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UNC ROSS HALL CHILLER REPLACEMENT BID SET

PROJECT #2024-041M23

FACILITY PLANNING and CONSTRUCTION **UNC - PARSON HALL** 501 20TH STREET CAMPUS BOX 57 GREELEY, CO 80639 (970) 351-2446



TION



3. JOB SITE MAY BE CONGESTED DUE TO CONSTRUCTION OF AN ADJACENT BUILDING. CONTRACTOR ENCOURAGED TO MINIMIZE FOOT PRINT OUTSIDE

OF ROSS HALL.



<u>ABBREVIATIONS</u>

AASHTO ABAN AC) AMERICAN ASSOC. OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS ABANDON ASPHAI TIC CONCRETE PAVING	INCL ID IN INSUI	INCLUDED INSIDE DIAMETER INLET INSULATION
ADDL ADDM	ADDITIONAL ADDENDUM	INV IRR	INVERT
AL ALT	ALUMINUM ALTERNATE	JTS	JOINTS
AM I APPROX ARCH	AMOUNT APPROXIMATE ARCHITECT(URAL)	KU KPL KWY	KNOCKOUT KICK PLATE KEYWAY
ARV ASTM	AIR RELIEF VALVE AMERICAN SOCIETY FOR TESTING AND		LEFT OR LITER
ASPH ASSY	ASEMALS ASSEMBLY	LSCAPE LF LP	LANDSCAPE(ING) LINEAR FOOT LOW POINT OR LIGHT POLE
ASYM AUTO AVG	ASYMMETRICAL AUTOMATIC AVERAGE	LT LWL	LIGHT LOW WATER LEVEL
AWWA BC	AMERICAN WATER WORKS ASSOC.	MAINT MAN MATI	MAINTENANCE MANUAL MATERIAI
BFV BG	BUTTERFLY VALVE FINISHED GRADE ADJACENT TO BOTTOM OF WALL	MAX ME	MATCH EXISTING
BLDG BLK BM	BUILDING BLOCK BENCH MARK	MEP MFR	MECHANICAL MECHANICAL, ELECTRICAL, PLU MANUFACTURER
BMP BS BOS	BEST MANAGEMENT PRACTICE BACKSIGHT BOTTOM OF STEP	MH MIN MISC	MANHOLE MINIMUM MISCELLANEOUS
BOT BSMT BVCE	BOTTOM BASEMENT BEGIN VERTICAL CURVE ELEVATION	MJ	MECHANICAL JOINT
BVCS BW	BEGIN VERTICAL CURVE STATION BOTTOM OF WALL	NA NIC	NOT APPLICABLE NOT IN CONTRACT
CB CCW	CATCH BASIN COUNTER CLOCKWISE	NPT NTS	NATIONAL PIPE THREAD NOT TO SCALE
CDOT CIP CJ	COLORADO DEPARTMENT OF TRANSPORTATION CAST IRON PIPE CONSTRUCTION JOINT	OS OC OD	OFFSET ON CENTER OUTSIDE DIAMETER
CL CLR	CENTER LINE OR CHAIN LINK CLEAR	OPP OPT	OPPOSITE OPTIONAL
CMP CMU CO	CONCRETE MASONRY UNIT CLEANOUT	PC PCO	POINT OF CURVATURE PRESSURE CLEAN OUT
CONC CONST CONT	CONCRETE CONSTRUCTION CONTINUOUS(ATION)	PCR PI PVI	POINT OF CURVE RETURN POINT OF INTERSECTION POINT OF VERTICAL INTERSEC
COR CR CTR	CORNER CONCENTRIC REDUCER	PL PE PREEAB	PROPERTY LINE POLYETHYLENE PREEABRICATED
CY	CUBIC YARDS	PRELIM	PRELIMINARY PREPARATION
DEMO DET DIA	DEMOLITION DETAIL DIAMETER	PRV	PROPOSED PRESSURE REDUCING VALVE C VALVE
DIAG DIP DOM	DIAGONAL DUCTILE IRON PIPE DOMESTIC	PSF PSI PT	POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH POINT OF TANGENCY
DN DR DWC		PV PVC	PLUG VALVE POLYVINYL CHLORIDE OR POIN
DWL	DOWEL	PVMT	PAVEMENT
E EA ECC	EAST EACH ECCENTRIC	QTY R RAD	QUAN ITTY RIGHT RADIUS
EJ EL ELB	EXPANSION JT ELEVATION ELBOW	RCP RD RE	REINFORCED CONCRETE PIPE ROOF DRAIN REFERENCE
ELEC ENGR EOP	ELECTRICAL ENGINEER EDGE OF PAVEMENT	RECT REINF	RECTANGULAR REINFORCE (D) (ING) (MENT)
EQ EQUIP	EQUAL EQUIPMENT	ROW	RIGHT OF WAY
EQUIV ESMT EST	EQUIVALENT EASEMENT ESTIMATE	SAN SC SD	SANITARY SAWCUT STORM DRAIN
EVCE EVCS EW	END VERTICAL CURVE ELEVATION END VERTICAL CURVE STATION EACH WAY	SECT SPD SPEC	SECTION STANDARD PROCTOR DENSITY SPECIFICATION
EXP EXIST	JT EXPANSION JOINT EXISTING	SQ SQ IN SO FT	SQUARE SQUARE INCH SQUARE FOOT
FND FES	FOUNDATION FLARED END SECTION	SQ YD SS	SQUARE YARD SQUARE YARD SANITARY SEWER
FG FH	FINISH FLOOR FINISH GRADE FIRE HYDRANT	STA STD	STAINLESS STEEL STATION STANDARD
FL FN FOC	FLOW LINE FENCE FACE OF CONCRETE	STL STRUCT SVC	STEEL STRUCTURAL SERVICE
FPM FPS FT	FEET PER MINUTE FEET PER SECOND FFET	SWMP SYM	STORMWATER MANAGEMENT PL SYMMETRICAL
FTG	FOOTING OR FITTING	TB TBC	THRUST BLOCK TOP BACK OF CURB
GA GAL	GAUGE GALLON	TEMP TG	TEMPORARY TEMPORARY FINISHED GRADE ADJACENT TO
GALV GB GCO	GALVANIZED GRADE BREAK GRADE CLEANOUT	TOB TOC	THICK TOP OF BANK TOP OF CONCRETE OR TOP OI
GIP GND GPD	GALVANIZED IRON PIPE GROUND GALLONS PER DAY	TOS TOT TW	TOP OF STEP TOTAL TOP OF WALL OR CAP OF WA
GPM GR GRTG	GALLONS PER MINUTE GRATE GRATING	TYP	TYPICAL
GSP GV	GALVANIZED STEEL PIPE GATE VALVE	UGE UTIL	UNDERGROUND ELECTRIC
H HB	HIGH HOSE BIB	VERT VC VCP	VERTICAL POINT OF VERTICAL CURVATUR VITRIFIED CLAY PIPE
HE HDWL HNDRL	HURIZONTAL ELLIPTICAL HEADWALL HAND RAIL	W W/	WIDE OR WIDTH WITH
HORIZ HP HR	HORIZONTAL HIGH POINT HOUR	W/O WQCV	WITHOUT WATER QUALITY CONTROL VOL
HVAC HWY	HEATING, VENTILATION, AIR CONDITIONING HIGHWAY	WSE WW	WAILR SURFACE ELEVATION WASTEWATER
нwL НYD	HIGH WATER LINE HYDRANT	X XFMR	SECT CROSS SECTION ELECTRICAL TRANSFORMER
		ΥH	YARD HYDRANT

<u>DESIGN LEGEND</u>

	•	BENCHMARK	X	FENCE
SIDE DIAMETER EFT	6	ΜΑΝΗΟΙ Ε	→ -···→-···→-··· → -···	FLOW LINE OF DITCH OR WASH
SULATION	Ø	ARFA DRAIN	5.0%	SLOPE ARROW
VERT			+ 03.54	PROPOSED SPOT ELEVATION
		TYPE R INIET	+ 03.3	EXIST SPOT ELEVATION
JIN 15		TYPE 13 FIFLD INLET		
		FLARED END SECTION W/ RIPRAP		EXIST INDEX CONTOUR
CK PLATE IYWAY		TEE W/ THRUST BLOCK	5221	EXIST INTERMEDIATE CONTOUR
	л Д	BEND W/ THRUST BLOCK		
NDSCAPE(ING)	▶[END CAP W/ THRUST BLOCK	20	PROPOSED INDEX CONTOUR
NEAR FOOT	8	GATE VALVE	21	PROPOSED INTERMEDIATE CONTOUR
JW POINT OR LIGHT POLE GHT	N	BUTTERFLY VALVE		
DW WATER LEVEL	Þ	REDUCER / INCREASER		CURB AND GUTTER
AINTENANCE	Ŵ	WATER METER		SPILL /CATCH CURB TRANSITION
	Č	FIRE HYDRANT		
ATERIAL AXIMUM		STORM – 12" AND SMALLER		SIGN W/ PUST
		STORM – LARGER THAN 12"		CURB RAMP
CHANICAL CHANICAL FLECTRICAL PLUMBING (ARCH)		ROOF DRAIN		
ANUFACTURER	тр	TRENCH DRAIN		SIDEWALK CHASE
ANHOLE NIMUM		UNDERDRAIN		SIDEWALK
SCELLANEOUS	—s —> s —>	SANITARY SEWER - 12" AND SMALLER		
CHANICAL JOINT		SANITARY SEWER - LARGER THAN 12"		
			л Д	HEAVY DUTY CONCRETE PAVING
OT APPLICABLE OT IN CONTRACT		FURGE MAIN		HEAVY DUTY ASPHALT PAVING
ATIONAL PIPE THREAD	W	WATER - 12 AND SMALLER		
JI TO SCALE		WATER - LARGER THAN 12		LIGHT DUTT ASPHALT PAVING
FSET		NON POTABLE WATER		GRAVEL
JTSIDE DIAMETER		IPPICATION - 12" AND SMALLER		
PPOSITE PTIONAL		IDDICATION I ADCED THAN 12"		
		CARLE TV		BUILDING ACCESS
DINT OF CURVATURE RESSURE CLEAN OUT	D			RETAINING WALL
DINT OF CURVE RETURN	F	FLECTRIC	1999999999999	BOULDER/ROCK WALL
DINT OF INTERSECTION DINT OF VERTICAL INTERSECTION	UF			LIMITS OF SAWCUT
ROPERTY LINE				LIMITS OF WORK
DLYE IHYLENE REFABRICATED		TELEPHONE		EASEMENT LINE
RELIMINARY	FO	FIBER OPTIC		PROPERTY LINE
ROPOSED		FUEL		ADJACENT PROPERTY LINE/ROW
RESSURE REDUCING VALVE OR PRESSURE RELIEF	C	GAS		MATCHLINE
alve Dunds per square foot	PVC	PVC PIPE (MISC)		
DUNDS PER SQUARE INCH	DETAIL TI	TI F	<u> </u>	SECTION CALLOUT
UG VALVE				
DLYVINYL CHLORIDE OR POINT OF VERTICAL		DETAIL NUMBER IDENTIFICATION		A SECTION NUMBER IDENTIFICATION
AVEMENT				SHEET WHERE THE SECTION IS
	JUALE	ELEVATION IS CUT OR CALLED OUT		- INDICATES SAME DRAWING
GHT		- INDICATES SAME DRAWING		
ADIUS INFORCED CONCRETE PIPE				<u>ULIAIL MARNER</u>
DOF DRAIN		DETAIL NUMBER IDENTIFICATION	\sim	REVISION CLOUD
FERENCE CTANGULAR	C1.0	SHEET WHERE THE DETAIL IS DRAWN		
EINFORCE (D) (ING) (MENT)		- INDICATES SAME DRAWING	L	
QUIRED			\sim	KE VISION NUMBER

NOTE: SHADED ITEMS REPRESENT EXIST FEATURES

TORMWATER MANAGEMENT PLAN

INISHED GRADE ADJACENT TO TOP OF WALL

TOP OF CONCRETE OR TOP OF CURB

OP OF WALL OR CAP OF WALL

OINT OF VERTICAL CURVATURE

ATER QUALITY CONTROL VOLUME

<u>GENERAL NOTES</u>

- 1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF THE UNIVERSITY OF NORTHERN COLORADO, CITY OF GREELEY, COLORADO DEPARTMENT OF TRANSPORTATION, GREELEY FIRE PROTECTION REQUIREMENTS, AND APPLICABLE STATE AND LOCAL STANDARDS AND SPECIFICATIONS. THE CONTRACTOR SHALL HAVE IN POSSESSION AT THE JOB SITE AT ALL TIMES ONE (1) SIGNED COPY OF APPROVED PLANS, STANDARDS AND SPECIFICATIONS. CONTRACTOR SHALL CONSTRUCT AND MAINTAIN EMERGENCY ACCESS ROUTES TO THE SITE AND STRUCTURE AT ALL TIMES PER THE APPLICABLE GREELEY FIRE PROTECTION DISTRICT REQUIREMENTS. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FOR ANY VARIANCE TO THE ABOVE DOCUMENTS. NOTIFY ENGINEER OF ANY CONFLICTING STANDARDS OR SPECIFICATIONS. IN THE EVENT OF ANY CONFLICTING STANDARD OR SPECIFICATION, THE MORE STRINGENT OR HIGHER QUALITY STANDARD, DETAIL OR SPECIFICATION SHALL APPLY.
- 2. THE CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL APPLICABLE CODES, LICENSES, STANDARD SPECIFICATIONS, PERMITS, BONDS, ETC., WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK, INCLUDING, BUT NOT LIMITED TO A LOCAL AND STATE GROUNDWATER DISCHARGE AND COLORADO DEPARTMENT OF HEALTH AND ENVIRONMENT (CDPHE) STORMWATER DISCHARGE PERMIT ASSOCIATED WITH CONSTRUCTION ACTIVITY.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE REQUIRED PARTY (OWNER, OWNER'S REPRESENTATIVE, MUNICIPAL/DISTRICT INSPECTOR, GEOTECHNICAL ENGINEER, ENGINEER AND/OR UTILITY OWNER) AT LEAST 48 HOURS PRIOR TO START OF ANY CONSTRUCTION, PRIOR TO BACKFILLING, AND AS REQUIRED BY JURISDICTIONAL AUTHORITY AND/OR PROJECT SPECIFICATIONS. THE CONTRACTOR SHALL CONTINUE WITH NOTIFICATIONS THROUGHOUT THE PROJECT AS REQUIRED BY THE STANDARDS AND SPECIFICATIONS.
- 4. THE LOCATIONS OF EXISTING UTILITIES ARE SHOWN IN THE APPROXIMATE LOCATION BASED ON INFORMATION BY OTHERS. NOT ALL UTILITIES MAY BE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT SIZE, LOCATION AND TYPE OF ALL EXISTING UTILITIES WHETHER SHOWN OR NOT BEFORE COMMENCING WORK. THE ENGINEER AND/OR OWNER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS SHOWN ON PLANS. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR ANY AND ALL DAMAGES AND COSTS WHICH MIGHT OCCUR BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES. THE CONTRACTOR SHALL NOTIFY ALL PUBLIC AND PRIVATE UTILITY COMPANIES AND DETERMINE THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO PROCEEDING WITH GRADING AND CONSTRUCTION. ALL WORK PERFORMED IN THE AREA OF UTILITIES SHALL BE PERFORMED AND INSPECTED ACCORDING TO THE REQUIREMENTS OF THE UTILITY OWNER. LIKEWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MAPPING ANY EXISTING UTILITY (INCLUDING DEPTH) WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION, AND FOR RELOCATING ENCOUNTERED UTILITIES AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL CONTACT AND RECEIVE APPROVAL FROM UNC/UTILITY OWNER AND ENGINEER BEFORE RELOCATING ANY ENCOUNTERED UTILITIES. CONTRACTOR RESPONSIBLE FOR SERVICE CONNECTIONS, AND RELOCATING AND RECONNECTING AFFECTED UTILITIES AS COORDINATED WITH UTILITY OWNER AND/OR ENGINEER, INCLUDING NON-MUNICIPAL UTILITIES (TELEPHONE, GAS, CABLE, ETC., WHICH SHALL BE COORDINATED WITH THE UTILITY OWNER). THE CONTRACTOR SHALL IMMEDIATELY CONTACT ENGINEER UPON DISCOVERY OF A UTILITY DISCREPANCY OR CONFLICT. AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY NOTIFICATION CENTER OF COLORADO (1-800-922-1987, WWW.UNCC.ORG). SEE SURVEY UTILITY LOCATION INFORMATION BELOW.

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- . THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL PREPARE A TRAFFIC CONTROL PLAN FOR OWNER AND/OR CITY APPROVAL AND PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FENCING, FLAGMEN OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR AGREES TO COMPLY WITH THE PROVISIONS OF THE TRAFFIC CONTROL PLAN AND THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," PART VI, FOR CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL. ALL TEMPORARY AND PERMANENT TRAFFIC SIGNS SHALL COMPLY TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) WITH REGARD TO SIGN SHAPE, COLOR, SIZE, LETTERING, ETC. UNLESS OTHERWISE SPECIFIED. IF APPLICABLE, PART NUMBERS ON SIGNAGE DETAILS REFER TO MUTCD SIGN NUMBERS.
- 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS NOR EROSION ON ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. GROUNDWATER TO BE PUMPED SHALL BE TESTED, PERMITTED, AND PUMPED PER THE STATE OF COLORADO AND LOCAL GROUNDWATER DISCHARGING PERMIT REQUIREMENTS.
- 7. RIM AND GRATE ELEVATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY AND ARE NOT TO BE TAKEN AS FINAL ELEVATIONS. THE CONTRACTOR SHALL ADJUST RIMS AND OTHER IMPROVEMENTS TO MATCH FINAL PAVEMENT AND FINISHED GRADE ELEVATIONS. ALL MANHOLES SHALL BE FINAL ADJUSTED AFTER PAVING SUCH THAT THE RIM IS 1/4" TO 1/2" BELOW FINISHED ASPHALT. MANHOLES IN UNPAVED AREAS SHALL BE SET SO THAT THE RIM IS 6"ABOVE FINISHED GRADE.
- 8. THE EXISTING AND PROPOSED ELEVATIONS OF FLATWORK, SIDEWALKS, CURBS, THRESHOLDS, PAVING, ETC. AS SHOWN HEREON ARE BASED ON EXTRAPOLATION OF FIELD SURVEY DATA, EXISTING CONDITIONS, AND DATA PROVIDED BY OTHERS. AT CRITICAL AREAS AND SITE FEATURES, CONTRACTOR SHALL HAVE FORMWORK INSPECTED AND APPROVED BY OWNER, OWNER'S REPRESENTATIVE, OR ENGINEER PRIOR TO PLACING CONCRETE. MINOR ADJUSTMENTS, AS APPROVED, TO PROPOSED GRADES, INVERTS, ETC. MAY BE REQUIRED TO PREVENT PONDING OR SLOPE NOT IN CONFORMANCE WITH MUNICIPAL STANDARDS. ALL FLATWORK MUST PREVENT PONDING AND PROVIDE POSITIVE DRAINAGE AWAY FROM EXISTING AND PROPOSED BUILDINGS, WALLS, ROOF DRAIN OUTFALLS, ACROSS DRIVES AND WALKS, ETC., TOWARDS THE PROPOSED INTENDED DRAINAGE FEATURES AND CONVEYANCES.
- 9. FINAL LIMITS OF REQUIRED ASPHALT SAWCUTTING AND PATCHING MAY VARY FROM LIMITS SHOWN ON PLANS. CONTRACTOR TO PROVIDE SAWCUT AND PATCH WORK TO ACHIEVE POSITIVE DRAINAGE AND A SMOOTH TRANSITION TO EXISTING ASPHALT WITHIN SLOPES ACCEPTABLE TO THE ENGINEER AND WITHIN MUNICIPAL STANDARDS. CONTRACTOR SHALL PROVIDE ADDITIONAL SAWCUTTING AND PATCHING AT UTILITY WORK, CONNECTION POINTS TO EXISTING PAVEMENT AND FEATURES, ETC. THAT MAY NOT BE DELINEATED ON PLANS.
- 10. ANY EXISTING MONITORING WELLS, CLEANOUTS, VALVE BOXES, ETC. TO BE PROTECTED AND TO REMAIN IN SERVICE. IF FEATURES EXIST, EXTEND OR LOWER TO FINAL SURFACE WITH LIKE KIND CAP WITH STANDARD CAST ACCESS LID WITH SAME MARKINGS. IN LANDSCAPED AREAS PROVIDE A CONCRETE COLLAR (18"x18"x6" THICK) AT ALL EXISTING AND PROPOSED MONITORING WELLS, CLEANOUTS, VALVE BOXES, ETC.
- 11. OWNER TO APPROVE ALL PRIVATE CONCRETE FINISHING, JOINT PATTERNS AND COLORING REQUIREMENTS PRIOR TO CONSTRUCTION. SUBMIT JOINT LAYOUT PLAN TO OWNER FOR APPROVAL PRIOR TO CONSTRUCTION.
- 12. PIPE LENGTHS AND HORIZONTAL CONTROL POINTS SHOWN ARE FROM CENTER OF STRUCTURES, END OF FLARED END SECTIONS, ETC. SEE STRUCTURE DETAILS FOR EXACT HORIZONTAL CONTROL LOCATION. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING ACTUAL PIPE LENGTHS TO ACCOUNT FOR STRUCTURES AND LENGTH OF FLARED END SECTIONS.
- 13. ALL SURPLUS MATERIALS, TOOLS, AND TEMPORARY STRUCTURES, FURNISHED BY THE CONTRACTOR, SHALL BE REMOVED FROM THE PROJECT SITE BY THE CONTRACTOR. ALL DEBRIS AND RUBBISH CAUSED BY THE OPERATIONS OF THE CONTRACTOR SHALL BE REMOVED, AND THE AREA OCCUPIED DURING CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ITS ORIGINAL CONDITION, WITHIN 48 HOURS OF PROJECT COMPLETION, UNLESS OTHERWISE DIRECTED BY THE MUNICIPALITY OR OWNER'S REPRESENTATIVE.
- 14. THE CONTRACTOR IS REQUIRED TO PROVIDE AND MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE LOCAL JURISDICTION, THE STATE OF COLORADO, MILE HIGH FLOOD DISTRICT "URBAN STORM DRAINAGE CRITERIA MANUAL VOLUME 3", THE M-STANDARD PLANS OF THE COLORADO DEPARTMENT OF TRANSPORTATION, AND THE APPROVED EROSION CONTROL PLAN. JURISDICTIONAL AUTHORITY MAY REQUIRE THE CONTRACTOR TO PROVIDE ADDITIONAL EROSION CONTROL MEASURES AT THE CONTRACTOR'S EXPENSE DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE PLANS DO NOT FUNCTION AS INTENDED. THE CONTRACTOR IS RESPONSIBLE FOR PROHIBITING SILT AND DEBRIS LADEN RUNOFF FROM LEAVING THE SITE, AND FOR KEEPING ALL PUBLIC AREAS FREE OF MUD AND DEBRIS. THE CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING FINAL GRADES AND FOR REMOVING ACCUMULATED SEDIMENTATION FROM ALL AREAS INCLUDING SWALES AND DETENTION/WATER QUALITY AREAS. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROL MEASURES AND REPAIR AREAS AS REQUIRED AFTER VEGETATION IS ESTABLISHED AND ACCEPTED BY OWNER AND MUNICIPALITY.
- 15. ADA COMPLIANCE: THE CROSS-SLOPE OF ALL WALKS MUST BE LESS THAN 1:48 (2.0%) PERPENDICULAR TO DIRECTION OF TRAVEL. RUNNING SLOPE OF ACCESSIBLE WALKS MUST BE NOT STEEPER THAN 1:20 (5.0%) IN DIRECTION OF TRAVEL. MAXIMUM GRADE OF ACCESSIBLE CURB RAMPS AND RAMPS IS 1:12 (8.3%). CURB RAMPS SHALL PROVIDE A LANDING AT THE TOP AND RAMP RUNS PROVIDE LANDINGS AT THE BOTTOM AND TOP OF EACH RAMP RUN AT A SLOPE NOT TO EXCEED 1:48. RAMPS RUNS EXCEEDING SIX INCHES SHALL INCLUDE HANDRAILS. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 1:48 IN ALL DIRECTIONS. CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO PLACEMENT OF FLATWORK OF SITE CONDITIONS OR DISCREPANCIES WHICH PREVENT TYPICAL REQUIRED GRADES FROM BEING ACHIEVED. ALL RAMPS, STAIRS, EDGE PROTECTION, AND RAILINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT ADA STANDARDS. ACCESSIBLE CURB RAMPS SHALL CONFORM TO THE CDOT M-STANDARDS (SEE DETAIL M-608-1, ETC). ACCESSIBLE FEATURE WITHIN THE PUBLIC RIGHTS-OF-WAY SHALL BE CONSTRUCTED TO CONFORM TO THE LOCAL AUTHORITY HAVING JURISDICTION REQUIREMENTS.
- 16. PROTECT ALL TREES AND VEGETATION. PLACE CONSTRUCTION FENCING AT DRIP LINE OF TREES AND PLANTS NEAR THE WORK ZONE. DEEP WATER TREES WEEKLY. HAND EXCAVATION REQUIRED AT ROOT ZONES WHERE PROPOSED PAVING OR UTILITY WORK IS WITHIN DRIPLINE OF TREES.
- 17. LOCATIONS OF CLEANOUTS, LIGHTS, SIGNAGE, JUNCTION BOXES, AND OTHER SIGNIFICANT SITE FEATURES TO BE STAKED FOR ENGINEER AND OR OWNER APPROVAL PRIOR TO WORK. CLEANOUTS, JUNCTION BOXES, AND ADJACENT GRADES TO BE RAISED ONE-HALF INCH AT ASPHALT/CONCRETE (OR 1" AT LANDSCAPING) TO PROVIDE POSITIVE DRAINAGE AWAY FROM FEATURES.
- 18. SURVEY INFORMATION: NO SURVEY PROVIDED FOR THIS PROJECT. DESIGN AND HISTORICAL DOCUMENTS WERE USED AND CONTRACTOR SHALL FIELD VERIFY DATA AND COORDINATE DESIGN WITH ENGINEER.
- 19. THE CONTRACTOR AT THE CONTRACTORS EXPENSE SHALL FURNISH THE OWNER AND ENGINEER OF RECORD A COMPLETE SET OF CONSTRUCTION RECORD DRAWINGS ("AS-BUILTS") FOR THE CONSTRUCTED IMPROVEMENTS. THE AS-BUILT SET SHALL SHOW SUFFICIENT DIMENSION TIES TO PERMANENT SURFACE FEATURES OR NORTHING/EASTING POINTS FOR ALL BURIED FACILITIES TO ALLOW FOR FUTURE LOCATING. THE AS-BUILT SET SHALL SHOW AS-BUILT CONTOURS AND ELEVATIONS OF ASPHALT AND CONCRETE FLATWORK, FLOWLINES, GRADE BREAKS, STAIRS, CROSS-SLOPES, HIGH AND LOW POINTS, AND ADDITIONAL ELEVATIONS TO DEMONSTRATE IMPROVEMENTS WERE CONSTRUCTED PER PLANS. THE AS-BUILT SET SHALL SHOW ELEVATIONS OF ALL DETENTION/WATER QUALITY FACILITIES, INCLUDING BUT NOT LIMITED TO BERMS, SPILLWAYS, BASIN BOTTOM, PIPE INVERTS, AND CONTROL STRUCTURE FEATURES (AS SURVEYED AND STAMPED BY A CERTIFIED P.L.S.). THE AS-BUILT SET SHALL ALSO INCLUDE ELEVATIONS OF MANHOLES, PIPES, INLETS, GRATES, AND SIZES OF ALL UTILITIES. THE AS-BUILT SET SHALL SHOW ANY AND ALL VARIATIONS FROM THE APPROVED PLAN. ENGINEER WILL PRODUCE FINAL RECORD DRAWINGS.







김민원 52°¥ , Unically AND NOT Ruma & I IICALLY TR ELEUIN ERENCE Cator, OR REF OR REF CTION.



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E1 OVERALL FLOOR PLAN A-101 1" = 30'-0"

CODE SUMMARY

EXISTING BUILDING: LEVEL 2 ALTERATION ALTERATION. Any construction or renovation to an existing structure other than a repair or addition. Alterations are classified as Level 1, Level 2 and Level 3.

ALTERATION, LEVEL 2. Alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.

WORK AREA. That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where work not initially intended by the Owner is specifically required by this code.

GOVERNING CODES:	2021 INTERNATIONAL BUILDING CODE 2021 INTERNATIONAL EXISTING BUILDING CODE 2021 INTERNATIONAL PLUMBING CODE 2021 INTERNATIONAL MECHANICAL CODE 2021 COLORADO FUEL GAS CODE 2021 INTERNATIONAL ENERGY CONSERVATION CODE 2021 INTERNATIONAL FIRE CODE 2023 NATIONAL ELECTRICAL CODE
	ACCESSIBILITY: ANSI A117.1-2017

CONSTRUCTION TYPE:NO CHANGENUMBER OF STORIES:NO CHANGEOCCUPANCY:NO CHANGE

AREA SEPARATIONS: NO CHANGE BUILDING AREA: (EXTERIOR GROSS) NO CHANGE

PLUMBING COUNTS ARE BASED ON BUILDING OCCUPANCY & THERE ARE NO PROPOSED CHANGES TO OCCUPANCY OR PLUMBING COUNTS

EXISTING STAIRWAYS AND EXITS TO REMAIN

AREA OF WORK LEGEND

----- E

BOUNDARY LINE FOR AREA OF ARCHITECTURAL SCOPE





A-101 1/4" = 1'-0"



- 1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE APPROPRIATE REMOVAL OF HAZARDOUS MATERIALS AS REQUIRED TO COMPLETE THE NEW WORK, AND SHALL COORDINATE THESE ACTIVITIES WITH THE OWNER'S REPRESENTATIVE. 2. COORDINATE DEMOLITION AND CONSTRUCTION ACTIVITIES WITH THE OWNER'S REPRESENTATIVE TO MINIMIZE DISRUPTION OF NORMAL DAILY FUNCTIONS WITHIN OCCUPIED AREAS.
- 3. KEEP NOISE DURING DEMOLITION AND CONSTRUCTION TO A MINIMUM WHEN OCCUPIED SPACES ARE IN USE. 4. INSTALL TEMPORARY BARRICADES AND PARTITIONS TO PREVENT INJURY TO PERSONS IN AND AROUND DEMOLITION AND CONSTRUCTION AREAS IN
- ACCORDANCE WITH OSHA REQUIREMENTS. COORDINATE LOCATIONS AND INSTALLATION WITH OWNER'S REPRESENTATIVE. 5. INSTALL DUST PARTITIONS IN ACCORDANCE WITH FIRE PROTECTION AND EGRESS REQUIREMENTS AND COORDINATE LOCATIONS AND INSTALLATION WITH
- THE OWNER'S REPRESENTATIVE. 6. UPON REMOVAL OF TEMPORARY PARTITIONS, PATCH DISTURBED EXISTING AREAS TO MATCH EXISTING ADJACENT CONSTRUCTION. IF PAINTING IS REQUIRED, REPAINT ENTIRE WALL TO AVOID MISMATCH OF COLOR.
- 7. DASHED LINES INDICATE WALLS AND ITEMS TO BE REMOVED. 8. THE ITEMS IDENTIFIED TO BE REMOVED REPRESENT THE MAJOR ITEMS ONLY AND IN NO WAY TRY TO IDENTIFY ALL PIECES AND PARTS ASSOCIATED TO BE
- REMOVED. NOTIFY A/E OF ANY DESCREPENCIES IN FLOOR PLAN LOCATIONS. 9. PROTECT EXISTING CONSTRUCTION SHOWN AS REMAINING. USE CAUTION WHEN REMOVING PARTITIONS, CEILINGS, AND OTHER CONSTRUCTION ADJACENT TO COLUMNS, BEAMS, AND OTHER STRUCTURAL ELEMENTS. AVOID DAMAGE TO THE EXISTING STRUCTURE TO REMAIN. REPAIR DAMAGE TO THE EXISTING CONSTRUCTION CAUSED BY WORK UNDER THIS CONTRACT.
- 10. PROTECT EXISTING ITEMS, EQUIPMENT, DOORS, ETC. INDICATED TO REMAIN IN PLACE FROM DIRT AND DAMAGE DURING DEMOLITIONAND CONSTRUCTION. 11. THE OWNER SHALL RETAIN SALVAGE THAT IS OF VALUE AS DESIGNATED BY THE OWNER'S REPRESENTATIVE. THE OWNER'S REPRESENTATIVE WILL DIRECT THE CONTRACTOR AS TO THE LOCATION OF STORAGE AREA FOR VARIOUS ITEMS. 12. REMOVE WALLS INDICATED TO BE DEMOLISHED FROM FLOOR TO STRUCTURE ABOVE AND INCLUDE ALL MECHANICAL, ELECTRICAL, EQUIPMENT, ETC. PREPARE
- ALL DISTURBED AREAS FOR NEW CONSTRUCTION. 13. WHERE PARTIAL DEMOLITION OF A WALL IS REQUIRED, COORDINATE EXTENT AND LOCATION OF REMOVED PORTION WITH NEW CONSTRUCTION PLAN AND FIELD CONDITIONS. NOTIFY A/E OF ANY DISCREPENCIES IN DIMENSIONS. 14. AT POINTS OF CONSTRUCTION ACCESS, PROVIDE LABOR AND MATERIALS TO
- REPAIR ALL DISTURBED ELEMENTS. 15. CLOSE OFF AND PATCH OPENINGS AND VOIDS LEFT BY THE REMOVAL OF EXISTING CONSTRUCTION, EQUIPMENT, PIPING, DUCTS, ELECTRICAL DEVICES, ETC. TO MAINTAIN PROPER FIRE RATING IN A RATED ASSEMBLY. PREPARE PATCHES TO RECEIVE NEW FINISHESAS REQUIRED TO MATCH EXISTING
- ADJACENT FINISHES. 16. FIRESTOP PENETRATIONS IN FIRE RATED AND SMOKE PARTITIONS. IN NON-FIRE-RATED AND SMOKE PARTITIONS, SEAL PENETRATIONS WITH ACOUSTICAL SEALANT AND FILL WITH SOUND ATTENUATION BLANKETS, UNLESS OTHERWISE NOTED. 17. COORDINATE WITH MEP REQUIREMENTS FOR CONDITIONS THAT WILL DISTURB
- EXISTING CONDITIONS AND WHICH WILL REQUIRE SELECTIVE DEMOLITION, CUTTING AND PATCHING, AND FINISHING OUTSIDE OF THAT SHOWN ON THE DRAWINGS.

GENERAL PLAN NOTES

- 1. FIELD VERIFY EXISTING OR CURRENT CONSTRUCTION RELATED CONDITIONS PRIOR TO THE START OF NEW CONSTRUCTION. 2. IMMEDIATELY NOTIFY ARCHITECT OF DISCREPANCIES FOUND BETWEEN FIELD
- CONDITIONS AND DRAWINGS. 3. DIMENSIONS SHOWN ARE TO FACE OF FINISHED GYPSUM BOARD UNLESS NOTED OTHERWISE.
- 4. EVERY EFFORT HAS BEEN MADE TO IDENTIFY THOSE DIMENSIONS WHICH MAY VARY WITH V.I.F. DIMENSIONS NOT SO NOTED ARE INTENDED TO BE HELD AS INDICATED. FIELD-VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OR INSTALLATION OF BUILDING COMPONENTS. 5. MECHANICAL, ELECTRICAL, AND PLUMBING (M.E.P.) ITEMS AND EQUIPMENT
- APPEARING ON ARCHITECTURAL DRAWINGS ARE SHOWN FOR CLARITY, AND ARE NOT MEANT TO BE ALL INCLUSIVE; SEE APPROPRIATE M.E.P. SHEETS FOR ADDITIONAL INFORMATION. 6. "WALL" AND "PARTITION" ARE USED IN DRAWING SET TO DENOTE EITHER
- WALLS OR PARTITIONS INTERCHANGEABLY. REFER TO FLOOR PLANS FOR LOCATION OF PARTITIONS AND LIFE SAFETY PLAN FOR FIRE RATINGS. 7. TYPICAL DETAILS APPLY TO ALL PARTITION TYPES U.N.O. 8. CONSTRUCT ADJACENT WALLS THAT APPEAR TO ALIGN IN PLAN TO ALIGN IN PLAN.
- 9. HOLD NEW FURRED PARTITIONS TIGHT TO EXISTING STRUCTURE UNLESS NOTED OTHERWISE. 10. PROVIDE BLOCKING TO SUPPORT WALL-MOUNTED EQUIPMENT, CASEWORK,
- AND ACCESSORIES. COORDINATE SPECIFIC PLACEMENT OF BLOCKING WITH EQUIPMENT AND ACCESSORIES REQUIREMENTS. 11. PROTECT OPENINGS FOR ITEMS RECESSED INTO RATED PARTITIONS (SUCH AS OUTLET BOXES, PANEL BOXES, ETC.) WITH BACK-UP MATERIALS SO AS TO
- RETAIN THE INTEGRITY OF THE PARTITION RATING. 12. FIRESTOP PENETRATIONS IN FIRE RATED AND SMOKE PARTITIONS, IN NON-FIRE-RATED AND SMOKE PARTITIONS, SEAL PENETRATIONS WITH AN ACOUSTICAL SEALANT AND FILL WITH SOUND ATTENUATION BLANKETS UNLESS NOTED OTHERWISE.
- 13. REVIEW EXISTING WALLS TO REMAIN THAT ARE FIRE-RATED OR SMOKE-TIGHT, AND NOTIFY THE A/E TEAM OF ANY PENETRATIONS WITHOUT APPROPRIATE CLOSURE ASSEMBLIES OR DUCTS WITHOUT FIRE/SMOKE DAMPERS. 14. REPAIR ANY SPRAY-ON FIREPROOFING DAMAGED DURING CONSTRUCTION. 15. CONFIRM EACH LOCATION FOR WALL MOUNTED ITEMS INCLUDING, BUT NOT
- LIMITED TO, EQUIPMENT, ACCESSORIES, OUTLETS, CALL BUTTONS, ETC. WITH THE OWNER PRIOR TO INSTALLATION. 16. COORDINATE WITH M&E REQUIREMENTS FOR CONDITIONS THAT WILL DISTURB EXISTING CONDITIONS AND WHICH WILL REQUIRE SELECTIVE DEMOLITION, CUTTING AND PATCHING, AND FINISHING OUTSIDE OF THAT SHOWN ON THE DRAWINGS.

-COPING IN SHEET METAL FLASHING & TRIM -075419.B01 SHEET FLASHING WITH DRIP EDGE -076200.B39 SELF-ADHERING HIGH TEMP SHEET UNDERLAYMENT

-075416.F19 COVER BOARD -072100.F02 POLY-ISO BOARD INSULATION, -053123 METAL DECK, 1 1/2" -RE: STRUCTURAL FOR ATTACHMENT

075419.B0⁻ SHEET FLASHING WITH DRIP EDGE ROOF MEMBRANE 076200.B39 SELF-ADHERING HIGH TEMP SHEET UNDERLAYMENT-075416.F19 COVER BOARD-072100.F02 POLY-ISO BOARD INSULATION, 1"-053123 METAL DECK, 1 1/2"-----

A-101 A-520 1 1/2" = 1'-0"

COPING IN SHEET METAL FLASHING & TRIM -076200.B39 SELF-ADHERING HIGH TEMP SHEET UNDERLAYMENT 077133.00 SHEET METAL SCUPPER WITH WELDED JOINTS. METAL FLANGES CONTINULOUS WELDED TO SCUPPER -076000.00 CAP FLASHING -076000.00 BASE FLASHING -EPDM, WHITE

—SET METAL FLANGE IN ROOF CEMENT & PRIME PRIOR TO STRIPPING -075416.F19 COVER BOARD -072100.F02 POLY-ISO BOARD INSULATION, 1" MIN. TAPERED AT 1/4" / 1'-0" SLOPE -053123 METAL DECK, 1 1/2"

A5 WALL PENETRATION DETAIL A-101 A-520 1 1/2" = 1'-0"

PROJECT DESCRIPTION

- 1. Project consists of the replacement of mechancical equipment in the basement of an existing structure.
- 2. This description is for general orientation only. The General Contractor is responsible for all scope items described in the drawings and project specifications as well as for all material and labor that can reasonably be inferred there from.

GENERAL APPLICATION

- 1. These drawings must be used in conjunction with the architectural
- drawings on the project to clearly define all requirements for construction. 2. No Contractor should attempt to bid nor construct any portion of this project without consulting the project architectural, mechanical, and electrical documents.
- 3. All things which, in the opinion of the Contractor, appear to be deficiencies, omissions, contradictions, or ambiguities in the drawings shall be brought to the attention of the Structural Engineer. Corrections or written interpretations shall be issued before affected work may proceed.
- 4. The Contractor shall inform the Structural Engineer, clearly and explicitly in writing of any deviation or substitution from requirements of the contract documents. Contractor shall not be relieved of any requirement of the contract documents by virtue of the Structural Engineer's review of shop drawings, project data, etc., unless the Contractor has clearly and explicitly informed the Structural Engineer in writing of any deviations or substitutions at time of submission.

EXISTING CONSTRUCTION

- 1. Information regarding existing structural systems is based on drawings prepared by Martin/Martin dated 05/14/2003 and on site observations on 10/18/2023 by KL&A personnel.
- 2. Existing Conditions:
- A. The current design is based on the best information available, with the understanding that not all conditions have been observed and unobserved conditions may not be fully understood.
- B. All existing information, dimensions, elevations, etc. shall be considered approximate and exiting conditions shall be field verified by the Contractor prior to ordering or fabricating material. Structural Engineer and Architect shall be informed in writing of any discrepancies.
- C. Remodeling, retrofit, renovation, or rehabilitation of an existing building requires that certain assumptions be made regarding existing conditions. The General Contractor must immediately notify the structural engineer if any existing condition deviates from those indicated in the Contract Documents.
- 3. Demolition and Shoring:
- A. The General Contractor is responsible for shoring of existing structure where required during demolition and new construction. B. The current interior walls and finishes may be significant to the
- stability of the structure and may be providing inadvertent load paths that are not observable and may impact how demolition impacts the structure.
- C. The General Contractor should be prepared to brace and shore framing during demolition.
- D. Demolition and reshoring are best accomplished prior to significant snowfall, if possible. If demolition takes place during the significant snowfall season, the Contractor's shoring design should account for this.
- 4. No openings, nor any changes or additions, shall be made in any existing structural elements without written approval of the Structural Engineer. Where the function of an existing element as structural or non-structural is unclear, the determination of its function will be made solely by the Structural Engineer.

QUALITY ASSURANCE AND QUALITY CONTROL

- 1. The Contractor is responsible for assuring quality, including workmanship and materials furnished by subcontractors and suppliers. 2. Inspection or testing by the Owner does not relieve the Contractor of the
- responsibility to perform the work in accordance with the Contract Documents.
- 3. Workmanship: The Contractor is responsible and shall bear the cost of correcting work which does not conform to the specified requirements. 4. Correct deficient work by means acceptable to the Architect. The cost of extra work incurred by the Architect to approve corrective work shall be borne by the Contractor.
- 5. The Owner's Testing Agency shall perform testing and special inspections required by the structural documents, building code, and the local authority. The Testing Agency shall comply with ASTM E329 and upon completion of work, the Testing Agency shall furnish a certificate of compliance, signed by the professional engineer overseeing special inspections and testing. The professional engineer must be registered and licensed in the state where the project is located.
- 6. The individual employed by the Testing Agency, responsible for overseeing testing and inspection of soils and foundations shall be a professional engineer practicing the discipline of geotechnical engineering, referred to as the Geotechnical Engineer in the structural portion of the construction documents. The Geotechnical Engineer is responsible for testing and inspections of soils, earthwork, and foundations for conformance to the foundation design and the geotechnical report. See foundation section of the General Notes.
- 7. See special inspections section of the General Notes for required testing and inspection.

SPECIAL INSPECTION

- 1. Special inspection and testing shall be performed as required by the local jurisdiction, the building code, and the construction documents. See quality assurance section of the General Notes.
- 2. Coordinate and schedule inspection and testing prior to the start of work requiring inspection and testing while providing special inspector reasonable notice.
- 3. All deficiencies shall be corrected for acceptance by the Testing Agency. 4. Inspections performed by the local jurisdiction do not replace inspection
- or testing required by the Owner's Testing Agency. 5. Special inspection and testing is required for the items shown in the "Special Inspections and Testing" Table.

SPECIFICATIONS

1. These General Notes are intended to function as the structural portion of project specifications.

CAST-IN-PLACE CONCRETE

- **GENERAL:**
- 1. All concrete work shall conform to ACI 318 and ACI 301 and tol shall conform to ACI 117 unless noted otherwise. Contractor sh copy of these references on site at all times.
- 2. Concrete Compressive Strength See "Concrete Mix Design Requirements" table
- 3. Materials See "Concrete Materials Designation" table 4. Unless noted otherwise, the terms reinforcing and reinforceme elements reinforced with deformed reinforcing as defined in A and/or reinforcing conforming to deformed reinforcing.

TESTING:

- 1. Tests and inspections shall be performed in compliance with A Chapter 17 of the IBC. See Special Inspections. Concrete shall not be placed until reinforcing and embedded it
- special inspector. 3. See "Special Inspections and Testing" Table.

FORMING:

- 1. Unless noted otherwise, all formwork shall conform to Class B t accordance with ACI 117 unless noted otherwise by architectu
- drawings. Refer to architectural drawings for architectural finis All construction joints shown on the drawings shall be incorpor the structure unless elimination is approved by the Structural Additional joints required to facilitate construction shall be loca points of minimum shear and shall be detailed on reinforcing drawings for review. Locate vertical joints in girders, beams, gr joists, walls and slabs within the middle third between support and detailed with dowels and keys for transfer of design shear, noted otherwise. Reinforcing shall pass continuously through joints. Where joints are shown as roughened, mechanically rou surface to 1/4" amplitude clean and free of laitance.

REINFORCING AND EMBEDDED ITEMS:

- 1. Provide standard hooks on bars terminating at a concrete face noted such as at edges of openings, slab edges, expansion joint beams, and ends of walls.
- PLACING AND FINISHING:
- 1. Handling, placing, constructing, and curing shall conform to ACI 301 including placement of concrete in wet weather, cold weather, and hot weather.

REINFORCED MASONRY

GENERAL:

- 1. All masonry work shall conform to TMS 602 unless noted otherwise. Contractor shall keep a copy of these references on site at all times. 2. Masonry Strength – See Masonry Strength Table
- 3. Materials See Masonry Materials Table

TESTING:

- 1. Owner will engage a qualified Testing Agency, approved by the Architect and Engineer to perform tests and Special Inspections. Upon completion of work, Testing Agency shall furnish a certificate of compliance, signed by the Professional Engineer responsible for management of the Agency. The Professional Engineer must be registered in the state where the project is located. Tests and inspections shall be performed in compliance with TMS 602 and Chapter 17 of the IBC. Inspections include: proportions of siteprepared mortar, construction of mortar joints, location of reinforcement and connectors, grout space, grade and size of reinforcement, proportions of site-prepared grout, grout placement and curing. Testing includes: Grout strength, mortar strength, and prisms.
- Masonry grout shall not be placed until reinforcing and connectors have been inspected by the owner's independent inspection agency and/or the special inspector.
- 3. See "Special Inspections and Testing" Table.

SUBMITTALS:

- 1. Submittals shall conform to TMS 602. All submittals shall be reviewed by the Contractor prior to Engineers/Architects review and shall bear Contractors review stamp. Contractor is responsible for reviewing submittals for conformance with all contract documents and coordination with all trades.
- 2. Submittals for all masonry shall include: Mix designs for grout and mortar, material certificates for: reinforcing, anchors, ties, and metal accessories, masonry units, mortar materials, and grout materials. Include control joint locations, masonry pour sequencing and life heights per arch and structural drawings.
- 3. Reinforcing shop drawings shall include placement drawings 1/8"=1'-0" minimum scale complete with wall elevations. Include special reinforcement required at openings through masonry structure. Include all accessories specified and required to support reinforcement.
- 4. Embed shop drawings shall include placement drawings 1/8"=1'-0" minimum scale locating all embed plates, anchors, and anchor bolts for structural and non-structural components attaching to masonry. Contractor is responsible for coordinating with all trades for determining the need for embeds and locations. Post installed anchors are not allowed unless approved by the structural engineer during the shop submittal process or specified in the structural drawings.

REINFORCING AND EMBEDDED ITEMS:

- 1. Vertical reinforcement shall extend the full height of the wall unless noted otherwise. Provide vertical reinforcement at all wall corners; end of walls; each side of openings and at each side of control and expansion joints.
- 2. Provide bond beams at sill lines, top and bottom edge of openings, top of walls, floor lines, and roof lines. Bond beams shall be continuous unless noted otherwise. See typical bond beam detail.
- 3. Reinforcement shall remain continous through control joints at floor lines, roof lines, lintels and top and bottom openings, all other horizontal reinforment shall be terminated at each side of the control joint.
- 4. Provide standard hooks on bars terminating at a masonry face unless noted. i.e.: edges of openings, ends of walls, heads, jambs, control joints,
- 5. Splice bars with contact laps per the reinforcing splice and development length table, unless noted otherwise.
- 6. Vertical reinforcement shall have a minimum clearance of 3/4" from masonry and shall be supported and fastened together to prevent displacement.
- 7. Horizontal joint reinforcing shall be lapped no less than 6" at all splices including corners and tees where no control joint is used.
- 8. Dowels from concrete shall be furnished and placed by the concrete
- 9. Welding of reinforcing is prohibited, unless noted otherwise and shall conform to ASTM A706.
- 10. Provide embeds (including anchors) for supporting structural and nonstructural elements including but not limited to: hand rails, canopies, miscellaneous steel, etc. As required, see deferred submittals.

AST-IN-PLACE CONCRETE	STRUCTURAL DESIGN CRITERIA				
ENERAL:	Building Code: 2021 International Building Code	(Note 1)			
All concrete work shall conform to ACI 318 and ACI 301 and tolerances	2021 International Existing Building	Code			
shall conform to ACI 117 unless noted otherwise. Contractor shall keep a	Local Jurisdiction: State of Colorado (City of Greeley	[,] for Climatic Data)			
copy of these references on site at all times.	Risk Category: III				
Concrete Compressive Strength – See "Concrete Mix Design	IEBC Alteration Level: 1				
Requirements" table	Change of Occupancy: No				
Materials – See "Concrete Materials Designation" table	Wind Loading				
elements reinforced with deformed reinforcing as defined in ACI 318	Basic Wind Speed	Vult= 115 MPH Vasd= 90 M			
and/or reinforcing conforming to deformed reinforcing.	Exposure Category	С			
	GCpi	+/- 0.85			
STING: Tests and inspections shall be performed in compliance with ACI 301 and	Ultimate Wind Design Pressure Components & Cladding, PSF	20ft ² 50ft ² 100f			
Chapter 17 of the IBC. See Special Inspections.	Interior Wall Zone (Zone 4)	22 /-23 20 /-22 19 /-2			
Concrete shall not be placed until reinforcing and embedded items have	Wall end Zone (Zone 5)	22 /-28 20 /-25 19 /-2			
been inspected by the owner's independent inspection agency and/or the	Snow Loading	(Notes 2,3)			
special inspector.	Ground Snow Load, Pg	30 psf			
See Special hispections and resulting Table.	Minimum Flat Roof Snow Load, Pf	23 psf			
DRMING:	Importance Factor, Is	1.1			
Unless noted otherwise, all formwork shall conform to Class B finish in	Exposure Factor, Ce	1.0			
accordance with ACI 117 unless noted otherwise by architectural	Thermal Factor, Ct	1.0			
drawings. Refer to architectural drawings for architectural finish concrete.	Slope Factor, Cs	1.0			
All construction joints shown on the drawings shall be incorporated into	NOTES:				
Additional joints required to facilitate construction shall be located at points of minimum shear and shall be detailed on reinforcing shop	 The governing building code defines the applicat standards. Where governing building code does standards, the latest edition shall be used. 	ble edition of referenced codes an not define referenced codes and			
joists, walls and slabs within the middle third between supports designed	 Ground snow load is according to the City of Greeley Building Department on 3/12/2024. 				
and detailed with dowels and keys for transfer of design shear, unless noted otherwise. Reinforcing shall pass continuously through construction joints. Where joints are shown as roughened, mechanically roughen surface to 1/4" amplitude clean and free of laitance.	 All snow loads on the structure for both flat and sloped roofs are calculated in accordance with the 2021 IBC and based on the ground snow load stated above. R snow loads consider the following load conditions: snow drifting. 				
INFORCING AND EMBEDDED ITEMS: Provide standard hooks on bars terminating at a concrete face unless noted such as at edges of openings, slab edges, expansion joints, ends of beams, and ends of walls. ACING AND FINISHING:	REINFORCED MASONRY (CONTINUED) MASONRY ERECTION: 1. Unless otherwise noted, lay masonry in ru 2. Unless noted provide control joints at 25 f	inning bond. feet on center.			

- 3. Coordinate blockouts, reveals, holes, openings, and built in items with all contract documents and trades.
- 4. Grout lift heights shall follow requirements of TMS 602 Sections 3.5C and 3.5D.
- 5. Grout cells solid at: reinforcing, bond beams, inserts, anchors, elevator guide rails, 24" below and 12" to each side of steel beam bearing points and below grade at exterior walls.
- 6. Consolidate grout pours 12" or less in height by mechanical vibration or puddling not more than five minutes after grouting. 7. Consolidate grout pours exceeding 12" in height by mechanical vibration
- not more than five minutes after grouting, and reconsolidate after initial water loss and settlement has occurred.
- 8. Grout in masonry beams shall be vibrated as it is placed. Where full depth grouting is required, the grouting shall extend to the end of the horizontal reinforcement.
- 9. Hot weather construction refer to section 1.8D. 10. Cold weather construction refer to section 1.8C.

MASONRY VENEER

- 1. Masonry veneer to be installed according to TMS 602/402. RE: architectural drawings for required finish and assembly.
- 2. Stone venner to be installed according to TMS 602/402 and IBC Chapter 14. RE: architectural drawings for required finish and assembly.

MASONRY REINFORCING SPLICE LENGTHS				
Bar Size Splice Length (in.)				
#3	13			
#4	22			
#5	35			
#6	64			
#7	87			
#8	131			

Laps in reinforcing bars in reinforced masonry shall have minimum lengths defined above unless noted otherwise on the drawings. All splices to be wired together.

Splice and development lengths are the same value for horizontal and vertical bars.

F'm must be greater than or equal to 2,000 psi.

Clear cover from outside face of block must be greater than 2".

STATEMENT OF SPECIAL INSPECTIONS IBC 2021

Special Inspection: Inspection of construction requiring the expertise of an approved special inspector in order to sure compliance with this code and the approved construction documents.					
Continuous Special Inspection: Special Inspection by the spec here the work to be inspected is being performed.	ial inspector v	vho is preser	t continuously when and		
Periodic Special Inspection: Special inspection by the special i be inspected has been or is being performed.	inspector who	is intermitte	ently present where the work		
Special Inspector: A qualified person employed or retained by ficial as having the competence necessary to inspect a particu	y an approved Ilar type of co	agency and nstruction re	approved by the building quiring special inspection.		
SOILS AND FOUNDATIONS	SPECIAL I	NSPECTI	ONS		
Special inspections and tests of existing site soil conditions, f performed in accordance with this table. The approved geotec used to determine compliance. During fill placement, the speci procedures are used in accordance with the provisions of the a	fill placement hnical report a ial inspector s approved geot	and load bea and the cons hall verify tha echnical rep	aring requirements shall be truction documents shall be at proper materials and ort.		
pecial Inspection of soils with shallow foundations					
nspection Task or Testing	Frequency		Critoria/Pomarka		
ispection rusk of resting	Continuous	Periodic	entenay temarks		
/erify materials below shallow foundations are adequate to chieve the design bearing capacity.	-	х			
/erify excavations are extended to proper depth and have eached proper material.	-	х			
Perform classification and testing of compacted fill materials.	-	Х			
During fill placement, verify use of proper materials and procedures in accordance with the provisions of the approved	v				

x | - |

geotechnical report. Verify densities and lift thicknesses during placement and compaction of compacted fill.			
Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	Х	
MASONRY SPECIAL	INSPECTI	ONS	
Notes: 1. Minimum levels of special inspection conform to IBC 1705.4 2. Where R is noted in the Periodic column, the test/inspection	and TMS 602 is Required p	1.6 prior to or du	ring construction
Special Inspection of Structural Masonry			
Inspection Task or Testing	Frequ	iency Periodic	Criteria/Remarks
Prior to construction, verification of compliance of submittals	continuous	R	TMS 602 - 1 5
Prior to construction, verification of fim		D	
During construction, verification of Slump flow and Visual Stabiltiy Index (VSI) when self-consolidating grout is delivered to the project site		R	TMS 602 - 1.4 B
As masonry construction begins, verify that the following are	in compliance	e:	
Proportions of site-prepared mortar		Х	TMS 602 - 2.1, 2.6 A, & 2.6
Grade, type and size of reinforcement, connectors and anchor bolts		х	TMS 602 - 2.4 B, & 2.4 H
Sample panel construction		Х	TMS 602 - 1.6 D
Prior to grouting, verify that the following are in compliance:			•
Grout space		Х	TMS 602 - 3.2 D, & 3.2 F
Placement of reinforcement, connectors, and anchor bolts		х	TMS 602 - 3.2 E & 3.4 TMS 402 6.1, 6.3.1, 6.3.6 & 6.3
Proportions of site-prepared grout		х	TMS 602 - 2.6 B & 2.4 G.1.
Verify compliance of the following during construction:			•
Materials and procedures with the approved submittals		Х	TMS 602 - 1.5
Placement of masonry units and mortar joint construction		Х	TMS 602 - 3.3 B
Size and location of structural members		Х	TMS 602 - 3.3 F
Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction		Х	TMS 402 - 1.2.1e & 6.2.1 & 6.3.1
Welding of reinforcement	Х		TMS 402 - 6.1.6.1.2
Preparation, construction, and protection of masonry during cold weather (temperature below 40 deg F (4.4 deg C)) or hot weather (temperature above 90 deg F (32.2 deg C)).		Х	TMS 602 - 1.8 C & 1.8 D
Placement of grout is in compliance	х		TMS 602 3.5 & 3.6 C
Observe preparation of grout specimens, mortar specimens, and/or prisms		Х	TMS 602 - 1.4 B.2, 1.4 B.3 1.4 B.4
CONCRETE SPECIAL	INSPECT	IONS	
Notes: 1. Minimum inspections conform to IBC 1705.3			
Special Inspection of Concrete Elements			
Inspection Task or Tasting	Frequ	iency	Critoria/Bomarka
inspection rusk of resulty	Continuous	Periodic	

Inspect rebar size, grade,

quantity, spacing, hook

length, splice length, cov

support, and surface

conditio

Special Inspection of Concrete Elements			
Inspection Task or Testing	Frequency		
inspection rask or resting	Continuous	Perio	
Inspect Reinforcement and verify placement		х	
Inspect anchors and embedded structural plates cast in concrete		х	
Inspect post installed anchors: Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads	х		
Inspect post installed anchors: All others not included above		Х	
Verify use of required design mix		Х	
Prior to concrete placement, fabricate specimens for strength test, perform slump and air content tests, and determine the temperature of the concrete	х		
Inspect concrete placement for proper application techniques	Х		

CONCRETE MIX DESIGN REQUIREMENTS								
Element	f'c (psi)	Cement Type	Max W/C	Max Agg	Air Content (Note 1,2)	Slump (Note 3)	Expo Cla	sure Iss
Foundation Walls	4000, NW	1/11	0.45	3/4"	-	4"	F0 S0	CO WO
nterior Slab-on-Grade SOG) & Isolation Pads	4500, NW at 56 days	1/11	0.45	3/4"	-	4"	F0 S0	CO WO
BLE FOOTNOTES:								

For any concrete exposed to freezing temperatures and moisture, the air content sha be the greater of 5%, minimum required by ACI 318, or of that shown in the table. Tolerance on air content as delivered shall be +/- 1.5%.

Slump tolerances as follows (ACI 117): Specified Slump not greater than 4"= +/- 1"

Specified Slump more than 4"= +/- 1 1/2"

Where Slump is specified as a range= No Tolerance See ACI 301 for slump of concrete before addition of plasticizers or high-range water reducing admixtures.

Unless otherwise approved by structural engineer.

ENERAL CONCRETE MIX NOTES: Strength (f'c) is the compressive strength at 28 days unless noted otherwise or

compressive strength at the specified age. Concrete is normal weight concrete unless noted otherwise. Normal weight concrete (NW) shall have a dry density of 145 ± 5 pcf unless noted otherwise.

Required minimum average splitting tensile strength = 6.7*√(f'c) regardless of concrete density.

Mix designs shall be in accordance with ACI 301.

Exposure Class indicates the severity of the anticipated exposure of concrete member for each exposure indicated below according to ACI 318 Table 19.3.1.1/ACI 301: Freeze Thaw Exposure noted thus: F0,F1,F2,F3

Water-Soluble Sulfate in Soil Exposure noted thus: S0,S1,S2,S3

Permeability Requirements noted thus: W0,W1 Corrosion Protection of Reinforcement noted thus: C0,C1,C2

Refer to ACI 301/ACI 318 for specific requirements based on the exposure category indicated in the mix design table above.

Corrosion Protection of Reinforcement requirements (C0,C1,C2):

Maximum water-soluble choride ion (CL-) content in concrete, by % weight of cement Reinforced Concrete: C0 = 1.0 C1 = 0.3 C2 = 0.15 Where concrete is exposed to F3 freeze thaw exposure, restrictions on maximum fly

ash and/or other cementitious materials apply. Refer to Table 26.4.2.2(b) in ACI 318 for requirements.

CONCRETE MATERIALS DESIGNA			
Material	SI		
Portland Cement	ASTM C150, Type I		
Fly Ash	ASTM C618, Class C		
Aggregate	ASTM C33		
Water	Potable		
Water Reducing Admixture	ASTM C494, Type A		
High Range Water Reducing Admixture	ASTM C494, Type F		
Accelerator Admixture	ASTM C494, Type C		
Air Entraining Admixture	ASTM C260		
Curing Compound	ASTM C309, Type I,		
Reinforcing Bars	ASTM A615-grade 6 (Specified Yield Stre		
NOTES:			

Type III Portland cement may be used if acceptable to the Arch

CONCRETE REINFORCING TENSION CON LENGTHS FOR CONCRETE COMPRESSION S

	PSI CASE 1				
Bar Size	Lap Class	Top Bars			
# 2	А	19"			
#3	В	24"			
#4	А	25"			
#4	В	32"			
<u></u>	А	32"			
#5	В	40"			
#C	А	37"			
#0	В	48"			
#7	A	54"			
#7	В	70"			
NOTES					

The table above is for concrete compression strength of 4000psi and Case #1 reinforcement. The table above is for Case #1 reinforcement with clear spacing greater than 2*db

AND cover greater than or equal to db. Top bars are horizontal reinforcement placed such that more than 12 inches of fresh

concrete is cast below the development length or splice. All tension splices shall be class B splices unless noted otherwise. Other bars are reinforcement other than Top bars.

	ON
an	dard
or ⁻	Гуре II
or	F
or	Type D
or	Type G
or	Туре Е
Cla	ass A
50	
eng	th = 60ksi)
-hit	
mi	ect.
іт	
IT.	ACT SPLICE
IT. STI	ACT SPLICE RENGTH 4000
IT. STI	ACT SPLICE RENGTH 4000
IT.	ACT SPLICE RENGTH 4000 Other Bars
JT.	ACT SPLICE RENGTH 4000 Other Bars 14"
JT. 5TI	ACT SPLICE RENGTH 4000 Other Bars 14" 19"
JT.	ACT SPLICE RENGTH 4000 Other Bars 14" 19" 19"
JT.	ACT SPLICE RENGTH 4000 Other Bars 14" 19" 19" 25"
JT.	ACT SPLICE RENGTH 4000 Other Bars 14" 19" 19" 25" 24"
	ACT SPLICE RENGTH 4000 Other Bars 14" 19" 19" 25" 24" 31"
JT.	ACT SPLICE RENGTH 4000 Other Bars 14" 19" 19" 25" 24" 31" 29"
	ACT SPLICE RENGTH 4000 Other Bars 14" 19" 19" 25" 24" 31" 29" 37"
	ACT SPLICE RENGTH 4000 Other Bars 14" 19" 19" 25" 24" 31" 29" 37" 42"

		HVAC L	EGEND)				GENERAL	LEGEI	ND	
	CMADOL	(Not all symbols listed below o	are used on the	ese drawings)	DECODIDITION			(Not all symbols listed below a	are used on th	ese drawings)	DECODIDITION
							STMBUL	DESCRIPTION	ABBR.		
	— — — — — — — — — — — — — — — — — — —						—	- SECTION DESIGNATION		SLOPE	
						-	<u>x-x</u>	- SECTION CUT ON THIS SHEET			
HIWS	HIWS-				EXHAUST DUCT UP / DOWN	_					
HIWR	HIWR	HIGH TEMPERATURE HEATING WATER RETURN PIPING	40540		ROUND DUCT UP / ROUND DUCT DOWN	-	$\begin{pmatrix} x \\ x-x \end{pmatrix}$	- VIEW REFERENCE DESIGNATION			
CHWS		CHILLED WATER SUPPLY PIPING	42F12			_					UNION OR FLANGE
	CHWR	CHILLED WATER RETURN PIPING				-	$\begin{pmatrix} \chi \\ 123 \end{pmatrix}$	EQUIPMENT UNIT IDENTIFICATION			
D	D	COOLING COIL DRAIN PAN PIPING	BDD					- (UNIT SERVED - FLOOR - SEQUENCE #)			
CWS		CONDENSER WATER SUPPLY PIPING			IEMP. CONTROL DAMPER-OPPOSED BLADE	$- \mid \boxtimes$	A^{10}	DIFFUSER IDENTIFICATION DIFFUSER NECK DIAMETER			PRESSURE REDUCING VALVE
CWR	CWR	CONDENSER WATER RETURN PIPING	ICD		IEMP. CONTROL DAMPER- PARALLEL BLADE		- 200 -	- DIFFUSER CFM		│ <u>',¥,</u>	PRESSURE AND/OR TEMPERATURE RELIEF VALVE
GHWS	GHWS	GLYCOL HEATING WATER SUPPLY PIPING	MVD		MANUAL VOLUME DAMPER	-		- LINEAR DIFFUSER IDENTIFICATION			ISOLATION VALVE (RE: SPEC FOR TYPE)
GHWR	GHWR	GLYCOL HEATING WATER RETURN PIPING	MD		DUCT MOTORIZED DAMPER		E 80/24"L~			<u> </u>	VERTICAL PIPE VALVE
PCWS	PCWS-	PROCESS CHILLED WATER SUPPLY PIPING			CONICAL FITTING WITH MVD	_		LINEAR DIFFUSER CFM	CV		CHECK VALVE
PCWR	PCWR	PROCESS CHILLED WATER RETURN PIPING			SPIN-IN FITTING WITH MVD	_		- FINNED TUBE RADIATOR ACTIVE ELEMENT LENGTH			SOLENOID / MOTORIZED VALVE
LPS	LPS	LOW PRESSURE STEAM SUPPLY PIPING (0 - 15#)	FD		DUCT FIRE DAMPER		$\frac{2-6}{3'-6''}$	EQUIPMENT UNIT NUMBER			SOLENOID VALVE
LPC	LPC	LOW PRESSURE CONDENSATE RETURN PIPING	FSD		COMBINATION DUCT SMOKE & FIRE DAMPER					<u> юн</u>	HOSE END DRAIN VALVE
MPS	MPS	MEDIUM PRESSURE STEAM SUPPLY PIPING (16# - 60#)	SD		DUCT SMOKE DAMPER	_		KEYNOTE REFERENCE	P/T	<u>P/T</u>	PRESSURE / TEMPERATURE TAP
MPC	MPC	MEDIUM PRESSURE CONDENSATE RETURN PIPING		L LET	DUCT SMOKE DETECTOR			KITCHEN/OWNER/MEDICAL EQUIPMENT REFERENCE			STRAINER
HPS	HPS	HIGH PRESSURE STEAM SUPPLY PIPING (61# - 125#)	DAD		DUCT ACCESS DOOR			TYPICAL ROOM REFERENCE (TOP = RM #, BOTTOM = FLR)			STRAINER W/ BLOWDOWN
HPC	HPC	HIGH PRESSURE CONDENSATE RETURN PIPING	_	(recall	TURNING VANES IN DUCT FLBOW		•	POINT OF CONNECTION, NEW TO EXISTING			BRAIDED FLEXIBLE PIPE CONNECTOR
PC	PC	PUMPED CONDENSATE PIPING						POINT OF DISCONNECTION, DEMO			
BBD	BBD	BOILER BLOWDOWN PIPING	EP	면	ELECTRIC-PNEUMATIC CONTROL VALVE			DIRECTION OF FLOW IN PIPE		_−∞ <u>−</u>	DOUBLE-BOWL FLEXIBLE PIPE CONNECTOR
BF	——BF——	BOILER FEED WATER PIPING	PE	م	PNEUMATIC-ELECTRIC CONTROL SWITCH			DUCTWORK, PIPING AND EQUIPMENT TO BE REMOVED		<u> </u>	THERMOMETER
RL		REFRIGERANT LIQUID PIPING		SES	WALL SWITCH / EMERGENCY SWITCH	(E)		EXISTING		<u> </u>	PRESSURE GAUGE
RS	RS	REFRIGERANT SUCTION PIPING		TS	TEMPERATURE SENSOR	(N)		NEW			SIGHT GLASS
RHG	RHG	REFRIGERANT HOT GAS PIPING		1	WALL MOUNTED THERMOSTAT	(R)		RELOCATED	C.A.P.		CEILING ACCESS PANEL
TT	⊗π	THERMOSTATIC STEAM TRAP		(02)	WALL MOUNTED CARBON DIOXIDE SENSOR	(F)		FUTURE			PUMP
F&T	⊗⊔ _{F&T}	FLOAT AND THERMOSTATIC STEAM TRAP		@2	WALL MOUNTED OXYGEN SENSOR	DIA	ø	DIAMETER	ТВ		THRUST BLOCK
IBT	Ш _{ІВТ}	INVERTED BUCKET STEAM TRAP		H	HUMIDISTAT	WAD		WALL ACCESS DOOR	MAV		MANUAL AIR VENT
TCV	- R	(2 OR 3-WAY) TEMPERATURE CONTROL VALVE		∇	UNIT MOUNTED THERMOSTAT	NIC		NOT IN CONTRACT	AAV		AUTOMATIC AIR VENT
	₩	VENTURI METER		P PM	PRESSURE SENSOR / PRESSURE MONITOR	AFF		ABOVE FINISHED FLOOR			
BV	—	CALIBRATED BALANCING VALVE			UNDERCUT DOOR	GC		GENERAL CONTRACTOR			
AFV	₩	AUTO FLOW VALVE			UNDERCUT DOOR	мс		MECHANICAL CONTRACTOR			
RSV	— M —	REFRIGERANT SERVICE VALVE		RISE	DUCT RISE	EC		ELECTRICAL CONTRACTOR			
DPS		DIFFERENTIAL PRESSURE SWITCH			DUCT DROP	UNO		UNLESS NOTED OTHERWISE			
FS		FLOW SWITCH	A.L.		ACOUSTICALLY LINED DUCTWORK	С		СОММОН			
EJ		EXPANSION JOINT	TCOAD		TEMPERATURE CONTROL OUTSIDE AIR DAMPER	NC		NORMALLY CLOSED			
BJ		BALL JOINT EXPANSION COMPENSATOR	TCRAD		TEMPERATURE CONTROL RETURN AIR DAMPER	NO		NORMALLY OPENED			
SA		SUPPLY AIR	TCEAD		TEMPERATURE CONTROL EXHAUST AIR DAMPER	1					·
RA		RETURN AIR	SP IN WC		STATIC PRESSURE IN INCHES WATER COLUMN	1					END
EA		EXHAUST AIR	EODM		END OF MAIN DRIP	1		(Not all symbols listed below of	are used on th	or LEO ese drawings)	
OA		OUTSIDE AIR	SCCR		SHORT CIRCUIT CURRENT RATING	SINGLE	INE DO	UBLE LINE SINGLE LINE DOUBLE LINE	SINGLE L	LINE DOU	BLE LINE SINGLE LINE DOUBLE LINE
			SD		SUPPLY AIR DEVICE	┤ │					
RV	RV	REFRIGERANT VENT PIPING	RG		RETURN AIR DEVICE	$1 \mid \mathbf{N}$			+		
			RG		RETURN AIR DEVICE WITH SOUND BOOT		► 45" TEE (ROUN	ND) I LAL' 90° TEF (RECTANCIII AR)			
			EG		EXHAUST AIR DEVICE		(
	II	I	1	1	I		\sim				

90° TEE (ROUND)

DAMPE

GRD RUNOUT

45' TEE (RECTANGULAR)

DUCT SPLIT

MANUAL VOLUME DAMPER

REDUCER

UNIT	REFRI TYPE	GERANT AMOUNT
UNIT	TYPE	AMOUNT
		(LB)
CHILLER	R-513A	650
CH-TOR CH-2		
REMARKS:		
1. CODE BASIS = 2021 IN	IC. REFER TO	THE TABLE 1103.1 F
2. THE CALCULATED RE	FRIGERATION	DENSITIES IN THE O
3. THE CHILLERS DO NO	T REQUIRE A	REFRIGERATION MA

90° ELBOW

45° ELBOW

UNLESS NOTED OTHERWISE ALL SCHEDULED DATA IS LISTED AT ELEVATION 4800 FT

GENERAL NOTES:

- 1. WORK INCLUDED IN THE CONTRACT IS DENOTED IN BOLD. EXISTING CONDITIONS TO REMAIN ARE DENOTED LIGHTLY.
- 2. A DETAILED METHOD OF PROCEDURE IS REQUIRED WHEN A CONSTRUCTION ACTIVITY AFFECTS THE SAFETY OF THE OCCUPANTS, OWNER'S EQUIPMENT OR VALUABLE CONTENTS OR ANY SYSTEM WHICH SUPPORTS THESE SYSTEMS; OR ESSENTIALLY AFFECTS THE BUILDING MANAGEMENT, OPERATIONS OR SECURITY.
- 3. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF ANY WORK AND SHALL NOTIFY THE ENGINEER/ARCHITECT OF ANY DISCREPANCIES FOR RESOLUTION.
- 4. COORDINATE WORK WITH ALL TRADES.
- 5. CONTRACTOR IS RESPONSIBLE FOR SECURING AND WEATHERPROOFING ANY ROOF OPENING NOT COMPLETED DURING WORKING HOURS.
- 6. COORDINATE ALL DUCTWORK AND PIPING WITH EQUIPMENT, STRUCTURE,
- CONTRACTOR SHALL NOT SHUT DOWN / TAKE OUT OF SERVICE ANY SYSTEMS WITHOUT FIRST COORDINATING WITH OWNER AND PREPARING M.O.P.

DEMOLITION GENERAL NOTES:

- 1. EXISTING ITEMS TO REMAIN ARE DENOTED LIGHTLY UNLESS OTHERWISE NOTED. ALL ITEMS SHOWN DARK AND DASHED SHALL BE REMOVED UNLESS OTHERWISE NOTED.
- 2. CONTRACTOR SHALL NOT SHUT-OFF OR PUT-OUT OF SERVICE ANY
- SYSTEMS OR SERVICE WITHOUT FIRST COORDINATING WITH THE OWNER. 3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND UNDERSTAND THE EXTENT OF THE REMODEL WORK REQUIRED PRIOR TO BID. NO EXTRAS WILL BE ALLOWED FOR WORK REQUIRED TO ACHIEVE THE END RESULT AS INDICATED BY THE CONTRACT DOCUMENT.
- 4. CONTRACTOR SHALL DETERMINE AND COORDINATE THE EXACT EXTENT OF DEMOLITION TO FACILITATE ALL WORK INDICATED BY THE CONTRACT
- DOCUMENT. 5. PRIOR TO COMMENCEMENT OF ANY DEMOLITION WORK, VERIFY EXISTING
- CONDITIONS AND NOTIFY ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION. 6. ALL ITEMS IDENTIFIED TO BE REMOVED SHALL BE REMOVED IN THEIR
- ENTIRETY. REMOVE FROM SITE AND LEGALLY DISPOSE OF ALL ITEMS THE OWNER CHOOSES NOT TO ACCEPT. 7. WHERE EXISTING PIPING, T.C. TUBING/WIRING ETC. ARE TO BE REMOVED
- FROM WALLS WHICH ARE REMAINING, THE WALLS SHALL BE REPAIRED TO MATCH ORIGINAL CONDITIONS. THEY SHALL BE CUT BACK TO WITHIN CONCRETE AND FILLED WITH GROUT TO ACHIEVE A SMOOTH AND EVEN FINISH WITH CONCRETE SURFACE. 8. WHERE EXISTING PIPING TO BE REMOVED PASSES THROUGH FLOORS,

PROJECT NOTES:

- 1. THIS PROJECT IS TO REPLACE THE CHILLER AT ROSS HALL. THE EXISTING TRANE CHILLER IS AN ABSORPTION MACHINE UTILIZING THE CAMPUS HIGH TEMPERATURE HOT WATER SYSTEM. THE NEW CHILLERS TO BE VARIABLE SPEED SCREW CHILLERS.
- 2. PROVIDE A PRELIMINARY TEST AND BALANCE REPORT TO ESTABLISH THE CURRENT PERFORMANCE OF THE CHILLED WATER AND CONDENSER WATER SYSTEMS. THIS INCLUDES PUMP PERFORMANCE, ALONG WITH FLOWS AND PRESSURE DROPS THROUGH THE CHILLER. COOLING TOWERS. AND AIR HANDLERS. THE PRELIMINARY TAB REPORT TO BE COMPLETED BEFORE THE CHILLER SUBMITTAL.
- 3. ADD ALTERNATE #1: CONVERT THE CHILLED WATER SYSTEM IN ROSS HALL TO A VARIABLE FLOW SYSTEM. THIS IS WORK AT THE AIR HANDLERS AND INCLUDES REPLACING 3-WAY VALVES WITH PRESSURE INDEPENDENT 2-WAY VALVES AND REMOVING COIL PUMPS. 4. ADD ALTERNATE #2: REBUILD THE COOLING TOWERS.
- 5. ADD ALTERNATE #3: REPLACE THE EXISTING CONDENSER WATER PUMPS P-1 AND P-2 WITH NEW PUMPS.
- 6. CHEMICALLY CLEAN THE EXISTING CONDENSER WATER PIPING TO REMOVE THE SCALE BUILDUP. REFER TO SPEC SECTION 232500 ON CLEANING OF OLD RUSTY SCALED HYDRONIC SYSTEMS FOR MORE INFORMATION.
- 7. CONSTRUCTION TO TAKE PLACE OVER THE WINTER TIME. SEE WORK SEQUENCE IN SPEC SECTION 011000 FOR MORE INFORMATION. THE CONTRACTOR TO COORDINATE THE EXACT SCHEDULE WITH THE OWNER.
- BE SURE TO ACCOUNT FOR LONG LEAD ITEMS. 8. THE EXISTING ABSORPTION CHILLER TO BE REMOVED. THE CONTRACTOR HAS SALVAGE RIGHTS TO THAT CHILLER. ANY FINANCIAL BENEFIT TO BE USED TO OFFSET THE COST OF THE NEW CONSTRUCTION.
- 9. THE INHIBITORS IN THE LITHIUM BROMIDE MAY BE TOXIC. THE CONTRACTOR TO REMOVE AND PLACE THE LITHIUM BROMIDE FROM THE ABSORPTION CHILLER IN 15 OR 30 GAL DRUMS. TURN THE DRUMS OVER TO UNC FOR DISPOSAL. DISPOSE OF ALL OTHER FLUIDS PER EPA REQUIREMENTS.
- 10. SHUTTING DOWN THE HIGH TEMPERATURE HOT WATER SYSTEM TO THE BUILDING TO BE LIMITED DURATION, DURING OFF HOURS, AND DURING WARM WEATHER. THE CONTRACTOR TO COORDINATE SCHEDULE WITH UNC. THE HTHW SYSTEM SUPPLIES THE BUILDING HEATING HOT WATER AND DOMESTIC HOT WATER. SEE SPEC SECTION 011000 FOR MORE INFORMATION.
- 11. UNC TO TAKE OUT OF SERVICE THE HIGH TEMPERATURE HOT WATER SYSTEM. IT IS PART OF A LOG OUT TAG OUT PROCEDURE.

ADD ALTERNATE #2 **COOLING TOWER REBUILD**

- 1. COOLING TOWER REBUILD TO BE DONE BY SYS-KOOL OR APPROVED
- EQUAL. THE EXISTING TOWERS ARE BALTIMORE AIRCOIL, MODEL 33458-2FGR, SERIAL NUMBER U013963001MAD, TWO TOWER CELLS, ROOFTOP LOCATION.
- 3. REPLACE THE NOZZLES IN THE EXISTING COOLING TOWER HOT WATER BASINS. THE NEW NOZZLES TO ACCOMMODATE THE REDUCED CONDENSER WATER FLOWS OF THE NEW CHILLERS. EACH CELL TO GO FROM 1346 GPM TO 900 GPM.
- 4. ADDITIONAL SCOPE OF WORK INCLUDES THE FOLLOWING:
- A. LOCK-OUT, TAG-OUT. PROTECT THE ELECTRIC SUMP HEATERS.
 B. REMOVE FILL MEDIA, FILL SUPPORTS, AND HANGERS.
 C. CRANE DOWN OLD MATERIAL. CRANE UP NEW MATERIAL TO ROOF.
- D. CLEAN, PREP, AND GRIND HOT WATER BASINS, COLD WATER BASINS, AND SIDEWALLS ADJACENT TO FILL MATERIAL. E. APPLY COOLING TOWER GRADE LINER TO HOT WATER BASINS, COLD
- WATER BASINS, AND SIDEWALLS ADJACENT TO FILL MATERIAL. F. REPLACE BALANCE CLEAN CHAMBER IN WEST CELL ONLY. DEMO EXISTING AND INSTALL NEW.
- G. INSTALL NEW COUPLINGS (QTY 8) FOR DISTRIBUTION SYSTEM H. REPLACE DRIVE SHAFTS, DEMO EXISTING AND INSTALL NEW.
- I. INSTALL NEW FIBERGLASS SUPPORTS. J. INSTALL NEW 15 ML BLOCK FILL MEDIA WITH INTEGRAL LOUVER AND
- SEPARATE DRIFT ELIMINATOR. K. REPLACE GEARBOXES AND ALIGN MECHANICALS L. REMOVE LOCKS, CLEAN SITE, AND DISPOSE OF OLD MATERIAL.

	ROOM	CEILING	ROOM	REFRIGERATION D	DENSITY IN SPACE	
ROOM	AREA	HEIGHT	VOLUME	CALCULATED	ALLOWED	REMARKS
	(SF)	(FT)	(CF)	LB / 1000 CF	LB / 1000 CF	
ECHANICAL ROOM	4,638	13	60,294	10.8	20	ALL
) SPACES.		I	
CUPIED SPACES ARE W	THIN THE ALL	WABLE LIMITS.				

													/	NAT	ER (COC	DLE) CHI	LLE	R SC	HED	ULE																		
					REFF				CHILLE	WATER DA	ТА			CON	IDENSER	WATER	DATA		PEAK		KW P	ER TON AT			SOUN		BAND	& CENTER	BAND FR		·	SIZ	ZE (INCHES)	——			ELE!			
DESIG.	MFR.	MODEL	ТҮРЕ	COOLING	G TYPE	LARGEST		EWT	LWT		N PRO	P PRES	S NO. OF	EWT	LWT	WATE	R FLOW	PRESS	KW	100%	75%	50%	25%	NPLV	1	2	3 4	5	6	7 8	A-			· · ·	OPER.	VOLTAGE	PHASE	MCA	MOCP	REMARKS
				CAPACIT	Y	CIRCUIT	PASSE	S (°F)	(°F)				PASSE	S (°F)	(°F)	PEAK	MIN	DROP	INPUT						63	125 2	50 50	0 1000	2000 4	000 8000	0 WTG	5 L	W	н м		1	1			
				(TONS)		(LBS)					VI %	(FT W.C	:.)			GPM	GPM	(FT W.C.)							HZ	HZ H		z Hz	HZ						LBS.	1	1			
CH-1	CARRIER	23XRV 3032 NQVR351	VARIABLE SPEED SCREW	300	R-513A	650	2	53.2	42.0	680 320	30%	29.9	2	75	84.3	900	470	15.6	170.2	0.5672	0.4258	0.3237	0.3215	0.3613	67.1	73.9 87	7.0 79	.9 74.3	73.8 7	0.6 59.1	1 83.8	165	82 8	87	16,500	460	3	REMARK 1	REMARK '	ALL
CH-2	CARRIER	23XRV 3032 NQVR351	VARIABLE SPEED SCREW	300	R-513A	650	2	53.2	42.0	680 320	30%	29.9	2	75	84.3	900	470	15.6	170.2	0.5672	0.4258	0.3237	0.3215	0.3613	67.1	73.9 87	7.0 79	.9 74.3	73.8 7	0.6 59.1	1 83.8	165	82 8	87	16,500	460	3	REMARK 1	REMARK	I ALL
REMARKS:																																			,					
1. REFER TO	ELECTRICAL D	RAWINGS FOR POWER REQUI	REMENTS, INCLUDING	COORDINA	TION OF VO	LTAGE, PHA	SE, SCCR,	WIRE SIZE	ES, AND OV	ERCURRENT	PROTECT	IVE DEVICE	S.																											
REFER TO	ELECTRICAL	NE-LINE DIAGRAM FOR MINIM	UM FAULT CURRENT R	ATING THA	T EACH UN	T SHALL EX	CEED. UNI	T NAMEPL	ATE SHALL	INDICATE T	HE SHORT	CIRCUIT CI	JRRENT RA	TING.																										
2. PROVIDE	CHILLER WITH I	IARMONIC FILTER OR LOW HA	RMONIC VFD, HINGED V	NATER BOX	ES, AND LC	JW SOUND P	ACKAGE.																																	

3. CHILLER TO HAVE STABLE OPERATION AT 10% LOAD.

2024 18:13

					LO	UVEI	R SCI	HEDUL	E					
DESIG.	MFR.	MODEL	INTAKE OR DISCHARGE	OVERAL LENGTH	L DIMENSI HEIGHT	ONS (IN.) DEPTH	FREE AREA (SF)	PEAK AIRFLOW (CFM)	AIR VEL FACE AREA (FPM)	OCITIES FREE AREA (FPM)	AIR P.D. AT SEA LEVEL (IN WC)	MATERIAL	FINISH	REMARKS
L-1	GREENHECK	ESD-435	DISCHARGE	36	48	4	6.55	5,000	417	763	0.09	ALUMINUM	AAMA 2605	ALL
REMARKS: 1. LOUVER 2. THE ARC	SUPPLIER SHALL R CHITECT TO SELECT	REFER TO ARCHITEC	CTURAL DRAWING T	O DETERM	INE THE FF	RAME STYL TO MATCH	E REQUIREI I THE EXIST	D BASED UPO	N WALL COM	STRUCTION G. CONFIRM	N AND ARCHIT	ECTURAL DETAIL SUBMITTAL PROC	S. ESS.	

3. INSTALL LOUVERS WITH BIRD SCREENS.

					FAN	WHEEL	CFM	E.S.P.	APPROX.	TIP	OUTLE
DESIG.	MFR.	MODEL	FAN TYPE	SERVICE	CLASS	DIA.	AT ELEV	IN. W.C.	RPM	SPEED	VELOC
						(INCHES)	4,800	4,800		(FPM)	(FPM
						,	FEET	FEET			
EF-CHR	GREENHECK	SQ-18-M2	MIX FLOW INLINE	MECHANICAL RM EXH	II	18	5,000	0.75	1384	6,522	1018
REMARKS:											
1. REFER	TO ELECTRICAL	. DRAWINGS FC	DR POWER REQ	UIREMENTS, INCL	UDING COO	RDINATION	OF VOLTA	GE, PHASI	E, SCCR, WI	RE SIZES, A	AND OVE
REFER	TO ELECTRICA	L ONE-LINE DIA	GRAM FOR MIN	IIMUM FAULT CUR	RENT RATI	NG THAT EA	CH UNIT S	HALL EXC	EED. UNIT N	AMEPLATE	SHALL
2. PROVID	E SHAFT GROU	NDING RINGS F	OR EACH BEAF	RING ON MOTORS	POWERED T	HROUGH V	ARIABLE FI	REQUENC	Y DRIVES.		
3. FEI = FA	N ENERGY INDE	EX IN ACCORDA	ANCE WITH AMC	CA 208.							
4. FAN E.S	P. INCLUDES D	AMPER PRESS	URE DROP. INC	LUDE DAMPER PR	ESSURE DR	OP IN SUBN	IITTAL.				

							HY	′DRC	ONIC F	PUMP	SCF	IEDU	ILE -	ADD	ALTE	ERNA	ATE #	3								
DESIG.	MFR.	MODEL	PUMP TYPE	SERVICE	MAX PUMP OPER °F	PROP GLYCOL (%)	DESIG MAX FLOW	IN GPM MIN FLOW	PRESSURE (FT HD)	NPSH (FT HD)	EFF. %	BHP	HP	RPM AT 60HZ	MOTOR VOLTAGE	PHASE	VFD/ RELAY/ STARTER	VFD BYPASS (YES/ NO)	VIBRATION ISOLATOR TYPE	INLET SIZE (IN.)	OUTLET SIZE (IN.)	L	ZE (INCHI W	ES) H	OPER. WEIGHT LBS.	REMARKS
P-1	BELL & GOSSETT	e1510-5EB	END SUCTION	CONDENSER WATER	150	0%	900	220	80	10	85.0	21.8	30.0	1800	460	3	VFD	NO	-	6	5	52	23	26	800	ALL
P-2	BELL & GOSSETT	e1510-5EB	END SUCTION	CONDENSER WATER	150	0%	900	220	80	10	85.0	21.8	30.0	1800	460	3	VFD	NO	-	6	5	52	23	26	800	ALL
REMARKS:																										

1. REFER TO ELECTRICAL DRAWINGS FOR POWER REQUIREMENTS, INCLUDING COORDINATION OF VOLTAGE, PHASE, SCCR, WIRE SIZES, AND OVERCURRENT PROTECTIVE DEVICES. REFER TO ELECTRICAL ONE-LINE DIAGRAM FOR MINIMUM FAULT CURRENT RATING THAT EACH UNIT SHALL EXCEED. UNIT NAMEPLATE SHALL INDICATE THE SHORT CIRCUIT CURRENT RATING. 2. PUMPS OPERATING THRU VFDS: UPON SELECTING THE PUMP FOR THE SPECIFIED DUTY POINT, THE SUPPLIER SHALL PROVIDE THE PUMP WITH THE LARGEST IMPELLER SIZE AVAILABLE FOR THE CASING THAT DOES NOT EXCEED THE DUTY POINT MOTOR HP

AT THE RIGHT END OF THE CURVE. SUBMITTAL DATA SHALL SHOW ALL IMPELLER CURVES AVAILABLE FOR THE PUMP MODEL. THIS APPLIES TO ALL MANUFACTURERS. 3. UNLESS INDICATED BY PUMP MODEL NUMBER, VARIABLE FREQUENCY DRIVE (VFD) IS REMOTE-MOUNTED RATHER THAN PUMP MOUNTED WHEN REQUIRED. 4. PROVIDE SHAFT GROUNDING RINGS FOR EACH BEARING ON MOTORS POWERED THROUGH VARIABLE FREQUENCY DRIVES.

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DUCT F	PRESSURE CLASSIFI	CATION	I SCHEDULE
DUCT TYPE	MATERIAL	PRESSURE CLASS	REM
MEDIUM PRESSURE EXHAUST	GALVANIZED STEEL	-4"	FAN IN
MEDIUM PRESSURE EXHAUST	GALVANIZED STEEL	+4"	FAN DISCH
REMARKS:			

							FAN	SCF	IEDU	ILE																				
т				MOTOR					DRIVE	VIBRATION	BACKDRAFT DA	MPER (BDD)	APPROX.	ARRANGE.	SOUND	OCTA	VE BAN	ND & C	ENTER	R BAND	FREQUE	NCY			SIZ	E (INCHE	ES)	OPER.		
TY [REQ'D	MAX	VOLTAGE	PHASE	ECM	VFD/	VFD	FEI	I TYPE	ISOLATOR	TYPE &	AIR PRESS	THROAT	&	BAND	1	2	3	4	5	6	7	8 S	SONES	L	W	н	WEIGHT	CONTROL	REMARKS
)	BHP	HP			(YES/	RELAY/	BYPASS	VALUE	(TYPE	LOCATION	DROP	DIM.	MOUNTING	Hz	63	125	250	500	1000	2000 4	000 80	000					LBS.		
		SIZE			NO)	STARTER	(YES/NO)		<u> </u>			(IN WC)			LOCATION															
	1.18	3	460	3	NO	VFD	NO	1.31	DIRECT	SPRING	MOTORIZED DISCHARGE	0.15	30 /30	HORIZONTAL	INLET	72	80	73	71	71	71	70 6	69	16.3	27	30	30	300	BAS / DDC	ALL
	RRENT PI	ROTECTI E SHORT	VE DEVICES CIRCUIT CU	RRENT RA	ATING.																									

NUMBER SYSTEM 10 AHU-1 1 AHU-2 2 3 AHU-3 FAST 4 RTU-7 65 RO RTU-8 65 RO 5 CC-1 89 AE 6 7 RTU-9 GREE REMARKS; 1. COORDINATE CONTROL SIGNALS WITH BUILDING AUTOMATION SYSTEM. 2. VALVE DIFFERENTIAL PRESSURE OPERATING RANGE = 5-70 PSID. 3. ALTERNATE PIC CONTROL VALVES= DELTA P VALVES AND BELIMO ENERGY VALVES

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		CONT	ROL VA	LVE SCH	HEDULE - AD	D ALT	ERN	ATE #2			
CATION	SERVICE	MFR	MODEL	FLUID	VALVE TYPE	VALVE SIZE (IN.)	FLOW RATE (GPM)	ACTUATOR TYPE	SIGNAL	FAIL POSITION	REMARKS
ORTH THOUSE	CHILLED WATER	BRAY	SSM-6	30% PG	2-WAY, PRESSURE INDEPENDENT	6"	422	ELECTRIC	PROPORTIONAL	IN PLACE	ALL
ORTH THOUSE	CHILLED WATER	BRAY	SSM-3	30% PG	2-WAY, PRESSURE INDEPENDENT	3"	122	ELECTRIC	PROPORTIONAL	IN PLACE	ALL
ADDITION	CHILLED WATER	BRAY	SSM-4	30% PG	2-WAY, PRESSURE INDEPENDENT	4"	212	ELECTRIC	PROPORTIONAL	IN PLACE	ALL
DSS HALL	CHILLED WATER	BRAY	SSM-4	30% PG	2-WAY, PRESSURE INDEPENDENT	4"	170	ELECTRIC	PROPORTIONAL	IN PLACE	ALL
DSS HALL	CHILLED WATER	BRAY	SSM-4	30% PG	2-WAY, PRESSURE INDEPENDENT	4"	187	ELECTRIC	PROPORTIONAL	IN PLACE	ALL
DDITION	CHILLED WATER	BRAY	SSM-4	30% PG	2-WAY, PRESSURE INDEPENDENT	4"	154	ELECTRIC	PROPORTIONAL	IN PLACE	ALL
ENHOUSE	CHILLED WATER	BRAY	SS-2	30% PG	2-WAY, PRESSURE INDEPENDENT	2	30	ELECTRIC	PROPORTIONAL	IN PLACE	ALL
							1297				

DEMO KEY NOTES:

- 1. DEMO ABSORPTION CHILLER.
- 2. DEMO HTHW PUMP. DEMO HTWH PIPING BACK TO MAINS AND CAP.
- 3. ADD ALTERNATE #3: REPLACE THE CONDENSER WATER PUMPS.
- 4. PIPE DEMO TO INCLUDE TEE. REMOVE TEE AND INSTALL SPOOL PIECE TO MAKE EXISTING PIPING CONTINUOUS.
- 5. DEMO CONDENSER WATER BYPASS.

1A

NEW KEY NOTES:

- 1. INSTALL THE NEW CHILLERS. SUPPORT ONE END FROM THE EXISTING CHILLER PAD. INSTALL A NEW PAD TO SUPPORT THE OTHER END. 2. REFRIGERANT MONITOR WITH MINIMUM EIGHT (8) SENSING POINTS.
- SENSING POINTS TO BE INSTALLED LOW (<12" AFF) AND LOCATIONS WHERE REFRIGERANT IS LIKELY TO COLLECT. DISTRIBUTE THE SENSING POINTS AROUND THE MECHANICAL ROOM. INSTALL ONE SENSING POINT NEAR THE INTAKE OF EF-N-6. FIELD VERIFY LOCATIONS DURING CONSTRUCTION.
- EXISTING SUPPLY AIR (MAKE-UP) FROM AHU-1 TO REMAIN. CONFIRM AND BALANCE AIR FLOWS TO VALUES INDICATED.
- 4. LOW EXHAUST AIR INTAKE, 18" AFF. COVER OPENING WITH 1/2" SCREEN. 5. ROUTE THE EXHAUST DUCT UP THE NEW DUCT CHASE. INSTALL THE
- LOUVER AT THE TOP, APPROXIMATELY 19 FT ABOVE LEVEL 1.
- 6. ROUTE THE REFRIGERANT VENT PIPING UP INSIDE THE NEW DUCT CHASE. DISCHARGE THROUGH THE TOP WITH A ROOF JACK, APPROXIMATELY 19 FT ABOVE LEVEL 1. TERMINATE WITH A GOOSE NECK DOWN. PAINT OUTDOOR PIPING FOR RUST PROTECTION. 7. NOT USED.
- 8. THE EXISTING CHILLED WATER BYPASS TO REMAIN BUT WILL NOT BE USED IN NORMAL OPERATION. LOCK VALVES IN THE CLOSED POSITION.
- 9. INSTALL AUDIBLE AND VISIBLE ALARMS AT EACH CHILLER ROOM DOOR. CONNECT ALARMS TO REFRIGERANT MONITOR. INSTALL PERMANENT SIGNS TO SAY "DO NOT ENTER WHEN LIGHT IS FLASHING - REFRIGERANT LEAK DETECTED."
- 10. NEW TEMPERATURE CONTROL PANEL LOCATION. ROUTE DATA FOR JACE FROM ROOM T0521.
- 11. ADD ALTERNATE #3: REPLACE THE CONDENSER WATER PUMPS. 12. WALL PENETRATION TO BE MINIMUM 2" LARGER THAN DUCT TO ALLOW FOR SETTLING OF NEW DUCT CHASE. FILL GAP WITH MINERAL WOOL
- INSULATION. 13. INSTALL AUDIBLE AND VISIBLE ALARMS WHERE INDICATED. CONNECT ALARMS TO REFRIGERANT MONITOR. INSTALL PERMANENT SIGNS TO SAY "EXIT ROOM WHEN LIGHT IS FLASHING - REFRIGERANT LEAK DETECTED."

1. ADD ALTERNATE #1: DEMO AND REMOVE THE CHILLED WATER COIL PUMP AND 3-WAY VALVE. ADD A PRESSURE INDEPENDENT CONTROL VALVE AND REWORK THE PIPING TO MAKE CONTINUOUS. SEE COIL DETAIL AND SCHEDULE FOR MORE INFORMATION. DEMO THE ELECTRICAL POWER CIRCUIT.

PENTHOUSE MECHANICAL PLAN - AHU-3 SCALE: 1/4"=1'-0"

KEY NOTES:

1. ADD ALTERNATE #1: DEMO AND REMOVE THE CHILLED WATER COIL PUMP AND 3-WAY VALVE. ADD A PRESSURE INDEPENDENT CONTROL VALVE AND REWORK THE PIPING TO MAKE CONTINUOUS. SEE COIL DETAIL AND SCHEDULE FOR MORE INFORMATION. DEMO THE ELECTRICAL POWER CIRCUIT.

BUILDING AUTOMA		ON	SYS	STE	<u>M C</u>		ITR	OL MATRIX
IN ADDITION TO THE DDC POINTS LISTED BELOW, THE CONTRACTOR SHALL CAREFULLY REVIEW ALL DRAWINGS, ALL SPECIFICATIONS, & ALL SEQUENCES OF OPERATION. THE DOCUMENTS ARE		POIN						
ALL INCLUSIVE & COMPLIMENTARY TO EACH OTHER. THE PROJECT SHALL INCLUDE ANY AND ALL NECESSARY DDC POINTS TO SUPPORT THE REQUIREMENTS OF ALL THE DOCUMENTS.	DIGITAL INPUT	DIGITAL OUTPUT	ANALOG INPUT	ANALOG OUTPUT	STATUS	ALARM	NETWORK COMMUNICATIONS	REMARKS
EQUIPMENT, SYSTEM & POINT								
EXISTING CONTROL POINTS								
OUTSIDE AIR TEMERATURE			x					
COOLING TOWERS (CT-1, CT-2)								
COOLING TOWER ISOLATION VALVE OPEN/ CLOSE		x						
COOLING TOWER FAN START/ STOP		x						
COOLING TOWER FAN STATUS	х				x			
COOLING TOWER FAN VFD SPEED				x				
COOLING TOWER SUMP TEMPERATURE			x					
COOLING TOWER SUMP HEATER STATUS	x							
CONDENSER WATER FLOW	х							
COOLING TOWER BYPASS				x				3-WAY VALVE IN PENTHOUSE
CONDENSER WATER SUPPLY TEMPERATURE			x					
CONDENSER WATER RETURN TEMPERATURE			x					
CONDENSER WATER PUMPS (P-1, P-2)								
PUMPSTART/ STOP		x						
PUMP STATUS	X				x			
CHILLED WATER PUMPS (P-4, P-5,P-6)								
PUMPSTART/ STOP		x						
PUMP STATUS	x				x			
PUMP VFD SPEED				x				
CHW DIFFERENTIAL PRESSURE AHU-1 & 2			x					
CHW DIFFERENTIAL PRESSURE AHU-3			x					
CHW DIFFERENTIAL PRESSURE RTU-7 & 8			x					
EXHAUST FAN EF-N-6 (MECH RM 0510)								
FAN START/ STOP		x						
FAN STATUS	X				x			

CONTROL NOTES

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- 1. CONTROLS TO BE BY DYNAMIC CONTROLS INC. THE NEW JACE TO BE TRIDIUM JACE 8000 RUNNING N4.
- ALL CONTROL POINTS ASSOCIATED WITH THE CHILLED WATER AND CONDENSER WATER SYSTEMS SHALL BE SERVED BY NEW JACE CONTROLLERS AND NEW I/O BOARDS WITHIN NEW TEMPERATURE CONTROL PANELS.
- THE EXISTING FIELD DEVICES MAY BE REUSED IF FUNCTIONAL AND CALIBRATED. THE CONTRACTOR TO VERIFY. WIRE TO THE NEW TEMPERATURE CONTROL PANELS.
- 4. DEMO AND REMOVE EXISTING CONTROL DEVICES AND WIRING THAT ARE NOT REUSED. DO NOT ABANDON ITEMS IN PLACE.
- 5. ALL NEW VALVE ACTUATORS TO BE ELECTRIC. COORDINATE POWER REQUIREMENTS BETWEEN THE CONTROLS CONTRACTOR AND THE ELECTRICAL CONTRACTOR. 120 V CIRCUITS, WHERE REQUIRED FOR THE BUILDING AUTOMATION SYSTEM, TO BE INCLUDED IN THE BID. REFER TO 230900 FOR MORE INFORMATION.

BUILDING AUTOMA	ATI(ON	SYS	STE	MC	CON	ITR	OL MATRIX
IN ADDITION TO THE DDC POINTS LISTED BELOW, THE CONTRACTOR SHALL CAREFULLY REVIEW ALL		POINT	TYPE					
DRAWINGS, ALL SPECIFICATIONS, & ALL SEQUENCES OF OPERATION. THE DOCUMENTS ARE ALL INCLUSIVE & COMPLIMENTARY TO EACH OTHER. THE PROJECT SHALL INCLUDE ANY AND ALL NECESSARY DDC POINTS TO SUPPORT THE REQUIREMENTS OF ALL THE DOCUMENTS.	DIGITAL INPUT	DIGITAL OUTPUT	ANALOG INPUT	ANALOG OUTPUT	STATUS	ALARM	NETWORK COMMUNICATIONS	REMARKS
								MFR FACTORY BAS INTERFACE
		v						MODULE REQUIRED
		^						
	X				×			
CHILLER CAPACITY IN TONS				X				
CHILLER POWER KW				X				
CHILLER GENERAL ALARM	X					X		
CHILLED WATER RETURN TEMPERATURE			x					
CHILLED WATER SUPPLY TEMPERATURE			x					
CHILLED WATER SUPPLY TEMPERATURE SET POINT				x				
CHILLED WATER FLOW SWITCH	x							THERMAL DISPERSION
CHILLER CHW ISOLATION VALVE				x				SLOW OPENING, SLOW CLOSING
CHILLER CW ISOLATION VALVE				x				SLOW OPENING, SLOW CLOSING
CHILLER EMERGENCY SHUTDOWN	x					x		EPO SWITCHES
CONDENSER WATER RETURN TEMPERATURE			x					
CONDENSER WATER SUPPLY TEMPERATURE			x					
CONDENSER WATER FLOW SWITCH	х							THERMAL DISPERSION
MISCELLANEOUS								
REFRIGERANT MONITOR- STATUS	х				x			
REFRIGERANT MONITOR- LEAK DETECTED	х					x		
CHILLED WATER DIFFERENTIAL PRESSURE			x					INSTALL AT THE FURTHEST AHU.
CHILLED WATER FLOW RATE			x					INSERTION TURBINE FLOW METER
MINIMUM FLOW BYPASS CONTROL VALVE				x				IN NORTH ADDITION PENTHOUSE
CHILLER BYPASS ISOLATION VALVE				x				SLOW OPENING, SLOW CLOSING
CONDENSER WATER CHEMICAL FEEDER ENABLE		x						ENABLE FEEDER WHEN CONDENSER WATER FLOWING
EXHAUST FAN (EF-CHR)								
FAN START/STOP		x						
FAN STATUS	x							
VFD SPEED			x					
MOTORIZED DAMPER		x						
MOTORIZED DAMPER STATUS	х							TWO END SWITCHES REQUIRED
NOTES: 1. ALWAYS REFER TO DRAWINGS FOR QUANTITY. 2. PROVIDE OPEN PROTOCOL COMMUNICATION WITH 3. BAS CONTRACTOR SHALL COORDINATE STATUS L IMMEDIATE ATTENTION.	FACTC EVEL F	ORY SUP OR EAC	PLIED (CH ALAF	CONTRO RM POIN	DLLER. IT WITH	THE OV	VNER TC	DETERMINE WHICH ONES REQUIRE

BUILDING AUTOMA	ATIC	SN :	SYS	STE	MC	ON	TR	OL MATRIX
N ADDITION TO THE DDC POINTS LISTED BELOW, THE CONTRACTOR SHALL CAREFULLY REVIEW ALL DRAWINGS, ALL SPECIFICATIONS, & ALL		POINT	ТҮРЕ					
SEQUENCES OF OPERATION. THE DOCUMENTS ARE ALL INCLUSIVE & COMPLIMENTARY TO EACH OTHER. THE PROJECT SHALL INCLUDE ANY AND ALL NECESSARY DDC POINTS TO SUPPORT THE REQUIREMENTS OF ALL THE DOCUMENTS.	DIGITAL INPUT DIGITAL OUTPUT		ANALOG INPUT	ANALOG OUTPUT	STATUS	ALARM	NETWORK COMMUNICATIONS	REMARKS
EQUIPMENT, SYSTEM & POINT								
AIR HANDLERS (AHU-1,2, 3,RTU-7,8,9,C0	C-1) A	DD AL	TERN	ATE #	ŧ1			
CHILLED WATER CONTROL VALVE				х				REFER TO SCHEDULE.
LEAVING AIR TEMPERATURE			x					
NOTES: 1. ALWAYS REFER TO DRAWINGS FOR QUANTITY. 2. PROVIDE OPEN PROTOCOL COMMUNICATION WI 3. BAS CONTRACTOR SHALL COORDINATE STATUS REQUIRE IMMEDIATE ATTENTION. 9/1/2024 18:30	TH FAC	TORY SI	JPPLIEE ACH AL/) CONTE ARM PO	ROLLER INT WIT	H THE C	WNER ⁻	O DETERMINE WHICH ONES

2024 18:30

CHILLER $\left< \begin{array}{c} CH \\ 1 \end{array} \right>$

CONDENSER WATER PIPING SCHEMATIC

CHILLED WATER PIPING SCHEMATIC

CHILLED WATER DISTRIBUTION DIAGRAM - DEMO SCALE: NTS

<u>'65 ROSS HALL (PHASE 2)</u>

KEY NOTES:

1. BASE BID: THE MINIMUM FLOW BYPASS IS TO PROVIDE THE REQUIRED MINIMUM FLOW FOR THE CHILLER. THE SIZING OF THE CONTROL VALVE AND PIPING SHALL BE BASED ON THE ACTUAL CHILLER SUPPLIED. CONFIRM DURING THE SUBMITTAL PROCESS.

POWER LEGEND (Not all symbols listed below are used on these dr SYMBOL SYMBOL DESCRIPTION SYMBOL Q SINGLE RECEPTACLE Import PLUG MOL Q DUPLEX RECEPTACLE Import WIREMOLD Q DUPLEX RECEPTACLE Import CONDUIT of CONDUIT of CONDUIT Q DUPLEX RECEPTACLE, HALF SWITCHED Import CONDUIT of CONDUIT, AS ALLOW Q DUPLEX RECEPTACLE, CEILING MOUNTED Import CONDUIT of CONDUIT of COND
SYMBOL DESCRIPTION SYMBOL ♥ SINGLE RECEPTACLE Import PLUG MOL ♥ DUPLEX RECEPTACLE Import WIREMOLD ♥ DOUBLE DUPLEX RECEPTACLE Import CONDUIT OF ♥ DUPLEX RECEPTACLE, HALF SWITCHED Import CONDUIT OF ♥ DUPLEX RECEPTACLE, CEILING MOUNTED Import CONDUIT, AS ALLOW Import DUPLEX RECEPTACLE, FLOOR MOUNTED Import CONDUIT TO Import DOUBLE DUPLEX RECEPTACLE, FLOOR MOUNTED Import CONDUIT TO Import DOUBLE DUPLEX RECEPTACLE, FLOOR MOUNTED Import CONDUIT TO Import SPECIAL RECEPTACLE, FLOOR MOUNTED Import Import CONDUIT TO Import SPECIAL RECEPTACLE, FLOOR MOUNTED Import Import CONDUIT TO Import SPECIAL RECEPTACLE, FLOOR MOUNTED Import Import SPECIAL RECEPTACLE Import Import SPECIAL RECEPTACLE Import Import Import SPECIAL RECEPTACLE Import Import Import Import Import Import Import Import Import Import </td
♥ SINGLE RECEPTACLE Import PLUG MOL ♥ DUPLEX RECEPTACLE Import WREMOLD ♥ DOUBLE DUPLEX RECEPTACLE Import CONDUIT OF ♥ DUPLEX RECEPTACLE, HALF SWITCHED Import CONDUIT OF ♥ DUPLEX RECEPTACLE, CEILING MOUNTED Import CONDUIT, AS ALLOW ♥ DUPLEX RECEPTACLE, CEILING MOUNTED Import CONDUIT TO ● DOUBLE DUPLEX RECEPTACLE, FLOOR MOUNTED Import CONDUIT TO ● DOUBLE DUPLEX RECEPTACLE, FLOOR MOUNTED Import CONDUIT TO ● DOUBLE DUPLEX RECEPTACLE, FLOOR MOUNTED Import CONDUIT TO ● SPECIAL RECEPTACLE, FLOOR MOUNTED Import Import CONDUIT TO ● SPECIAL RECEPTACLE, FLOOR MOUNTED Import Import CONDUIT TO ● SPECIAL RECEPTACLE Import Import SPECIAL RECEPTACLE Import Import SPECIAL RECEPTACLE Import SPECIAL RECEPTACLE Import
♥ DUPLEX RECEPTACLE Image: Wireword Wireword ♥ DOUBLE DUPLEX RECEPTACLE Image: Conduit of
Image: Double Duplex Receptacle Image: Conduit of Con
♥ DUPLEX RECEPTACLE, HALF SWITCHED CONDUIT E ♥CLG DUPLEX RECEPTACLE, CEILING MOUNTED CONDUIT, AS ALLOW ☑ DUPLEX RECEPTACLE, FLOOR MOUNTED CONDUIT T ☑ DUPLEX RECEPTACLE, FLOOR MOUNTED CONDUIT T ☑ DOUBLE DUPLEX RECEPTACLE, FLOOR MOUNTED CONDUIT T ☑ SPECIAL RECEPTACLE, FLOOR MOUNTED CONDUIT T ☑ SPECIAL RECEPTACLE, FLOOR MOUNTED CONDUIT T ⑨ SPECIAL RECEPTACLE CONDUIT T ⑨ SPECIAL RECEPTACLE SPECIAL RECEPTACLE
DUPLEX RECEPTACLE, FLOOR MOUNTED CONDUIT DUPLEX RECEPTACLE, FLOOR MOUNTED CONDUIT SPECIAL RECEPTACLE CONDUIT SPECIAL RECEPTACLE CONDUIT SPECIAL RECEPTACLE BRANCH CONDUIT
Image: Double Duplex Receptacle, Floor Mounted Image: Double Duplex Receptacle
Image: Special receptacle Image: Conduit of Conduit Image: Special receptacle Image: Conduit Image: Conduit Image: Conduit Image:
SPECIAL RECEPTACLE, FLOOR MOUNTED
JUNCTION BOX, WALL OR CEILING MOUNTED
J JUNCTION BOX, FLOOR MOUNTED MAIN SWIT
M MOTOR T TRANSFOR
DISCONNECT SWITCH (NON-FUSED)
DISCONNECT SWITCH (FUSED)
CH VARIABLE SPEED DRIVE WITH DISCONNECT GANN GENERATO
ENCLOSED CIRCUIT BREAKER
S TOGGLE SWITCH UTILITY ME
ELECTRICAL PANELBOARD, CONTROL PANEL, OR OTHER CABINET AS NOTED

	ONE-LINE DIAC (Not all symbols listed below	EGEND n these drawings)	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
<i>_</i>	DISCONNECT SWITCH	A	PANELBOARD "A"
	DISCONNECT SWITCH, FUSED	PM	EM=ENERGY METER, PM=POWER METER, CM=CIRCUIT MONITOR
^	CIRCUIT BREAKER	- <u></u>	VOLTMETER TEST SWITCH
	FUSE	-AS-	AMMETER TEST SWITCH
Ť	GROUND	Ŵ	VOLTMETER
T ##	STEP DOWN TRANSFORMER, ## INDICATES KVA	(A)	AMMETER
TK ##	K-RATED STEP DOWN TRANSFORMER ## INDICATES KVA, # INDICATES K RATING		SEE FEEDER/MEC/TRANSFORMER SCHEDULES FOR FEEDER SIZE
$\neg \uparrow \uparrow$	CURRENT TRANSFORMER	6	ENGINE GENERATOR
J℃	POTENTIAL TRANSFORMER		CONTACTOR/RELAY/CAPACITOR (AS NOTED)
∰, ok 🖳	SERVICE ENTRANCE TRANSFORMER	.\	TRANSFER SWITCH - ATS=AUTOMATIC, MTS=MANUAL
M	METER	GFI	GROUND FAULT INTERRUPTER
	EQUIPMENT ENCLOSURE	SPD	SURGE PROTECTIVE DEVICE
	SERVICE WEATHERHEAD	S	SHUNT TRIP
	SHORT CIRCUIT CURRENT AVAILABLE	>>	TERMINATIONS LB=LOAD BREAK, NLB=NO LOAD BREAK
€	KIRK KEY INTERLOCK, SUBSCRIPT INDICATES INTERLOCKED GROUP	→	DRAW-OUT DEVICE
Êa	ELECTRICAL INTERLOCK, SUBSCRIPT INDICATES INTERLOCKED GROUP	\rightarrow	PLUG-IN DEVICE
	MECHANICAL INTERLOCK	EO	ELECTRICALLY OPERATED

	ABBREVIAI (Not all symbols listed belo	IONS LEO	っ these drawing
SYMBOL	DESCRIPTION	SYMBOL	
Α	AMPERES	МСР	MOTOR CIRCUIT F
AC	ABOVE COUNTER, MOUNT HORIZONTALLY TO CENTERLINE OF DEVICE, +6" ABOVE COUNTER OR BACK SPLASH	MEC	SEE MECHANICAL
AFF	ABOVE FINISHED FLOOR	MIN	мілімим
AFG	ABOVE FINISHED GRADE	MLO	MAIN LUGS ONLY
ANN	ANNUNCIATOR	MTS	MANUAL TRANSFE
ARF	ABOVE RAISED FLOOR	NC	NORMALLY CLOSE
ASSD	AIR SAMPLING SMOKE DETECTION	NIC	NOT IN CONTRAC
ATS	AUTOMATIC TRANSFER SWITCH	NL	NIGHT LIGHT
BFG	BELOW FINISHED GRADE	NO	NORMALLY OPEN
С	CONDUIT	NTS	NOT TO SCALE
CATV	CABLE TELEVISION	ос	ON CENTER
СВ	CIRCUIT BREAKER	OFCI	OWNER FURNISHE
CCTV	CLOSED CIRCUIT TELEVISION	OFOI	OWNER FURNISHE
(E)	EXISTING	OSWF	ON SITE WORK F
EM	EMERGENCY	PB	PULL BOX
EMDC	EMERGENCY MAIN DISTRIBUTION CENTER	SB	STAND-BY
EP	EXPLOSION PROOF	SDC	SUB-DISTRIBUTIO
EPO	EMERGENCY POWER OFF	TP	TAMPER PROOF
EVO	EMERGENCY VENTILATION ON/OFF	TVSS	TRANSIENT VOLTA
EWC	ELECTRIC WATER COOLER	TYP	TYPICAL
FA	FIRE ALARM	UF	UNDER FLOOR
G	GROUND	UG	UNDER GROUND
GCP	GENERATOR CONTROL PANEL	UON	UNLESS OTHERWI
GFI	GROUND FAULT INTERRUPTING	UPS	UNINTERRUPTIBLE
НОА	HAND OFF AUTOMATIC	v	VOLTS
IG	ISOLATED GROUND	VFD	VARIABLE FREQUI
МАХ	МАХІМИМ	W/	WITH
МСВ	MAIN CIRCUIT BREAKER	w/0	WITHOUT
мсс	MOTOR CONTROL CENTER	WP	WEATHER PROOF
MDC	MAIN DISTRIBUTION CENTER	XFMR	TRANSFORMER
•			

	(Not all symbols listed below	MBOLS are used or	LEGEND these drawings
SYMBOL	DESCRIPTION	SYMBOL	
$\langle \rangle$	KEY NOTE REFERENCE		KITCHEN/OWNER/
LPA-#	TYPICAL CIRCUIT NUMBER	Æ	EXISTING TO REM
) TG# (TYPICAL LUMINAIRE TYPE	Ŕ	EXISTING TO BE I
	TYPICAL ROOM REFERENCE (TOP=RM#, BOTTOM=FLR)	Ŕ	EXISTING TO BE I
UH	MECHANICAL EQUIPMENT REFERENCE	Æ	EXISTING TO REM
I	LIGHTING CONTROL/ EQUIPMENT REFERENCE	A	EXISTING TO BE I

)
CE RACEWAT)
ED
SPECIFICATIONS
DOWN
UP
HOME RUN, NUMBER OF ARROWS INDICATES
RD/DISTRIBUTION CENTER
ORMER
INCLATOR PANFI
S EMERGENCY SYSTEM
ANEL AND CIRCUIT DESIGNATION

DESCRIPTION PROTECTOR EQUIPMENT SCHEDULE

FER SWITCH

IED, CONTRACTOR INSTALLED

IED, OWNER INSTALLED ORCE

ON CENTER

TAGE SURGE SUPPRESSER

VISE NOTED POWER SUPPLY UENCY DRIVE

)
DESCRIPTION
MEDICAL EQUIPMENT REFERENCE
AIN
EMOVED

RELOCATED MAIN – REPLACE DEVICE REMOVED AND REPLACED

GENERAL NOTES:

- 1. FOR REMODELING, WORK INCLUDED IS DENOTED IN BOLD. EXISTING CONDITIONS TO REMAIN ARE DENOTED LIGHTLY.
- 2. PROTECT STRUCTURE AND OWNER EQUIPMENT FROM DAMAGE. IMMEDIATELY REPLACE OR REPAIR. TO ORIGINAL CONDITION. DAMAGE CAUSED BY THE CONTRACTOR WHETHER EQUIPMENT APPEARS TO BE CURRENTLY IN USE OR NOT, UNLESS WRITTEN AUTHORIZATION FROM THE OWNER INDICATED OTHERWISE. PREPARE LISTING OF ALL EXISTING DAMAGED ITEMS AND SUBMIT TO OWNER PRIOR TO BEGINNING WORK.
- 3. INSTALL CONDUIT CONCEALED IN FINISHED AREAS UNLESS OTHERWISE NOTED. PAINT EXPOSED CONDUIT TO MATCH EXISTING FINISHES WITHIN
- THE SURROUNDING AREA. 4. FIRE SEAL ALL FIRE RATED WALL AND FLOOR PENETRATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS.
- 5. COORDINATE EXACT REQUIREMENTS AND LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN AND ORDERING MATERIALS OR EQUIPMENT.
- 6. EXISTING INFORMATION SHOWN ON THE DRAWINGS HAS BEEN TAKEN FROM OWNER FURNISHED DRAWINGS AND/OR LIMITED FIELD OBSERVATIONS. CATOR, RUMA & ASSOCIATES IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY INFORMATION OR THE ADEQUACY, SAFETY AND CONFORMANCE TO CURRENT PREVAILING CODES OF ANY WORK SHOWN AS EXISTING ON THESE DRAWINGS.
- 7. FIELD LOCATE EXISTING UNDERGROUND PUBLIC AND OWNER UTILITIES OF ALL TRADES AND BUILDING GROUNDING/LIGHTNING PROTECTION SYSTEMS PRIOR TO ANY EXCAVATION. REPLACE OR REPAIR DAMAGED UTILITIES AND GROUNDING/LIGHTNING PROTECTION SYSTEMS TO ORIGINAL CONDITION.
- 8. PROVIDE SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR IN ALL FEEDER, HOMERUN AND BRANCH CIRCUITS.
- 9. COORDINATE ALL SERVICES SHUTDOWN WITH THE OWNER; PROVIDE TEMPORARY SERVICES. COORDINATE ANY REQUIRED DISRUPTIONS WITH OWNER, AT A MINIMUM OF 72 HOURS IN ADVANCE.

DEMOLITION NOTES:

- 1. UNLESS NOTED OTHERWISE, BOLD ITEMS INDICATE EQUIPMENT, DEVICES, ETC. TO BE REMOVED. SEE SPECIFICATION SECTION 260500 FOR REMODEL/DEMOLITION DETAILED REQUIREMENTS.
- 2. DEMOLITION DRAWINGS MAY NOT SHOW EVERY ITEM TO BE DEMOLISHED. CONTRACTOR SHALL VISIT SITE TO DETERMINE AND COORDINATE THE EXACT EXTENT OF DEMOLITION TO FACILITATE ALL WORK INDICATED BY THE CONTRACT DOCUMENTS PRIOR TO QUOTATION. NO EXTRAS WILL BE ALLOWED FOR WORK REQUIRED TO ACHIEVE THE END RESULT AS INDICATED BY THE CONTRACT DOCUMENTS. REWORK EXISTING TERMINATIONS, CONNECTIONS, CONDUIT, WIRING, ETC. TO ACCEPT NEW WORK. MAINTAIN CIRCUIT CONTINUITY TO EXISTING CIRCUITS AND DEVICES TO REMAIN OR REMODEL/DEMOLITION DETAILED REQUIREMENTS TO BE RELOCATED. PRIOR TO COMMENCEMENT OF ANY DEMO WORK, CONFIRM EXISTING CONDITIONS AND NOTIFY ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
- 3. ALL ITEMS IDENTIFIED TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY INCLUDING ALL WIRING AND EXPOSED CONDUIT AND CONDUIT SUPPORTS BACK TO POINT OF ORIGIN OR NEXT DEVICE TO REMAIN. REMOVED ITEMS SHALL BE TURNED OVER TO THE OWNER, UNLESS NOTED OTHERWISE, AND STORED IN THE AREA DESIGNATED BY TH OWNER. REMOVE FROM SITE AND LEGALLY DISPOSE OF ALL ITEMS THE OWNER CHOOSES NOT TO ACCEPT.
- 4. WHERE EXISTING CONDUITS ARE SHOWN TO BE REMOVED AND HAVE BEEN ROUTED IN CONCRETE FLOOR SLABS, CONCRETE WALLS OR CONCRETE CEILINGS, THEY SHALL BE CUT BACK FLUSH WITH CONCRETE. FILL WITH GROUT TO ACHIEVE A SMOOTH AND EVEN FINISH FLUSH WITH CONCRETE SURFACE AFTER CONDUCTORS HAVE BEEN REMOVED.
- 5. REUSE EXISTING CONDUIT WHERE CURRENT NEC AND LOCAL CODE REQUIREMENTS ARE MAINTAINED. PROVIDE NEW CONDUIT AND WIRE FOR NEW INSTALLATIONS AND EXTENSION OF EXISTING INSTALLATIONS. REUSE EXISTING CONDUIT IN PLACE, DO NOT REINSTALL EXISTING CONDUIT. PROVIDE LABELING PER SPECIFICATIONS FOR REUSED CONDUIT.
- 6. WHERE EXISTING DEVICES. SWITCHES. MOTOR CONNECTIONS. ETC. ARE TO BE REMOVED FROM WALLS WHICH ARE REMAINING, WALLS SHALL BE PATCHED TO MATCH ORIGINAL FINISH. BLANK COVERPLATES OVER EXISTING BOXES ARE NOT ACCEPTABLE, UNLESS NOTED OTHERWISE.
- ADD ALTERNATE 3: REMOVE CHILLED WATER COIL PUMP P-11, P-13, P-17, P-20, P-22, AND P-23 BRANCH CIRCUITS BACK TO SOURCE. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS.

POWER PLAN NOTES:

- 1. MAKE ALL FINAL ELECTRICAL CONNECTIONS TO EQUIPMENT REQUIRING ELECTRICAL CONNECTION. THIS SHALL INCLUDE BUT NOT BE LIMITED TO ALL MECHANICAL AND OTHER EQUIPMENT INCLUDED IN THIS PROJECT.
- 2. COORDINATE EXACT REQUIREMENTS AND LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
- 3. PROVIDE FUSES SIZED PER EQUIPMENT MANUFACTURER'S REQUIREMENTS.
- 4. DISCONNECT SWITCH LOCATIONS ARE SHOWN DIAGRAMMATICALLY AND SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS TO SUIT EQUIPMENT AND SPACE. DISCONNECT SWITCHES SHALL BE WITHIN SIGHT OF THE EQUIPMENT THEY SERVE AND MOUNTED AT 6'-3", MAXIMUM, TO TOP OF CABINET. MAINTAIN NEC WORK SPACE REQUIREMENTS.
- 5. COORDINATE AND VERIFY EXACT MOUNTING LOCATIONS OF WALL AND FLOOR DEVICES WITH ARCHITECTURAL ELEVATIONS, AND ANY FURNITURE OR SPECIALTY EQUIPMENT SUPPLIER DRAWINGS PRIOR TO ROUGH-IN.
- 6. PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR EACH 120V CIRCUIT. 7. CIRCUITS MAY BE COMBINED INTO HOMERUNS OF UP TO SIX (6) CURRENT CARRYING CONDUCTORS, INCLUDING NEUTRALS, UNLESS OTHERWISE INDICATED. WHERE CIRCUITS ARE COMBINED WITHIN A SINGLE CONDUIT, PROVIDE STRIPING FOR FULL LENGTH OF NEUTRAL CONDUCTOR INSULATION TO MATCH THE COLOR CODE OF THE
- ASSOCIATED PHASE CONDUCTOR. SEE SPECIFICATION FOR COLOR CODES. 8. 120V POWER HAS BEEN SHOWN ON DRAWINGS TO J-BOXES IDENTIFIED FOR BAS CONTROLS, DAMPER ACTUATORS AND OTHER MISCELLANEOUS POWER TO OPERATE MECHANICAL CONTROLS AND DEVICES. COORDINATE ALL 120V REQUIREMENTS WITH MECHANICAL CONTROLS AND EQUIPMENT AND MAKE ALL CONNECTIONS REQUIRED TO THESE OR OTHER 120V

ONE-LINE DIAGRAM NOTES:

- 1. PANELBOARDS INDICATED ON ONE-LINE DIAGRAMS DO NOT SHOW ALL BRANCH CIRCUITS. REFER TO PANELBOARD SCHEDULE(S).
- 2. EQUIPMENT SHOWN SHADED REPRESENTS STANDBY POWERED SERVICES. 3. ADJUSTABLE BREAKERS SHALL BE SOLID STATE TRIP. CIRCUIT BREAKER TRIP FUNCTIONS: L=LONG TIME
 - S=SHORT TIME I=INSTANTANEOUS G=GROUND FAULT
- Z=ZONE SELECT INTERLOCK 4. EXISTING ONE-LINE DIAGRAM TAKEN FROM OWNER FURNISHED DRAWINGS.
- EXISTING INFORMATION SHOWN OTHER THAN LOCATIONS IMPACTED BY NEW WORK HAS NOT BEEN VERIFIED.
- 5. COORDINATE MOUNTING, CONDUIT, WIRE, AND OCPD SIZE FOR SPD'S WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.

					EXI	STING	PANELB	OARD		MBN			Notes:								
	600 A M	И.L.O.					VOLTAGE		277	/ 480	V		1. PROVIDE	NEW CIRC	CUIT BREAK	KER IN SPAC	СЕ ТО МАТС	H EXISTING	BREAKERS	<i>.</i>	
	600 A E	BUS					PHASE			3	PH		2. CIRCUIT	BREAKER	MADE SPA	RE BY DEMO	DLITION.				
М	FR · SQUARE D						WIRE			4	W		3. SCOP UN	DER ADD /	ALTERNATE						
MT	G.: SURFACE		14000 AM	PERE SHO	ORT CIRCI	JIT RATIN	G (FULLY RATED	D)													
CRIPTION OF			CO	NNECTED	LOADS (II	VA) BY C	ATEGORY AND	PHASE													
-LOAD OR PANE	EL		LIG	HTING			RECEPTACLES	S		MOTORS				OTHER			GENERAL				
J-6				PHA	РНВ	PH C	PH A	PH B	PHC	9H A	2326	2326	LARGEST	PH A	PH B	PHC	PH A	PH B	PH C	REMAR	RKS
										15519	15519	15519									
RE																					
1P PUMP										3326	3326	3326									
RE										3320	3320	3320								2	
1P-6										13302	13302	13302									
RE																				2	
1P-8 1P-9										11085	11085	11085									
1P-10										11085	11085	11085									
VAC PUMP										8868	8868	8868									
1P-5										13302	13302	13302									
1P-4 1P-1										13302	13302	13302									1,3
1P-2										11085	11085	11085							-		1,3
CE																					
CE CE																					
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CE																					
SE LOADING SU	JMMARY	DUD	DU O	LC	ADING SU	JMMARY															
D TYPE (VA)	РНА	РНВ	PHC		JAD TYPE	:	LOAD KVA	Ē	DEMAND L	OAD											
	0	0	0		GHTING		0.0	KVA ×	x 125% =	0.0	KVA										
JEPTACLES TORS	0 129.696	0 129.696	0 129.696	R	EGEPTAC	LES KVA	0.0	KVA ¥	(100% =	0.0	KVA					CONNECT	ED				
HER	0	0	0		REMAINDI	ER	0.0	KVA ×	< 50% =	0.0	KVA					AMPACITY					
IERAL	0	0	0	м	OTORS											468.0					
	129,696	129,696	129,696			ED	0.0	KVA ×	<pre>(125% = (100% -</pre>	0.0	KVA KV/A										
GE DALANGE	A-B	в-С	0-A	0		-12	0.0	KVA ×	(125% =	0.0	KVA					AMPACITY	(=				
	0%	0%	0%	GE	INERAL		0.0	KVA ×	< 100% =	0.0	KVA					468.0					
				Т	JTAL		389.1	KVA		389.1	KVA										

H. SPECIFIC	H. DISCONNECT SWITCHES PROVIDED IN THE MOTOR FEEDERS BETWEEN A VFD AND THE MOTOR SHALL BE PROVIDED WITH AUXILIARY CONTACTS AT THE DISCONNECT THAT DE-ENERGIZES POWER TO THE VFD. ECIFIC NOTES:																									
1.	. NEW PUMP UNDER ADD ALTERNATE 3	3.																								
KEY	ITEM	MC	TORS	OTHER	EQUIV.	VOLTA	GE				FEEDE	R			PROTE	CTIC	N					DISC	AT UN	IIT		NOTE
		HP	FLA	WATTS	LD (VA)	VLTS	PH	SETS			SIZE			"C	BREAK	ER		DISC.	SW.		FU	SE DISC	SW.		FUSE	
CH-1	CHILLER		223.0		185,399	480	3	1 3	#	300	,1 #	2	G	3	500	А	3 P	600	Α	3	P 50	0 600	A	3 P	500	
CH-2	CHILLER		223.0		185,399	480	3	1 3	#	300	,1 #	2	G	3	500	А	3 P	600	А	3	P 50	0 600	Α	3 P	500	
EF-CHR	EXHAUST FAN		4.8		3,991	480	3	1 3	#	12	,1 #	12	G	3/4	15	А	3 P	30	А	3	P 1	5 30	А	3 P	15	
P-1	CONDENSER WATER PUMP	30			33,255	480	3	1 3	#	6	,1 #	8	G	1 1/4	70	А	3 P	60	А	3	P 6) 60	А	3 P	60	1
P-2	CONDENSER WATER PUMP	30			33,255	480	3	1 3	#	6	,1 #	8	G	1 1/4	70	А	3 P	60	А	3	P 6) 60	Α	3 P	60	1

D. COORDINATE 120V POWER CONNECTIONS TO DAMPERS AND OTHER CONTROL CIRCUITS. GROUP EQUIPMENT CONTROL CIRCUITS SUCH THAT FAILURE OF ONE CONTROL CIRCUIT DOES NOT AFFECT OPERATION OF OTHER EQUIPMENT. FOR EXAMPLE, DO NOT CONNECT A DAMPER ASSOCIATED WITH ONE AIR HANDLING UNIT TO THE SAME BRANCH CIRCUIT AS DAMPERS ASSOCIATED WITH A DIFFERENT

F. COORDINATE LOCATION OF VFD'S AND WORKING SPACE CLEARANCES. IF INSTALLED REMOTE FROM EQUIPMENT, PROVIDE CIRCUIT CONNECTION FROM VFD TO MOTOR(S).

GENERAL NOTES: A. PRIOR TO WORK, VERIFY ELECTRICAL REQUIREMENTS (VOLTAGE, AMPERAGE, RECOMMENDED OCPD, CONDUCTORS, AND DISCONNECT) FOR EACH PIECE OF EQUIPMENT. B. PRIOR TO WORK, VERIFY EXACT LOCATION FOR EACH PIECE OF EQUIPMENT WITH ARCHITECT AND/OR OWNER.

E. FEEDERS, BREAKERS, DISCONNECTS, AND FUSING APPLIES TO FIELD-INSTALLED AND/OR FACTORY-INSTALLED EQUIPMENT.

G. WHERE MULTIPLE MOTORS ARE SERVED BY A SINGLE VFD, COORDINATE FIELD-WIRING REQUIREMENTS WITH EQUIPMENT VENDOR.

C. COORDINATE AND PROVIDE ALL FIELD CONNECTIONS AS REQUIRED.

AIR HANDLING UNIT.

EXISTING SWITCHBOARD MDS 3000 A MAN GROUT DREAKER 3000 A DBS VOLTACE PHAZE 277 / 409 v 3 PHAZE 1 PROVIDE CROUT DREAKER IN SPACE TO MATCH DOSTING. MFS: EDUDATED PHAZE BOOM ANSOLDS BOOM ANSOLDS DOTACE PHAZE 277 / 409 v 3 PHA 1 PROVIDE CROUT DREAKER IN SPACE TO MATCH DOSTING. DESCRIPTION DP- MITG: BOOM ANSOLDS BOOM ANSOLDS DOTACE LID LODING INVO JIV TATISSOM MOLPHALE. CTIMEN CTIMEN CTIMEN CTIMEN CTIMEN PHA PHS PHC																					
Day Aleo Contraction Line No. Out of a bit o						EX	ISTING	SWITC	HBOAR	2D	MDS										
Description of PANEL Description of PANEL <th>M</th> <th>3000 A 1 3000 A 1 FR : SQUARE D IG : SURFACE</th> <th>MAIN CIRCU BUS</th> <th>JIT BREAKE</th> <th></th> <th>SHORT CIRC</th> <th></th> <th>VOLTAGE PHASE WIRE</th> <th>TED)</th> <th>277</th> <th>7 / 480 3 4</th> <th>V PH W</th> <th></th> <th>Notes: 1. PROVIDE</th> <th>E CIRCUIT E</th> <th>BREAKER IN</th> <th>SPACE TO</th> <th>MATCH EXIS</th> <th>sting.</th> <th></th> <th></th>	M	3000 A 1 3000 A 1 FR : SQUARE D IG : SURFACE	MAIN CIRCU BUS	JIT BREAKE		SHORT CIRC		VOLTAGE PHASE WIRE	TED)	277	7 / 480 3 4	V PH W		Notes: 1. PROVIDE	E CIRCUIT E	BREAKER IN	SPACE TO	MATCH EXIS	sting.		
Description of and								G(I OLLI I KA													_
Concernme PHA	DESCRIPTION OF	=1				ED LOADS (N VA) BY C				MOTOPS							CENEDAL			_
Lighter free free free free free free free f	SUB-LOAD OK FANL					DHB	PHC			PHC		DHB	PHC	LAPGEST		DHB	PHC		DH B	PHC	-
EXESTING LAND Image: Control of the sector of					IIIA	THE	1110	TITA	THD	THE		THE	THO	LANGEST	TILA		THE	TITA	THD	THO	
PANEL BASY Image: Sector Sec																					
ATS2 Image: Barbon Marker Ma	PANEL MBN																				
PANEL INFN Image: Sector Sec	ATS2																				
TATA Impair	PANEL MPN																				
PARELD INT Image: Province of the second o	TVSS																				
NAMEL H Image:																					
PANEL 10 'T Image: 10 'mage: 10 'mag																					
PANEL 192 Image: 1 mining of the second of																					
PARE LD377 Image: Marker Mar																					
AT D1																					
PANEL LOS/T Image: Second Se	AISI DANEL LD2/77																				
PANEL H2017 PANEL H3 Image: Constraint of the constraint of	PANEL LD3/17																				
PrACE D3 Image: Display (Constraint) Image: Display (Constraint) <t< td=""><td>PANEL LU2/17</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	PANEL LU2/17																				
SileAnd Gen Chi C	PANEL H3																				_
CH-1 CH-2	STEAM GEN											0.4000									
CH-2 CH-2 CH-3	CH-1										61800	61800	61800								1
SPACE Image: S	CH-2										61800	61800	61800								1
SPACE SPACE Image: SPACE <td>SPACE</td> <td></td>	SPACE																				
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SPACE SPACE Image: Constraint of the state of the st	SPACE																				
SPACE SPACE Image: SPACE </td <td>SPACE</td> <td></td>	SPACE																				
SPACE Coloring Summary Load Ing Summary Load Type (va) PH A PH B PH C Load Type CONNECTED LOAD KVA NEC CALCULATED DEMAND LOAD LIGHTING 0 0 0 RECEPTACLES 0 CONNECTED NEV X 125% = 0.0 KVA CONNECTED 146.0 <td>SPACE</td> <td></td> <td>_</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	SPACE											_									
PHASE LOADING SUMMARY LOADING SUMMARY LOADING SUMMARY LOADING SUMMARY LOAD TYPE (VA) PH A PH B PH C LOAD TYPE CONNECTED NEC CALCULATED LIGHTING 0 0 0 LIGHTING 0.0 KVA x 125% = 0.0 KVA RECEPTACLES 0 0 0 RECEPTACLES 0.0 KVA x 100% = 0.0 KVA MOTORS 123,600 123,600 FIRST 10 KVA 0.0 KVA x 100% = 0.0 KVA PHASE BALANCE AB BC C-A REMAINDER 0.0 KVA x 100% = 370.8 KVA 0% 0% 0% FERRAL 0.0 KVA x 100% = 370.8 KVA AMPACITY = 0% 0% 0% 0% KVA x 100% = 370.8 KVA MOTOR	SPACE																				
LIGAD TYPE (VA) PH A PH B PH C LOAD TYPE CONNECTED NEC CALCULATED LOAD KVA DEMAND LOAD LIGHTING 0 0 0 LIGHTING 0.0 KVA x125% = 0.0 KVA RECEPTACLES 0 0 0 0 MOTORS 123,600 123,600 FIRST 10 KVA 0.0 KVA x125% = 0.0 KVA OTHER 0 0 0 FIRST 10 KVA 0.0 KVA x100% = 0.0 KVA GENERAL 0 0 0 TOTAL 123,600 123,600 123,600 LARGEST 0.0 KVA x125% = 0.0 KVA PHASE BALANCE A-B B-C C-A REMAINDER 370.8 KVA x100% = 370.8 KVA MOTORS 0% 0% GENERAL 0.0 KVA x100% = 0.0 KVA	PHASE LOADING SU	JMMARY				LOADING S	SUMMARY														
LighTing000LighTing0.0KVA x 125% =0.0KVARECEPTACLES000RECEPTACLESRECEPTACLESNOTORS123,600123,600FIRST 10 KVA0.0KVA x 100% =0.0KVAOTHER000REMAINDER0.0KVA x 50% =0.0KVAAMPACITY =GENERAL00123,600123,600123,600LARGEST0.0KVA x 125% =0.0KVAPHASE BALANCEA-BB-CC-AREMAINDER370.8KVA x 100% =370.8KVAAMPACITY =0%0%0%-GENERAL0.0KVA x 125% =0.0KVAAMPACITY =0%0%0%-GENERAL0.0KVA x 100% =0.0KVAAMPACITY =0%0%0%-GENERAL0.0KVA x 100% =0.0KVAAMPACITY =0%0%0%-GENERAL0.0KVA x 100% =0.0KVAAMPACITY =0%0%0%0%0%0%0%0%0%0%0%0%0%0%0%0%0%0%0	LOAD TYPE (VA)	PH A	PH B	PH C		LOAD TYF	Έ	CONNECTE LOAD KVA	Đ	NEC CALC DEMAND I	CULATED LOAD										
MOTORS 123,600 123,600 123,600 123,600 FIRST 10 KVA 0.0 KVA × 100% = 0.0 KVA OTHER 0 0 REMAINDER 0.0 KVA × 50% = 0.0 KVA AMPACITY = GENERAL 0 0 0 MOTORS MOTORS LARGEST 0.0 KVA × 125% = 0.0 KVA AMPACITY = PHASE BALANCE A.B B-C C-A REMAINDER 370.8 KVA × 100% = 370.8 KVA MOTOR 0% 0% 0% 0% GENERAL 0.0 KVA × 125% = 0.0 KVA AMPACITY = 00 0% 0% 0% 0.0 KVA × 100% = 370.8 KVA AMPACITY =	LIGHTING RECEPTACLES	0 0	0 0	0 0		LIGHTING RECEPTA	CLES	0.0	KVA	x 125% =	0.0	KVA									
OTHER 0 0 0 REMAINDER 0.0 KVA x 50% = 0.0 KVA AMPACITY = GENERAL 0 0 0 MOTORS 446.0 TOTAL 123,600 123,600 123,600 LARGEST 0.0 KVA x 125% = 0.0 KVA PHASE BALANCE A-B B-C C-A REMAINDER 370.8 KVA x 100% = 370.8 KVA 0% 0% 0% GENERAL 0.0 KVA x 125% = 0.0 KVA AMPACITY = 0% 0% 0% GENERAL 0.0 KVA x 100% = 370.8 KVA AMPACITY =	MOTORS	123,600	123,600	123,600		FIRST 10	KVA	0.0	KVA	x 100% =	0.0	KVA					CONNECT	ED			
GENERAL 0 0 0 MOTORS 446.0 TOTAL 123,600 123,600 123,600 123,600 LARGEST 0.0 KVA x 125% = 0.0 KVA MOTORS HASE BALANCE A-B B-C C-A REMAINDER 370.8 KVA x 100% = 370.8 KVA NEC DEMAND 0% 0% 0% 0% GENERAL 0.0 KVA x 100% = 0.0 KVA AMPACITY =	OTHER	0	0	0		REMAIN	DER	0.0	KVA	x 50% =	0.0	KVA					AMPACITY	/ =			
TOTAL 123,600 123,600 123,600 123,600 LARGEST 0.0 KVA x 125% = 0.0 KVA PHASE BALANCE A-B B-C C-A REMAINDER 370.8 KVA x 100% = 370.8 KVA 0% 0% 0% GENERAL 0.0 KVA x 100% = 0.0 KVA AMPACITY = 0% 0% 0% GENERAL 0.0 KVA x 100% = 0.0 KVA 446.0	GENERAL	0	ñ	0		MOTORS											446 0)			
PHASE BALANCE A-B B-C C-A REMAINDER 370.8 KVA x 100% = 370.8 KVA 0% 0% 0% GENERAL 0.0 KVA x 100% = 0.0 KVA MARCE AMPACITY = 0% 0% 0% GENERAL 0.0 KVA x 100% = 0.0 KVA 446.0	TOTAL	123.600	123.600	123.600		LARGES	г	0.0	к\/Δ	x 125% =	0.0	KVA									
OTHER 0.0 KVA x 100% 0.0 KVA AMPACITY AMPACITY 446.0	PHASE BALANCE	A-R	B-C	C-A		REMAIN) ER	370.8	K\/A	x 100% =	370.8	KVA					NEC DEM4				
0% 0% 0% GENERAL 0.0 KVA x 100% = 0.0 KVA 446.0			50	0.0		OTHER		0.0	KV/A	x 125% =	0.0	KVA					AMPACITY	····=			
		0% (0%	0%		GENERAL		0.0	KVA	x 100% =	0.0	KVA					446.0)			

370.8

TOTAL

KVA

					EXIS	TING	P	ANE	L	BH1									
										Panel N	otes:								
250 /	AMLO.			VOLTAGE	277	480	V			1. CIRC	UIT BR	REAKER MA	ADE SPARE BY		N.				
250 /	A BUS			PHASE	3	PH				2. PRO	VIDE N	EW CIRCU	IT BREAKER I	SPACE TO	MATCH E	XISTING CIR	CUIT BREAK	ERS.	
				WIRE	4	W				3. LOAI	D BASE	ED ON 80%	OF CIRCUIT B	REAKER RA	TING.				
MFR : SQUARE D																			
MTG.: SURFACE		18000	AMPERE S	HORT CIRCUIT RATING	6 (FULLY RATE	D)													
						BRE	AKER				BF	REAKER							
NOTE DESCRIPTION	LTG	RECEPT	MOTORS	OTHER GENERAL	TOTAL	AMP	/ P	сст	PH	ССТ	AMP	/ P	TOTAL	GENERAL	OTHER	MOTORS	RECEPT	LTG DESCRIPTION	NOTE
MECH RM LTG	1,000				1000	20	/ 1	1	А	2	50	1	0					SPARE	1
BSMT CORR, STOR	500				500	20	/ 1	3	В	4		/	0					1	
SPARE					0	20	/ 1	5	С	6		/ 3	0					1	
SPARE					0	20	/ 1	7	А	8	20	1	0					SPARE	1
SPARE					0	20	/ 1	9	В	10		1	0					1	
SPARE					0	20	/ 1	11	С	12		/ 3	0					1	
SPARE					0	20	/ 1	13	А	14	15	1	3322	3,322				EXISTING LOAD	3
SPARE					0	20	/ 1	15	В	16		1	3322	3,322				/	
SPARE					0	20	/ 1	17	С	18		/ 3	3322	3,322				/	
SPARE					0	20	/ 1	19	А	20	20	/ 1	0					SPARE	
SPARE					0	20	/ 1	21	В	22	20	/ 1	0					SPARE	
SPARE					0	20	/ 1	23	С	24	20	/ 1	0					SPARE	
SPARE					0	20	/ 1	25	А	26	20	/ 1	0					SPARE	
SPARE					0	20	/ 1	27	В	28	20	/ 1	0					SPARE	
SPARE					0	20	/ 1	29	С	30	20	/ 1	0					SPARE	
SPACE					0		1	31	А	32		1	0					SPACE	
SPACE					0		1	33	В	34		1	0					SPACE	
SPACE					0		/	35	С	36		/	0					SPACE	
2 EXHAUST FAN			1,330		1330	15	1	37	А	38	50	1	11072	11,072				PANEL BL1	3
EF-CHR			1,330		1330		1	39	В	40		1	11072	11,072				/	
1			1,330		1330		/ 3	41	С	42		/ 3	11072	11,072				/	
PHASE LOADING SUMMARY						PAN	VEL LOAD	ING SU	JMMARY										
LOAD TYPE (VA)	PH A	PH B	PH C	LOAD TYPE		CONNE	CTED		NEC CAL	CULATE	ED								
LIGHTING	1,000.0	500.0	0.0			LOAD K	XVA	I	DEMAND	LOAD									
RECEPTACLES	0.0	0.0	0.0																
MOTORS	1,330.0	1,330.0	1,330.0	LIGHTING		1.5	KVA		x 125% =	1.9	KVA								
OTHER	0.0	0.0	0.0	RECEPTA	CLES														
GENERAL	14,394.0	14,394.0	14,394.0		FIRST 10 KVA	0.0	KVA		x 100% =	0.0	KVA							CONNECTED	
TOTAL (VA)	16,724.0	16,224.0	15,724.0		REMAINDER	0.0	KVA		x 50% =	0.0	KVA							AMPACITY =	
				MOTORS														58.5	
NEC CALCULATED					LARGEST	4.0	KVA		x 125% =	5.0	KVA								
PHASE AMPACITY	62.4	60.1	57.9		REMAINDER	0.0	KVA		x 100% =	0.0	KVA							NEC DEMAND	
				OTHER		0.0	KVA		x 125% =	0.0	KVA							AMPACITY =	
	#REF!			GENERAL		43.2	KVA		x 100% =	43.2	KVA							60.2	
PHASE BALANCE	A-B	B-C	C-A					_	-										
	3%	3%	6%		TOTAL	48.7	KVA			50.0	KVA								

370.8 KVA

GENERAL NOTES: ' PROVIDE NEW UPDATED PANEL DIRECTORIES FOR PANELS THAT ARE INCLUDED IN THIS PROJECT. ' PROVIDE TYPED DESCRIPTIONS OF NEW CIRCUITS BEING INSTALLED. INDICATE NEW SPARES IN PENCIL.

							EXIS	STING		PAN	IEL	BL1									
	100 A MAIN CIRCUIT BREAKER 100 A BUS					Ē	120 3	/ 208 PH	V			Panel f 1. NEV	Votes: / LOA	AD ON EXISTI	NG CIRCUIT BREAKER.						
MFR : SQUARE D MTG. : SURFACE			10000	AMPERE S	SHORT CIF	CUIT RATING	4 G (FULLY RATI	ED)													
								BREAKER				BREAKER		BREAKER	FR						
	N	LTG	RECEPT	MOTORS	OTHER	GENERAL	ΤΟΤΑΙ			20 4	т рн	ССТ	AN	MP / P	TOTAL GENERAL	OTHER	MOTORS	RECEPT	LTG	DESCRIPTION	NOT
FLEC BM BEC		210	NEOLI I	MOTORS	OTTIER	OLNEIVAL	0	20	/ 1	1	Δ	2	20	/ 1		OTTIER	10101010	RECEIT	LIQ		
UH-1 SE WALLE	REC						0	20	/ 1	3		4	20	/ 1	0					DWH-1	
	A REC						0	20	/ 1	5	с С	6	20	/ 1	0					DCP-1	
SPARE	INCO						0	20	/ 1	7	Δ	8	20	/ 1	0					WATER SOFTNER	
							0	20	/ 1	0	R	10	20	/ 1	0					TEMP CTPL PANEL	
WEI DEP							0	60	1	1		10	20	/ 1	0						
							0	00	12	13		14	20	/ 1	0						
							0	20	/ 2	14		14	20	/ 1	0						
							0	20	/ 1	17		10	20	/ 1	0						
	e .				19	0	180	20	/ 1	10		20	50	/ 2	0						
	.5 10N				10	0	100	20	/ 1			20	20	12	0						-
					10		100	40	7 1	2		24	50	/ 2	0						
							0	40	10	2.		24	20	12	0						-
							0	20	12	2:		20	20	1	0					KEVERSE USIVIUSIS	
							0	30	/	21		20		/	0					1	
							0		12	28		30	_	/ 3	0						
SPACE							0		1	3		32		1	0					SPACE	
SPACE							0		1	30	ь в	34	_	1	0					SPACE	
SPACE							0		1	30		30		1	0					SPACE	
SPACE							0		/	31		38		/	0					SPACE	
SPACE							0		1	39	я в	40	_	/	0					SPACE	
SPACE							0			4		42		1	0					SPACE	
PHASE LOADING SUMMA	ARY	511.4				~~~		PAI		DADING	SUMMARY	r Hollin A T									
LOAD TYPE (VA)		PHA	PHB	PHC	LOAD IY	PE		CONNE	CIED		NEC CA		ED								
		0.0	0.0	0.0				LOAD K	ΚVA		DEMAN	D LOAD									
RECEPTACLES		0.0	0.0	0.0							4050										
MOTORS		0.0	0.0	0.0		LIGHTING	0.50	0.0	KVA	4	x 125%	= 0.0) KV/	4							
OTHER		180.0	180.0	0.0		RECEPTA	CLES												0.01115.0		
GENERAL		0.0	0.0	0.0			FIRST 10 KV	A 0.0	KVA	4	x 100%	= 0.0) KVA	4					CONNEC	IED	
TOTAL (VA)		180.0	180.0	0.0			REMAINDER	0.0	KVA	4	x 50% =	- 0.0) KV#	A					AMPACI	Y =	
						MOTORS													1.	0	
NEC CALCULATED				_ ·			LARGEST	0.0	KVA	4	x 125%	= 0.0	V KVA	4							
PHASE AMPACITY		1.9	1.9	0.0			REMAINDER	0.0	KVA	4	x 100%	= 0.0) KV/	4					NEC DEM		
						OTHER		0.4	KVA	A	x 125%	= 0.5	5 KVA	4					AMPACIT	Y =	
	#R	EF!				GENERAL		0.0	KVA	۸	x 100%	= 0.0) KVA	4					1.	2	
PHASE BALANCE		A-B	B-C	C-A																	
	0%	, C)%	0%			TOTAL	0.4	KVA	١		0.5	5 KVA	4							
GENERAL NOTES: PROVIDE NEW UPDATE	D PANEL	DIRECTO	RIES FOR	PANELS TH	IAT ARE IN	CLUDED IN T	HIS PROJECT														

' PROVIDE TYPED DESCRIPTIONS OF NEW CIRCUITS BEING INSTALLED. INDICATE NEW SPARES IN PENCIL.

REMARKS

					٦	RAN	SF	ORM	EF	s s	CI	ЧE	EDU
KEY	PRI FLA	SEC FLA	PRIMAR	۱Y									
	480 V	208 V	СВ		SWITCH	FUSE		CONDUCT	ORS				"C
T15	18.0	41.6	25 A	3 P	30 A 3 P	FRS-R-	25	3 #	10	, 1 #	10	G	3/4
T30	36.1	83.3	45 A	3 P	60 A 3 P	FRS-R-	45	3 #	6	, 1 #	10	G	1
T45	54.1	124.9	70 A	3 P	100 A 3 P	FRS-R-	70	3 #	4	, 1 #	8	G	1-1/4
T75	90.2	208.2	110 A	3 P	200 A 3 P	FRS-R-	110	3 #	1	, 1 #	6	G	1-1/2
T112.5	135.3	312.3	175 A	3 P	200 A 3 P	FRS-R-	175	3 #	2/0	, 1 #	6	G	2
T150	180.4	416.4	225 A	3 P	400 A 3 P	FRS-R-	225	3 #	4/0	, 1 #	4	G	2
NOTES:	1.)	OVERCL	IRRENT I	PROT	ECTION IS S	ZED PER	NEC 4	50.3.					
	2.)	ALL CON	DUCTOR	RS AR	E COPPER.	SEE PLAN	IS FOI	R INCREAS	ED CC	NDUC	ror :	SIZE	S DUE
	3.)	SECONE	ARY BO	NDING	G AND GROU	INDING CC	NDU	CTORS ARE	SIZE	D PER I	NEC	250.	66 ANE
	4.)	DIMENS	ONS, WE	EIGHT	S & BTUH O	JTPUT SH	OWN '	ARE FOR R	EFERI	ENCE C	NLY	. AC	TUAL
	5.)	FOR K-R	ATED TR	RANSF	ORMERS, P	ROVIDE PA	RALL	EL NEUTR/	AL CO	NDUCT	ORS	LUC	GS AT
	6.)	CONDU	T 40% FII	LL RA	TIO IS BASE	D ON EMT.							

THIRD FLOOR

FIRST FLOOR

BASEMENT

PENTHOUSE

SECOND FLOOR

L1C L1B

EXISTING 2000KVA UTILITY TRANSFORMER 12.47KV-480/277V 3000A 3P 6 2 6 $\times 1$

ELECTRICAL ONE-LINE DIAGRAM SCALE: NONE

KEY NOTES: 1. THE CONTRACTOR SHALL METER THE POINTS INDICATED FOR A PERIOD OF 30 DAYS PRIOR TO SUBMITTING FOR PERMIT TO VERIFY EXISTING LOAD. METER SHALL RECORD VOLTAGE, AMPERAGE, KVA, AND POWER FACTOR FOR EACH PHASE AND SUM OF THE PHASES. THE METER SHALL CONTINUALLY AVERAGE THE POWER DEMAND OVER MAXIMUM 15 MINUTE INTERVALS AS REQUIRED BY NEC 220.87. COMPILE A METERING SUMMARY REPORT AND DELIVER RESULTS TO ENGINEER AFTER 7 DAYS AND AFTER 30 DAYS. VERIFY EXISTING LOADS AT AND DOWNSTREAM OF THE METERING LOCATION AND PROVIDE LIST TO ENGINEER OF WHAT LOADS ARE NOT ON DURING THE 30 DAY METERING AND THE REASON WHY. ORGANIZE LIST BY EQUIPMENT NAME. IF ANY LOADS HAVE BEEN

DEMO KEY NOTES:

1. REMOVE CONNECTION TO EXISTING PUMP. PROTECT EXISTING BRANCH CIRCUIT FOR RECONNECTION.

NEW KEY NOTES:

3. CONNECT NEW PUMP TO EXISTING BRANCH CIRCUIT.

