			AMP	ERE RA	TING:	80	Α				VOL.	FAGE	(L-L):	208		Р	HASE:	3		,000 MINIMUM RMS	
	ENCLOSURE RATING	: NEMA	1		MA	IN BRE	AKER:	80/3					VOLT	AGE	(L-N):	120			WIRE:	4		SYMMETRICAL AIC RATIN	IG
	MOUNTING	: SURFA	CE		Ц	JG OP1	IONS:	мсв					LO	CATIC	DN:	MAIN	ELEC.	RM					
CIR	LOAD	T		LOAD	(KVA)			PHASE	G	CND	BRKR	BRKR	PHASE	G		Ι		LOAD	(KVA)			LOAD	∃c
NO.	DESCRIPTION	LTG	н/с	мот	КІТ	REC	міс	SIZE	SIZE	IN.	RTG	RTG	SIZE	SIZE	IN.	LTG	H/C	мот	КІТ	REC	мізс	DESCRIPTION	N
1	RCPTS		1	1		1.08		EX	EX	EX	20/1	A 20/1	EX	EX	EX					1.08		TELCO RM RCPTS	
3	DOOR HOLDERS			1.00				EX	EX	EX	20/1	B 20/1	EX	EX	EX	0.50						PHOTO CELL ROOF LT CNTRL	
5	FIRE ALARM						0.50	EX	EX	EX	20/1	c 20/1	EX	EX	EX						1.00	AIR COMPRESSOR	
7	ΗΕΑΤ ΤΑΡΕ						0.50	EX	EX	EX	20/1	A 20/1	EX	EX	EX						1.00	AIR COMPRESSOR	
9	ELEV. FAN & LTS						0.50	EX	EX	EX	20/1	B 20/1	EX	EX	EX						0.50	DELUGE VALVE	1
11								EX				C	EX	1	_						2.00		1
13	ACCU-4(OFF)							EX	EX	EX	15/2	A 25/2	EX		E						2.00	TAPERM	1
15	НСР1						1.00	EX	EX	EX	20/1	B 20/1	EX	EX	EX					1.08		RCPTS	1
17	НСР2						1.00	EX	EX	EX	20/1	C 20/1	EX	EX	EX					1.08		TELCO RM RCPTS	1
19	НСРЗ						1.00	EX	EX	EX	20/1	A 20/1	EX	EX	EX					1.08		TELCO RM RCPTS	2
21	RCPTS					1.08		EX	EX	EX	20/1	B 20/1	EX	EX	EX						1.00	SIEBE COMPUTER	12
23	MECH RM CONTROLS						0.50	12	12	3/4	20/1	C 20/1	EX	EX	EX							SHUNT TRIPS	12
25	SPARE							EX	EX	ĒX	20/1	A	EX	1									2
27								EX				B 20/2	EX		EX							SPARE	2
29	SPARE							EX	EX	EX	30/2	C 20/1	EX	EX	EX						0.50	AC CNTRL RM 1072	3
31												A											3
33												В											3
35												С											3
37												A											3
39												В											4
41												С											4
	PANELBOARD NOTES: 1. EXISTING PANEL IS WI POW-R-LINE C. 2. EXISTING LOADS ARE EXISTING CONDTIONS. 3. ITEMS IN HATCH DENO ITEMS IN BOLD DENOTE LARGEST MOTOR (KVA):	ESTINGH BASED C DTE DEM MODIFI	IOUSE DN ESTI MOLITIC CATIOI -	IMATE: ON. N.	S OF		LOAD LIGHT HEAT MOTO KITCH RECEP MISCI TOTA	TOTALS FING/CO ING/CO DRS IEN PTACLES ELLANEC L	<u>s (kva</u> Dntin Olino DUS	<u>ı):</u> IUOUS 3		CONNE 0.50 0.00 1.00 0.00 6.48 13.00 20.98	<u>-</u>	DEN 0 1 0 6 1 2	<u>MAND</u>).63).00 1.00).00 5.48 3.00 1.11	LARG	ARGE	L PHA PHA PHA TOTA ST UNE	OAD B SE A SE B SE C L DEM BALAN	ALANC 110 95. 94. AND A CE PH/	2E .68% 23% 09% .MPS x ASE %: AMPS:	59 1.1068 64.84]

				EX	ISTI	NG		PANE	LBC	ARE)	Ε	Ρ							
	SERVED FROM: ENCLOSURE RATING: MOUNTING:	NEMA : SURFA	1 CE		amp Ma	ere Ra In Bre Jg opt	TING: AKER: TONS:	80 80/3 MCB	Α					Volt Volt Loc	AGE (AGE (CATIO	L-L): L-N): N:	208 120 MAIN	ELEC.	P RM	H W
CIR.	LOAD	1		LOAD (KVA)			PHASE	G	CND	BRKR	1	BRKR	PHASE	G	CND			LOAD) (I
NO.	DESCRIPTION	LTG	H/C	мот	КІТ	REC	MISC	SIZE	SIZE	IN.	RTG		RTG	SIZE	SIZE	IN.	LTG	H/C	мот	Ļ
1	RCPTS					1.08		EX	EX	EX	20/1	Α	20/1	EX	EX	EX				Γ
3	DOOR HOLDERS			1.00				EX	EX	EX	20/1	В	20/1	EX	EX	EX	0.50			
5	FIRE ALARM						0.50	EX	EX	EX	20/1	С	20/1	EX	EX	EX				
7	HEAT TAPE						0.50	EX	EX	EX	20/1	Α	20/1	EX	EX	EX				
9	ELEV. FAN & LTS						0.50	EX	EX	EX	20/1	В	20/1	EX	EX	EX				
11								EX	ΓV	ΓV	15/2	С	а <i>г /</i> а	EX	гv	г				
13	ACCO-4(OFF)							EX		EX	15/2	Α	25/2	EX	EA	E				
15	HCP1						1.00	EX	EX	EX	20/1	В	20/1	EX	EX	EX				
17	HCP2						1.00	EX	EX	EX	20/1	С	20/1	EX	EX	EX				
19	НСР3						1.00	EX	EX	EX	20/1	Α	20/1	EX	EX	EX				
21	RCPTS					1.08		EX	EX	EX	20/1	В	20/1	EX	EX	EX				
23	MECH CNTRLS						0.50	EX	EX	EX	20/1	С	20/1	EX	EX	EX				
25	SPARE							EX	EX	EX	20/1	Α	20/2	EX	EV	EV				
27	SDADE							EX	EV	EV	20/2	В	20/2	EX		LA				
29	SFARE							EX		LA	30/2	С	20/1	EX	EX	EX				L
31												Α								L
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	PANELBOARD NOTES: 1. EXISTING PANEL IS WE POW-R-LINE C. 2. EXISTING LOADS ARE E EXISTING CONDTIONS. 3. ITEMS IN HATCH DENOTE ITEMS IN BOLD DENOTE LARGEST MOTOR (KVA):	STINGH BASED O DTE DEM MODIFI	OUSE IN ESTI IOLITIC CATIOI -	MATES DN. N.	S OF		LOAD LIGHT HEATI MOTC KITCH RECEF MISCE TOTAI	TOTALS ING/CO NG/CO DRS EN PTACLES ELLANEC	<u>(kva</u>)ntin Dintin Dlinc	<u>):</u> UOUS 3			DNNEC 0.50 0.00 1.00 0.00 6.48 13.00 20.98	<u>TED</u>	DEM 0 1 0 6 13 21	AND .63 .00 .00 .00 .48 3.00 11		ARGE	L PHA PHA PHA TOTA ST UNI	<u>O</u> .SI .SI .S L
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		ENGINEER
		Venture IV Building, Suite 500 1730 Varsity Drive Raleigh, North Carolina 27606 Phone: (919) 233–8091, Fax: (919) 233–8031 NC License# F-1222 www.mckimcreed.com
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GENERAL DEMOLITION NOTES:

- 1. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY AND COORDINATE ALL EXISTING CONDITIONS, LOCATIONS, AND CIRCUITING OF ALL EXISTING ELECTRICAL EQUIPMENT LOCATED IN THE AREAS OF CONSTRUCTION INCLUDING EQUIPMENT LOCATED IN ADJACENT AREAS SERVED BY THE CIRCUITING LOCATED IN THESE SPACES. CONTRACTOR SHALL TRACE CIRCUITS UTILIZING CIRCUIT TRACERS FOR ALL CIRCUITS IN THE AREA OF WORK. CONTRACTOR SHALL DOCUMENT EXISTING CIRCUITING IN PREPARATION FOR DEMOLITION WORK AND TO FACILITATE NEW WORK INCLUDING UPDATED LABELING AS REQUIRED PER THE SPECIFICATIONS.
- 2. CONTRACTOR SHALL MAINTAIN THE CIRCUITS THAT ARE RUNNING THROUGH THE AREA BEING DEMOLISHED AND THE AREA OF NEW CONSTRUCTION.
- DEMOLITION WORK SHALL BE COMPLETED IN FULL. ALL CONDUIT AND WIRING SHALL BE DEMOLISHED BACK TO SOURCE UNLESS OTHERWISE NOTED. PANELS SCHEDULES SHALL BE UPDATED WHERE APPLICABLE. NO RACEWAY SHALL BE ABANDONED IN PLACE UNLESS SPECIFICALLY NOTED ON DRAWINGS.
- 4. ALL EXISTING EQUIPMENT AND DEVICES (EX. FIRE ALARM, TELECOM, DATA, ETC.) TO REMAIN (I.E. NOT CALLED OUT FOR DEMOLITION SHALL BE PROTECTED FROM CONTRACTOR DEBRIS IN AREAS OF CONSTRUCTION.
- 5. CONTRACTOR SHALL REPORT ANY POSSIBLE ASBESTOS CONTAINING MATERIAL TO OWNER FOR DETERMINATION OF ASBESTOS CONTENT.

<u>KEYED DEMOLITION NOTES</u>:

- ELECTRICAL CONTRACTOR SHALL DISCONNECT LINE SIDE WIRING FOR F-16, CHILLER 1, CHILLER 2, COOLING TOWER 1, COOLING TOWER 2, PUMP-10, AND PUMP-11 AND PULL WIRE BACK TO ITS RESPECTIVE POWER SOURCE. CONTRACTOR SHALL PREPARE THE POWER SOURCE FOR REUSE.
- ALTERNATE M -1,2: EXISTING PRIMARY (ALTERNATE M-1) AND EXISTING SECONDARY (ALTERNATE M-2)CHWP TO BE DEMOLISHED BY MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL ALSO DEMOLISH LOAD SIDE CONDUIT, WIRING AND EQUIPMENT CONNECTION IN ADDITION TO OTHER ITEMS NOTED IN THE MECHANICAL DOCUMENTS. ELECTRICAL CONTRACTOR SHALL DEMOLISH WIRING FROM EXISTING CIRCUIT BREAKER TO NEW EXISTING VFD/DISCONNECT.
- 3. EXISTING REFRIGERANT MONITORING SYSTEM SHALL BE DEMOLISHED BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL DISCONNECT LINE SIDE CONDUIT AND WIRING IN PREPARATION FOR RECONNECTION OF REFRIGERANT MONITORING SYSTEM ELECTRICAL CONTRACTOR SHALL MAKE SAFE CIRCUIT PRIOR TO DEMOLITION.

			OWNER PBS NORTH CAROLINA POWERED BY THE UNC SYSTEM
			ENGINEER
			Venture IV Building, Suite 500 1730 Varsity Drive Raleigh, North Carolina 27606 Phone: (919) 233–8091, Fax: (919) 233–8031 NC Licensef F-1222 www.mckimcreed.com
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		ED LEGEND 1-HOUR FIRE BARRIER 2-HOUR FIRE BARRIER 3-HOUR FIRE BARRIER 1-HOUR FIRE/SMOKE BARRIER 2-HOUR FIRE/SMOKE BARRIER 1-HOUR FIRE PARTITION	CHECKED ADS PROJ. MGR. DJW CONSTRUCTION DOCUMENTS
	4' 2' 0 1/4"=1'-0"	SMOKE PARTITION 4' 8'	DEMOLITION PLAN

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		EXISTING MCC - 1		
		POSITION SCHEDULE		
POSITION	PROTECTIVE DEVICE SIZE	EQUIPMENT SERVED	CONDUCTOR AND CONDUIT SIZE	TOTAL CONNECTED LOAD (kW)
1 A	N/A	SPACE		
(1B)	30A/3P	AHU-4 1	EX	22.4
10	30A/3P	FAN F-9 1	EX	9.1
1D	60A/3P	AHU-5 1	EX	28.2
(1E)	N/A	SPACE		
2A	N/A	SPACE		
2B	60A/3P	FAN F-10 1	EX	17.40
20	30A/3P	PUMP P-12	EX	2.50
2D	30A/3P	PUMP P-13	EX	1.30
2E	N/A	SPACE		
2F)	N/A	SPACE		
		TOTAL CONNECTED LOAD(kW)		80.900000

		EXISTING MCC-2		
POSITION	PROTECTIVE DEVICE SIZE	EQUIPMENT SERVED	CONDUCTOR AND CONDUIT SIZE	TOTAL CONNECTED LOAD (kW)
(1A)	N/A	SPACE		
(1B)	30A/3P	EX FAN F-2	EX	11.6
	30A/3P	EX MZU-1	EX	9.1
1D	60A/3P	EX AHU-2 1	EX	17.4
(1E)	N/A	SPACE		
(1F)	N/A	SPACE		
(2A)	N/A	SPACE		
2B	30A/3P	EX FAN F-3	EX	6.3
2C)	60A/3P	EX AHU-3	EX	17.4
2D	30A/3P	EX FAN F-5	EX	2.5
(2E)	30A/3P	EX FAN F-6	EX	6.3
2F	30A/3P	EX FAN F-7	EX	4
3A	N/A	SPACE		
3B	30A/3P	EX PUMP P-8	EX	1.7
30	30A/3P	EX PUMP P-9	EX	1.7
3D	30A/3P	EX PUMP P-14	EX	0.9
(JE)	30A/3P	EX PUMP P-15	EX	4
3F	30A/3P	EX FAN F-8	EX	1.3
(4A)	N/A	SPACE		
(4B)	30A/3P	EX FAN F-4	EX	4
(4C)	30A/3P	EX FAN F-1 1	EX	17.4
(4D)	N/A	SPACE		
(4E)	30A/3P	EX RTPAC-1	EX	17.4
(4F)	60A/3P	EX AHU-1 1	EX	22.4
		TOTAL CONNECTED LOAD(kW)		145.400000

		MODIFIED MCC - 1 POSITION SCHEDULE		
POSITION	PROTECTIVE DEVICE SIZE	EQUIPMENT SERVED	CONDUCTOR AND CONDUIT SIZE	TOTAL CONNECTED LOAD (kW)
(1A)	N/A	SPACE		
(1B)	45A/3P	NEW AHU-4	3-#8, 1-#10 GND IN 3/4" C	17.4
10	25A/3P	NEW FAN F-9	3-#10, 1-#10 GND IN 3/4" C	11.6
(1D)	80A/3P	NEW AHU-5	3-#4, 1-#8 GND IN 1" C	33.2
(1E)	N/A	SPACE		
2A	N/A	SPACE		
2B	35A/3P	NEW FAN F-10	3-#8, 1-#10 GND IN 3/4" C	17.4
20	30A/3P	PUMP P-12	EX	2.50
2D	30A/3P	PUMP P-13	EX	1.30
2E	N/A	SPACE		
2F	N/A	SPACE		
		TOTAL CONNECTED LOAD(kW)		83.400000

		MODIFIED MCC-2		
		POSITION SCHEDULE		
POSITION	PROTECTIVE DEVICE SIZE	EQUIPMENT SERVED	CONDUCTOR AND CONDUIT SIZE	TOTAL CONNECTED LOAD (kW)
(1A)	N/A	SPACE		
(1B)	25A/3P	NEW FAN F-2	3-#10, 1-#10 GND IN 3/4" C	11.6
(10)	30A/3P	EX MZU-1		
(1D)	45A/3P	NEW AHU-2	3-#8, 1-#10 GND IN 3/4" C	17.4
(1E)	N/A	SPACE		
(1F)	N/A	SPACE		
(2A)	N/A	SPACE		
(2B)	30A/3P	EX FAN F-3	EX	6.3
2C	25A/3P	EX AHU-3	EX	17.4
2D	30A/3P	EX FAN F-5	EX	2.5
(2E)	30A/3P	EX FAN F-6	EX	6.3
2F	30A/3P	EX FAN F-7	EX	4
(3A)	N/A	SPACE		
(3B)	30A/3P	EX PUMP P-8	EX	1.7
30	30A/3P	EX PUMP P-9	EX	1.7
(3D)	30A/3P	EX PUMP P-14	EX	0.9
(3E)	30A/3P	EX PUMP P-15	EX	4
(3F)	30A/3P	EX FAN F-8	EX	1.3
(4A)	N/A	SPACE		
(4B)	30A/3P	EX FAN F-4	EX	4
4C)	45A/3P	NEW FAN F-1	3-#8, 1-#10 GND IN 3/4" C	17.4
(4D)	30A/3P	EX RTPAC-1	EX	17.4
(4E)	N/A	SPACE		
(4F)	70A/3P	NEW AHU-1	3-#4, 1-#8 GND IN 1" C	28.2
		TOTAL CONNECTED LOAD(kW)		142.100000

SECTION	#1	S	SECTION	#2
_ (1A)	-	_	2A)	-
1B	_	_	2B)	_
(1C)	_	_	2C)	_
1D	_	_	2D	_
	-	_	(2E)	_
	-	_	2F	

S	ECTION	#1	5	SECTION	#2
	(1A)	-	_	2A)	-
_	(1B)		_	2B	
_	10		_	2C)	-
_	1 D		_	2D	-
_		-	_	2E	-
_		-	_	2F)	-

1 EXISTING MCC-1 ELEVATION SCALE: N.T.S.

2 MODIFIED MCC-1 ELEVATION SCALE: N.T.S.

EXISTING MCC-BP											
POSITION	PROTECTIVE DEVICE SIZE	EQUIPMENT SERVED	CONDUCTOR AND CONDUIT SIZE	TOTAL CONNECTED LOAD (kW)							
(1A)	N/A	SPACE		N/A							
(1B)	30A/3P	EX F-16		2.5							
	30A/3P	EX F-15		6.3							
	30A/3P	EX PUMP P-10		17.4							
(LE)	30A/3P	EX PUMP P-11		17.4							
15	60A/3P	EX. PUMPS P3 AND P4 2		34.8							
2A	N/A	SPACE		N/A							
2B	30A/3P	EX. COOLING TOWER CT-1		11.6							
2C	30A/3P	EX. PUMP P-1 2		9.1							
2D	30A/3P	EX. PUMP P-2 2		9.1							
(3A)	N/A	SPACE		N/A							
(3B)	30A/3P	EX. COOLING TOWER CT-2		11.6							
30		SPACE									
3D	30A/3P	EX. WATER HEATER CIRC. PUMP		4							
		TOTAL CONNECTED LOAD(KVA)		123.800000							

		MODIFIED MCC-BP		
		POSITION SCHEDULE		
POSITION	PROTECTIVE DEVICE SIZE SIZE	EQUIPMENT SERVED	CONDUCTOR AND CONDUIT SIZE	TOTAL CONNECTED LOAD (kW)
(1A)	N/A	SPACE		
	15A/3P	NEW F-16	3-#12, 1-#12 GND IN 3/4" C	1.7
	N/A	SPACE	N/A	
	30A/3P	EX F-15	EX	6.3
	30A/3P	NEW PUMP P-10	3-#10, 1-#10 GND IN 3/4" C	17.4
	30A/3P	NEW PUMP P-11	3-#10, 1-#10 GND IN 3/4" C	17.4
	N/A	SPACE		
(1F)	40A/3P	NEW PUMP P-3	3-#8, 1-#10 GND IN 3/4" C	17.4
(1F)2	40A/3P	NEW PUMP P-4	3-#8, 1-#10 GND IN 3/4" C	17.4
(2A)	N/A	SPACE		
2B	N/A	SPACE		
20	30A/3P	NEW PUMP P-1	3-#10, 1-#10 GND IN 3/4" C	11.6
2D	30A/3P	NEW PUMP P-2	3-#10, 1-#10 GND IN 3/4" C	11.6
(3A)	N/A	SPACE		
(3B)	N/A	SPACE		
3C1	15A/3P	NEW COOLING TOWER CT-1	3-#12, 1-#12 GND IN 3/4" C	4
30 ₂	15A/3P	NEW COOLING TOWER CT-1	3-#12, 1-#12 GND IN 3/4" C	4
(3D)	30A/3P	EX WATER HEATER CIRC. PUMP	EX	4
		TOTAL CONNECTED LOAD(KVA)		112.800000

SECTION #1	SECTION #2	SECTION #3	SECTION #4
	2A -	<u>3</u> A	
B	2B -	3B -	
	20	3C -	4C -
	2D	3D -	4D -
E	2E -	3E	4E -
F	2F -	3F -	4F

3 EXISTING MCC-2 ELEVATION SCALE: N.T.S.

SECTION #1	SECTION #2	SECTION #3	SECTION #4	2
	A			
	B	3B -	- 4B -	
	20	3C	40	
	2D -	3D -	- 4D -	
	2E	3E	4E -	
	2F -	3F -	4F	

4 MODIFIED MCC-2 ELEVATION SCALE: N.T.S.

5 EXISTING MCC-BP ELEVATION SCALE: N.T.S.

GENERAL DEMOLITION NOTES:

1. DEMO WORK TO BE COMPLETED IN FULL. ALL CONDUIT AND WIRING SHALL BE DEMOLISHED BACK TO SOURCE, AND BREAKERS LABELED AS SPARE. PANELS SCHEDULES SHALL BE UPDATED WHERE APPLICABLE. NO RACEWAY SHALL BE ABANDONED IN PLACE UNLESS SPECIFICALLY NOTED ON DRAWINGS.

2. CONTRACTOR SHALL MAINTAIN THE CIRCUITS THAT ARE RUNNING THROUGH THE AREA BEING DEMOLISHED AND THE AREA OF NEW CONSTRUCTION.

<u>KEYED DEMOLITION NOTES:</u>

1. EXISTING EQUIPMENT DISCONNECT TO BE REMOVED BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL DISCONNECT LINE SIDE WIRING AND REMOVE EXISTING WIRE/CONDUIT BACK TO SOURCE AND MAKE SAFE.

2. ALL WORK ASSOCIATED WITH PRIMARY PUMPS P-1 AND P-2 SHALL BE ASSOCIATED WITH ALTERNATE M-1. ALL WORK ASSOCIATED WITH SECONDARY PUMPS P-3 AND P4 SHALL BE ASSOCIATED WITH ALTERNATE M-2.

GENERAL NEW WORK NOTES:

1. REFER TO DRAWING E001FOR GENERAL PROJECT NOTES, SYMBOLS & ABBREVIATIONS.

KEYED NEW WORK NOTES:

- 1. MCC-1 IS A 600A, 480V, 3PH, 3W 42kAIC WESTINGHOUSE SERIES 2100 MCC. ALL NEW PROTECTIVE DEVICES SHALL BE EATON-CUTLER HAMMER.
- 2. MCC-2 IS A 600A, 480V, 3PH, 3W 42kAIC WESTINGHOUSE SERIES 2100 MCC. ALL NEW PROTECTIVE DEVICES SHALL BE EATON-CUTLER HAMMER.
- 3. MCC-BP IS A 600A, 480V, 3PH, 3W 42kAIC WESTINGHOUSE SERIES 2100 MCC. ALL NEW PROTECTIVE DEVICES SHALL BE EATON-CUTLER HAMMER.
- 4. ELECTRICAL CONTRACTOR SHALL PROVIDE NEW EATON CUTLER HAMMER DUAL FEEDER BUCKETS IN MCC TO POWER NEW EQUIPMENT.
- 5. ELECTRICAL CONTRACTOR SHALL UTILIZE EXISTING BUCKET TO POWER NEW EQUIPMENT.
- 6. ALL WORK ASSOCIATED WITH PRIMARY PUMPS P-1,P-2 SHALL BE ASSOCIATED WITH ALTERNATE M-1. ALL WORK ASSOCIATED SECONDARY PUMPS P-3 AND P4 SHALL BE ASSOCIATED WITH ALTERNATE M-2.

ON #2	SECTION #3		SECT	TON #1	SE	CTION	#2	SEC	CTION #3	
)	3A -	4				2A)		(3A)	
	- 3B -	4				(2B)		(3B)	
) =	3C -		_ (1	e) =	_	20	\geq	3C ₁	3C2	
) =	3D -	4	(1F)	(1F)	_	2D (:		- (3D	
										,
		-								

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I:\05394\0011\ENG\80-DRAWINGS\86-DESIGN\86E-ELECTRICAL DESIGN\E500.DWG 03/29/2023 10:45:45 OMAR NAHHAS

OWNER
PBS NORTH POWERED BY THE UNC SYSTEM
ENGINEER
Venture IV Building, Suite 500 1730 Varsity Drive Raleigh, North Carolina 27606 Phone: (919) 233–8091, Fax: (919) 233–803 NC License# F-1222 www.mckimcreed.com
ARCHITECT
Strada
SEAL 053121 C. ALOTONIU
REV REVISION DESCRIPTION DATE
PBS NC HVAC REPLACEMENT
SCO ID: 22-24542 014 CODE: 42442 ITEM: 004
300 ID. 22-24943-01A CODE: 42112 ITEM: 301
DATE 2023-03-31 M&C PROJ. # 05394-0011
DRAWN JCA
DESIGNED JCA CHECKED ADS
PROJ. MGR. DJW
ELECTRICAL MCC
SCHEDULES AND
I ELEVATIONS

E500

SWITCHDUARD:		SERVED FROM: ENCLOSURE RATING: NEMA 1	AMPERE RA MAIN BRE	ATING: 35 A AKER: 35/3		VOLTAGE (L-L): VOLTAGE (L-N):	208 PHASE: 3 120 WIRE: 4	,000 MINIMUM RMS SYMMETRICAL AIC RATIN
MOUNTING: PAD MOUNTED	1200 A MAIN BUS RATING MAIN LUG ONLY	CIR. LOAD	E LUG OP	FIONS: MCB PHASE G CND E MISC SIZE SIZE IN	BRKR BRKR	LOCATION: PHASE G CND SIZE SIZE IN		
ENCLOSURE: NEMA 1	50 KAIC, MIN. RMS SYM. RATING	1 1 3 MAIN BREAKER		EXISTING 3	A 20/1 35/3 B 15/1 C 30/1	EXISTING EXISTING	0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50	EX. BOILER RM LTS EX. BOILER RM LTS EX. BOILER RM LTS
VOLTAGE: 480 Y / 277	V 3PH 4W	1 EX. RECS 3 EX. CHEM. FEED 5 EX. UNIT HEATER	0.36	EXISTING 2 0.50 EXISTING 1	20/1 A 20/1 15/1 B 20/1 20/1 C 20/1	EXISTING EXISTING EXISTING		50 EX. CT VALVES EX. REC BESIDE DOOR 50 EX. REC BESIDE DOOR
DESCRIPTION LTG H/C MOT KIT	WIRE GND DREARCR REC MISC SIZE SIZE CND IN. FRAME & PHA TRIP/POLE TRIP/POLE TRIP/POLE	7 9 EX. COMPRESSOR		1.00 1.00 1.00 1.00	A 15/1 30/3 B 20/1 C 20/1	EXISTING EXISTING EXISTING EXISTING		50 EX. OIL TESTER 50 EX. CONTROL PANEL 50 EX. CT VALVES
MCCBP	49.70 A 49.70 EX 300/3 B							
	49.70 A							
5PACE ONLY	EX B							
CRM-1 62.70 62.70	EX 350/3 B							
CRM-2 62.70 62.70	EX 350/3 B	PANELBOARD NOTES: 1. EXISTING PANEL IS WESTINGHO	DUSE	LOAD TOTALS (KVA): LIGHTING/CONTINUOUS	<u>CONNEC</u> 1.00	<u>CTED</u> <u>DEMAND</u> 1.25	LOAD BALANCE PHASE A 100.47 DHASE B 04.15	%
62.70		2. EXISTING LOADS ARE BASED ON EXISTING CONDTIONS.	I ESTIMATES OF	MOTORS KITCHEN RECEPTACIES	0.00 0.00 0.54	0.00 0.00 0.00 0.54	PHASE D 54.15 PHASE C 105.39	° %
PACE ONLY	EX B	ITEMS IN BOLD DENOTE DENO LARGEST MOTOR (KVA):	ATION.	MISCELLANEOUS	7.00 8.54	7.00 8.79	LARGEST UNBALANCE PHASE	PS: 25 71
PANEL BP	EX 15/3 B							<u> </u>
SWITCHBOARD NOTES:	CONNECTED LOAD KVA AMPS PHASE A 175.1 632							
1. SWITCHBOARD BMP IS A WESTINGHOUSE SWBD 2. ITEMS IN HATCH DENOTE DEMOLITION.	PHASE B 175.1 632 PHASE C 175.1 632							
	MAX UNBAL. 0.0 0	SERVED FROM: ENCLOSURE RATING: NEMA 1	MODIFIED AMPERE RA MAIN BRE	PANELBOARD ATING: 35 A FAKER: 35/3	BP	VOLTAGE (L-L): VOLTAGE (L-N):	208 PHASE: 3	,000 MINIMUM RMS
	LARGEST MOTOR (KVA)	CIR. LOAD	E LUG OP	TIONS: MCB	BRKR BRKR	LOCATION:	UTILITY ELEC	LOAD
со	NNECTED DEMAND	NO.DESCRIPTIONLTG1	H/C MOT KIT REC	MISC SIZE SIZE IN. EXISTING 3	RTG RTG A 20/1 35/3 B 15/1	SIZE SIZE IN. EXISTING EXISTING	LTG H/C MOT KIT REC M 0.50	IISC DESCRIPTION EX. BOILER RM LTS EX. BOILER RM LTS
	(KVA) LOAD TYPES 0.0 0.0 LIGHTING 376.2 376.2 HEATING/COOLING	5 1 1 EX. RECS 3 EX. CHEM. FEED	0.36	EXISTING 2 0.50 EXISTING 1	C 30/1 20/1 A 20/1 15/1 B 20/1	EXISTING EXISTING EXISTING	000000000000000000000000000000000000000	.50 EX. SUMP PUMP CONTRO .50 EX. CT VALVES EX. REC BESIDE DOOR
	0.0 0.0 MOTORS 0.0 0.0 KITCHEN	5 EX. UNIT HEATER 7		0.50 EXISTING 2 1.00 EXISTING 3 1.00 EXISTING 3	20/1 C 20/1 A 15/1 30/3 B 20/1 C 20/1	EXISTING EXISTING EXISTING		50 NEW REFRIG. MON. SYST 50 EX. OIL TESTER 50 EX. CONTROL PANEL 50 EX. CONTROL PANEL
	0.00.0RECEPTACLES149.1149.1MISCELLANEOUS							
	TOTAL DEMAND LOAD 525.3 KVA							
SWITCHBOARD:	BMP (MODIFIED)							
LOCATION: UTILITY BUILDING MOUNTING: PAD MOUNTED	1200 A MAIN BUS RATING MAIN LUG ONLY	PANELBOARD NOTES: 1. EXISTING PANEL IS WESTINGHO	DUSE	LOAD TOTALS (KVA): LIGHTING/CONTINUOUS	<u>CONNEC</u> 1.00	CTED DEMAND 1.25	LOAD BALANCE PHASE A 100.47	%
ENCLOSURE: NEMA 1	50 KAIC, MIN. RMS SYM. RATING	2. EXISTING LOADS ARE BASED ON EXISTING CONDTIONS. 3. ITEMS IN HATCH DENOTE DEMO	NESTIMATES OF	MOTORS KITCHEN RECEPTACLES	0.00 0.00 0.54	0.00 0.00 0.54	PHASE C 105.39	% 25 x 24
VOLTAGE: 480 Y / 277	V 3PH 4W	ITEMS IN BOLD DENOTE MODIFICA LARGEST MOTOR (KVA):	ATION.	MISCELLANEOUS TOTAL	7.00 8.54	7.00 8.79	LARGEST UNBALANCE PHASI	E %: 1.0539 PS: 25.71
DESCRIPTION LOAD (KVA) LTG H/C MOT KIT	WIRE GND BREAKER WIRE GND CND IN. FRAME & PHAS REC MISC SIZE SIZE TRIP/POLE							
MCCBP	45.20 A 45.20 EX 300/3 B							
	45.20 A							
SPACE ONLY	B							
42.50 CRM-1 42.50	(3)#250kCMIL, #4GND, 2 1/2" C 225/3 A							
42.50 42.50 CRM-2 42.50	(3)#250kCMIL, #4GND, 2 225/3 B							
42.50								
SPACE ONLY	B							
PANEL BP	A A							
SWITCHBOARD NOTES:	CONNECTED LOADKVAAMPSPHASE A130.2470PHASE D100.2100.2							
2. ITEMS IN BOLD DENOTE MODIFICATION.	РНАЗЕ В 130.2 470 PHASE C 130.2 470 MAX UNBAL. 0.0 0							
	MOTOR (KVA)							
	NNECTED DEMAND (KVA) LOAD TYPES							
со								
со	0.00.0LIGHTING255.0255.0HEATING/COOLING							
CO	0.0 0.0 LIGHTING 255.0 255.0 HEATING/COOLING 0.0 0.0 MOTORS 0.0 0.0 KITCHEN 0.0 0.0 RECEPTACLES							
CO	0.0 0.0 LIGHTING 255.0 255.0 HEATING/COOLING 0.0 0.0 MOTORS 0.0 0.0 KITCHEN 0.0 0.0 RECEPTACLES 135.6 135.6 MISCELLANEOUS							

				IVIC				ANC	LDC)	C	U											
	SERVED FROM:	TX-EG			AMP			60	Α					VOLT	AGE ((L-L):	208		P	HASE:	3	10	,000 MINIMUM RMS	
	MOUNTING:	SURFA	CE		LL	JG OPT	IONS:	MCB						LO	CATIO	N:	GENE	RATOR	HOUS	E	4		STIVINE I RICAL AIC RATI	NG
IR.	LOAD			LOAD	(KVA)			PHASE	G	CND	BRKR]	BRKR	PHASE	G	CND			LOAD	(KVA)			LOAD	CIR.
0.	DESCRIPTION	LTG	H/C	мот	КІТ	REC	MISC	SIZE	SIZE	IN.	RTG		RTG	SIZE	SIZE	IN.	LTG	H/C	мот	KIT	REC	MISC	DESCRIPTION	NO.
												Α	20/1										SPACE	2
	MAIN										60/3	В	35/2	FX	FX	FX						1.50	WATER HEATERS	4
												С	55/2									1.50		6
1	DAYTANK						0.50	EX	EX	EX	20/1	Α	20/1	EX	EX	EX						0.50	HVAC CONTROLS	8
3	BOILER YARD LIGHTS	0.50						EX	EX	EX	20/1	В	35/1										SPARE	10
5	GENERATOR LIGHTS	0.50						EX	EX	EX	20/1	С	35/1										SPARE	12
7	GENERATOR RECEPTACLE					0.36		EX	EX	EX	20/1	Α	20/1	EX	EX	EX						1.00	BATTERY CHARGER	14
9	OIL HEATERS						1.50	EX	EX	EX	20/1	В	15/1	EX	EX	EX						0.75	CONTROL COMPRESSOR	16
1	SPARE										20/1	С	25/1	10	12	3/4						2.00	HEAT TAPE CP	18
L3	SPACE										20/1	Α	20/1										SPACE	20
ι5	SPACE										20/1	В	20/1										SPACE	22
L7	SPACE										20/1	С	20/1										SPACE	24
	PANELBOARD NOTES:						LOAD	TOTALS	(KVA	<u> ():</u>		<u>C(</u>	ONNEC	<u>TED</u>	DEM	AND			LC	DAD B.	ALANC	<u> </u>		
	1. EXISTING PANEL IS WE	STINGH	OUSE				LIGHT	'ING/CC	NTIN	IUOUS			1.00		1	.25			PHAS	SE A	66.	73%		
	POW-R-LINE C.						HEATI	NG/CO	OLING	G			0.00		0	.00			PHAS	SE B	120	.17%		
	2. EXISTING LOADS ARE E	BASED O	N ESTI	MATES	S OF		MOTO	DRS					0.00		0	.00			PHA	SE C	113	.10%		
	EXISTING CONDTIONS.						KITCH	EN					0.00		0	.00								
	3. ITEMS IN HATCH DENG	DTE DEN	IOLITI	DN.			RECEP	PTACLES					0.36		0	.36			ΤΟΤΑΙ	_ DEM/	AND A	MPS x	30	
	ITEMS IN BOLD DENOTE	MODIFI	CATIO	N.			MISCE	ELLANEC	DUS				9.25		9	.25	_ I	ARGE	ST UNE	BALAN	CE PH	ASE %:	1.2017	
	LARGEST MOTOR (KVA):						ΤΟΤΑΙ	L				1	10.61	-	10).86				-				
	·		-														LARG	EST U	NBALA	NCE PH	ASE A	AMPS:	36.22	

		EXISTING EMCC - BP		
		POSITION SCHEDULE		
POSITION	PROTECTIVE DEVICE SIZE	EQUIPMENT SERVED	CONDUCTOR AND CONDUIT SIZE	TOTAL CONNECTED LOAD (kW)
(1A)	N/A	SPACE		
(1B)	30A/3P	PUMP-P6	EX	3.73
	30A/3P	BOILERS	EX	6.00
(D	60A/3P	SPACE	EX	
(TE)	80/3P	MAIN SWITCH		
(2A)	N/A	SPACE		
2B	30A/3P	CAC-1	EX	12.50
2C	30A/3P	PUMP P-5	EX	3.73
2D	30A/3P	EUH-3	EX	15.50
(2E)	N/A	SPACE		
2F	N/A	SPACE		
		TOTAL CONNECTED LOAD(kW)		41.460000

			IVIC	ллг			PANE	LDC)) P											
ROM	:			AMP	ERE RA	ATING:	35	Α					VOLT	AGE	(L-L):	208		Р	HASE:	3		,000 MINIMUM RMS	
TING	NEMA	1		MA	IN BRE	AKER:	35/3						VOLT	AGE (L-N):	120			WIRE:	4		SYMMETRICAL AIC RATIN	G
TING	SURFA	CE		LL	JG OP1	FIONS:	MCB						LO	CATIO	N:	UTILIT	Y ELEC	2					
			LOAD	(KVA)			PHASE	G	CND	BRKR	1	BRKR	PHASE	G	CND			LOAD	(KVA)			LOAD	CIR
	LTG	H/C	мот	КІТ	REC	MISC	SIZE	SIZE	IN.	RTG		RTG	SIZE	SIZE	IN.	LTG	H/C	мот	KIT	REC	MISC	DESCRIPTION	NO
											Α	20/1	E)	(ISTIN	G	0.50						EX. BOILER RM LTS	2
							EX	ISTIN	G	35/3	В	15/1	E)	(ISTIN	G	0.50						EX. BOILER RM LTS	4
											С	30/1	E)	(ISTIN	G						0.50	EX. SUMP PUMP CONTROLS	6
					0.36		EX	ISTIN	G	20/1	Α	20/1	EX	(ISTIN	G						0.50	EX. CT VALVES	8
						0.50	EX	ISTIN	G	15/1	В	20/1	EX	(ISTIN	G					0.18		EX. REC BESIDE DOOR	10
						0.50	EX	ISTIN	G	20/1	С	20/1	E)	(ISTIN	G						0.50	NEW REFRIG. MON. SYSTEM	12
						1.00					Α	15/1	E)	(ISTIN	G						0.50	EX. OIL TESTER	14
						1.00	EX	ISTIN	G	30/3	В	20/1	E)	(ISTIN	G						0.50	EX. CONTROL PANEL	16
						1.00					С	20/1	E)	ISTIN	G						0.50	EX. CT VALVES	18
																							_
																							_
																							_
		L								I													<u> </u>
										I													<u> </u>
																							<u> </u>
																							–
S:						LOAD	TOTALS	(KVA	A):		С	ONNEC	TED	DEM	AND			L	OAD B	ALAN	<u>CE</u>		
S WE	ESTINGH	IOUSE				LIGH	TING/CC	NTIN	iuous		_	1.00		1	.25			PHA	SE A	100	.47%		
						HEAT	ING/CO	OLIN	G			0.00		0	.00			PHA	SE B	94.	15%		
ARE	BASED C	N ESTI	MATE	S OF		мото	DRS					0.00		0	.00			PHA	SE C	105	.39%		
NS.						KITCH	IEN					0.00		0	.00								
DEN	DTE DEM	10LITI (DN.			RECE	PTACLES					0.54		0	.54			ΤΟΤΑ	L DEM	AND A	MPS x	24	
IOTE	MODIFI	CATIO	N.			MISC	ELLANEC	DUS				7.00	_	7	.00	_ I	ARGE	ST UNE	BALAN	CE PH/	ASE %:	1.0539	
VA):		-				ΤΟΤΑ	L					8.54	_	8	.79								-
																LARG	EST U	NBALA	NCE P	HASE A	AMPS:	25.71	1

		MODIFIED EMCC - BP	
		POSITION SCHEDULE	
POSITION	PROTECTIVE DEVICE SIZE	EQUIPMENT SERVED	CONDUCTOR AND CONDUIT SIZE
(1A)	N/A	SPACE	
(1B)	30A/3P	PUMP-P6	EX
10	30A/3P	BOILERS	EX
1	60A/3P	SPACE	EX
(1E)	80/3P	MAIN SWITCH	
(2A)	20/3P	NEW IMERSION HEATERS CT-1	3-#12, 1-#12GND IN 3/4" C
(2A)2	20/3P	NEW IMERSION HEATERS CT-1	3-#12, 1-#12GND IN 3/4" C
2B	30A/3P	CAC-1	EX
2C	30A/3P	PUMP P-5	EX
2D	30A/3P	EUH-3	EX
2E	N/A	SPACE	
2F	N/A	SPACE	
		TOTAL CONNECTED LOAD(kW)	

SECTION #	1	SECTION	I #2
_ (1A)		2A)	-
1B		2B	-
1C)		2C)	-
- - (1D)		2D	-
		2E	-
- (1E)		2F)	-

1 EXISTING EMCC-BP ELEVATION SCALE: N.T.S.

(#) <u>KEYED NEW WORK NOTES</u>:

12.50

3.73

15.50

65.460000

 EMCC-BP IS A 600A, 480V, 3PH, 3W 42kAIC WESTINGHOUSE SERIES 2100 MCC. ALL NEW PROTECTIVE DEVICES SHALL BE EATON-CUTLER HAMMER. ELECTRICAL CONTRACTOR SHALL PROVIDE NEW EATON CUTLER HAMMER DUAL FEEDER BUCKETS IN MCC TO POWER NEW EQUIPMENT.

4' 2' 0

1/4"=1'-0"

1 (25)

4 (102)

6 (152)

12 (305)

+ WHEN COPPER PIPE IS USED, T RATING IS 0 H.

3M COMPANY - CP 25WB+ OR FB-3000 WT.

* BEARING THE UL CLASSIFICATION MARK.

3 OR 4

1 OR 2

3 OR 4

1 OR 2

3 OR 4

0

0

0

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1. FLOOR OR WALL ASSEMBLY - MIN 2-1/2 IN. (64 MM) THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF OR 1600-2400 KG/M3) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF OPENING IS 18 IN. (457 MM).

SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

- 1A. STEEL SLEEVE (OPTIONAL, NOT SHOWN) NOM 10 IN. (254 MM) (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL SLEEVE CAST OR GROUTED INTO FLOOR OR WALL ASSEMBLY. SLEEVE MAY EXTEND A MAX OF 2 IN. (51 MM) ABOVE TOP OF FLOOR OR BEYOND EITHER SURFACE OF WALL. AS AN ALTERNATE, NOM 10 IN. (254 MM) DIAM (OR SMALLER) SLEEVE FABRICATED FROM NOM 0.019 IN. (0.48 MM) THICK GALV STEEL CAST OR GROUTED INTO FLOOR OR WALL ASSEMBLY FLUSH WITH FLOOR OR WALL SURFACES. T RATING IS 0 HR WHEN SLEEVE IS USED.
- 2. THROUGH PENETRANT NOM 4 IN. (102 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER PIPE, NOM 12 IN. (305 MM) DIAM (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 12 IN. (305 MM) DIAM (OR SMALLER) CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE OR NOM 12 IN. (305 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE CENTERED IN THE OPENING AND RIGIDLY SUPPORTED ON BOTH SIDES OF THE FLOOR OR WALL ASSEMBLY.
- 3. PIPE COVERING* NOM 1/2 TO 2 IN. (13 TO 51 MM) THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF OR 56 KG/M3) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY-APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT STRIP TAPE SUPPLIED WITH THE PRODUCT.

DIAM, IN. (MM) 4 (102)	1 or 1-1/2
4 (102)	1 or 1-1/2
	1011-1/2
4 (102)	2 (51)
12 (305)	1 (25)
12 (305)	1 (25)
12 (305)	1/2 (13)
-	4 (102) 12 (305) 12 (305) 12 (305)

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E601