MARICOPA COMMUNITY COLLEGES
RIO SALADO COLLEGE TOWER
THIRD FLOOR REMODEL
2323 W 14th Street, Tempe, AZ 85281
BIDDING SET
FEBRUARY 08, 2021

MCCD BID #3467-2
DWL PROJECT #1831.00

ABBREVIATIONS

"	INCHES
#	NUMBER
&	AND
'	FOOT / FEET
<	LESS THAN
>	GREATER THAN
@	AT
¢	CENTERLINE
Ø	DIAMETER
⊥	PERPENDICULAR
L	ANGLE
ACOUS.	ACOUSTICAL
ACP	ACOUSTICAL CEILING PANEL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADJ.	ADJUSTABLE
AFF, AF	ABOVE FINISH FLOOR
ALT	ALTERNATE
ALUM.	ALUMINUM
ANOD	ANODIZE
APPROX.	APPROXIMATE
ARCH	ARCHITECTURAL/ ARCHITECT
BD	BOARD
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BOT, BTM	BOTTOM
BRG	BEARING
BRKT	BRACKET
BTWN	BETWEEN
C.I.P.	CAST IN PLACE
CBU	CEMENTITIOUS BACKER UNIT
CFCI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED
CI	CAST IRON
CJ	CONSTRUCTION JOINT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
COL	COLUMN
CONC.	CONCRETE
CONN.	CONNECTION
CONSTR.	CONSTRUCTION
CONT.	CONTINUOUS OR CONTINUE
CPT	CARPET
CS	CONCETE, SEALED
CT	CERAMIL TILE
DBL	DOUBLE
DEMO	DEMOLITION
DEPT	DEPARTMENT
DF	DIRNKING FOUNTAIN
DIA	DIAMETER
DIM	DIMENSION
DISC	DISCONNECT
DN	DOWN
DP	DEEP
DR	DOOR
DS	DOWNSPOUT
DTL	DETAIL
DWG	DRAWINGS
E	EAST
EA	EACH
EDF	ELECTRICAL DRINKING FOUNTAIN
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC.	ELECTRICAL
ELEV	ELEVATOR
EP	ELECTRICAL PANEL
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST	EXISTING
EXT	EXTERIOR
FA	FIRE ALARM
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FDN	FOUNDATION
FEC	FIRE EXTINGUISHER CABINET
FF	FACTORY FINISHED
FFE	FINISHED FLOOR ELEVATION
FFL	FINISHED FLOOR LEVEL
FH	FIRE HYDRANT
FIN	FINISH(ED)
FLR	FLOOR
FOB	FACE OF BUILDING
FOC	FACE OF CONRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FR	FIRE RETARDANT
FRT	FIRE RETARDANT TREATED
FS	FLOOR SINK
FT	FOOT/FEET
FTG	FOOTING
FV	FIELD VERIFY
GA	GAGE, GAUGE
GALV	GALVANIZED
GL	GLASS
GWB	GYPSUM WALL BOARD
H	HIGH
HB	HOSE BIB
HC	HANDICAPPED
HGT	HEIGHT
HM	HOLLOW METAL
HORZ	HORIZONTAL
HPL/HPDL	HIGH-PRESSURE DECORATIVE LAMINATE
HTR	HEATER
HVAC	HEATING, VENTILATION & AIR CONDITIONS
ID	INSIDE DIAMETER
IGU	INSULATED GLAZING UNIT
IN	INCH/INCHES
INSUL	INSULATION
INT/INTR	INTERIOR
JAN	JANITOR
JT	JOINT
LAM	LAMINATE(D)
LAV	LAVATORY
LIN	LINOLEUM
LL	LIVE LOAD
LPL	LOW-PRESSURE LAMINATE
LT	LIGHT
MACH	MACHINE
MAX	MAXIMUM
MB	MARKER BOARD
MECH	MECHANIC(AL)
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTL	METAL
N	NORTH
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
NO.	NUMBER
O	OVER
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
P, PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTIC
PLYWD	PLYWOOD
PNL	PANEL
PR	PAIR
PSF	POUNDS PER DQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
QT	QUARRY TILE
R	RISER
RAD	RADIUS
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
REF	REFERENCE
REFR	REFRIGERATOR
REINF	REINFORCED/ REINFORCNING
REV	REVISIONS/ REVISED
RM	ROOM
RO	ROUGH OPENING
S	SOUTH
SC	SOLID-CORE
SCHED	SCHEDULE
SD	SOAP DISPENSER
SECT	SECTION
SHT	SHEET
SHWR	SHOWER
SIM	SIMILIAR
SPECS	SPECIFICATIONS
SQ.	SQUARE
SST	STAINLESS STEEL
ST	STONE
STC	SOUND TRANSMISSION COEFFICIENT
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUC	STRUCTURAL
SUSP	SUSPENDED
SYMM	SYMMETRICAL
T & G	TONGUE AND GROOVE
T, TR	TREAD
T.O.	TOP OF
T.O.C.	TOP OF CONCRETE
T.O.P.	TOP OF PARAPET
T.O.W.	TOP OF WALL
TCA	TILE COUNCIL OF AMERICA
TEL	TELEPHONE
TEMP	TEMPORARY/ TEMPERATURE
TYP.	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VT	VINYL TILE
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WDO, WDW	WINDOW
WH	WATER HEATER
WP	WEATHER PROOF
WSCT	WAINSCOT

PROJECT TEAM

OWNER:

MARICOPA COMMUNITY COLLEGES DISTRICT

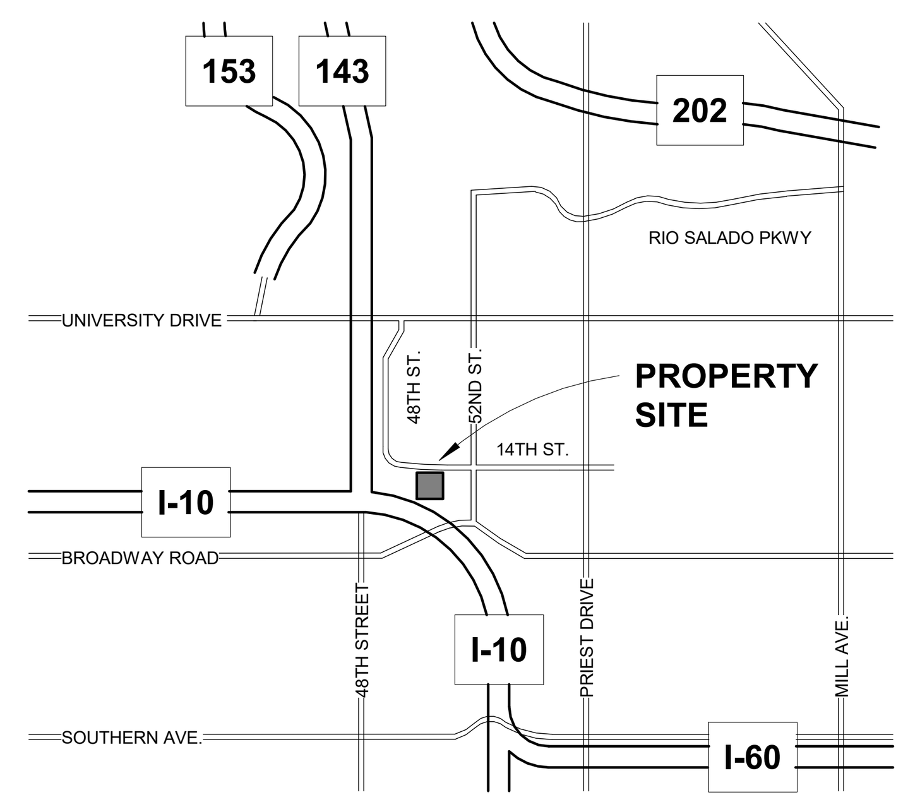
RIO SALADO COLLEGE
2323 W 14th Street,
Tempe, AZ 85281

ARCHITECTURAL:

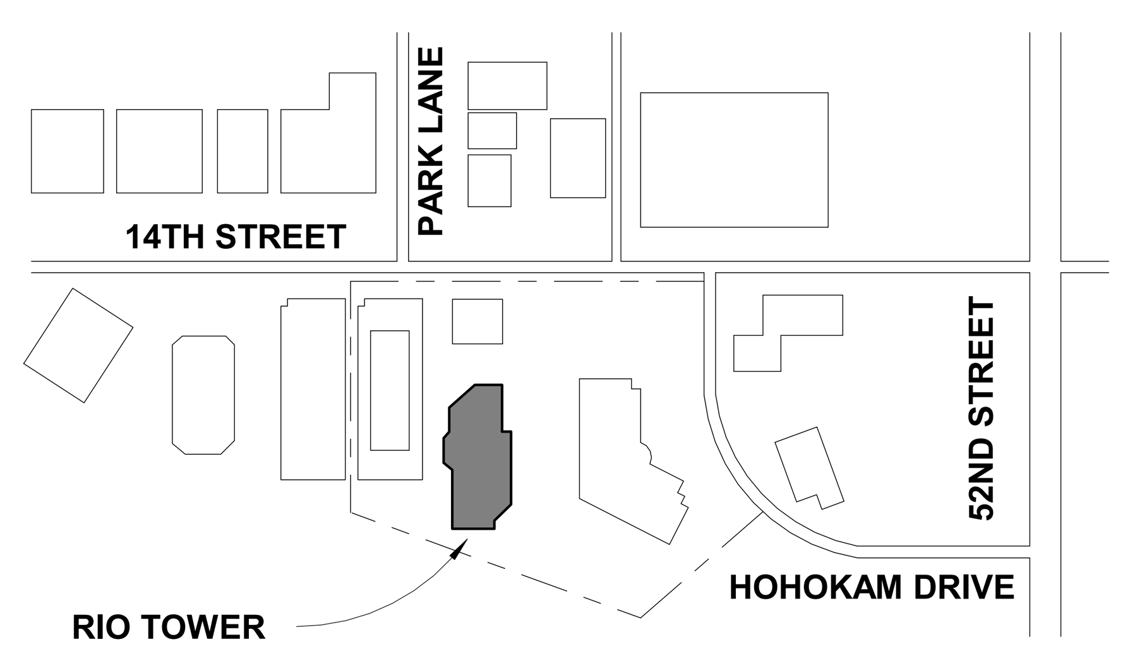
DWL ARCHITECTS + PLANNERS, INC.
2333 N. Central Avenue,
Phoenix, AZ 85004

MECHANICAL / PLUMBING / ELECTRICAL:

ENERGY SYSTEMS DESIGN INC.
7135 E. Camelback Road, Suite 275,
Scottsdale, AZ 85251



VICINITY MAP
NOT TO SCALE



KEY MAP
NOT TO SCALE

SYMBOLS & MATERIALS

- KEYED NOTE
- REVISION SYMBOL
- WINDOW TAG
- NORTH ARROW
- DETAIL REFERENCE
  - Detail Number
  - Sheet Number
- COLUMN GRIDLINES
- ROOM NAME
- ROOM NO.
- WALL INDICATION/ DIRECTION
- DOOR NO.
  - EX-3000 - EXISTING DOOR TO BE SALVAGED AND REUSED. NUMBER REFERENCES NEW LOCATION (DEMO PLANS)
  - D-3000e - REUSED EXISTING DOOR (NEW FLOOR PLANS)
  - D-3000 - NEW DOOR (NEW FLOOR PLANS)
- ASPHALT
- ALUMINUM
- BRICK
- CONCRETE
- CMU
- EARTH
- GRAVEL
- STEEL
- FINISH WOOD
- ROUGH WOOD
- BATT INSULATION
- RIGID INSULATION
- PLYWOOD SHEATHING
- GYPSUM BOARD

DRAWING INDEX

△	LATEST REVISION	ORIG.		DRAWING INDEX
		02/08/2021	G001	PROJECT DATA & DRAWING INDEX
		02/08/2021	G002	CODE ANALYSIS
		02/08/2021	G003	ARCHITECTURAL SPECIFICATIONS
		02/08/2021	G004	ARCHITECTURAL SPECIFICATIONS
		02/08/2021	G005	ARCHITECTURAL SPECIFICATIONS
		02/08/2021	G006	ARCHITECTURAL SPECIFICATIONS
		02/08/2021	A101	DEMOLITION FLOOR PLAN
		02/08/2021	A111	DEMOLITION CEILING PLAN
		02/08/2021	A201	FLOOR PLAN
		02/08/2021	A202	DIMENSION FLOOR PLAN
		02/08/2021	A211	REFLECTED CEILING PLAN
		02/08/2021	A240	INTERIOR ASSEMBLIES
		02/08/2021	A300	RR MOUNTING DIMENSIONS & TOILET STALL TYPES
		02/08/2021	A301	ENLARGED RESTROOM PLAN & ELEVATIONS
		02/08/2021	A400	DOOR SCHEDULE
		02/08/2021	A401	STOREFRONT SCHEDULE
		02/08/2021	A410	DOOR & STOREFRONT DETAILS
		02/08/2021	A500	ROOM FINISH PLAN
		02/08/2021	A510	INTERIOR ELEVATIONS
		02/08/2021	A600	DETAILS
		02/08/2021	A700	FURNITURE LAYOUT
		02/08/2021	M001	MECHANICAL COVER SHEET
		02/08/2021	M002	MECHANICAL SPECIFICATIONS
		02/08/2021	M003	MECHANICAL SCHEDULES
		02/08/2021	M004	MECHANICAL SCHEDULES AND DETAILS
		02/08/2021	M005	MECHANICAL CONTROLS
		02/08/2021	M100	MECHANICAL DEMO PLAN 3RD FLOOR
		02/08/2021	M200	MECHANICAL FLOOR PLAN 3RD FLOOR
		02/08/2021	M300	MECHANICAL PIPING PLAN 3RD FLOOR
		02/08/2021	P000	PLUMBING NOTES AND SPECIFICATIONS
		02/08/2021	P100	PLUMBING DEMO PLAN
		02/08/2021	P200	PLUMBING PLAN - OVERALL 3RD FLOOR
		02/08/2021	P300	ENLARGED PLUMBING PLANS - 3RD FLOOR
		02/08/2021	P400	PLUMBING DIAGRAMS
		02/08/2021	E000	ELECTRICAL SYMBOLS AND NOTES
		02/08/2021	E001	ELECTRICAL SPECIFICATIONS
		02/08/2021	E002	ELECTRICAL LUMINAIRE SCHEDULE
		02/08/2021	E100	ELECTRICAL DEMO POWER PLAN - 3RD FLOOR
		02/08/2021	E101	ELECTRICAL NEW POWER PLAN - 3RD FLOOR
		02/08/2021	E200	ELECTRICAL DEMO LIGHTING PLAN - 3RD FLOOR
		02/08/2021	E201	ELECTRICAL NEW LIGHTING PLAN - 3RD FLOOR
		02/08/2021	E300	ELECTRICAL DEMO HVAC PLAN - 3RD FLOOR
		02/08/2021	E301	ELECTRICAL NEW M&P EQUIP POWER PLAN - 3RD FLOOR
		02/08/2021	E400	ELECTRICAL ONE-LINE DIAGRAM
		02/08/2021	E401	ELECTRICAL PANEL SCHEDULES

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DEE

MARICOPA COMMUNITY COLLEGES
RIO SALADO COLLEGE TOWER:
Third Floor Remodel
2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
PROJECT DATA & DRAWING INDEX

SHEET NUMBER:
G001

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

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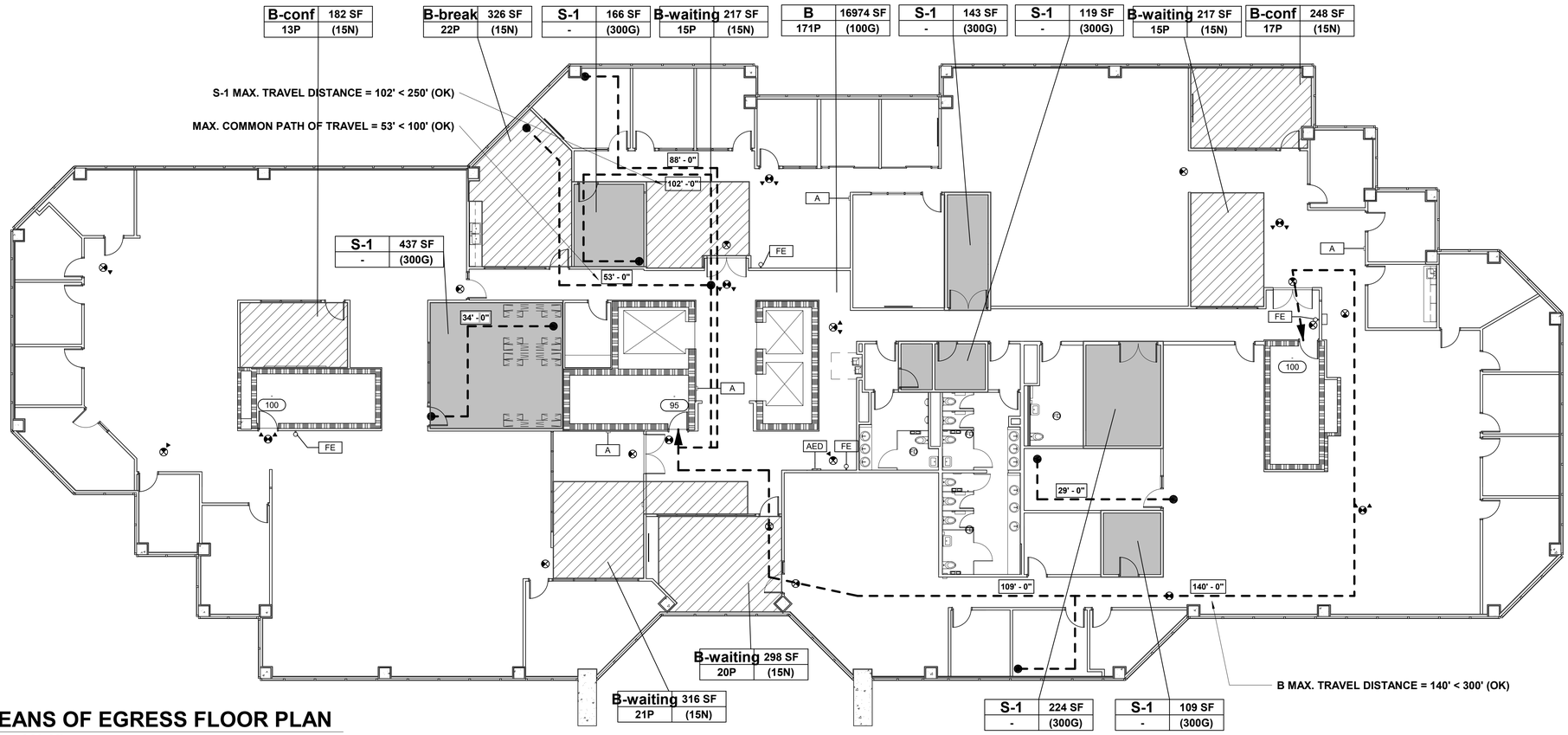

MEANS OF EGRESS FLOOR PLAN
1" = 10'-0"

CODE PLAN LEGEND

X'-0"	ACTUAL TRAVEL DISTANCE
101P	OCCUPANT LOAD SUM AT DOOR OR EXIT
	2 HOUR RATED WALL ASSEMBLY
	EXIT SIGN
FE	FIRE EXTINGUISHER (WALL MOUNTED)
FEC	FIRE EXTINGUISHER CABINET
AED	AED (AUTOMATED EXTERNAL DEFIBRILLATOR) AND HORN
A	"ALERT" WALL MOUNTED DEVICE

MINIMUM PLUMBING FACILITIES

(IBC TABLE 2902.1)

OCCUPANT LOAD:
B = 291 PERSONS (145 MEN + 146 WOMEN)
S-1 = 4 PERSONS (2 MEN + 2 WOMEN)

	MEN				WOMEN			
	WC	(RATIO)	LAV	(RATIO)	WC	(RATIO)	LAV	(RATIO)
B	3.90	(1+1:50)	2.8	(1+1:80)	3.92	(1+1:50)	2.8	(1+1:80)
S-1	0.02	(1:100)	0.02	(1:100)	0.02	(1:100)	0.02	(1:100)
TOTAL	3.92		2.82		3.94		2.82	
REQ'D	4		3		4		3	
PROV'D	**4**		**5**		**7**		**8**	

NOTE: EXISTING DRINKING FOUNTAINS TO REMAIN.

EXITING REQUIREMENTS

REQUIRED EXITS FROM SPACE: (IBC TABLE 1006.2)

(GROUP B, MIXED USE - 296 PERSONS)
2 EXIT REQUIRED (TABLE 1015.1) - **3 PROVIDED**

EXIT ACCESS TRAVEL DISTANCE: (IBC SECTION 1017.2)

MAXIMUM ALLOWABLE DISTANCE (WITH SPRINKLERS) S-1 = 250' ALLOWABLE; B = 300' ALLOWABLE
MAXIMUM ACTUAL DISTANCE S-1 = 102' ACTUAL; B = 140' ACTUAL

COMMON PATH TRAVEL DISTANCE: (IBC SECTION 1016.2.1)

MAXIMUM ALLOWABLE DISTANCE (MIXED USE - WITH SPRINKLERS) B, S-1 = 100' PERMITTED
MAXIMUM ACTUAL DISTANCE = 53' ACTUAL

EXIT DOOR REQUIREMENTS:
(IBC SECTION 1005, SECTION 1010, SECTION 1013)
- DOOR SHALL SWING IN THE DIRECTION OF EGRESS TRAVEL WHERE SERVING AN OCCUPANT LOAD OF 50 OR MORE. (IBC SECTION 1010.1.2.1)
- EGRESS DOORS SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. (IBC 1010.1.9)
- MINIMUM EXIT WIDTH SHALL BE 32" CLEAR (36" NOMINAL DOOR WIDTH).
- PROVIDE TACTILE SIGNS STATING "EXIT" AND COMPLYING WITH ICC A117.1 AT BUILDING EXIT DOORS.

ACCESSIBLE MEANS OF EGRESS: (IEBC SECTION 305.6):
EXCEPTION 1: ACCESSIBLE MEANS OF EGRESS ARE NOT REQUIRED IN ALTERATIONS TO EXISTING BUILDINGS.

ELEVATOR LOBBY: (IBC SECTION 3006):
EXCEPTION 4: ENCLOSED ELEVATOR LOBBIES ARE NOT REQUIRED WHERE THE BUILDING IS PROTECTED BY AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.1 OR 903.3.1.2.

HIGH-RISE BUILDING: (IBC SECTIONS 202, 403):
TOP FLOOR OF THE BUILDING (6TH FLOOR) IS LOCATED 67 FEET ABOVE THE LOWEST LEVEL OF FIRE DEPARTMENT VEHICLE ACCESS.

67FEET < 75 FEET **NOT HIGH-RISE BUILDING**

OCCUPANCY

MIXED USE: NON-SEPARATED OCCUPANCY (IBC 302.1 & 508.3)

OFFICES/ GENERAL USE GROUP B
STORAGE GROUP S-1

TENANT USE: NO CHANGE IN OCCUPANCY OF SPACE

OFFICES/ GENERAL USE GROUP B

OCCUPANCY LOADS (3RD FLOOR):

B	GENERAL OFFICE	16,973 sf	(100 gross)	170 Persons
B	CONF/ WAITING/ BREAK	1,804 sf	(15 net)	121 Persons
S-1	STORAGE	1,198 sf	(300 gross)	4 Persons
TOTAL		19,975 sf		295 Persons

CONSTRUCTION REQUIREMENTS

CONSTRUCTION TYPE (IBC TABLE 601): TYPE I-B, SPRINKLERED

REQUIRED FIRE RESISTANCE
(IBC TABLES 601 & 602, 713.4, 3002)

STRUCTURAL FRAME	2 HR
BEARING WALLS	
EXTERIOR	2 HR
INTERIOR	2 HR
NONBEARING WALLS & PARTITIONS	
EXTERIOR	0 HR X>30'
INTERIOR	0 HR
FLOOR CONSTRUCTION	2 HR
ROOF CONSTRUCTION	1 HR
EXTERIOR DOORS & WINDOWS	NON RATED

FIRE RESISTIVE SYSTEMS RATING:

SHAFT ENCLOSURES	2 HR
EXIT ENCLOSURES	2 HR
ELEVATOR ENCLOSURES	2 HR

FIRE RESISTIVE RATED SEPARATIONS:

OCCUPANCY SEPARATIONS	NONE
MIXED USE NON-SEPARATED OCCUPANCY (IBC 508.3)	
CORRIDOR RATING (IBC TABLE 10120.1)	0 HR

BUILDING CODE INFORMATION

OWNER: MARICOPA COMMUNITY COLLEGES DISTRICT
RIO SALADO COLLEGE

PROJECT ADDRESS: 2323 W. 14TH STREET, TEMPE, AZ 85281

CODES/ ORDINANCES:

2018 INTERNATIONAL BUILDING CODE (IBC)
2018 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
2018 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2018 INTERNATIONAL MECHANICAL CODE (IMC)
2018 INTERNATIONAL PLUMBING CODE (IPC)
2017 NATIONAL ELECTRICAL CODE (NEC)
2012 INTERNATIONAL FIRE CODE (IFC) (
2003 ICC/ANSI A 117.1 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
2018 "FM GLOBAL" INSTALLATION GUIDELINES FOR AUTOMATIC SPRINKLERS

PROJECT SCOPE: ALTERATIONS TO THE EXISTING THIRD FLOOR OF SIX STORY BUILDING: APPROXIMATELY 19,975 SQUARE FEET OF OFFICE SPACE

EXISTING BUILDING ALTERATIONS (IEBC SECTION 305):

- NO CHANGE IN OCCUPANCY PROPOSED.
- NEW DOORS - ACCESSIBLE ROUTE IMPROVEMENTS, SECTION 305.7
  EXCEPTION 1: THE COSTS OF PROVIDING THE ACCESSIBLE ROUTE ARE NOT REQUIRED TO EXCEED 20% OF THE COST OF THE ALTERATIONS AFFECTING THE AREA OF PRIMARY ACTION

THIS PROJECT PROVIDES + TO 20% OF THE ALTERATION COST.

DEFERRED SUBMITTALS

AUTOMATIC FIRE SPRINKLER SYSTEM: (IBC SECTION 903.3.1)

ADJUST EXISTING SPRINKLER SYSTEM TO PROVIDE A FUNCTIONAL SPRINKLER SYSTEM PER NFPA 13 AND ALL APPLICABLE CODES THROUGHOUT THE PROJECT AREA.

FIRE ALARM & DETECTION SYSTEMS: (IBC SECTION 907)

INSTALL A CLASS A FIRE ALARM SYSTEM THROUGHOUT ALL PROJECT AREAS AS REQUIRED FOR A FUNCTIONAL SYSTEM ACCORDING TO ALL APPLICABLE CODES.

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REGISTERED ARCHITECT 22425 MARK ROBERT DEE DATE SIGNED (SHOWN) Arizona U.S.A.

MARICOPA COMMUNITY COLLEGES
RIO SALADO COLLEGE TOWER: Third Floor Remodel
2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE: CODE ANALYSIS

SHEET NUMBER: G002

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

ARCHITECTURAL SPECIFICATIONS

SECTION 01 10 00 - SUMMARY OF WORK

1. Reference Owner issued Project Manual included with Invitation to Bid. This information is applicable currently with documents published by Architect.

2. The Work of the Contract shall include all work indicated or specified unless the work is specifically indicated as “Not in Contract”. Also included is all work which may be necessary to provide water, sewer, telephone and electrical service to the tenant improvement area, including cutting and patching of existing materials to match the original “like new” condition and to meet the requirements of governing municipal authorities.

3. The Work includes alterations within the existing Rio Salado College Tower location.

4. The word “shown”, “indicated”, “noted”, “scheduled”, or words of like effect shall be understood to mean that reference is made to the Drawings.

5. The Owner will have the right to occupy portions of the work area that are completed on or after the specified completion date (even though the Contractor may not have completed the entire Project). Such occupancy by the Owner will not release the Contractor (or bonding agency) from warranties or guarantees and final completion of work in accordance with the Contract documents.

6. Work by Owner includes, items indicated in Section 01010 Summary of Work.

7. Cooperate full with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

SECTION 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION

8. Immediately after execution and before the first partial payment is made, the Contractor shall deliver to the Architect, a Construction Progress Schedule in a form satisfactory to the Architect, showing the proposed dates of commencement and completion of each of the various subdivisions of the work required under the Contract Documents.

9. Submit an itemized breakdown of the costs of the various subdivisions of the work for the purpose of evaluating the work completed during the preceding month and indicate any revisions to the Construction Progress Schedule.

10. Submit monthly, an updated Progress Report indicating work completed during the preceding month and indicate revisions to the Construction Progress Schedule.

SECTION 01 33 00 - SUBMITTAL PROCEDURES

11. Furnish to the Architect, for review, electronic copies (by e-mail) of each sheet of shop drawings and schedules for parts of the work as required. Architect shall return reviewed copy (by e-mail). Contractor shall make additional copies as required from reviewed copy for distribution to subcontractors. .

12. All such drawings and details, when submitted, must bear the stamp of approval of Contractor, bearing checked data, as evidence that such drawings and details have been checked.

13. Do not deliver material to the building site prior to receipt of Architect’s written approval of samples. Furnish materials equal in every respect to approved samples and execute work in conformity.

SECTION 01 50 00 - CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

14. Provide adequate fire extinguishers on the premises during the course of construction, of the type and sizes recommended by the NFPA to control fires resulting from the particular work being performed.

15. Protect elements of construction from any danger of damage from wind, rain, dust, or other infiltration of weather.

16. Exercise all possible care to control excessive noise and dust during the construction to keep these problems to a minimum.

SECTION 01 60 00 – PRODUCT REQUIREMENTS

17. Provide items that comply with the Contract Documents, are undamaged, and are new at the time of installation.

18. Provide products and equipment complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.

19. Do not attach manufacturer’s labels or trademarks, except for required nameplates, on surfaces exposed to view in occupied spaces or on the exterior.

20. Unless otherwise indicated, Architect will select color, pattern, and texture of any product from manufacturer’s full range of options. Some items are indicated “to match existing.” Architect shall be sole judge of match.

21. Reasonable and timely requests for substitutions will be considered. Substitutions include changes proposed by the Contractor after award of the Contract, in products and methods of construction required by the Contract Documents.

22. Do not submit unapproved substitutions on Shop Drawings.

23. Architect will review the proposed substitution and notify Contractor of its acceptance or rejection.

SECTION 01 73 29 - CUTTING AND PATCHING

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

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

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

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

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

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

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

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

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

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

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

35. Flame Cutting: **Do not use cutting torches**.

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

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

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

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

40. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

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

42. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance. Return items to Owner as indicated on drawings.

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

SECTION 02 41 19 – SELECTIVE DEMOLITION

44. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner’s operations will not be disrupted.

45. Coordinate with owner a detailed schedule of demolition. Include the following:

a. Starting and ending dates of each activity. Ensure Owner’s on-site operations are uninterrupted.
b. Interruption of utility services.
c. Coordination for shutoff, capping and continuation of utility services.
d. Coordination of Owner’s continuing occupancy of portions of the existing building and of Owner’s partial occupancy of completed Work.

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

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

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

49. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

50. Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

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

52. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations.

53. Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

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

55. Selective demolition of Roofing:
a. Patch and repair existing roofing according to manufacturer’s recommendations.
b. Match existing roofing materials. Provide materials that are compatible with one another and able to bond to substrate under conditions or service and application required.
c. Protect existing roofing from damage during removal of existing rooftop units and during construction of new units.
d. Protect roofing from damage and wear during remainder of construction period.
e. Do not comprise warranty of existing roof.
f. Perform as designed and installed.
g. Remain watertight.
h. Remain free of manufacturer or installation defects.
i. Remain as a sustainable roof system within specified warranty period.
j. Provide roofing that is watertight and will not permit the passage of water.

SECTION 03 30 10 - MISCELLANEOUS CAST-IN-PLACE CONCRETE

56. Submit for Review:

a. Product data, for each type of product.

57. Concrete materials, mixing, transporting procedures, and tolerances shall conform to requirements of ACI-301 with Type II cement. Minimum 28-day strength shall be 3000 psi.

58. Fly Ash: None permitted.

59. Expansion Joint Filler: ASTM D-1752, Type II preformed non-extruded, resilient type.

60. Vapor Retarder: Comply with manufacturer’s recommendations for patching and repairing existing vapor barriers at locations where existing vapor barrier is damaged. Vapor barriers shall be a minimum 15-mil thick polyolefin (or equivalent), which meets ASTM E 1745 Class A for below building slab-on-grade.

61. When required to correct any unsatisfactory floor surface due to undue settlement, shrinkage or cracking, leveling agent shall be used.

SECTION 05 50 10 – METAL FABRICATIONS

62. The type of miscellaneous metal items include, but are not limited to the following:

a. Miscellaneous framing and supports.
b. Tube steel framing.

63. Use materials of required size and thickness to produce adequate strength and durability of the finished product for the intended use.

64. Comply with AWS “Code for Welding in Building Construction.”

65. Shop paint miscellaneous metal work, except the members or portions of members to be embedded in concrete or masonry and surfaces and edges to be field welded. Apply one shop coat of metal primer paint to fabricated metal items, except apply 2 coats of paint to surfaces, which are inaccessible after assembly or erection.

SECTION 06 10 00 – MISCELLANEOUS CARPENTRY

66. Lumber shall comply with the “American softwood Lumber Standard” PS 20 by the U.S. Department of Commerce. All lumber to be S-Dry and S4S.

67. Plywood shall comply for each use, with the requirements of the U.S. Product Standard PS-1 for “Softwood Plywood/Construction and Industrial”.

68. Provide wood for support or attachment of other work such as cant strips, bucks, mailers, blocking, furring, grounds, and stripping and similar members.

69. Provide blocking of OFOI items. Coordinate locations with Owner.

70. Select proper type and size of anchor or fastener based upon material and finish for each application. Comply with the following:

a. Nails and Staples: FS FF-N-105.
b. Wood Screws: FS FF-S-111.
c. Bolts and Studs: FS FF-B-575.
d. Nuts: FS FF-H-836.
e. Washers: FS FF-W-92.
f. Lag Screws or Lag Bolts: FS FF-B-561.
g. Expansion Shields, Expansion Nails and Drive Screws Devices: FS FF-B-561.
h. Toggle Bolts: FS DD-B-588.
i. Metal Framing Connectors: Simpson.

71. Pressure treat the following items with water borne preservatives for aboveground use, complying with the AWPB LP-2:

a. Wood nailers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete or below grade.

72. For all wood members required by code as fire retardant treated provide pressure impregnation with fire retardant chemicals. Wood shall be identified with a UL label certifying this classification or the FM Diamond.

73. Securely attach carpentry work substrates by anchoring and fastening as shown and as required by recognized standards.

SECTION 06 41 16 – PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

74. Submit for Review:

a. Product data, for each type of product, including panel products, high-pressure decorative laminate, cabinet hardware and accessories.

b. Shop drawings, include plans, elevations, sections, details and attachments to other work. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
2. Show locations and sizes of cutouts and holes for electrical switches and outlets and other items installed in architectural plastic-laminate cabinets.

c. Sample: For each type of exposed finish, submit sample for Architect’s review.

75. The “Quality Standards” of the AWI for Custom grade shall apply.

76. Adhesives: Contact cement.

a. Adhesive for bonding edges: Hot-melt adhesive.

77. Casework with high-pressure laminate finish to be flush overlay design.

a. Horizontal Surfaces Other Than Tops: Grade HGL.
b. Postformed Surfaces: Grade HGP.
c. Vertical Surfaces: Grade VGS.
d. Edges: Grade VGS.

78. Furnish and install all items of casework hardware, including pulls, drawer guides, pivot hinges, shelf standards and locks.

a. Hinges: Installed plum concealed face-framed.
b. Wire pulls: Aluminum finish.
c. Key each area separately, all areas shall be accessible with a single master key. Coordinate areas with Owner.

79. Reference: Casework tag indicated on Drawings corresponds with numerical identification referenced in Architectural Woodwork Standards “Design Ideas,” Cabinet Design Series (CDS.)

SECTION 07 92 00 – JOINT SEALANTS

79. Submittals:
a. Samples of sealant colors. For each kind of color of joint sealant required, provide samples with joint sealants in ½ inch wide joints formed between two 6-inch long strips of materials matching the appearance of exposed surfaces adjacent to joint sealants.
b. Product data: For each joint-sealant product indicated.
c. Joint Sealant Schedule: Proposed joint sealant for each condition indicated. Include color in schedule.

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

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

82. Polyurethane Multi-component polyurethane base, ASTM C 920. Type M, Grad NS, Class 25.

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

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

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

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

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

a. Perimeter of exterior door frames: Polyurethane Sealant of Silicone Sealant.
b. Perimeter of window frames, interior and exterior: Polyurethane Sealant of Silicone Sealant.
c. Perimeter of Louvers and Grilles, interior and exterior: Polyurethane Sealant of Silicone Sealant.
d. Perimeter of interior door frames: Acrylic Latex Sealant.
e. Perimeter of storefront frames, interior and exterior: Polyurethane Sealant or Silicone Sealant.
f. Counter tops at walls or partitions: Acrylic Latex Sealant.
g. At joints created by penetrations in rated wall or floor assembly and fire resistant joints: Fire-stopping Sealant.

88. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

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

SECTION 08 12 16 – INTERIOR ALUMINUM DOORS AND FRAMES

90. Submit for Review:

a. Product data, for each type of product.
b. Shop drawings, include plans, and elevations.
c. Sample: For each type of exposed finish, submit sample for Architect’s review.

91. Manufacturer: Western Integrated Aluminum, Series 315. Finish shall match existing.

92. Deliver interior aluminum frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic. Store interior aluminum frames under cover at Project site.

93. Aluminum Framing: ASTM B 221 (ASTM B 221M), Alloy 6063-T5 or alloy and temper required to suit structural and finish requirements, not less than 0.062 inch (1.6 mm) thick.

94. Door Frames: Extruded aluminum, reinforced for hinges, strikes, and closers.

95. Glazing Frames: Extruded aluminum, for glazing thickness indicate.

96. Door Silencers: Manufacturer's standard continuous mohair, wool pile, or vinyl seals.

97. Glazing Gaskets: Manufacturer's standard extruded or molded plastic, to accommodate glazing thickness indicated.

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MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER:
Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ARCHITECTURAL SPECIFICATIONS

SHEET NUMBER:
G003

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE:	PROJECT NUMBER:
02/08/2021	1831.00

ARCHITECTURAL SPECIFICATIONS, CONT.

SECTION 08 12 16 – INTERIOR ALUMINUM DOORS AND FRAMES (CONT.)

98. Provide concealed corner reinforcements and alignment clips for accurately fitted hairline joints at butted or mitered connections.

99. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

100. Color Anodic Finish, Dark Bronze, AAMA 611 AA-M12C22A42/A44, Class I.

101. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

102. Examine walls, floors, and ceilings, with Installer present, for conditions affecting performance of the Work. Proceed with installation only after it has been verified that unsatisfactory conditions have been corrected.

103. General: Install interior aluminum frames plumb, rigid, properly aligned, and securely fastened in place; comply with manufacturer's written instructions. Set frames accurately in position and plumbed, aligned, and securely anchored to substrates.

104. Clean exposed frame surfaces promptly after installation, using cleaning methods recommended by frame manufacturer and according to AAMA 609 & 610.

105. Relocation of existing frames and doors as recommended by manufacturer.

SECTION 08 14 16 - FLUSH WOOD DOORS

106. Submit for Review:

a. Product data, for each type of product.
b. Shop drawings, include plans, and elevations.
c. Sample: For each type of exposed finish, submit sample for Architect's review.
d. Submit sample of veneer for Architect's review. Match existing veneer.

107. Interior doors shall be solid core wood doors with hardwood veneer finish: Veneer shall match existing.

108. Provide wood doors and related items in accordance with AWI "Quality Standards", Section 1300.

109. Furnish manufacturer's standard "Life of the Installation" guarantee for all interior doors.

110. Solid Core Wood Doors: Flush, 1-3/4 inch thick. Core to be Type PC-5 or 7, particle board.

111. Relocation of existing doors as recommended by manufacturer.

SECTION 08 31 13 – ACCESS DOORS AND FRAMES

112. Submit for Review:

a. Product data, for each type of product.
b. Sample: For each type of exposed finish, submit sample for Architect's review.

113. Medium-Security, Flush Access Doors with Trimless Frames: Fabricated from steel sheet.

a. Locations: Ceiling surfaces.
b. Door: Minimum 0.105-inch- (2.7-mm-) thick sheet metal, flush construction.
c. Frame: Minimum 0.105-inch- (2.7-mm-) thick sheet metal with drywall bead.
d. Hinges: Manufacturer's standard.
e. Lock: Cylinder.
f. Lock Preparation: Prepare door panel to accept cylinder specified in Division 8 Section "Door Hardware."

114. Flush Access Doors with Exposed Flanges:

a. Locations: Wall.
b. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
c. Door Size: As indicated.
d. Uncoated Steel Sheet for Door: Nominal 0.060 inch (1.52 mm), 16 gage.
e. Finish: Factory finish.
f. Frame Material: Same material, thickness, and finish as door.
g. Hinges: Manufacturer's standard.
h. Hardware: Lock.

115. Comply with manufacturer's written instructions for installing access doors and frames.

116. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.

117. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

SECTION 08 41 13 – ALUMINUM-FRAMED STOREFRONTS

118. Install new storefront to match existing. Relocate existing storefront according to manufacturer's written requirements.

119. Submit for Review:

a. Product data, for each type of product and accessories.
b. Shop drawings, include plans, elevations, sections, details and attachments to other work. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
c. Sample: For each type of exposed finish, submit sample for Architect's review.

120. Informational Submittals:

a. Installer's qualifications.
b. Sample of warranty.

121. Installer Qualification: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

122. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

a. Warranty period: Five years from date of Substantial Completion.
b. Finish Warranty period: Ten years from date of Substantial Completion.

123. Comply with manufacturer's specifications and recommendations for installation of aluminum storefront.

124. Framing members, transition members, mullions, adapters and mountings shall be extruded of aluminum alloy and temper consistent of with the method manufacture. Reinforcement according to manufacturer's written recommendation.

a. Sheet Plate: ASTM B 209/ 209M.
b. Extruded Bars Rods, Profiles and Tubes: ASTM B 221/221M.
c. Extruded Structural Pipe and Tubes: ASTM B 249.
d. Structural Profiles: ASTM B 308/B 308M.

125. Glazing: Provide glazing as Specified under "Glazing" Section.

a. Match existing glazing location.
b. Exposed Edges; Machine ground and flat polish. Match existing.

126. Sealants: Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant: ASMT C 920, Type S, Grade NS, Class 25, for uses NT, G and A.

127. Finish: Match existing.

128. Verify actual locations of supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

129. Proceed with installation only after unsatisfactory conditions have been corrected.

130. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance for the Work.

131. Set units plumb, level and true in line without warp or rack of frames, doors or panels. Anchor securely in place. Separate aluminum and other corrodible metal surfaces from sources of corrosion or electrolytic action at points of contact with other materials. Maintain uniform clearances between adjacent components.

132. Remove excess sealant and glazing compounds and dirt from surfaces.

SECTION 08 42 26 – ALL-GLASS ENTRANCES

133. Submit for Architect's review, Product Data and Shop Drawings. Include plans, elevations, sections, construction details, material descriptions, dimensions of individual components and profiles, and finishes for all-glass system. Include hardware, hardware locations, mounting heights and installation requirements.

134. Submit samples of exposed finish indicated. Prepare metal finish in 6-inch long sections.
Prepare class in 6-inch square, showing exposed-edge finish, prepare hardware in each specified finish, full size sample.

135. Submit warranty data. Manufacturer agrees to repair or replace components of all-glass systems that do not comply with requirements or that fail in materials or workmanship within Two years from date of Substantial Completion. Failures include, but are not limited to, the following:

a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
b. Failure of operating components.

136. Include maintenance data and warranty information in maintenance manuals.

137. Basis of Design: Subject to compliance with requirements, provide Manual-Swinging, Tempered Glass Door, B-2010, Series 640C Door with panic hardware, as manufactured by Blumcraft of Pittsburgh, 460 Melwood Avenue, Pittsburgh, PA 15213.

a. Provide ½" tempered, clear glass. Comply with ASTM C 1048, Kind FT, Condition A, tested for surface and edge compression per ASTM C 1048 and for impact strength per 16 CFR 1201 for Category II materials.
b. Exposed Edges: Machine ground and flat polished.
c. Butt Edges: Fat ground.

138. Provide Heavy-duty entrance doors hardware units in sizes, quantities, and type recommended by manufacturer for all-glass entrance systems indicated. For exposed parts, match metal and finish of patch fittings and rail fittings.

139. Concealed Floor Closers and Top Pivots: Center hung; BHMA A156.4, Grade 1; including cases, bottom arms, top walking beam pivots, plates, and accessories required for complete installation. Double acting swing.

140. Concealed Overhead Holder: BHMA A 156.8, Grade 1, with dead-stop setting coordinating with hardware set and concealed floor closer.

141. Push-Pull Set: As indicated in drawings.

142. Threshold: Not more than ½ inch (13 mm) high.

143. Factory assemble components and factory install hardware and fittings to greatest extent possible.

144. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

145. Proceed with installation only after unsatisfactory conditions have been corrected.

146. Install all-glass systems and associated components according to manufacturer's written instructions.

147. Set units level, plumb and true to line with uniform joints.

148. Maintain uniform clearances between adjacent components.

149. Lubricate hardware and other moving parts according to manufacturer's written instructions.

150. Set, seal and grout floor closer cases as required to suit hardware and substrate indicated.

SECTION 08 71 00 - DOOR HARDWARE

151. Submittals: Door Hardware Schedule: Provide a vertical format hardware schedule. Submittal must be prepared by or under the supervision of an AHC. Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

152. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

153. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace component of door hardware that fail in materials or workmanship within specified warranty period.

a. Warranty Period: 2 years from date of Substantial Completion, unless otherwise indicated.
b. Lockets: 10 years.
c. Panic Exit Devices: 3 years.
d. Closers: 30 years.

154. Hardware shall be furnished and installed with cylinders and keys that coordinated with Rio Salado College standard hardware - No substitutions will be accepted.

155. Furnish finish hardware including necessary screws, bolts, or other fastenings of suitable size and type to anchor the hardware in position for heavy use.

156. Lock and latchets to have 2-3/4" basket unless otherwise noted. Cylinders shall be removable with own change key without removing lock from door.

157. Provide closers, exit devices, thresholds and other hardware at doors in conformance with applicable codes and an approved hardware schedule.

158. The Contractor shall be responsible for proper operation and fitting of hardware in locations specified. The hardware supplier shall mark each item of hardware as to description and location of installation in accordance with approved hardware schedule. Exposed surfaces of hardware shall be covered and well protected during installation, so as to avoid damage to finishes.

159. Provide hardware for fire-rated openings in compliance with requirements of NFPA 80. This requirement takes precedence over other requirements for such hardware.

160. Hardware finish shall match existing.

161. Mounting heights shall match existing.

162. Install each hardware item in accordance with the manufacturer's written instructions and recommendations. Set items level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for a secure installation. Space fasteners and anchors as indicated or in accordance with industry standards.

163. Provide floor stops for doors unless wall or other type stops are indicated in the door hardware schedule. Do not mount floor stops where they will impede traffic.

164. Lubricate all moving parts with graphite-type lubricant, unless otherwise recommended by manufacturer. Replace hardware which cannot be lubricated and adjust to operate freely and smoothly.

165. Cylinder and Keying:

a. Acceptable Manufacturer, Stanley Best (BE).
b. Coordinate permanent cores with Owner to key according to the Maricopa Community Colleges Rio Salado standard.

166. Mechanical Locks and Latching Devices:

a. Mortise Locks, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified.
b. Acceptable Manufacturer, Yale Locks and Hardware (YA) – 8800FL Series.
c. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A 156.2, Series 4000, Grade 1 certified.
d. Acceptable Manufacturer, Schlage (SC) – ND Series.

167. Door Closers:

a. Door Closers, Surface Mounted (Commercial Duty): ANSI/BHMA 156.4, Grade 1 certified surface mounted, institutional grade door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use and opening force.

b. Acceptable Manufacturers:
1. Corbin Russin Hardware (RU) – DC6000 Series
2. Norton Door Controls (NO) – 8500 Series
3. Sargent Manufacturing (S) – 1431 Series
4. Yale Locks and Hardware (YA) – 3500 Series

168. Frameless Glass Door Hardware to match existing frameless glass doors. Field verification of top and bottom rail and header sizes is required. Rails, header, concealed overhead closer, pivots as specified in hardware sets. Acceptable Manufacture: CR Laurence (CR).

169. Door Stops and Holders:

a. Door stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers.

b. Acceptable Manufacturers:
1. Hager Companies (HA)
2. Rockwood Manufacturing (RO)
3. Trimco (TC)

170. **Hardware Schedule: As indicated in Drawings.**

SECTION 08 80 00 – GLAZING

171. Submit for Review:

a. Product data, for each type of product provide.
b. Sample: For each type of exposed finish, submit sample for Architect's review.

172. Glass and glazing shall conform to "Safety Standards Architectural Glazing Material," 16 CFR 1201 and to local code requirements. In case of conflict the more stringent requirements shall apply.

173. Watertight and airtight installation of each exterior piece of glass is required. Each installation shall withstand normal temperature changes, wind loading, and impact loading without failure of any kind including loss or breakage of glass.

174. Monolithic Glass: Tested ASTM C 1048 for surface and edge compression and impact strength according to 16 CFR 1201 for category II materials. Provide fully tempered float glass. Provide thickness indicated on drawings.

a. Color: Color shall match existing.

175. Installation to comply with "Glazing Manual" by GANA (Glazing Association of North America), except as shown and specified otherwise by the manufacturer of the glass and glazing materials.

176. Warranty Period: 10 years from date of Final Acceptance.

177. Sealant as recommend by glass manufacturer at butt glazed joints.

SECTION 08 83 00 - MIRRORS

178. Submit for Review:

a. Product data, for each type of product provide.

179. Sizes as indicated on drawings.

180. Glass Mirrors: ASTM C 1503; manufactured using copper-free, low-lead mirror coating process.

181. Clear Glass: Nominal thickness of 4.0 mm. Ultraclear (low-iron) float glass with a minimum 91 percent visible light transmission.

182. Film backing for safety mirrors.

183. Mirror Hardware: Bottom aluminum J-channels and top aluminum J-channels.

184. Mirror Edges: Flat polished.

SECTION 09 21 16 - GYPSUM BOARD

185. Submit for Review:

a. Product data, for each type of product provide.

186. Gypsum Board (Typical): 5/8" thick, regular, tapered edge. Provide Type "X" fire retardant gypsum wall board panels 5/8" thick, tested and qualified for 1-hour rating. Install bullnose cornerbeads in locations indicated on drawings.

187. Provide gypsum wall panels manufactured in accordance with requirements of ASTM 336.

188. Ceiling board: Gypsum board manufactured to have more sag resistance than regular-type gypsum board. Thickness, Not less than ½ inch. Long edges, tapered.

189. Provide blocking and framing for wall mounted finish hardware and equipment, including door stops.

190. Provide channel shaped blocking support or galvanized strip support of wall-hung cabinets, equipment, fixtures and accessories of not less than 22 ga. material. Provide support in wall or partition framing system wherever wall hung cabinets and equipment are indicated on drawings and where required for mounting of miscellaneous items requiring backing.

191. Provide kick bracing in accordance with industry standards for wall studs, ceiling members, draft or smoke stops and curtain walls.

192. Provide metal edge and corner beads at ends, edges, and corners.

193. Fire Rated Assemblies: Type X, 5/8" thick.

194. Wall Texture: Match existing adjacent texture.

SECTION 09 22 16 – NON-LOAD-BEARING STEEL FRAMING

195. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

196. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.

197. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized, unless otherwise indicated.

198. Steel Studs and Runners: ASTM C 645.

a. Minimum Base-Metal Thickness: 0.0296 inch.
b. Depth: As indicated.

199. Metal Studs: Size and gage as indicated on drawings, galvanized metal, 'C' shaped studs at 16" o.c. minimum. Provide channel-shaped roll formed sheet steel members conforming to ASTM C640. Provide 20 gage (structural) at door jambs in accordance with ASTM C 840 framing details and requirements.

CONTINUED ON SHEET G005

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REGISTERED ARCHITECT 22425 MARK ROBERT DEE DATE SIGNED (SHOWN) Arizona U.S.A.

MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ARCHITECTURAL SPECIFICATIONS

SHEET NUMBER:
G004

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE:	PROJECT NUMBER:
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ARCHITECTURAL SPECIFICATIONS, CONT.

SECTION 09 30 00 - TILING

200. Submit for Review:

a. Product data, for each type of product provide.
b. Installation procedures.
c. Sample: For each type of exposed finish, submit sample for Architect's review. Ceramic Tile shall be used in locations indicated on drawings.

201. Provide products indicated on Finish Schedule.

202. Tile Backing Panels: Cementitious backer units, ANSI A118.9 or ASTM C 1325, Type A, in maximum lengths available to minimize end-to -end butt joints.

203. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.

204. TCNA Installation Guidelines: TCNA "Handbook for Ceramic Tile Installation"; comply with TCNA installation methods appropriate for site conditions.

205. Grout tile to comply with the requirements for ceramic tile grouts with ANSI A108.10.

206. Seal tile per manufacturer's written instructions with sealer recommended for the tile installed. Double seal all joints.

207. Install floor tile per TCNA Method No. F205-18 and per tile manufacturer's written requirements.

a. If existing cracks are present, treat according to F-125-FULL requirements.

208. Install wall tile per TCNA Method No. W244C-18 and per tile manufacturer's written requirements.

a. Provide vapor retarder member. Comply with A108.02-3.8.

209. Grout: Provide Epoxy grout complying with ANSI A118.3.

210. Edge profiles: Provide profiles indicated on drawings as manufactured by Schluter Systems or comparable product acceptable to Architect. Finish as selected by Architect.

a. DILEX-AHKA
b. DILEX-AHK/-PHK
c. JOLLY

211. Floor transition profiles: Provide profiles indicated on drawings as manufactured by Schluter Systems or comparable product acceptable to Architect. Finish as selected by Architect.

a. RENO-U

212. Marble Thresholds: ASTM C 503/C 503M, with a minimum abrasion resistance of 10 according to ASTM C 1353 or ASTM C 241/C 241M and with honed finish.

a. Uniform, fine to medium grained white stone with gray veining.

SECTION 09 51 13 – ACOUSTICAL PANEL CEILINGS

213. Submit for Review:

a. Product data, for each type of product provide.
b. Installation procedures.
c. Sample: For each type of exposed finish, submit sample for Architect's review.

214. Standard for Acoustical Ceiling Units: Provide manufacturers' standard units of configuration indicated that comply with ASTM E 1264 classifications as designated by reference to types, patterns, acoustical ratings, and light reflectance, unless otherwise indicated.

a. APC-1 Basis-of-Design: Armstrong World Industries, Inc., "ULTIMA".
1. Classification: Type IV, Form 2, Pattern E.
2. Color: White.
3. LR: 0.90.
4. NRC: 0.75.
5. CAC: 35.
6. Edge/Joint Detail: Beveled Tegular
7. Thickness: 3/4" (15 mm)
8. Modular Size: 24 by 24 inches (610 by 610 mm).

b. APC-2 Basis-of-Design (Mylar Faced): Armstrong World Industries, Inc., "Clean Room Mylar" with "Prelude," 15/16 inch exposed tee grid.
1. Classification: Type IV, Form 2, Pattern G H.
2. Color: White.
3. LR: 0.80.
4. NRC: 0.55.
5. CAC: 35.
6. Edge/Joint Detail: Square,
7. Thickness: 3/4 inch (15 mm).
8. Modular Size: 24 by 24 inches (610 by 610 mm).

215. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper. Gage: Provide wire sized so that stress at 3 times hanger design load (ASTM C 635, Table 1, Direct-Hung), will be less than yield stress of wire, but provide not less than 0.106-inch diameter (12 gage).

216. Edge Moldings and Trim: Manufacturer's standard moldings for edges and penetrations that fit type of edge detail and suspension system indicated.

217. Install acoustical panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

a. Do not use exposed fasteners, including pop rivets or button rivets, on grid face.

SECTION 09 65 13 - RESILIENT BASE

218. Submit for Review:

a. Product data, for each type of product provide.
b. Installation procedures.
c. Sample: For each type of exposed finish, submit sample for Architect's review.

219. Molded rubber cove base top set type shall be 4" high x 1/8" thick.

220. Basis of Design: As indicated on Finish Schedule.

221. Type TS (rubber, vulcanized thermoset.)

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

223. Outside Corners: Job formed.

224. Inside Corners: Job formed.

225. Installation Materials:

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

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

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

228. Do not stretch resilient base during installation.

SECTION 09 65 19 – RESILIENT TILE FLOORING

229. Submit for Review:

a. Product data, for each type of product provide.
b. Installation procedures.
c. Sample: For each type of exposed finish, submit sample for Architect's review.

230. Install according to manufacturer's recommendations. Submit installation procedures for review.

231. Basis of Design: As indicated on Finish Schedule.

232. Colors and Pattern: As selected by Architect from manufacturer's full range.

233. Installation: Glue down as recommended by manufacturer. Prior to installation, examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale and foreign deposits that might interfere with adhesion of floor tile.

a. Prepare substrate according to floor tile manufacturer's written instructions to ensure adhesion to resilient products.
b. Proceed with installation only after unsatisfactory conditions have been corrected.

234. Floor Transition Accessories: Resilient Adapter Moldings, Color: to match resilient floor base.

235. Antimicrobial properties per manufacturer's standard added agents.

236. Slip resistance ASTM D2047, ADA compliant.

237. Warranty: Manufacturer's standard 10 year warranty.

238. Comply with manufacturer's written requirements for cleaning and protection.

239. Cover floor until Substantial Completion.

SECTION 09 68 13 – TILE CARPETING

240. Submit for Review:

a. Product data, for each type of product provide.
b. Installation procedures.
c. Sample: For each type of exposed finish, submit sample for Architect's review.

241. Styles: 24x24-inch square.

242. Basis of Design: As indicated on Finish Schedule.

243. Carpet Backing: As recommended by carpet manufacturer.

244. Carpet Adhesive: Water resistant and non-staining as recommended by carpet manufacturer to comply with flammability requirements for installed carpet.

245. Installation method as indicated on drawings.

SECTION 09 81 00 - ACOUSTICAL INSULATION

246. Sound attenuation blanket shall be fiberglass sound barrier blankets, thickness as indicated, 0.75 PCF density. Material to have fire hazard classification:

Flame Spread 20
Fuel Contributed 15
Smoke Developed 20

247. Install sound attenuation blankets in stud cavities of partitions as indicated. Attach to one layer of wallboard. Butt ends of blankets closely together and fill all voids. Secure according to manufacturer's written instructions. Allow air space between backs of blankets and back of the opposite face layer.

SECTION 09 91 00 - PAINTING

248. Submit for Review:
a. Product data, for each type of paint provided.
b. Sample: For each type of paint system and each color and gloss of topcoat. Submit on rigid backing, 8 inch square minimum.

249. Provide all painting and finishing required for unfinished surfaces.

250. Paint shall be on the Master Painters Institute (MPI) Approved Products List for the use indicated.

251. Before painting, remove hardware, accessories, plates, lighting fixtures and similar items or provide ample protection of such items. On completion of each space, replace above items. Protect adjacent surfaces as required or directed.

252. Perform all work using only experienced, competent painters. Materials, preparation and workmanship shall conform to the requirements of the latest edition of the Architectural Painting Specification Manual by the Master Painters Institute (MPI.) Roll or brush interior work. Apply all paint materials under adequate illumination.

253. Exposed water, gas, waste piping, exposed conduit, lighting panels, telephone terminal boxes and galvanized or insulated ducts, shall be painted in all areas other than mechanical rooms.

254. Paint only when surfaces are clean, dry, smooth and adequately protected from dampness. Each coat of paint shall be well applied, worked out evenly and allowed to dry at least 24 hours before the subsequent coat is applied. Finished work shall be uniform, of approved color, smooth and free from runs, sags, clogging or excessive flooding. Make edges of paint adjoining other materials or colors sharp and clean without overlapping. Where high gloss enamel is used, lightly sand undercoats to obtain a smooth finish coat.

255. Apply 2 coat applications over proper primer, filler or pre-treatment for each Type of surface. Walls shall be gloss level 2, except where flat or matte is indicated. Ceilings shall be flat, gloss level 1.

256. Provide the following paint systems for the substrates indicated: Master Painters Institute (MPI) approved products list can be found on-line at www.paintinfo.com. Products are listed numerically, alphabetically and by category on that web site.

a. Interior Galvanized-Metal Substrates (Electrical conduits, interior sheet metal): Latex over Waterborne Primer System, select topcoat to match gloss of adjacent surfaces, MPI system INT 5.3J.
1. Prime Coat: Primer, galvanized, water based, MPI #134.
2. Intermediate Coat: Latex, interior, matching topcoat.
3. Topcoat: Latex, interior, (Gloss Level 2), MPI #44 or (Gloss Level 3), MPI #52 or (Gloss Level 4), MPI #43 or (Gloss Level 5), MPI #54.
b. Interior Galvanized-Metal Substrates: Duct interiors behind louvers, grills and diffusers for a minimum of 460 mm (18") or beyond sight line, whichever is greater, shall be painted using flat black (non-reflecting) paint.
1. Latex over Waterborne Primer System: Flat (not a quality system).
2. Prime Coat: Primer, galvanized, water based, MPI #134.
3. Topcoat: Latex, interior, flat, (Gloss Level 1), MPI #53.
c. Interior Gypsum Board Ceilings and Soffits: Latex System: Flat, MPI system INT 9.2A.
1. Prime Coat: Primer sealer, latex, interior, MPI #50.
2. Intermediate Coat: Latex, interior, matching topcoat.
3. Topcoat: Latex, interior, Flat, (Gloss Level 1), MPI #53.
d. Interior Ferrous Metal: Doors and door frames and other miscellaneous interior ferrous metal (Do not paint factory or shop painted doors and door frames): High-Performance Architectural Latex System: Semi-gloss, MPI system INT 5.1R.
1. Prime Coat: Primer, alkyd, quick dry, for metal, MPI #76.
2. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.
3. Topcoat: Latex, interior, high performance architectural, (Gloss Level 4), MPI # 140.
e. Interior Wood Substrates: Including wood-based panel products and other wood exposed to view (Telephone mounting boards): Latex System: Eggshell, MPI system INT 6.2D.
1. Prime Coat: Primer, latex, for interior wood, MPI #39.
2. Intermediate Coat: Latex, interior, matching topcoat.
3. Topcoat: Latex, interior, (Gloss Level 3), MPI #52.
f. Interior Gypsum Board Substrates: Latex System: Egg-shell, MPI system INT 9.2A.
1. Prime Coat: Primer sealer, latex, interior, MPI #50.
2. Intermediate Coat: Latex, interior, matching topcoat.
3. Topcoat: Latex, interior, eggshell, (Gloss Level 3), MPI #52.
4. Topcoat (where indicated): Latex, interior, semi-gloss, (Gloss Level 5), MPI #54.

SECTION 10 21 00 - TOILET COMPARTMENTS

257. Basis of Design: Subject to compliance with requirements, provide over-head braced Standard Series Partitions as manufactured by Hadrian Inc. or comparable product acceptable to Architect.

a. Stainless steel, #4, brushed.
b. Provide the following accessories:
1. Stainless steel brackets.
2. Stainless steel wrap around hinges
3. Shoes, stainless steel, brushed.
c. Hardware: As required for complete installation.

258. Urinal Screens: Provide wall mounted urinal screens as manufactured by same manufactured as toilet compartments.

259. Submit for Review:

a. Product Data: For each type of product indicated, provide construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.

b. Shop Drawings:
1. Include plans, elevations, sections, and attachment details.
2. Show locations of cutouts for compartment-mounted toilet accessories.
3. Show locations of reinforcements for compartment-mounted grab bars and locations of blocking for surface-mounted toilet accessories.
4. Show locations of centerlines of toilet fixtures.
5. Show locations of connections to structural above and ceiling penetrations.

260. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

261. Comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities for toilet compartments designated as accessible.

262. Materials:

a. Stainless-Steel Sheet: ASTM A666, Type 304, stretcher-leveled standard of flatness.
b. Stainless-Steel Castings: ASTM A743/A743M.

263. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories, and solid blocking within panel where required for attachment of toilet accessories.

264. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

265. Urinal-Screen Posts: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment at tops and bottoms of posts. Provide shoes and sleeves (caps) posts to conceal anchorage.

266. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging
doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as accessible.

267. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.

a. Confirm location and adequacy of blocking and supports required for installation.

268. Proceed with installation only after unsatisfactory conditions have been corrected.

269. Coordinate layout and installation of supports, inserts, and anchors built into other units of work for toilet compartment anchorage.

270. Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position indicated with manufacturer's recommended anchoring devices.

271. Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches (44 mm) into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

272. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

SECTION 10 28 00 – TOILET AND BATH ACCESSORIES

273. Submit for Architect's review, product data for each accessory.

274. Provide stainless steel units unless noted otherwise.

275. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 0.034-inch (22-gage) minimum thickness.

276. Provide toilet accessories of the same manufacturer for each type of accessory unit and for units exposed in the same areas wherever possible. Stamped names or labels on exposed faces of units will not be permitted.

277. Provide anchors, bolts and other necessary fasteners, and attach accessories securely to walls and partitions. Use concealed fastening wherever possible.

278. Available Manufacturers: Design is based on products manufactured by Bobrick Washroom Equipment, Inc. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. American Specialties, Inc.
b. Bobrick Washroom Equipment, Inc.
c. Bradley Corporation.

279. Accessory Schedule:

a. Bookshelf: Bobrick Model No. B-295 x 24
b. Heavy Duty Clothes Hook: Bobrick Model No. B-211.
c. Grab Bars: Bobrick No. B-6806 Series
d. Sanitary Napkin Disposal: Bobrick No. B-270 surface mounted
e. Framed Mirror: Bobrick No. B-165. Mirror per section 08 83 00

280. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

281. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

282. Adult Changing Table: Subject to compliance with requirements, provide 100SSE-SM (Horizontal Surface Mount) Changing Table as manufactured by Foundations Worldwide, Inc.; or comparable product acceptable to Architect.

a. Full body 16-gauge, 304 brushed stainless steel, seamless welds.
b. Minimum capacity: 400 lbs.
c. Length: 62 inches.
d. Provide the following: Foundations Worldwide, Inc. 200-SSLD; stainless steel liner dispenser.

283. Comply with manufacturer's blocking requirements. Provide anchors, bolts and other necessary fasteners, and attach accessories securely to walls and partitions. Use concealed fastening wherever possible.

284. Install according to manufacturers' written instructions. Install units level, plumb, and firmly anchored in locations and at heights indicated.

CONTINUED ON SHEET G006

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Arizona U.S.A.

MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

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ARCHITECTURAL SPECIFICATIONS, CONT.

SECTION 10 44 13 - FIRE EXTINGUISHERS

285. Submit for Review: Product data.

286. Provide fire extinguishers at locations as required by code.

287. Rating of extinguishers to be 5A10BC, multi-purpose chemical type.

SECTION 10 55 00 – MAIL CHUTES

288. Provide mail chute at locations indicated on drawings.
289. Submit for review: Product data and dimensions.

290. Basis of Design: Subject to compliance with requirements, provide Protex Wall-Mount drop box with adjustable through-wall chute as manufactured by Global Equipment Company or comparable product acceptable to Architect.

a. Model EDC-160E Electronic Lock, 12"W x 6"Dx16"H
b. Provide manufacture's recommended mounting hardware.

291. Install according to manufacturer's written requirements.

SECTION 12 21 13 – LOUVER BLINDS

292. Submit for Review:

a. Product data, for each type of product.
b. Sample: For each type of exposed finish, submit sample for Architect's review.

293. Basis of design: Subject to compliance with requirements, provide Riviera horizontal aluminum blinds as manufactured by LEVOLOR or comparable product acceptable to Architect.

a. 1" Horizontal Aluminum Mini Blinds, 6 Gauge, Standard Controls, Color: Dark Bronze

294. Slats: Aluminum; alloy and temper recommended by producer for type of use and finish indicated; with crowned profile and radius corners.

295. Headrail: Formed steel or extruded aluminum; long edges returned or rolled. Headrails fully enclose operating mechanisms on three sides.

296. Manual Lift Mechanism: Lift-Cord Lock: Variable; stops lift cord at user-selected position within blind full operating range. Operator: Extension of lift cord(s) through lift-cord lock mechanism to form cord pull.

297. Manual Tilt Mechanism: Enclosed worm-gear mechanism and linkage rod that adjusts ladders, full tilt. Operator, clear plastic-wand.

298. Bottom Rail: Formed-steel or extruded-aluminum tube that secures and protects ends of ladders and lift cords and has plastic- or metal-capped ends.

299. Lift Cords: Manufacturer's standard braided cord.

300. Ladders: Evenly spaced across headrail at spacing that prevents long-term slat sag, braided.

301. Overhead Mounting Brackets: With spacers and shims required for blind placement and alignment indicated. Provide intermediate support brackets to produce support spacing recommended by blind manufacturer for weight and size of blind.

302. Install level, plumb, aligned and centered on opening. Install according to manufacturer's written requirements.

303. Clean and protect after installation. Replace damaged blinds that cannot be repaired in a manner approved by Architect.

SECTION 12 36 40 - SOILD SURFACING COUNTERTOPS

304. Submit for Review:

a. Product data, for each type of product.
b. Shop drawings, include plans, elevations, sections, details and attachments to other work. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
c. Sample: For each type of exposed finish, submit sample for Architect's review.

305. Provide Solid surface countertop and backsplash in dimensions and profiles indicated on drawings.

306. Material: Homogeneous-filled plastic resin complying with ICPA SS-1.

307. Countertops: 1/2-inch- 12.7-mm- thick, solid surface material with front edge built up with same material.

308. Backsplashes: 1/2-inch- 12.7-mm- thick, solid surface material.

309. Acceptable manufacturers:

a. Corian® by DuPont; www.corian.com
b. Samsung Chemical USA; www.staron.com
c. Wilsonart Contract; www.wilsonartcontract.com

310. Colors and Pattern: As selected by Architect from manufacturer's full range.

311. Fabricate tops with shop-applied edges and backsplashes unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

312. Install with adhesive product recommend by solid surface material manufacturer.

313. Provide Elastomeric Joint Sealant: Silicone ASTM C 920.

314. Install with a tolerance of 1/8 inch in 8 feet, ¼ inch maximum. Do not exceed 1/64-inch difference between planes of adjacent units.

END OF SPECIFICATIONS

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RIO SALADO COLLEGE TOWER: Third Floor Remodel
2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

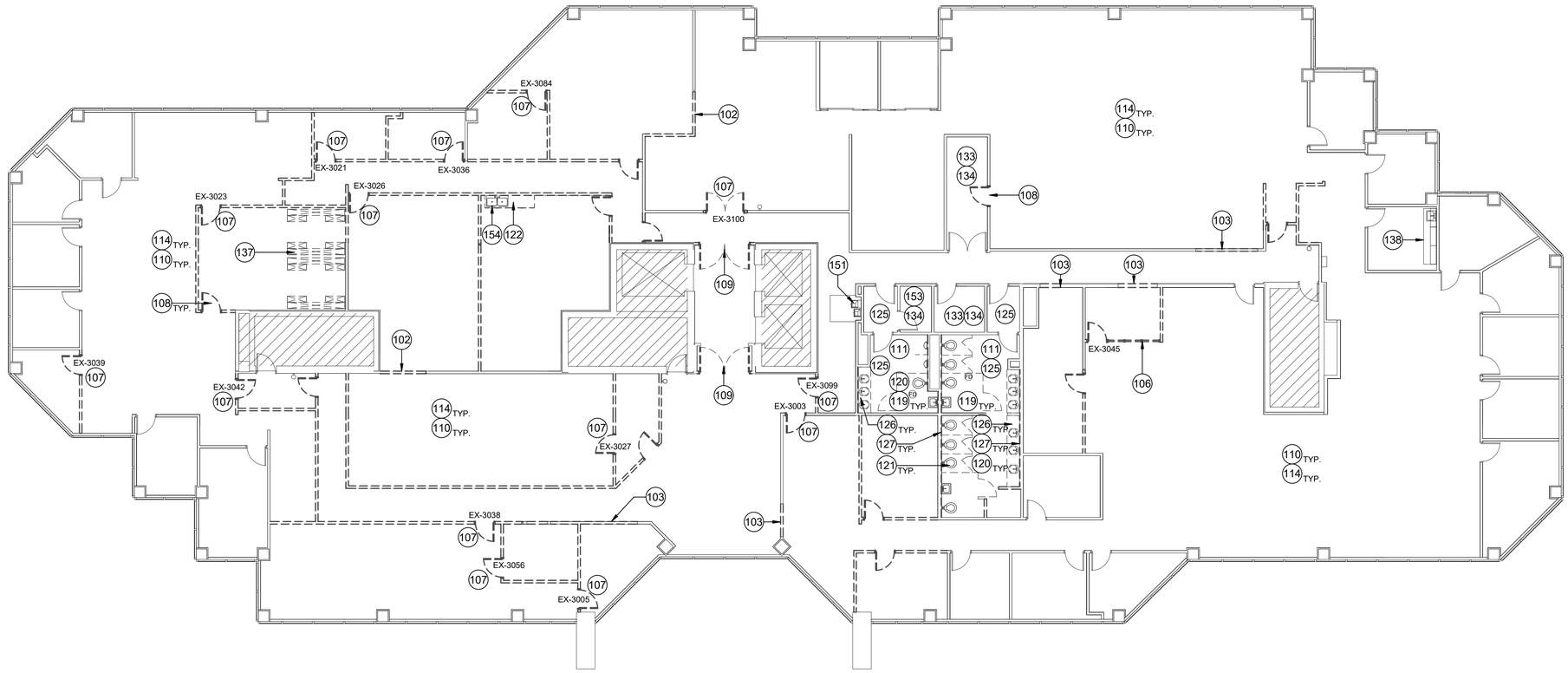
BIDDING SET

KEY:

SHEET TITLE: ARCHITECTURAL SPECIFICATIONS

SHEET NUMBER: G006

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00



DEMOLITION FLOOR PLAN

1" = 10'-0"

0 10 20

SCALE: 1:10

DEMOLITION PLAN LEGEND

EXISTING COMPONENTS DEPICTED BY CONTINUOUS THIN LINE SHALL REMAIN.

EXISTING COMPONENTS DEPICTED BY DASHED BOLD LINE SHALL BE REMOVED, MODIFIED, OR SALVAGED AND REINSTALLED AS INDICATED BY KEYNOTE.

EXISTING SPACE. NOT PART OF THIS PROJECT.

DEMOLITION PLAN NOTES

1. REFER TO MPE DEMOLITION DRAWINGS FOR COMPLETE SCOPE OF DEMOLITION. COORDINATE UNDER FLOOR SLAB DEMOLITION ITEMS WITH OWNER TO ACCESS SECOND FLOOR AREAS. PROTECT EXISTING CEILINGS, FINISHES, EQUIPMENT AND FURNITURE IN THE AFFECTED SECOND FLOOR AREAS.
2. EXISTING CEILINGS TO REMAIN ARE TO BE PROTECTED DURING ALL ABOVE CEILING WORK
3. CONTRACTOR SHALL LOCATE EXISTING CONCRETE SLAB REINFORCEMENT WITH X-RAY (OR APPROVED EQUAL METHOD) PRIOR TO CORING OR DRILLING NEW HOLES FOR ALL NEW PIPES, FLOOR BOXES AND CONDUIT. DO NOT CUT OR DAMAGE EXISTING CONCRETE STRUCTURAL REINFORCEMENT.
4. FIRE ALARM AND AUTOMATIC FIRE SPRINKLER SYSTEMS DESIGNS ARE DEFERRED SUBMITTALS. COORDINATE SCOPE OF DEMOLITION AND EXTENT OF DEVICES TO BE SALVAGED WITH NEW DESIGN.

KEYNOTE LEGEND

102	REMOVE PORTION OF GWB PARTITION
103	REMOVE PORTION OF GWB PARTITION FOR NEW OPENING
106	REMOVE EXISTING GLASS DOOR AND STOREFRONT ASSEMBLY. SALVAGE FOR RE-INSTALLATION
107	REMOVE EXISTING DOOR AND FRAMES ASSEMBLY. SALVAGE FOR RE-INSTALLATION. REFER TO HARDWARE SCHEDULE FOR PORTION OF HARDWARE TO BE REUSED
108	REMOVE DOOR ASSEMBLY AND RETURN TO OWNER. TYPICAL FOR ALL DOORS NOT TO BE REUSED.
109	REMOVE EXISTING DOUBLE DOOR LEAVES. FRAME TO REMAIN, COVER HOLES AT REMOVED HINGE LOCATIONS WITH ALUMINUM PLATES TO MATCH EXISTING FRAME.
110	REMOVE EXISTING FLOORING AND WALL BASES
111	REMOVE EXISTING FLOOR AND WALL TILE
114	REMOVE EXISTING WINDOW COVERINGS AT ALL EXTERIOR STOREFRONT.
119	REMOVE EXISTING TOILET PARTITIONS.
120	REMOVE EXISTING MIRROR, BATHROOM ACCESSORIES AND GARB BARS.
121	REMOVE EXISTING PLUMBING FIXTURES.
122	REMOVE COUNTER, BASE AND WALL CABINETS
125	REMOVE EXISTING WALL PAPER AND PREPARE SURFACE FOR NEW FINISH
126	REMOVE EXISTING COUNTERS, LAVATORIES AND FAUCETS.
127	REMOVE INTERIOR LAYER OF GYP BOARD AT PLUMBING FIXTURES.
133	PROTECT EXISTING EQUIPMENT DURING DEMOLITION. COORDINATE WITH OWNER.
134	EXISTING FLOORING AND BASE TO REMAIN IN THIS AREA
137	EXISTING STORAGE SYSTEM. SALVAGE FOR RELOCATION.
138	EXISTING MILLWORK TO REMAIN. CLEAN AND REPAIR CABINETS
151	EXISTING DRINKING FOUNTAIN TO REMAIN
153	REFER TO PLUMBING DRAWINGS FOR THE EXISTING WATER HEATER DEMOLITION SCOPE.
154	REFER TO PLUMBING DRAWINGS FOR FIXTURE AND PIPING DEMOLITION SCOPE.

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MARICOPA COMMUNITY COLLEGES

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

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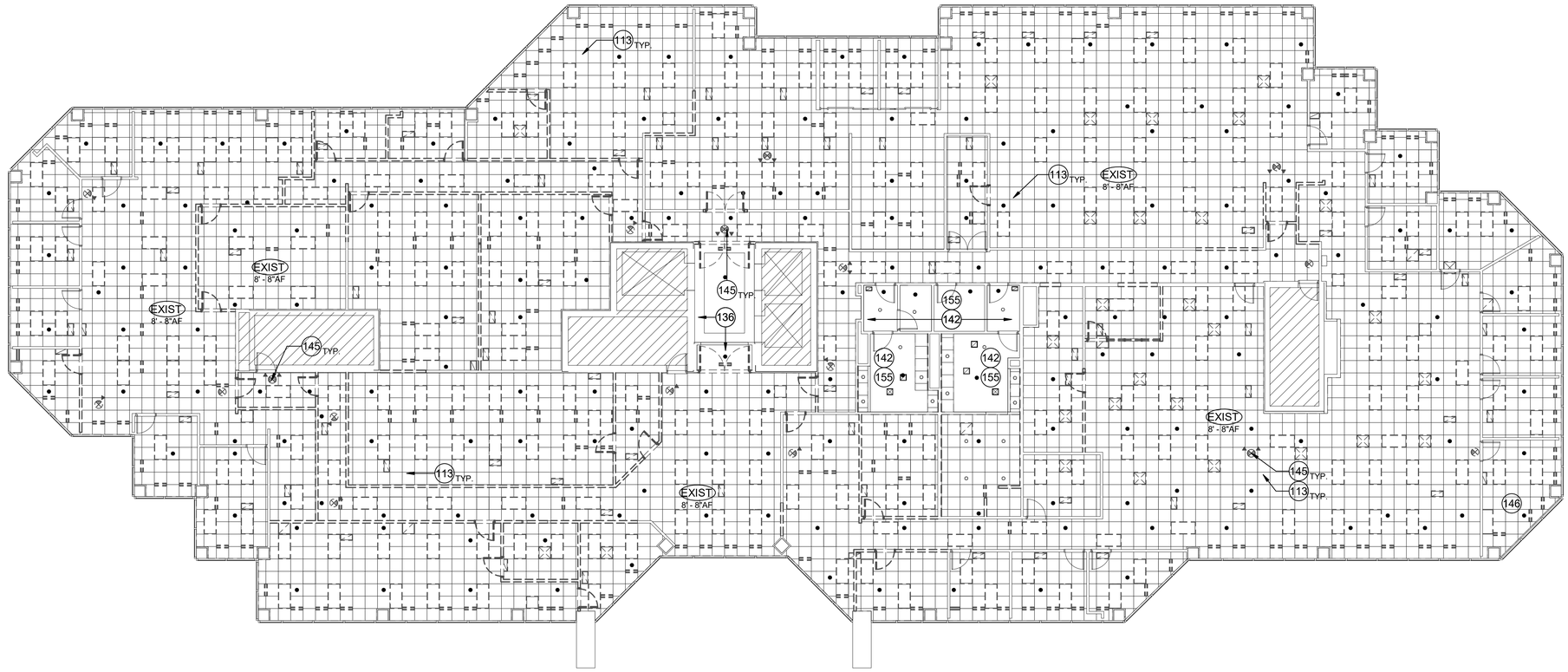

DEMOLITION REFLECTED CEILING PLAN

1" = 10'-0"

0 10 20

SCALE: 1:10

DEMOLITION PLAN LEGEND

EXISTING COMPONENTS DEPICTED BY CONTINUOUS THIN LINE SHALL REMAIN.

EXISTING COMPONENTS DEPICTED BY DASHED BOLD LINE SHALL BE REMOVED, MODIFIED, OR SALVAGED AND REINSTALLED AS INDICATED BY KEYNOTE.

EXISTING SPACE. NOT PART OF THIS PROJECT.

DEMOLITION PLAN NOTES

1. REFER TO MPE DEMOLITION DRAWINGS FOR COMPLETE SCOPE OF DEMOLITION. COORDINATE UNDER FLOOR SLAB DEMOLITION ITEMS WITH OWNER TO ACCESS SECOND FLOOR AREAS. PROTECT EXISTING CEILINGS, FINISHES, EQUIPMENT AND FURNITURE IN THE AFFECTED SECOND FLOOR AREAS.
2. EXISTING CEILINGS TO REMAIN ARE TO BE PROTECTED DURING ALL ABOVE CEILING WORK
3. CONTRACTOR SHALL LOCATE EXISTING CONCRETE SLAB REINFORCEMENT WITH X-RAY (OR APPROVED EQUAL METHOD) PRIOR TO CORING OR DRILLING NEW HOLES FOR ALL NEW PIPES, FLOOR BOXES AND CONDUIT. DO NOT CUT OR DAMAGE EXISTING CONCRETE STRUCTURAL REINFORCEMENT.
4. FIRE ALARM AND AUTOMATIC FIRE SPRINKLER SYSTEMS DESIGNS ARE DEFERRED SUBMITTALS. COORDINATE SCOPE OF DEMOLITION AND EXTENT OF DEVICES TO BE SALVAGED WITH NEW DESIGN.

KEYNOTE LEGEND

113	REMOVE EXISTING SUSPENDED CEILING SYSTEM, IN ENTIRE FLOOR AREA
136	EXISTING GWB CEILING AND FIXTURES TO REMAIN.
142	EXISTING GWB CEILING TO REMAIN. PATCH AS REQUIRED FOR NEW LIGHTING FIXTURE AND DIFFUSERS INSTALLATION
145	EXISTING EXIT SIGNAGE TO BE RELOCATED. SALVAGE UNUSED SIGNS AND RETURN TO OWNER
146	EXISTING CEILING MOUNTED PROJECTOR TO BE REPLACED. REMOVE AND RETURN TO OWNER.
155	REFER TO MPE DRAWINGS FOR THE EXISTING LIGHTING FIXTURES AND DIFFUSERS DEMOLITION SCOPE

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MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER:
Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
DEMOLITION CEILING PLAN

SHEET NUMBER:
A111

DRAWN BY:	REVIEWED BY:
EBL	MRD
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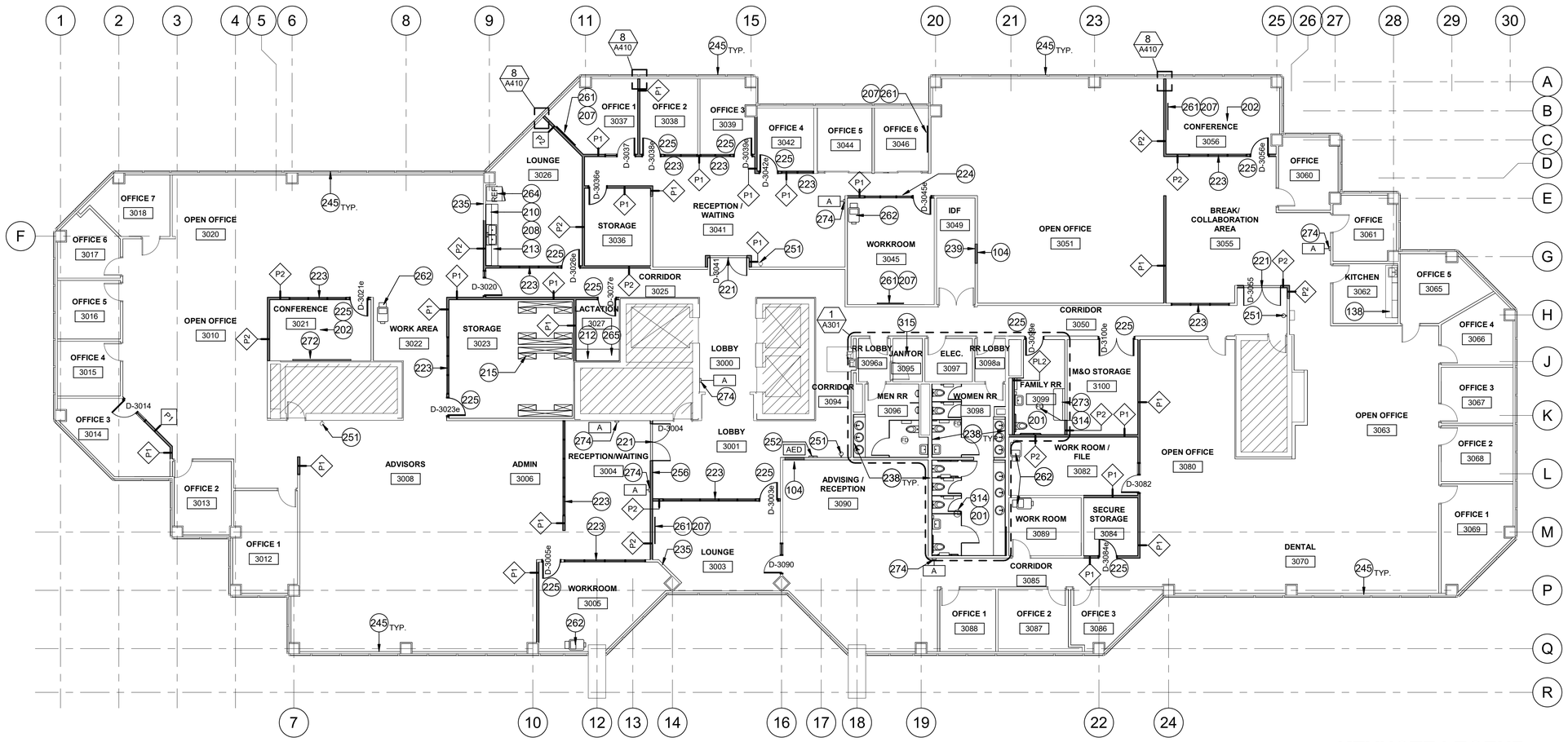

FLOOR PLAN

1" = 10'-0"

NORTH

0 10 20

SCALE: 1:10

FLOOR PLAN LEGEND

EXISTING COMPONENTS DEPICTED BY CONTINUOUS THIN LINE SHALL REMAIN.

NEW COMPONENTS ARE DEPICTED BY CONTINUOUS THICK LINES. NEW WALLS ARE SHOWN SHADED.

EXISTING COMPONENTS DEPICTED BY THIN DASHED LINES ARE BELOW OR ABOVE THIS LEVEL AND ARE SHOWN FOR REFERENCE ONLY.

EXISTING SPACE. NOT PART OF THIS PROJECT.

Px — DENOTES FLOOR, ROOF, CEILING OR WALL TYPE. REFER TO SHEET A240 FOR ADDITIONAL INFORMATION.

FE — FIRE EXTINGUISHER (WALL MOUNTED)

AED — AED (AUTOMATED EXTERNAL DEFIBRILLATOR) AND HORN

A — "ALERT" WALL MOUNTED DEVICE

FLOOR PLAN NOTES

1. CONTRACTOR SHALL LOCATE EXISTING CONCRETE SLAB REINFORCEMENT WITH RADAR PRIOR TO CORING OR DRILLING NEW HOLES FOR ALL NEW PIPES, FLOOR BOXES AND CONDUIT. DO NOT CUT OR DAMAGE EXISTING CONCRETE STRUCTURAL REINFORCEMENT.

2. COORDINATE UNDER FLOOR SLAB WORK FOR PIPING, CORING, CONDUIT WITH OWNER TO ACCESS SECOND FLOOR AREAS. PROTECT EXISTING CEILINGS, FINISHES, EQUIPMENT AND FURNITURE IN THE AFFECTED SECOND FLOOR AREAS.

KEYNOTE LEGEND

104	FILL IN OPENINGS TO MATCH EXISTING WALL ASSEMBLY
138	EXISTING MILLWORK TO REMAIN. CLEAN AND REPAIR CABINETS
201	CORE-DRILL FLOOR SLAB FOR PLUMBING, REFER TO PLUMBING PLAN FOR DETAILS
202	CORE-DRILL FLOOR SLAB FOR FLOOR OUTLETS, REFER TO ELECTRICAL PLAN FOR DETAILS
207	PROVIDE BLOCKING FOR WALL MOUNTED EQUIPMENT. COORDINATE MOUNTING LOCATION w/OWNER
208	PROVIDE BLOCKING FOR WALL MOUNTED CABINETS
210	BASE AND WALL MOUNTED CABINETS.
212	PLASTIC LAMINATE COUNTERTOP AND BACKSPLASH
213	SOLID SURFACE COUNTERTOP AND BACKSPLASH
215	RELOCATED EXISTING STORAGE SYSTEM
221	NEW FRAMELESS GLASS DOOR
223	NEW STOREFRONT SYSTEM. REFER TO SHEET A401 FOR ELEVATIONS.
224	RELOCATED EXISTING STOREFRONT SYSTEM AND DOOR
225	RELOCATED DOOR ASSEMBLY.
235	EXTEND EXISTING PARTITION TO ABOVE CEILING HEIGHT
238	NEW LAYER 5/8" MOISTURE & MOLD RESISTANT GYPSUM BOARD AT REPLACED PLUMBING FIXTURES.
239	ADD BASE TO MATCH EXISTING AT REMOVED DOOR LOCATION
245	PROVIDE WINDOW COVERINGS TO ALL EXISTING EXTERIOR WINDOWS, TYPICAL
251	SURFACE MOUNTED FIRE EXTINGUISHER
252	AED (AUTOMATED EXTERNAL DEFIBRILLATOR) AND HORN (O.F.O.I.)
256	MAIL DROP OFF
261	WALL MOUNTED TV MONITOR / SCREEN (O.F.O.I.)
262	PRINTER / COPIER (O.F.O.I.)
264	REFRIGERATOR (O.F.O.I.)
265	UNDERCOUNTER REFRIGERATOR (O.F.O.I.)
272	WALL MOUNTED WHITEBOARD (O.F.O.I.)
273	ADULT CHANGING TABLE. PROVIDE WALL BACKING. COORDINATE FINAL MOUNTING HEIGHT WITH OWNER
274	"ALERTUS" WALL MOUNTED DEVICE (O.F.O.I.) PROVIDE CONDUIT AND STUB UP INTO ACCESSIBLE CEILING ABOVE. COORDINATE LOCATION w/OWNER
314	NEW FLOOR DRAIN, REFER TO PLUMBING DRAWINGS
315	REFER TO PLUMBING DRAWINGS FOR THE NEW WATER HEATER SCOPE. PATCH EXISTING FINISHES AS REQUIRED FOR NEW INSTALLATION AND PIPING

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE: FLOOR PLAN

SHEET NUMBER: A201

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

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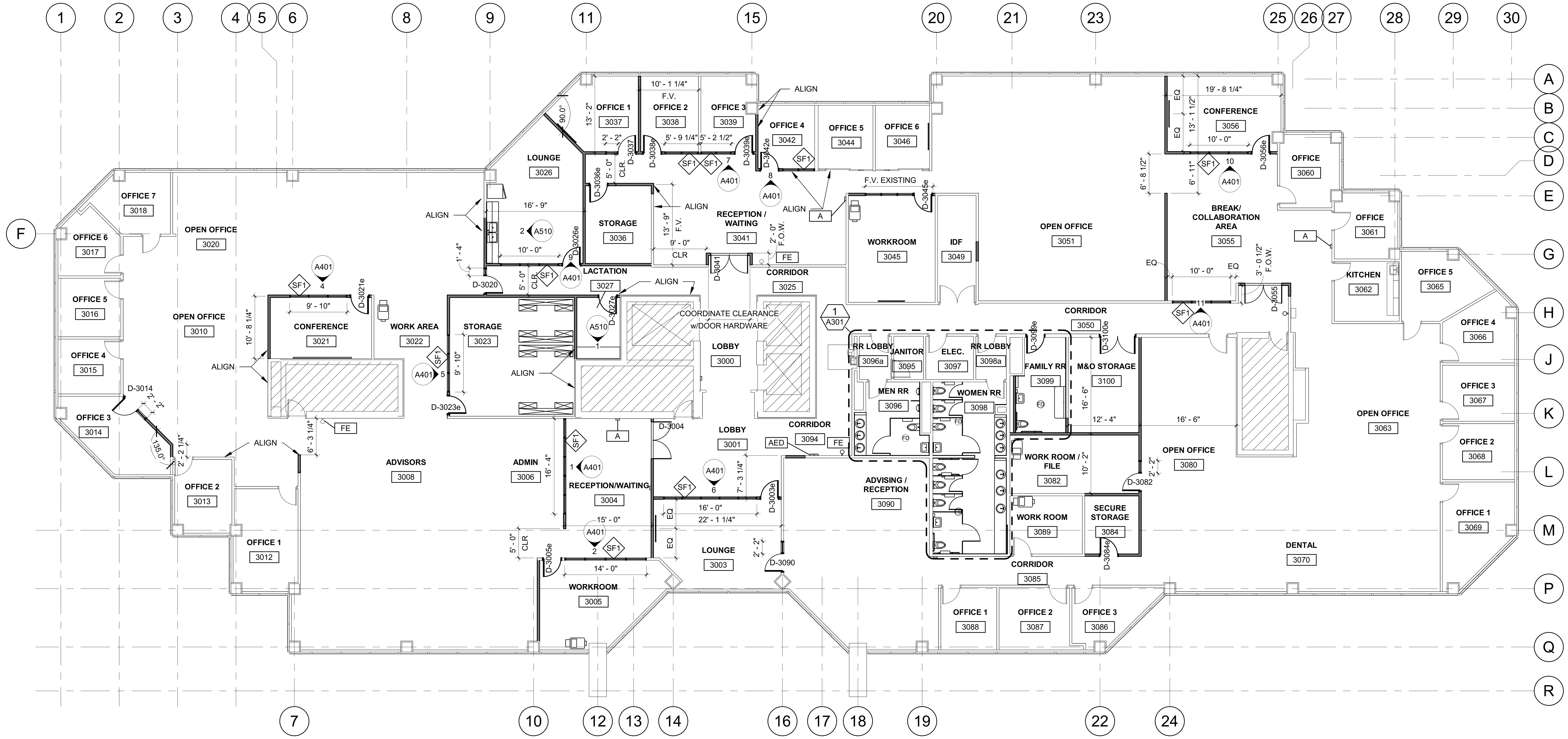

DIMENSION FLOOR PLAN

1" = 10'-0"

0 10 20

SCALE: 1:10

FLOOR PLAN LEGEND

EXISTING COMPONENTS DEPICTED BY CONTINUOUS THIN LINE SHALL REMAIN.

NEW COMPONENTS ARE DEPICTED BY CONTINUOUS THICK LINES. NEW WALLS ARE SHOWN SHADED.

EXISTING COMPONENTS DEPICTED BY THIN DASHED LINES ARE BELOW OR ABOVE THIS LEVEL AND ARE SHOWN FOR REFERENCE ONLY.

EXISTING SPACE. NOT PART OF THIS PROJECT.

Px — DENOTES FLOOR, ROOF, CEILING OR WALL TYPE. REFER TO SHEET A240 FOR ADDITIONAL INFORMATION.

FE — FIRE EXTINGUISHER (WALL MOUNTED)

AED — AED (AUTOMATED EXTERNAL DEFIBRILLATOR) AND HORN

A — "ALERT" WALL MOUNTED DEVICE

DIMENSION PLAN NOTES

1. CONTROL DIMENSIONS ARE AS FOLLOWS UNLESS NOTED OTHERWISE:
   - CENTERLINE OF GRID AT COLUMNS
   - FACE OF MASONRY AT CMU WALLS
   - FACE OF FINISH AT EXTERIOR SIDE OF EXTERIOR WALLS. DIMENSION DOES NOT INCLUDE SILL OR HEAD PROJECTIONS AT OPENINGS
   - FACE OF STUD AT INTERIOR SIDE OF EXTERIOR WALLS.
   - CENTERLINE OF STUD AT INTERIOR PARTITION AND FURRING WALLS.
   - CENTERLINE OF INTERIOR CONCRETE WALLS.
   - CENTERLINE OF WINDOWS AND DOORS FROM WALLS AND GRIDLINES.
   - CENTERLINE OF MULLIONS IN STOREFRONT AND CURTAINWALL SYSTEMS.
2. DOOR OPENINGS NOT LOCATED BY DIMENSIONS SHALL BE CENTERED ON WALLS OR OFFSET WITH 4" CLEAR BETWEEN EDGE OF DOOR AND FACE OF PERPENDICULAR STUD WALL.

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REVISIONS		
No.	Description	Date

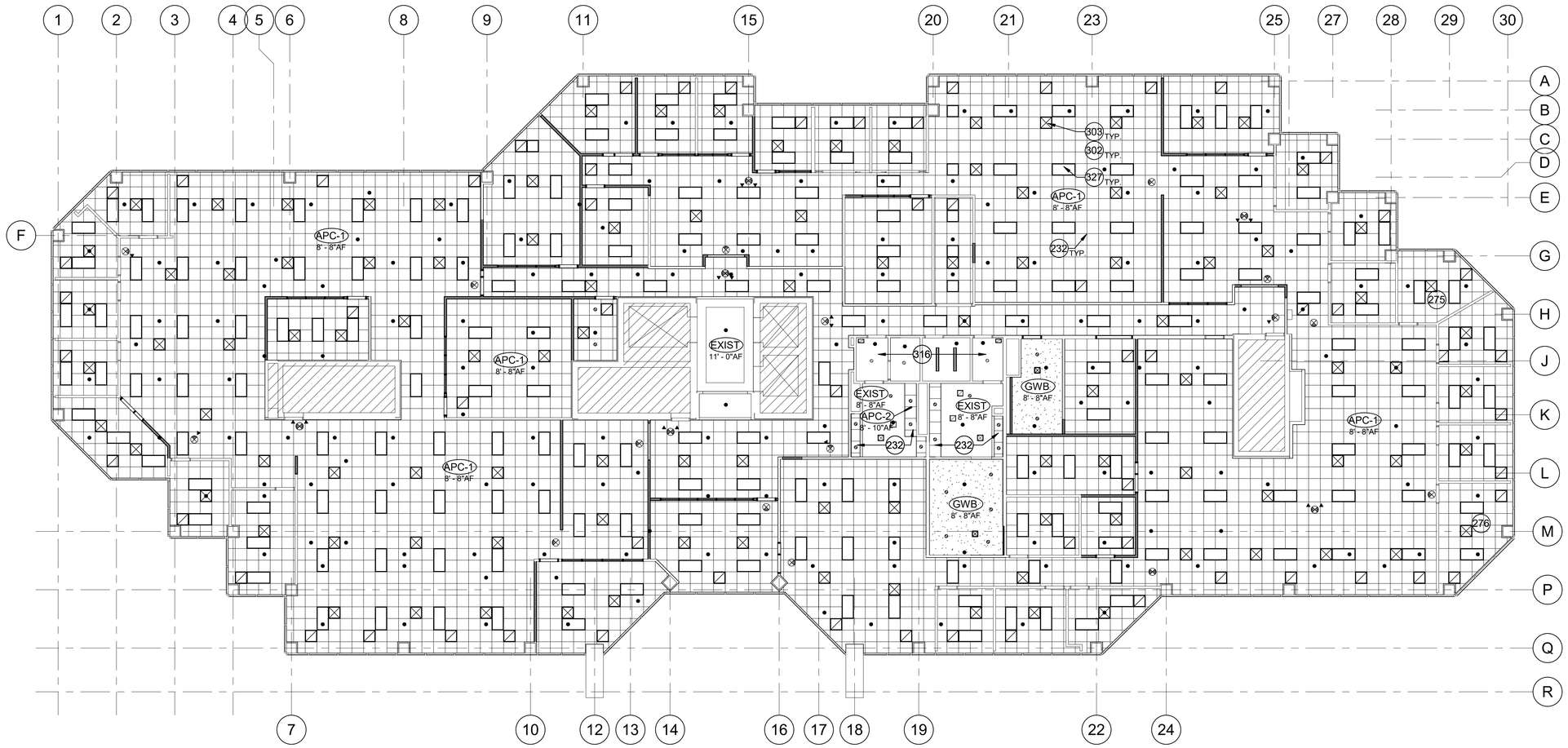
BIDDING SET

KEY:

SHEET TITLE:
DIMENSION FLOOR PLAN

SHEET NUMBER:
A202

DRAWN BY: EBL	REVIEWED BY: MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00



REFLECTED CEILING PLAN

1" = 10'-0"

0 10 20

SCALE: 1:10

REFLECTED CEILING PLAN LEGEND

C 0 / 13' - 10"AF	CEILING TYPE TAG WITH HEIGHT OF CEILING ABOVE FINISHED FLOOR ELEVATION OF FLOOR IMMEDIATELY BELOW.
	2' X 4' (NOM) LIGHT FIXTURE
	2' X 2' (NOM) LIGHT FIXTURE
	RECESSED DOWN LIGHT FIXTURE
	WALL WASHER OR DIRECTIONAL DOWN LIGHT
	EXIT SIGN
	FIRE SPRINKLER HEAD (FIRE SPRINKLER SYSTEM DESIGN BY DEFERRED SUBMITTAL). EXISTING LOCATIONS SHOWN FOR REFERENCE ONLY. FIELD-VERIFY ALL LOCATIONS.
	SUPPLY AIR DIFFUSER
	RETURN AIR GRILLE
	EXHAUST AIR GRILLE
	LINEAR SUPPLY/ RETURN AIR DIFFUSER

KEYNOTE LEGEND

232	NEW ACOUSTICAL CEILING PANELS AND GRID
275	EXISTING PROJECTOR TO BE REPLACED (O.F.O.I.). COORDINATE NEW LOCATION WITH OWNER
276	CEILING MOUNTED PROJECTOR (O.F.O.I) COORDINATE LOCATION AND REQUIREMENTS WITH OWNER.
302	EXISTING AIR PLENUM SPACE ABOVE CEILING. NO EXISTING OR NEW ABS, PB OR CPVC PIPING OR TUBING ALLOWED ABOVE CEILING. CONTRACTOR TO NOTIFY OWNER IF NON-COMPLIANT PIPING OR TUBING DISCOVERED DURING CONSTRUCTION. REFER TO MECHANICAL DRAWINGS FOR DETAILS.
303	NEW DIFFUSERS AND GRILLES. REFER TO MECHANICAL DRAWINGS FOR DETAILS.
316	REFER TO MPE DRAWINGS FOR THE NEW LIGHTING FIXTURES AND DIFFUSERS SCOPE. PATCH EXISTING CEILINGS AS REQUIRED FOR NEW SCOPE
327	NEW LED LIGHTING FIXTURES, TYP.

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
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SHEET NUMBER:
A211

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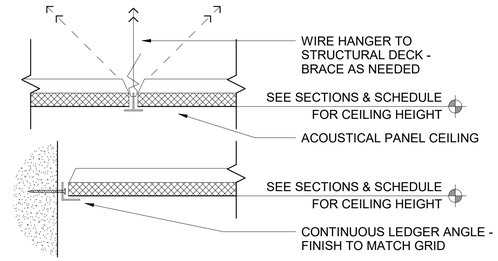
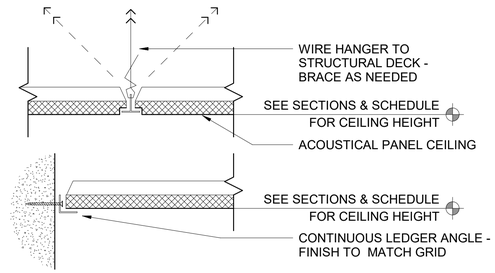
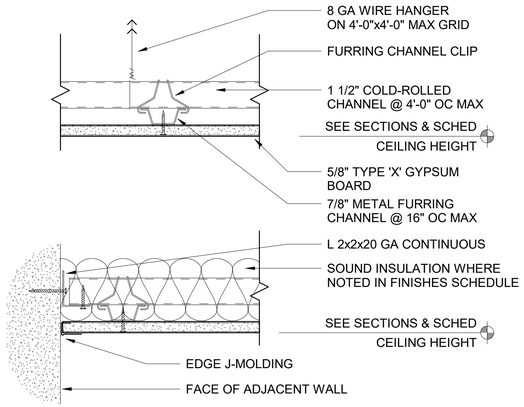


NON PERFORATED, MOISTURE RESISTANT, CLEANABLE CEILING TILES IN RESTROOMS, TYP.

APC2 ACOUSTICAL PANEL CEILING (RR)
3" = 1'-0"



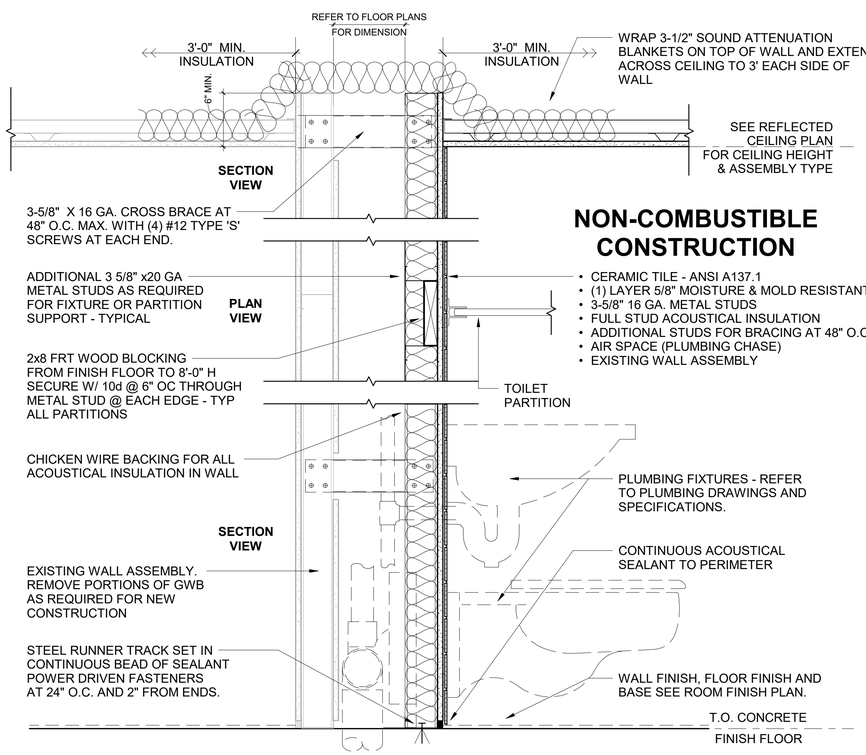
APC1 ACOUSTICAL PANEL CEILING (TYP)
3" = 1'-0"



GWB GYPSUM BOARD (SUSP. ON FRAME)
3" = 1'-0"

WALL TYPE NOTES

1. REFER TO FLOOR PLANS FOR LOCATIONS OF WALLS TYPES
2. WALL ASSEMBLIES ARE SCHEMATIC ONLY - REFER TO SECTIONS, ELEVATIONS, DETAILS, AND SCHEDULES FOR MORE SPECIFIC INFORMATION
3. SPECIAL FINISH MATERIALS, CARPET/FLOORING, BASES, DOORS, ETC, ARE NOT SHOWN FOR CLARITY PURPOSES - REFER TO PLANS, SECTIONS, DETAILS, SPECIFICATIONS AND SCHEDULES FOR ADDITIONAL INFORMATION
4. DETAILS AND NOTES OF SIMILAR CONDITIONS ARE TYPICAL. SIMILAR CONDITIONS MAY NOT BE CALLED OUT AT ALL LOCATIONS
5. PROVIDE TRACK BLOCKING AT ALL WALL-MOUNTED CABINETS, MARKER BOARDS, DISPLAY BOARDS, FIRE EXTINGUISHER CABINETS, WALL-BRACED EQUIPMENT, ETC.

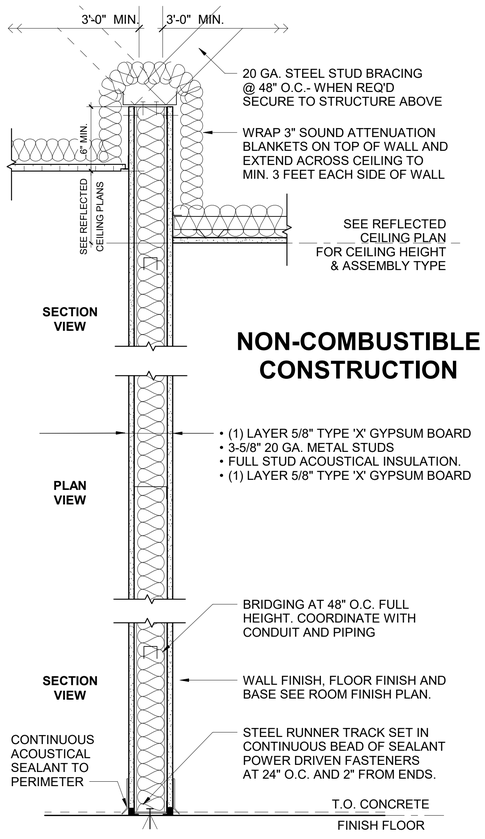


NON-COMBUSTIBLE CONSTRUCTION

- CERAMIC TILE - ANSI A137.1
- (1) LAYER 5/8" MOISTURE & MOLD RESISTANT GYPSUM BOARD
- 3-5/8" 16 GA. METAL STUDS
- FULL STUD ACOUSTICAL INSULATION
- ADDITIONAL STUDS FOR BRACING AT 48" O.C.
- AIR SPACE (PLUMBING CHASE)
- EXISTING WALL ASSEMBLY

* NON-RATED, NON-COMBUSTIBLE WALL FURRING.
* FIRE PROTECTION OF OPENINGS NOT REQUIRED.
* THROUGH & MEMBRANE PENETRATION TO COMPLY w/ AIR-TIGHTNESS REQUIREMENTS.
* NON-BEARING.

PL1 PLUMBING WALL PL1
1 1/2" = 1'-0"



NON-COMBUSTIBLE CONSTRUCTION

* NON-RATED, NON-COMBUSTIBLE WALL
* PROTECTION OF OPENING NOT REQUIRED
* NON-BEARING

P2 PARTITION P2
1 1/2" = 1'-0"

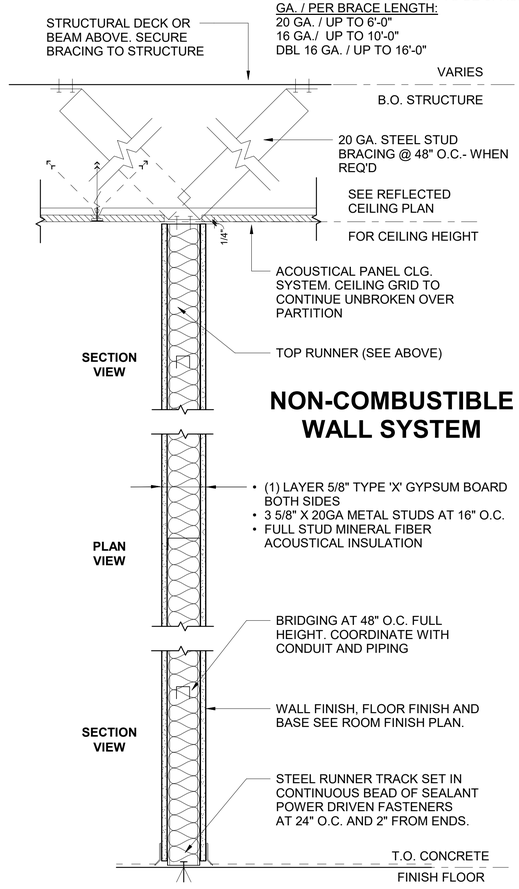
BRACING REQUIREMENTS

NO BRACING REQUIRED FOR:

PTN. LENGTH	TOP RUNNER GA.
UP TO 8'-0"	25 GA.
UP TO 12'-0"	20 GA.
UP TO 16'-0"	16 GA.

WHEN REQUIRED BRACES TO BE SPACED 8'-0" O.C. MAX

GA. / PER BRACE LENGTH:
20 GA. / UP TO 6'-0"
16 GA./ UP TO 10'-0"
DBL 16 GA. / UP TO 16'-0"



NON-COMBUSTIBLE WALL SYSTEM

* NON-RATED, NON-COMBUSTIBLE WALL FURRING.
* FIRE PROTECTION OF OPENINGS NOT REQUIRED.
* NON-BEARING.

P1 PARTITION P1
1 1/2" = 1'-0"

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MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
INTERIOR ASSEMBLIES

SHEET NUMBER:
A240

DRAWN BY:	REVIEWED BY:
EBL	MRD
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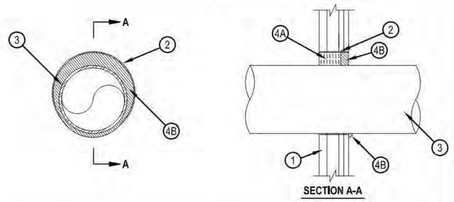
SHAFT WALL PENETRATIONS

System No. W-L-1206

WL 1206

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 and 2 Hr (See Items 1 and 4)	F Rating — 1 and 2 Hr (See Items 1 and 4)
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 1 and 2 Hr (See Items 1 and 4)
	FTH Rating — 0 Hr



1. Wall Assembly — The fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — "C-T" shaped studs 1-5/8 in. (41 mm) wide by 2-1/2 in. (64 mm) deep, fabricated from 25 MSG galv steel, spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — One layer of nom 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner and one or two layers of nom 5/8 in. (16 mm) thick, 4 ft. (1.27 m) wide gypsum board with square or tapered edges. The gypsum board types, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 10-1/2 in. (267 mm).

1A. Wall Assembly — As an alternate to the above wall assembly, the 1 or 2 Hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC.
   B. Gypsum Board* — Thickness, type, number of layers and fasteners as required in the individual Wall and Partition Design. Max diam of opening is 10-1/2 in. (267 mm).

The hourly F, FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. Metallic Sleeve — Max 10-1/2 in. (267 mm) diam cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) thick (28 gauge) galv sheet steel and having a min 1 in. (25 mm) lap along the longitudinal seam. Length of steel sleeve to be equal to thickness of wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum board layers. Sleeve may also be formed of No. 8 steel wire mesh having a min 1 in. (25 mm) lap along the longitudinal seam.

Hilti Firestop Systems

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System No. W-L-1206

WL 1206

3. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. An annular space of min 0 in. (0 mm, point contact) to max 1-7/8 in. (48 mm) is required within firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 8 in. (203 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 8 in. (203 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 4 in. (102 mm) diam steel conduit.
   D. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
   F. Flexible Steel Conduit+ — Nom 2 in. (51 mm) diam (or smaller) flexible steel conduit.
   See Flexible Metal Conduit (DXUZ) category in the Electrical Construction Equipment Directory for names of manufacturers.
4. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 1-5/8 or 2-1/4 in. (41 or 57 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into sleeve on one side of the wall as permanent form for 1 and 2 Hr walls, respectively. Packing material to be recessed from the room side of wall to accommodate the required thickness of fill material. In alternate wall assembly, packing material to be flush with either side of the wall and recessed from the other side of the wall to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material — Sealant* — Min 1-1/2 in. (38 mm) thickness applied within sleeve, flush with the surface of wall. At the point contact location between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe/wall interface.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.
+Bearing the UL Listing Mark

Hilti Firestop Systems

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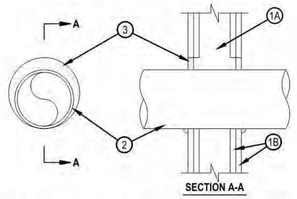
THROUGH-WALL PENETRATIONS

System No. W-L-1054

WL 1054

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings —1 and 2 Hr (See Items 1 and 3)	F Ratings — 1 and 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating (Without Movement) at Ambient — Less Than 1 CFM/sq ft	FH Ratings —1 and 2 Hr (See Items 1 and 3)
L Rating (Without Movement) at 400°F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
M Rating (Movement) — See Table 1	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 5.1 L/s/m2
	L Rating at 204°C — Less Than 5.1 L/s/m2



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. For M Rating, steel studs to be min 3-5/8 in. (92 mm) wide. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 8 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.

The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly. The M Rating is applicable only to 1 hr rated walls.

Hilti Firestop Systems

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System No. W-L-1054

WL 1054

2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) . diam steel conduit.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe..
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX Intumescent Sealant

Movement Direction	Penetrant Item	Nominal Penetrant Diameter	Annular Space	Movement	Sealant Depth	F-Rating	L Rating with Movement
Y	2A, 2C*	2 in.	Max 2-1/4 in.	5%	5/8 in.	1 hr	N/A
Z	2A, 2C*	2 in.	2-1/4 in.	0.25 in.	5/8 in.	1 hr	N/A

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

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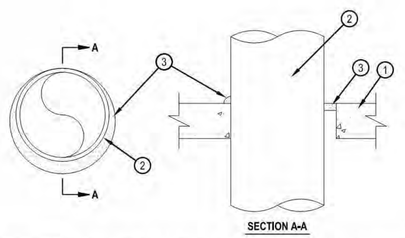
FLOOR METAL PIPE & DRAIN PENETRATIONS

System No. C-AJ-1291

CAJ 1291

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 2 Hr
	FTH Rating — 0 Hr



1. Floor or Wall Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*, Max diam of opening is 30-7/8 in. (784 mm). See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through-Penetrant — One metallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe or conduit and periphery of opening shall be min 0 in. to max 7/8 in. (22 mm). Pipe or conduit to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or conduits may be used:
   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Conduit — Nom 6 in. (152 mm) diam (or smaller) steel conduit.
   F. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT).
3. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. At the point contact location between pipe and concrete, a min 1/4 in. (6 mm) diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

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THROUGH PENETRATIONS OF FIRE-RESISTANCE-RATED WALLS (IBC SECTION 714.4)

FR 9. 714.4.1 Through penetrations. Through penetrations of fire-resistance-rated walls shall comply with Section 714.4.1.1 or 714.4.1.2.
Exception: Where the penetrating items are steel, ferrous or copper pipes, tubes or conduits, the annular spacebetween the penetrating item and the fire-resistance-rated wall is permitted to be protected as follows:
1. ...; or
2. The material used to fill the *annular space* shall prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the *fire-resistance rating* of the construction penetrated.

714.4.1.1 Fire-resistance-rated assemblies. Through penetrations shall be protected using systems installed as tested in the approved fire-resistance-rated assembly.

714.4.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water and shall have an F rating of not less than the required fire-resistance rating of the wall pen-etrated.

FR 10. 714.4.2 Membrane penetrations. Membrane penetrations shall comply with Section 714.4.1. Where walls or partitions are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced. See Code for exceptions

FR 11. 714.4.3 Dissimilar materials. Noncombustible penetrating items shall not connect to combustible items beyond the point of firestopping unless it can be demonstrated that the fire-resistance integrity of the wall is maintained.

FIRE RESISTIVE SYSTEM NOTES

FR 1. When submitting and installing penetration protection systems use most current edition of the listed system. Reports shown in these drawings were correct at the time they were downloaded from the Internet and are for general reference only.

FR 2. Current editions of each penetration protection system are to be maintained on the jobsite (in hardcopy form). Current editions can be downloaded from the underwriters laboratories online directory at the following Internet address:

http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.html

FR 3. INSTALLER QUALIFICATIONS
Installation Responsibility: assign installation of through-penetration firestop systems and fire-resistive joint systems in project to a **single sole source firestop specialty contractor.**

The work is to be installed by a contractor with at least one of the following qualifications:
- Hilti Accredited Fire Stop Specialty Contractor (HAFSC)
- 3M "Master Contractor"
- Hilti "Certified Contractor" with current letter from manufacturer
- 3M "Certified Contractor" with current letter from manufacturer
- UL Approved Contractor
- FM 4991 Approved Contractor

FR 4. ACCEPTABLE MANUFACTURERS
Subject to compliance with through penetration firestop systems (XHEZ), joint systems (XHBN), and perimeter firestop systems (XHDG) listed in Volume 2 of the UL Fire Resistance Directory; provide products of the following manufacturers as identified below:
1. Hilti, Inc., Tulsa, Oklahoma
   800-879-8000/www.us.hilti.com
2. 3M Company, St. Paul, Minnesota
   800-328-1687/www.3m.com/firestop
3. Provide products from the above acceptable manufacturers; no substitutions will be accepted.

THROUGH PENETRATIONS OF HORIZONTAL ASSEMBLIES (IBC SECTION 714.5)

FR 5. 714.5.1 Through penetrations. Through penetrations of horizontal assemblies shall comply with Section 714.5.1.1 or 714.5.1.2.
Exceptions:
1. Penetrations by steel, ferrous or copper conduits, pipes, tubes or vents or concrete or masonry items through a single fire-resistance-rated floor assembly where the annular space is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated. Penetrating items with a maximum 6-inch nominal diameter shall not be limited to the penetration of a single fire-resistance-rated floor assembly, provided that the aggregate area of the openings through the assembly does not exceed 144 square inches in any 100 square feet of floor area.
2.Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes or vents with a maximum 6-inch (152 mm) nominal diameter, provided that the concrete, grout or mortar is installed the full thickness of the floor or the thickness required to maintain the fire-resistance rating. The penetrating items shall not be limited to the penetration of a single concrete floor, provided that the area of the opening through each floor does not exceed 144 square inches.
3.Penetrations by listed electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and installed in accordance with the instructions included in the listing.

FR 6. 714.5.1.1 Fire-resistance-rated assemblies. Through penetrations shall be protected using systems installed as tested in the approved fire-resistance-rated assembly.

FR 7. 714.5.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa). The system shall have an F rating /T rating of not less than 2 HOURS.
Exceptions:
1.Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a T rating.
2.Floor penetrations by floor drains, tub drains or shower drains contained and located within the concealed space of a horizontal assembly do not require a T rating.
3.Floor penetrations of maximum 4-inch (102 mm) nominal diameter metal conduit or tubing penetrating directly into metal-enclosed electrical power switchgear do not require a T rating.

FR 8. 714.5.2 Membrane penetrations. Penetrations of membranes that are part of a horizontal assembly shall comply with Section 714.5.1.1 or 714.5.1.2. Where floor/ceiling assemblies are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.
Exceptions:
1. N/A
2. N/A
3. Membrane penetrations by electrical boxes of any size or type, that have been listed as part of an opening protective material system for use in horizontal assemblies and are installed in accordance with the instructions included in the listing.
4. Membrane penetrations by listed electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the ceiling membrane and the box shall not exceed 1/8 inch unless listed otherwise.

DWL ARCHITECTS+
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Phoenix Arizona 85004
602.264.9731
dwlarchitects.com

REGISTERED ARCHITECT 22425 MARK ROBERT DEE DATE SIGNED (BRUSH) Arizona U.S.A.

MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

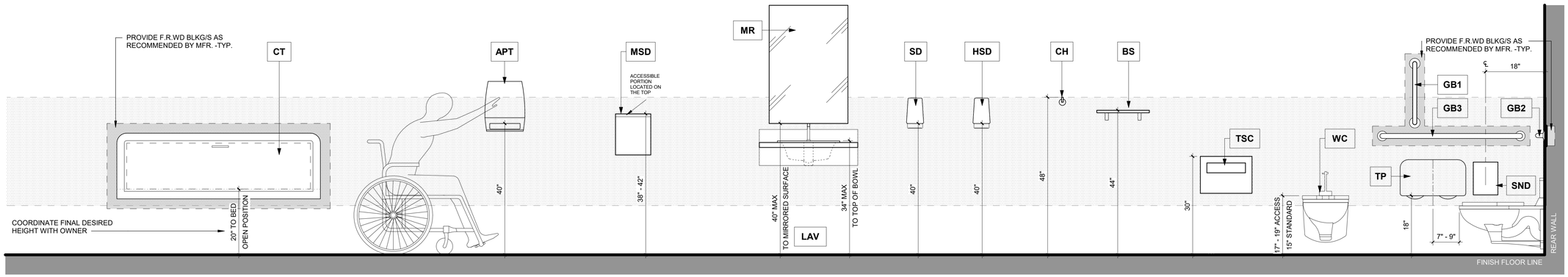
KEY:

SHEET TITLE:
FIRE RESISTIVE ASSEMBLIES

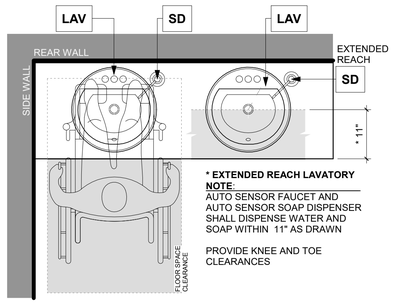
SHEET NUMBER:
A241

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE:	PROJECT NUMBER:
02/08/2021	1831.00

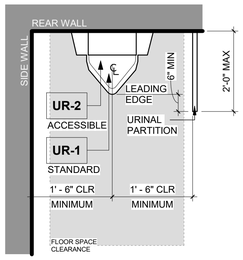
2/8/2021 7:14:39 PM



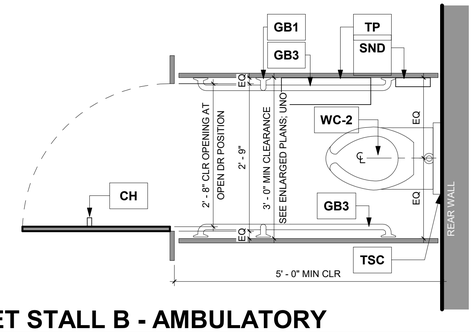
TOILET FIXTURES & ACCESSORIES MOUNTING HEIGHTS



LAVATORY - FLR PLAN



URINAL - FLR PLAN

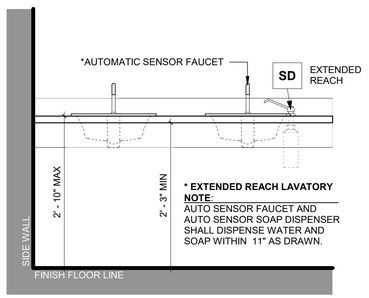


TOILET STALL B - AMBULATORY

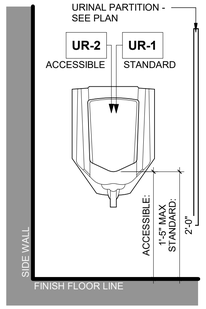
RESTROOM ACCESSORIES LEGEND

* PROVIDE FIRE RETARDANT WOOD BLOCKING/S OR RECOMMENDED BLOCKING/S BY MANUFACTURER FOR STRUCTURAL STABILITY.

APT	* **PAPER TOWEL DISPENSER** - OFOI
BS	* **BOOK SHELF** - BOBRICK B-295 x 24, STAINLESS STEEL
CH	**COAT HOOK** - BOBRICK B-211
CT	* **CHANGING TABLE** - FOUNDATIONS WORLDWIDE, INC.; 100SSE-SM (HORIZONTAL SURFACE MOUNT).
EP	* **EDGE PROTECTION** - SCHLUTER JOLLY, ANODIZED ALUMINUM
GB1	* **GRAB BAR** - 18" - BOBRICK B-6806 SERIES VERTICAL
GB2	* **GRAB BAR** - 36" - BOBRICK B-6806 SERIES HORIZONTAL
GB3	* **GRAB BAR** - 42" - BOBRICK B-6806 SERIES HORIZONTAL
HSD	**HAND SANITIZER DISPENER** - OFOI
LAV	* **LAVATORY SINK** (SEE PLUMBING SCHEDULE FOR DETAILS)
MR	* **MIRROR** - **MR-1 CHANNEL FRAME STAINLESS STEEL** - BOBRICK B-165 - 24"x60" **MR-2 FRAMELESS CONTINUOUS** - SEE ELEV FOR SIZE
MSD	**MEDICAL SHARPS DISPOSAL** - OFOI
SD	**LIQUID SOAP DISPENSER** - OFOI
SND	**SANITARY NAPKIN DISPOSAL** - BOBRICK B-270 SURFACE MOUNTED
TSC	**TOILET SEAT COVER DISPENSER** - OFOI
TP	**TOILET TISSUE DISPENSER** - OFOI
UR	* **URINAL** - **UR-1** STANDARD **UR-2** ACCESSIBLE (HDCP) (SEE PLUMBING SCHEDULE)
WC	* **WATER CLOSET** - **WC-1** STANDARD **WC-2** ACCESSIBLE (HDCP) (SEE PLUMBING SCHEDULE)
WR	**WASTE RECEPTACLE** - OFOI



LAVATORY - ELEV FRNT



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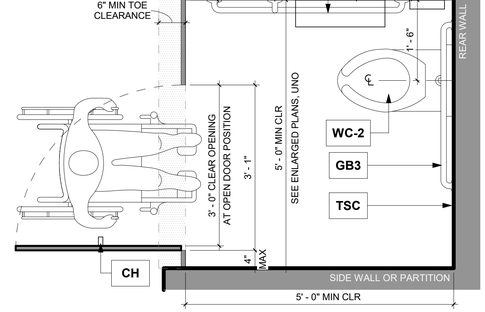
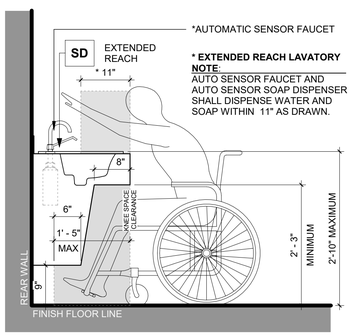


TOILET STALL C- ACCESSIBLE



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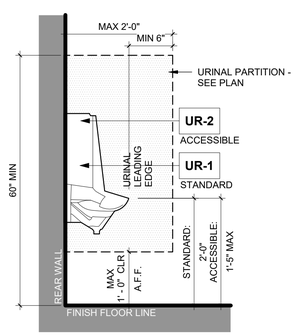

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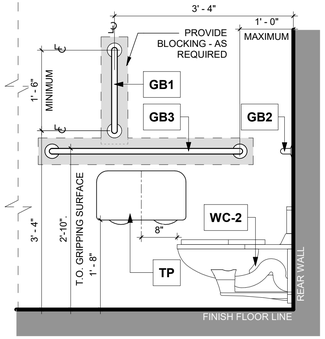
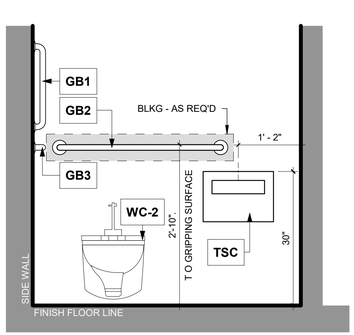


ADA - ELEV SIDE



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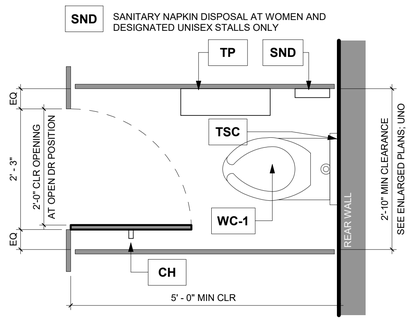


TOILET STALL A - STANDARD

DWL ARCHITECTS+
2333 North Central Avenue
Phoenix Arizona 85004
602.264.9731
dwlarchitects.com

REGISTERED ARCHITECT
22425
MARK ROBERT DEE
DATE SIGNED (SHOWN)
Arizona U.S.A.

MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A **MARICOPA** COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

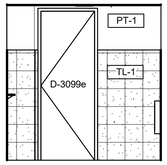
KEY:

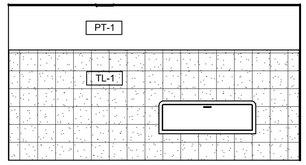
SHEET TITLE:
RR MOUNTING DIMENSIONS & TOILET STALL TYPES

SHEET NUMBER:
A300

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

2/8/2021 7:14:49 PM





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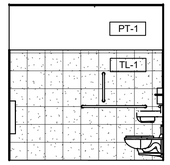

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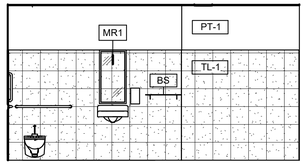
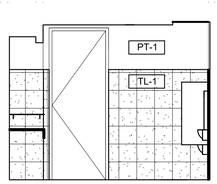
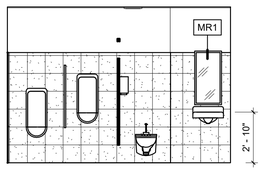


2.4 FAMILY 4

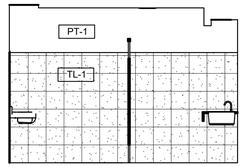
2.1 FAMILY RESTROOM ELEVATIONS

1/4" = 1'-0"

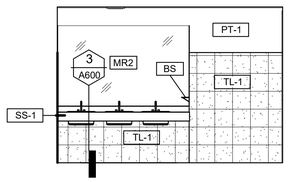




3.2 MEN 2



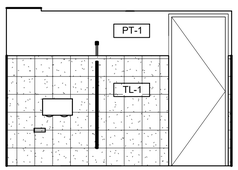
3.3 MEN 3

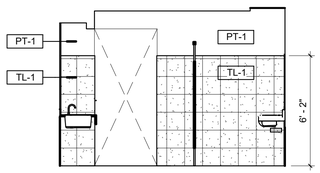


3.4 MEN 4

3.1 MEN RESTROOM ELEVATIONS

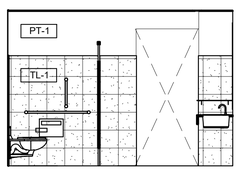
1/4" = 1'-0"



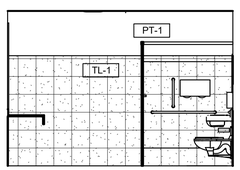


4.1 WOMEN 1

1/4" = 1'-0"



4.3 WOMEN 3



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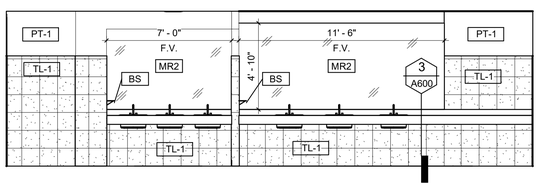
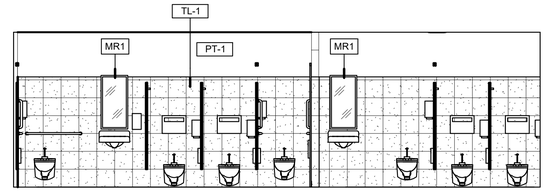
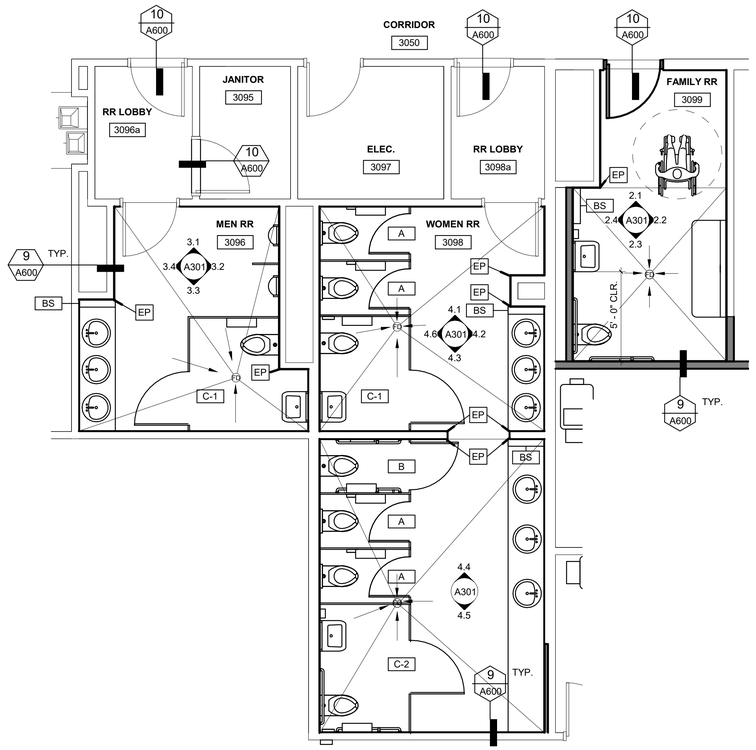


4.2 WOMEN RESTROOM ELEVATIONS

1/4" = 1'-0"



4.6 WOMEN 6



1 RESTROOMS PLAN

1/4" = 1'-0"

RESTROOM ACCESSORIES LEGEND

* PROVIDE FIRE RETARDANT WOOD BLOCKING/S OR RECOMMENDED BLOCKING/S BY MANUFACTURER FOR STRUCTURAL STABILITY.

APT	* **PAPER TOWEL DISPENSER** - OFOI
BS	* **BOOK SHELF** - BOBRICK B-295 x 24, STAINLESS STEEL
CH	**COAT HOOK** - BOBRICK B-211
CT	* **CHANGING TABLE** - FOUNDATIONS WORLDWIDE, INC.; 100SSE-SM (HORIZONTAL SURFACE MOUNT).
EP	* **EDGE PROTECTION** - SCHLUTER JOLLY, ANODIZED ALUMINUM
GB1	* **GRAB BAR** - 18" - BOBRICK B-6806 SERIES VERTICAL
GB2	* **GRAB BAR** - 36" - BOBRICK B-6806 SERIES HORIZONTAL
GB3	* **GRAB BAR** - 42" - BOBRICK B-6806 SERIES HORIZONTAL
HSD	**HAND SANITIZER DISPENER** - OFOI
LAV	* **LAVATORY SINK** (SEE PLUMBING SCHEDULE FOR DETAILS)
MR	* **MIRROR** - **MR-1 CHANNEL FRAME STAINLESS STEEL** - BOBRICK B-165 - 24"x60" **MR-2 FRAMELESS CONTINUOUS** - SEE ELEV FOR SIZE
MSD	**MEDICAL SHARPS DISPOSAL** - OFOI
SD	**LIQUID SOAP DISPENSER** - OFOI
SND	**SANITARY NAPKIN DISPOSAL** - BOBRICK B-270 SURFACE MOUNTED
TSC	**TOILET SEAT COVER DISPENSER** - OFOI
TP	**TOILET TISSUE DISPENSER** - OFOI
UR	* **URINAL** - **UR-1** STANDARD **UR-2** ACCESSIBLE (HDCP) (SEE PLUMBING SCHEDULE)
WC	* **WATER CLOSET** - **WC-1** STANDARD **WC-2** ACCESSIBLE (HDCP) (SEE PLUMBING SCHEDULE)
WR	**WASTE RECEPTACLE** - OFOI

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REGISTERED ARCHITECT 22425 MARK ROBERT DEE DATE SIGNED (DO NOT) Arizona U.S.A.

MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ENLARGED RESTROOM PLAN & ELEVATIONS

SHEET NUMBER:
A301

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

2/8/2021 7:14:57 PM

DOOR ABBREVIATION LEGEND

ALUM	ALUMINUM
WD	SOLID CORE WOOD WITH WOOD VENEER
ALL GLASS	FRAMELESS GLASS DOOR
GL-1	TEMPERED GLASS 1/2" THICK
GL-2	TEMPERED GLASS 1/4" THICK

HARDWARE ABBREVIATION LEGEND

MK	MCKINNEY
RO	ROCKWOOD
SC	SCHLAGE
AD	ADAMS RITE
YA	YALE
BE	STANLEY SECURITY SOLUTIONS INC
NO	NORTON
CR	CR LAURENCE

DOOR HARDWARE SCHEDULE

GENERAL NOTES:

1. NEW STOPS AND SEALS FOR ALL DOORS IN PROJECT AREA.

HW SET: 1.0 (GLASS DOOR) TO HAVE

2 EA	BOTTOM PIVOT	CRL8010DP	-	CR
1 EA	GLASS PANIC	PA100-F-3-R-K-BS (RHR LEAF)	-	CRL
1 EA	GLASS PANIC	PA100-F-4-R-P-BS (LHR LEAF)	-	CRL
1 EA	MORTISE CYLINDER	1E-74 C181	626	BE
2 EA	90 DEG HOLD OPEN CONCEALED OH CLOSER	20104M20	-	CR
2 EA	CLOSER ARM	CRL8010AS	-	CR
1 EA	HEADER	DCH4	-	CR
2 EA	DRY GLAZE TOP RAIL	DR6S	US32D	CR
2 EA	DRY GLAZE BOTTOM RAIL	DR4S	US32D	CR
2 EA	MOUNTING CLIP	CRL8010FS	-	CR

NOTES: MATCH SIZE OF EXISTING DOORS AT THE RIO TOWER 6TH FLOOR.

HW SET: 2.1 (EXISTING RELOCATED – OFFICE, STORAGE ROOMS) TO HAVE

1 EA	MORTISE LOCK	JNR 8808FL OR8805FL A620 LESS CORE	605	YA
1 EA	PERMANENT CORE	1C72	626	BE

NOTES: EXISTING DOOR AND HARDWARE RELOCATED. REPLACE LOCK AS NEEDED.

HW SET: 2.2 (EXISTING RELOCATED – BREAK ROOM & CONFERENCE ROOMS) TO HAVE

1 EA	MORTISE LOCK	JNR 8808FL OR8805FL A620 LESS CORE	605	YA
1 EA	PERMANENT CORE	1C72	626	BE
1 EA	SURFACE CLOSER	8501	690	NO

NOTES: EXISTING DOOR AND HARDWARE RELOCATED. REPLACE LOCK AS NEEDED.

HW SET: 2.3 (EXISTING RELOCATED – RESTROOM & LACTATION ROOM) TO HAVE

1 EA	MORTISE LOCK w/ INDICATOR	JNR 8864FL LESS CORE	605	YA
1 EA	PERMANENT CORE	1C72	626	BE
1 EA	SURFACE CLOSER	8501	690	NO

NOTES: EXISTING DOOR AND HARDWARE RELOCATED. REPLACE LOCK AS NEEDED.

HW SET: 2.4 (EXISTING RELOCATED – PASSAGE) TO HAVE

1 EA	MORTISE LOCK	JNR 8808FL OR8805FL A620 LESS CORE	605	YA
1 EA	PERMANENT CORE	1C72	626	BE
1 EA	SURFACE CLOSER	8501	690	NO

NOTES: PROVIDE SIGN "THIS DOOR TO REMAIN OPEN DURING BUSINESS HOURS"
EXISTING DOOR AND HARDWARE RELOCATED. REPLACE LOCK AS NEEDED.

HW SET: 3.1 (NEW - OFFICE) TO HAVE

4 EA	HINGE	TA2714 X (NRP)	US3	MK
1 EA	MORTISE LOCK	JNR 8808FL OR8805FL A620 LESS CORE	605	YA
1 EA	PERMANENT CORE	1C72	626	BE
1 EA	WALL STOP	406	US3	RO

NOTES: SEALS PROVIDED BY FRAME MANUFACTURER.

HW SET: 3.2 (NEW - PASSAGE) TO HAVE

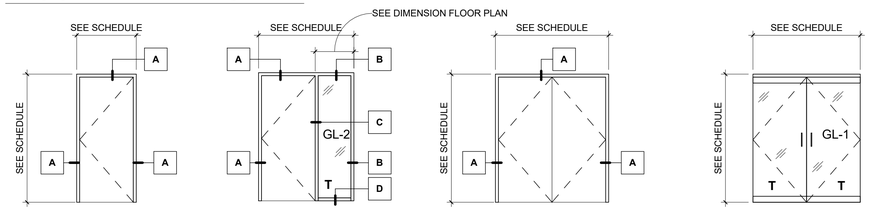
4 EA	HINGE	TA2714 X (NRP)	US3	MK
1 EA	MORTISE LOCK	JNR 8808FL OR8805FL A620 LESS CORE	605	YA
1 EA	PERMANENT CORE	1C72	626	BE
1 EA	SURFACE CLOSER	8501	690	NO
1 EA	WALL STOP	406	US3	RO

NOTES: SEALS PROVIDED BY FRAME MANUFACTURER.
PROVIDE SIGN "THIS DOOR TO REMAIN OPEN DURING BUSINESS HOURS"

DOOR SCHEDULE

REV#	DOOR NO.	DOOR SIZE WIDTH (CLR)	DOOR SIZE HEIGHT (CLR)	PANEL LEAF 1	PANEL LEAF 2	PANEL DOOR MTL	PANEL GLASS TYPE	FRAME FRAME TYPE	FRAME FRAME MTL	HDWR SET	FIRE RATING	REMARKS
	D-3004	6' - 4"	8' - 4"	GLASS	GLASS	ALL GLASS	GL-1	4	SS	HW 1.0	-	
	D-3041	6' - 4"	8' - 4"	GLASS	GLASS	ALL GLASS	GL-1	4	SS	HW 1.0	-	
	D-3055	6' - 4"	8' - 4"	GLASS	GLASS	ALL GLASS	GL-1	4	SS	HW 1.0	-	
	D-3003e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.4	-	
	D-3005e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.1	-	
	D-3021e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.2	-	
	D-3023e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.1	-	
	D-3026e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.2	-	
	D-3027e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.3	-	
	D-3036e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.1	-	
	D-3038e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.1	-	
	D-3039e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.1	-	
	D-3042e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.1	-	
	D-3045e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.1	-	
	D-3056e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.2	-	
	D-3084e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.1	-	
	D-3099e	3' - 0"	8' - 4"	FLUSH		EXIST	-	1	EXIST	HW 2.3	-	
	D-3100e	6' - 0"	8' - 4"	FLUSH	FLUSH	EXIST	-	3	EXIST	HW 2.1	-	
	D-3014	3' - 0"	8' - 4"	FLUSH		WD	GL-2	2	ALUM	HW 3.1	-	
	D-3020	3' - 0"	8' - 4"	FLUSH		WD	GL-2	2	ALUM	HW 3.2	-	
	D-3037	3' - 0"	8' - 4"	FLUSH		WD	GL-2	2	ALUM	HW 3.1	-	
	D-3082	3' - 0"	8' - 4"	FLUSH		WD	GL-2	2	ALUM	HW 3.1	-	
	D-3090	3' - 0"	8' - 4"	FLUSH		WD	GL-2	2	ALUM	HW 3.2	-	

DOOR FRAME LEGEND



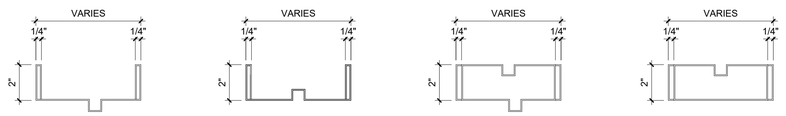
1 ALUMINUM SINGLE DOOR (EXISTING RELOCATED)

2 ALUMINUM SINGLE DOOR w/ SIDELITE (NEW)

3 ALUMINUM DOUBLE DOOR (EXISTING RELOCATED)

4 FRAMELESS DOUBLE DOOR (NEW)

DOOR FRAME PROFILE LEGEND



A ALUM

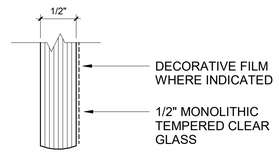
B ALUM

C ALUM

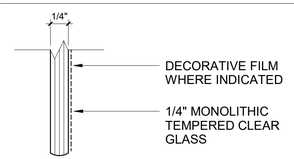
D ALUM

VARIES = SEE PARTITION TYPES FOR WIDTH

GLASS TYPES LEGEND

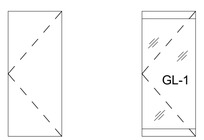


GL-1 TEMPERED CLEAR GLASS



GL-2 TEMPERED CLEAR GLASS

DOOR PANEL LEGEND



FLUSH GLASS

DOOR GENERAL NOTES

1. ALL EXIT DOORS SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. PROVIDE PANIC HARDWARE PER NEC 110.26.C.2a AT THOSE DOORS INDICATED IN THE DOOR HARDWARE SPECIFICATIONS
2. EXIT DOORS SHALL COMPLY WITH IBC 2018 1010.1
3. VERIFY AND COORDINATE ALL DOOR FRAMES AND THEIR RESPECTIVE PARTITION REQUIREMENTS, PARTITION DETAILS, DOOR DETAILS, AND EXISTING FIELD CONDITIONS. NOTIFY ARCHITECT WHERE DISCREPANCIES OCCUR.
4. THROAT AT PARTITIONS SHALL BE AS REQUIRED FOR THE RESPECTIVE PARTITION THICKNESS INDICATED. ADJUST 1/2" FRAME RETURN DIMENSION AS NECESSARY.
5. GLASS UNITS FOR DOORS SHALL BE AS INDICATED ON DOOR SCHEDULE AND SAFETY GLAZING NOTES
6. MAXIMUM CLEARANCES AT DOORS SHALL BE AS FOLLOWS:
   - BETWEEN DOOR & FRAME AT HEAD & JAMBS AND BETWEEN PAIRS OF DOORS - 1/8"
   - AT DOOR SILLS WITHOUT THRESHOLD - 1/2"
   - AT DOOR SILLS WITH THRESHOLD - 3/4" ABOVE CONCRETE SLAB
   - AT DOORS WHERE CARPET OCCURS - 3/8" SILL HEIGHT
   -
7. CONTRACTOR SHALL PROVIDE PROPER TRANSITION STRIPS BETWEEN DIFFERENT FLOORING MATERIAL. TRANSITION SHALL OCCUR AT CENTERLINE OF DOOR IN CLOSED POSITION.
8. MAXIMUM INSTALLATION TOLERANCE PERMITTED FOR SQUARENESS, PLUMB, ALIGNMENT AND TWIST - 1/16".
9. REFER TO SPECIFICATIONS FOR COMPLETE HARDWARE SPECIFICATIONS. INFORMATION ON THIS SHEET IS FOR CONVENIENCE OF REFERENCE ONLY

SAFETY GLAZING NOTES:

1. SAFETY GLASS SHALL BE PROVIDED IN HAZAROUS AREAS AS REQUIRED BY CODES, INCLUDING THE FOLLOWING SPECFIC LOCATIONS. COMPLY WITH IBC SECTION 2406 "SAFETY GLAZING".
2. GLASS IN DOORS.
3. GLASS IN UNFRAMED DOORS.
4. GLASS IN FIXED OR OPERABLE PANELS ADJACENT TO A DOOR WHERE THE NEAREST EXPOSED EDGE OF THE GLASS IS WITHIN A 24-INCH ARC OF EITHER THE VERTICAL EDGE OF THE DOOR IN A CLOSED POSITION OR WHERE THE BOTTOM EXPOSED EDGE OF THE GLASS IS LESS THAN 60 INCHES ABOVE THE WALKING SURFACE.
5. GLASS IN INDIVIDUAL PANELS WITH ALL OF THE FOLLOWING CHARACTERISTICS:
   - PANE SIZE GREATER THAN 9 SQUARE FEET,
   - EXPOSED BOTTOM EDGE LESS THAN 18 INCHES ABOVE THE FLOOR,
   - EXPOSED TOP EDGE GREATER THAN 36 INCHES ABOVE THE FLOOR AND A WALKING SURFACE WITHIN 36 INCHES HORIZONTALLY OF THE PLANE OF THE GLASS.

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REGISTERED ARCHITECT 22425 MARK ROBERT DEE DATE SIGNED (DO NOT DATE) Arizona U.S.A.

MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

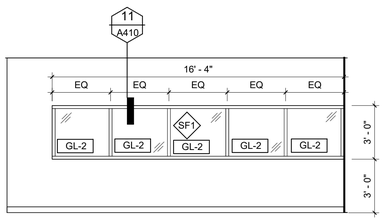
KEY:

SHEET TITLE: DOOR SCHEDULE

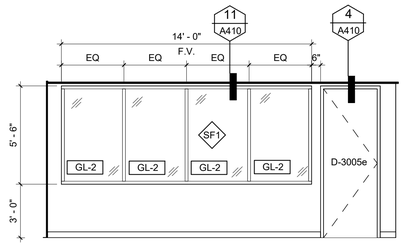
SHEET NUMBER: A400

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

2/8/2021 7:14:58 PM



1 SF-EPP1
1/4" = 1'-0"



2 SF-RM 3005
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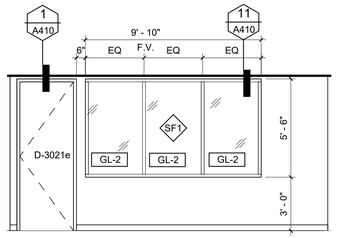
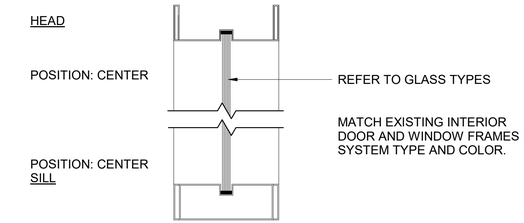
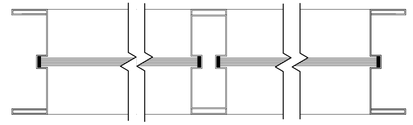


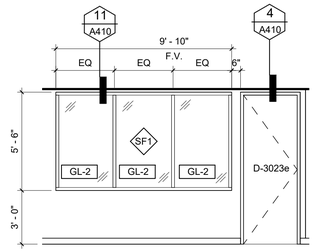
4 SF-RM 3021
1/4" = 1'-0"



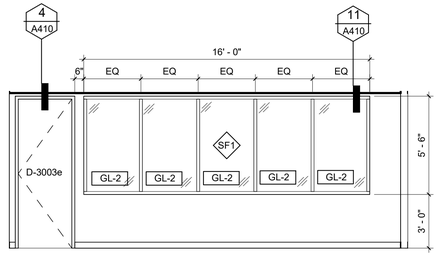


PROVIDE ATTACHEMENTS PER MANUFACTURERS DETAILS.
PROVIDE INTERNAL STEEL REINFORCEMENT AS REQUIRED.

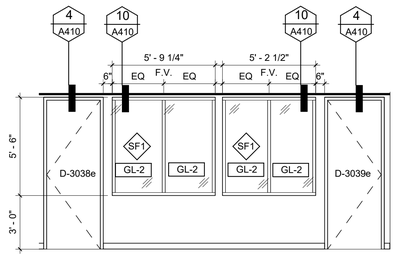
SF1 FIXED ALUMINUM WINDOWS
3" = 1'-0"



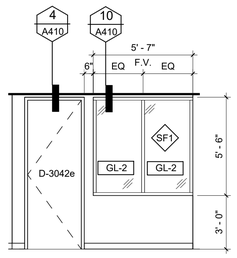
5 SF-RM 3023
1/4" = 1'-0"



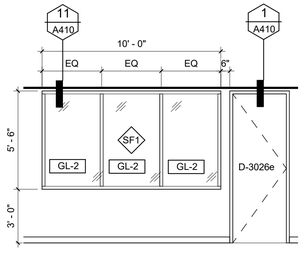
6 SF-RM 3003
1/4" = 1'-0"



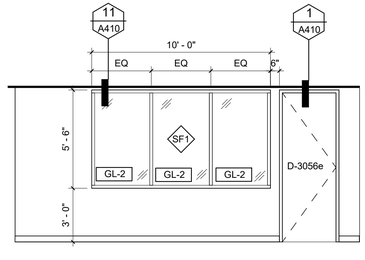
7 SF-RM3038 & 3039
1/4" = 1'-0"



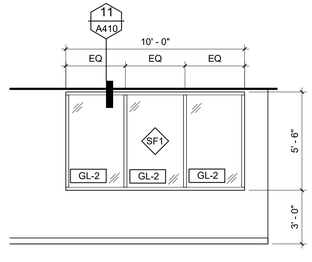
8 SF-RM 3042
1/4" = 1'-0"



9 SF-RM 3026
1/4" = 1'-0"



10 SF-RM 3056
1/4" = 1'-0"



11 SF-RM 3055
1/4" = 1'-0"

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REGISTERED ARCHITECT
22425
MARK ROBERT DEE
DATE SIGNED (08/08/21)
Arizona U.S.A.

MARICOPA COMMUNITY COLLEGES
RIO SALADO COLLEGE TOWER:
Third Floor Remodel
2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

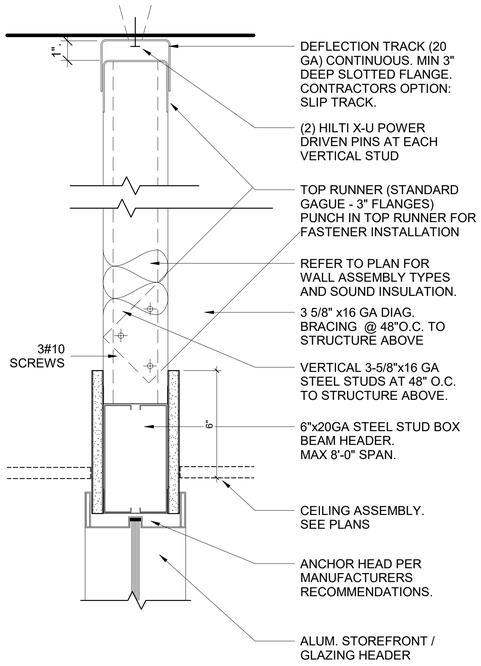
KEY:

SHEET TITLE:
STOREFRONT SCHEDULE

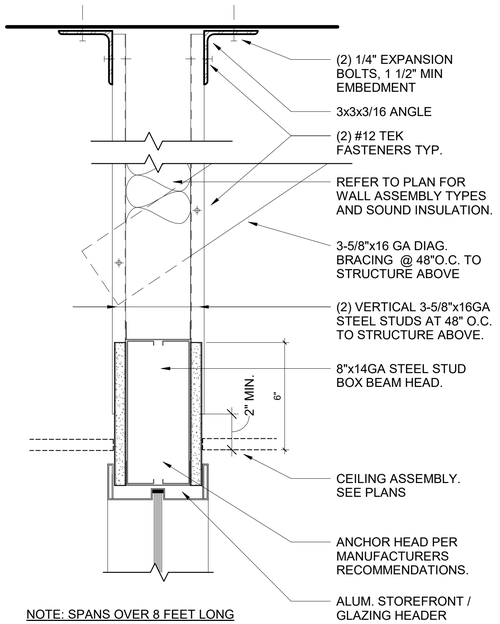
SHEET NUMBER:
A401

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

2/8/2021 7:15:00 PM

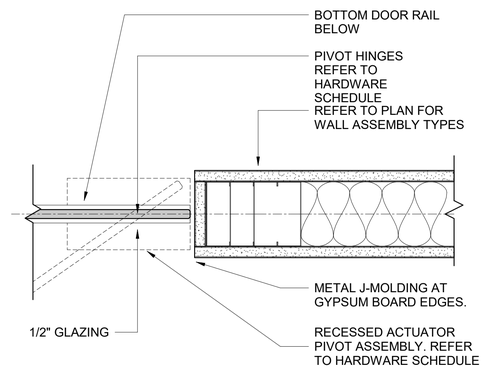


10 TYP. HEAD DETAIL - 8' MAX SPAN
3" = 1'-0"

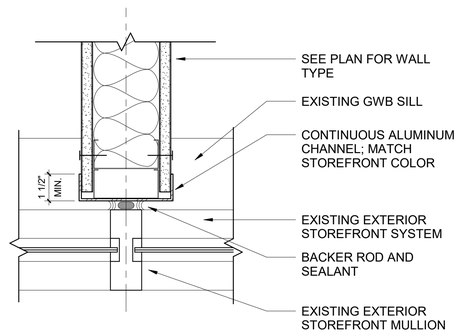


NOTE: SPANS OVER 8 FEET LONG

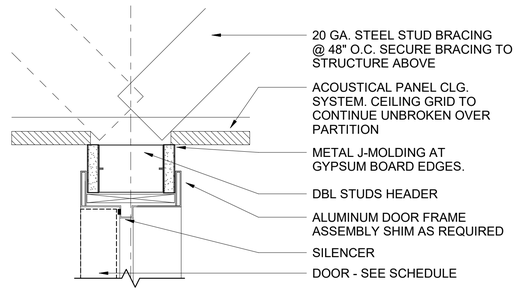
11 TYP. HEAD DETAIL - OVER 8' SPAN
3" = 1'-0"



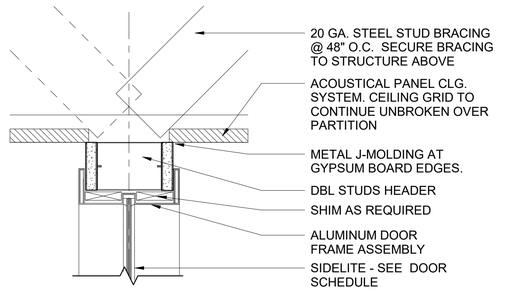
7 FULL GLASS DOOR JAMB
3" = 1'-0"



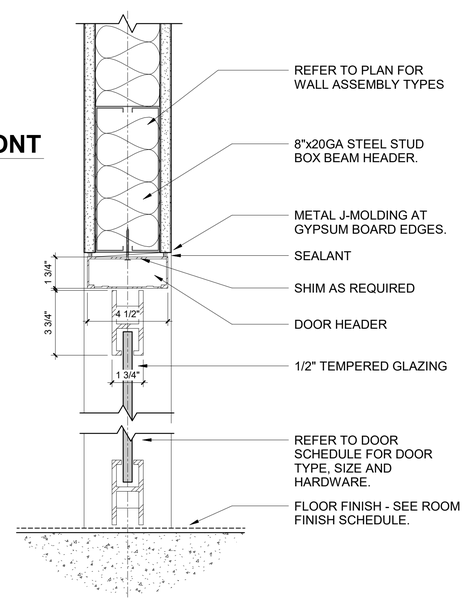
8 WALL TERMINATION @ EXT STOREFRONT
3" = 1'-0"



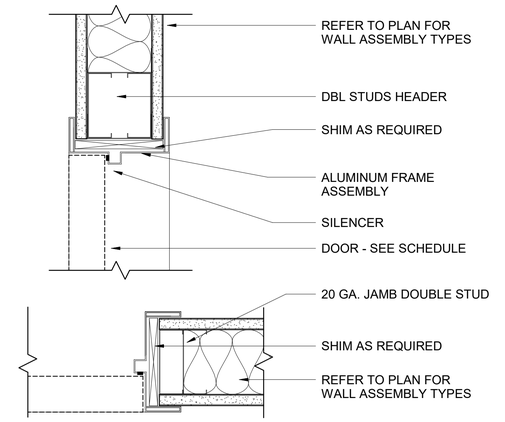
4 ALUM DOOR FRAME HEAD @ P1
3" = 1'-0"



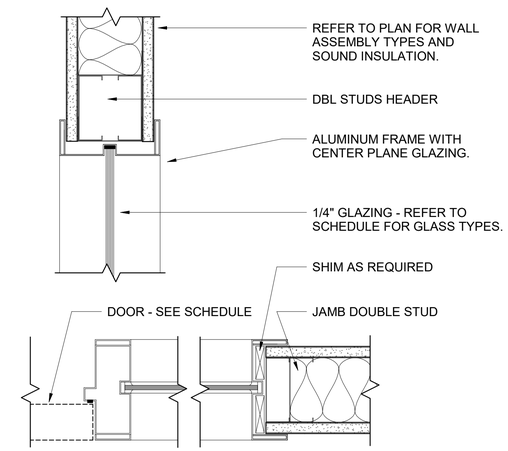
5 ALUM SIDELITE FRAME HEAD @ P1
3" = 1'-0"



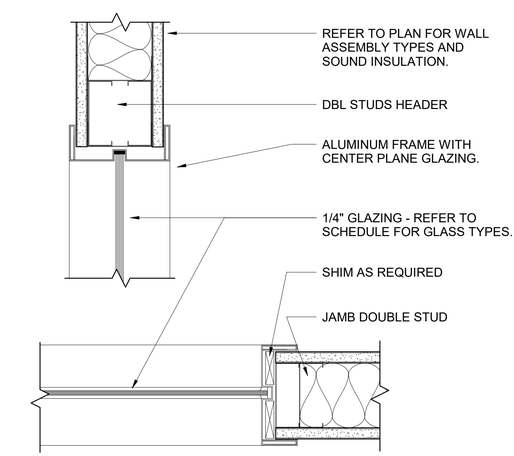
6 FULL GLASS DOOR HEAD & SILL
3" = 1'-0"



1 ALUM FRAME DOOR HEAD/JAMB
3" = 1'-0"



2 ALUM FRAME SIDELITE HEAD/JAMB
3" = 1'-0"



3 ALUM FRAME STOREFRONT HEAD/JAMB
3" = 1'-0"

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MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE: DOOR & STOREFRONT DETAILS

SHEET NUMBER: A410

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

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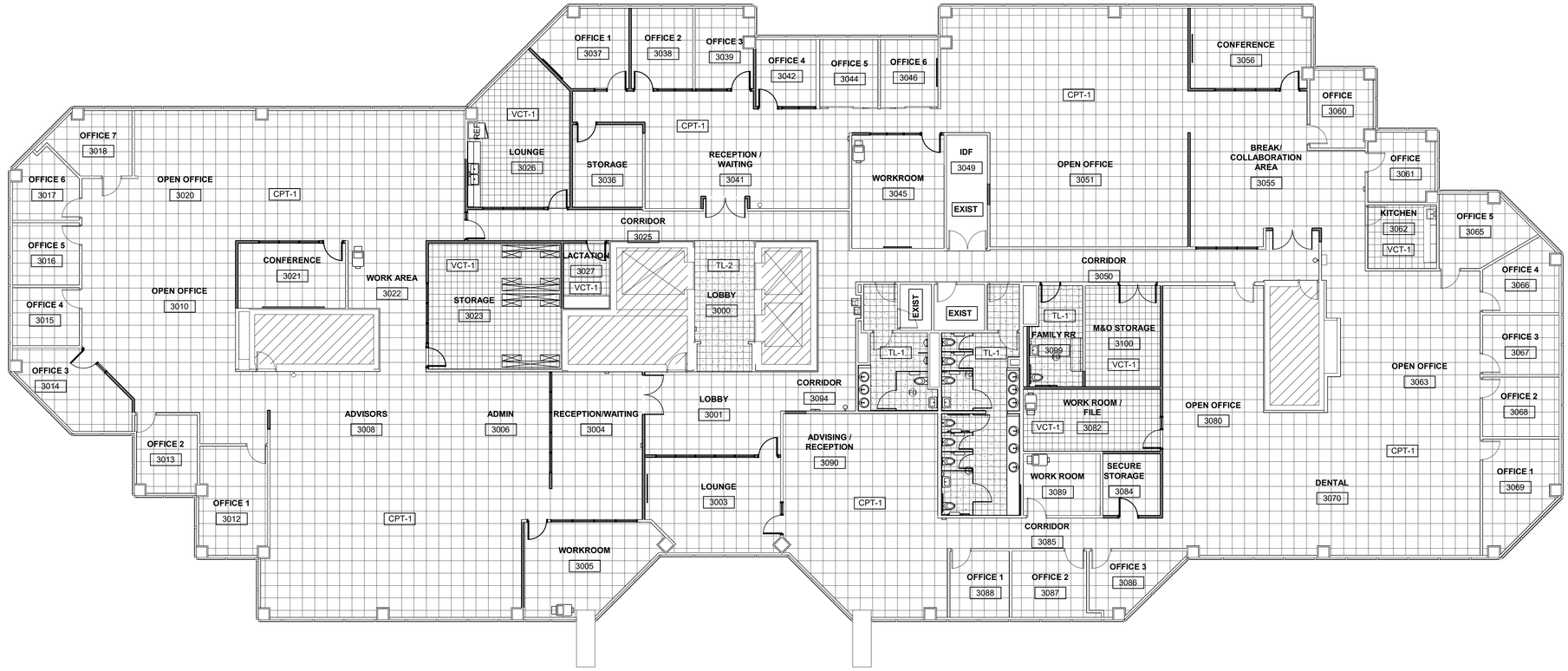

FINISHES FLOOR PLAN

1" = 10'-0"

0 10 20

SCALE: 1:10

MATERIAL LEGEND

DESIGNATION	DESCRIPTION	MANUFACTURER	MODEL/COLOR	COMMENTS
CPT-1	24x24 CARPET TILE	SHAW	Focus Tile 59455, COLOR: Freedom 54505, BASE:Rubber base, Johnsonite, Burnt Umber 63	INSTALLATION: Monolithic
EXIST	EXISTING TO REMAIN	N/A		
PLAM-1	PLASTIC LAMINATE	TBD	TBD (As selected from manufacturer's full range).	
PLAM-2	PLASTIC LAMINATE	TBD	TBD (As selected from manufacturer's full range).	
PT-1	PAINT(FIELD)	DUNN EDWARDS	COLOR: DE6225 Fossil	
PT-2	PAINT (ACCENT 1)	TBD	TBD	Accent paint color and locations TBD
PT-3	PAINT (ACCENT 2)	TBD	TBD	Accent paint color and locations TBD
PT-4	PAINT (ACCENT 3)	TBD	TBD	Accent paint color and locations TBD
SS-1	SOLID SURFACE COUNTER RESTROOMS	TBD	TBD	Match existing 6th floor restrooms counter
SS-2	SOLID SURFACE COUNTER LOUNGE	TBD	COLOR: TBD (As selected from manufacturer's full range).	
TL-1	12x12 CERAMIC TILE	TBD	TBD	Match existing 6th floor restrooms tile
TL-2	12x12 STONE TILE	DALTILE	Travertine T720 Baja Cream (honed), SIZE: 12"x12", GROUT: MAPEI Sahara Beige, BASE: 4" x 12" Stone Tile (cut 12x12 tile)	
VCT-1	12x12 VINYL TILE	ARMSTRONG	Standard Excelon, Imperial Texture 59234 Silk, SIZE 12"X12", BASE:Rubber base, Johnsonite, Burnt Umber 63	

GENERAL FINISH NOTES

1. PAINT ALL GYPSUM BOARD WALLS PT-1, U.N.O. ACCENT PAINT AND SURFACES AS NOTED ON PLANS.
2. ALL CAULKING PRODUCTS AND SEALANT (EXPOSED TO VIEW) WHERE USED NEXT TO OR ADJACENT TO DOOR FRAMES, WINDOWS FRAMES, ETC., SHALL MATCH COLOR OF SURROUNDING WALL AREAS, NOT THE COLOR OF DOOR OR WINDOW FRAMING MEMBERS
3. ALL WOOD BLOCKING, OR ROUGH CARPENTRY MATERIAL SHALL BE FIRE RETARDANT TREATED LUMBER. THIS INCLUDES PLYWOOD AND PARTICLE BOARD.
4. INTERIOR FINISHES SHALL COMPLY WITH THE 2018 INTERNATIONAL BUILDING CODE CHAPTER 8 SECTIONS 803, 804 & 805. FLAME SPREAD: 26-75 CLASS B EXCEPT AT STAIRS WHICH SHALL BE CLASS A. & A SMOKE DEVELOPMENT OF 0-450 CLASS B.
5. FLOOR AREAS SHOW ARE APPROXIMATE. CONTRACTOR TO CONFIRM MATERIAL TAKE-OFFS FOR PROPER QUANTATIES.
6. GWB FINISH AND TEXTURE AT NEW WALLS SHALL MATCH EXISTING ADJACENT SURFACES.
7. REFER TO FLOOR TRANSITION DETAILS FOR APPLICABLE INSTALLATION TYPE (SHEET A600).

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2323 W. 14th Street, Tempe, AZ 85281

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE: ROOM FINISH PLAN

SHEET NUMBER: A500

DRAWN BY: EBL | REVIEWED BY: MRD

DATE: 02/08/2021 | PROJECT NUMBER: 1831.00

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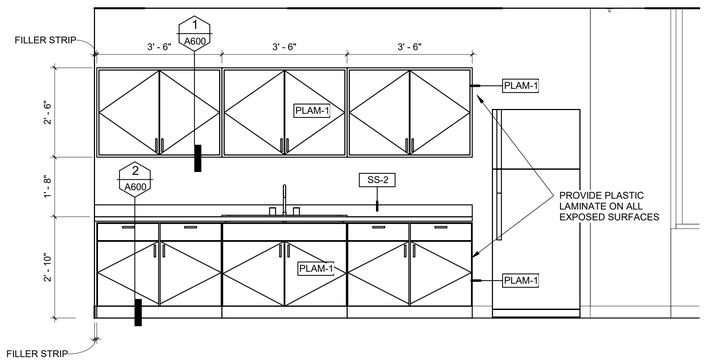
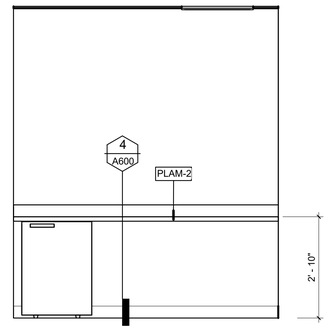


2 LOUNGE CASEWORK
1/2" = 1'-0"



1 LACTATION RM COUNTER
1/2" = 1'-0"

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
INTERIOR ELEVATIONS

SHEET NUMBER:
A510

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

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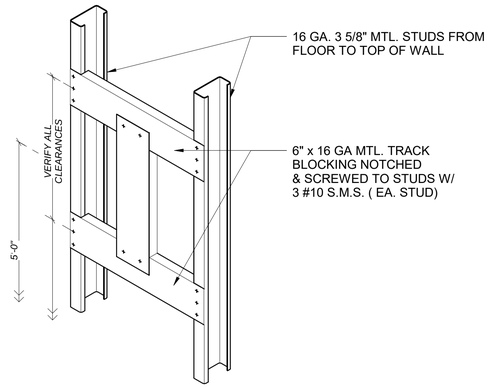
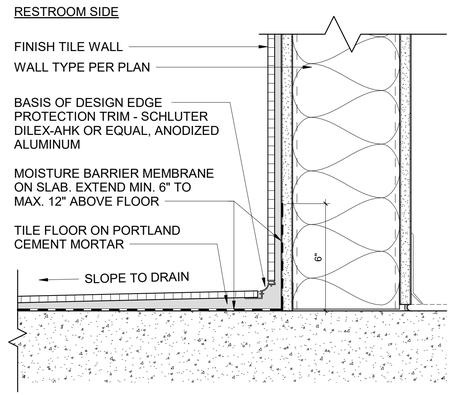
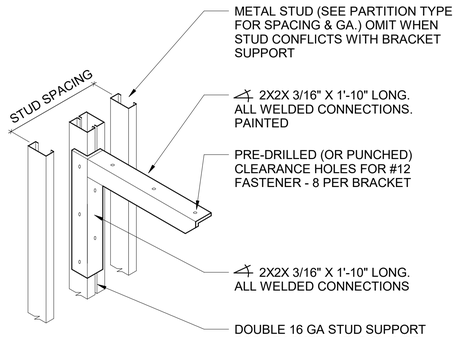


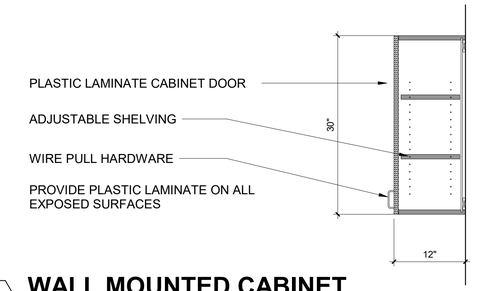
12 TV BRACKET BLOCKING DETAIL
1 1/2" = 1'-0"



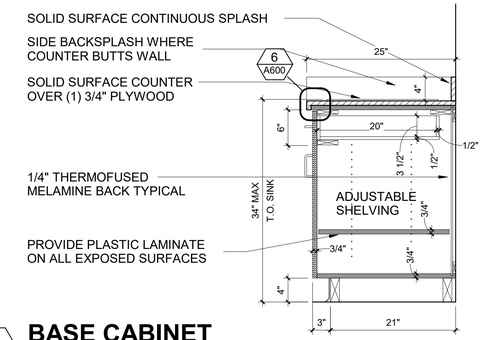
9 BASE AT TILE FLOOR
3" = 1'-0"



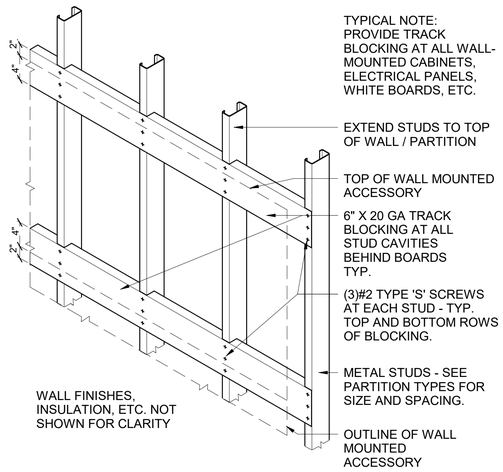
5 COUNTER BRACKET
1" = 1'-0"



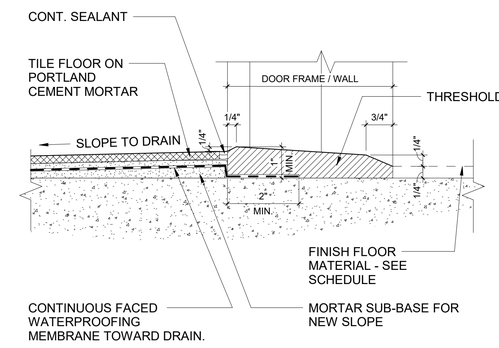
1 WALL MOUNTED CABINET
1" = 1'-0"



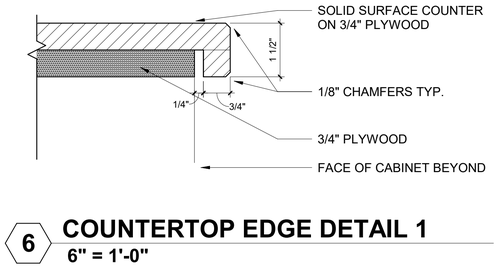
2 BASE CABINET
1" = 1'-0"



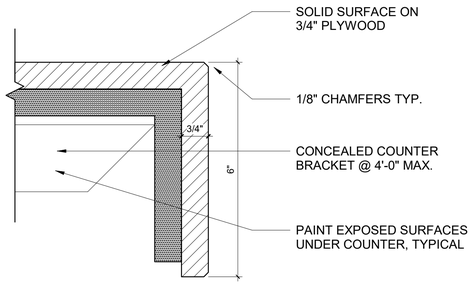
13 TYPICAL TRACK BLOCKING
1 1/2" = 1'-0"

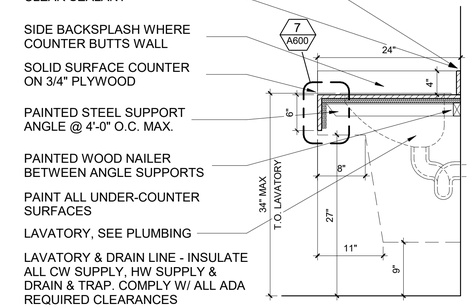


10 TILE FLOOR THRESHOLD
6" = 1'-0"

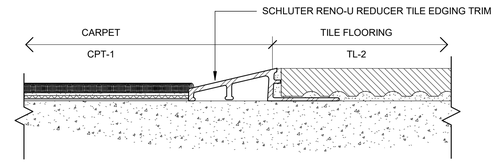


6 COUNTERTOP EDGE DETAIL 1
6" = 1'-0"

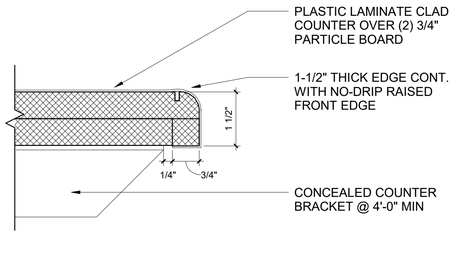




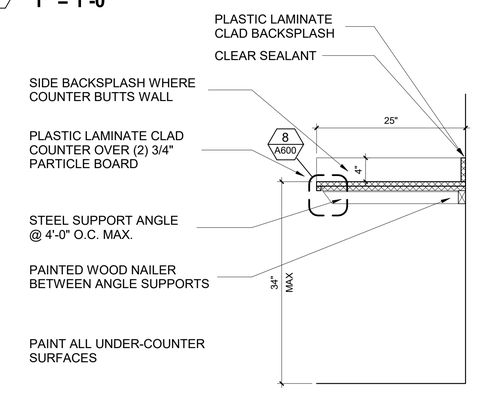
3 RESTROOM COUNTERTOP
1" = 1'-0"



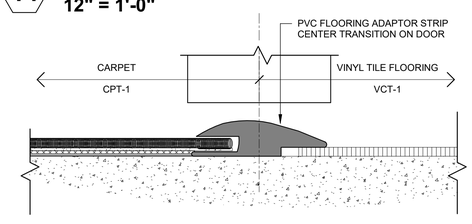
14 CPT-1 / TL-2 TRANSITION
12" = 1'-0"



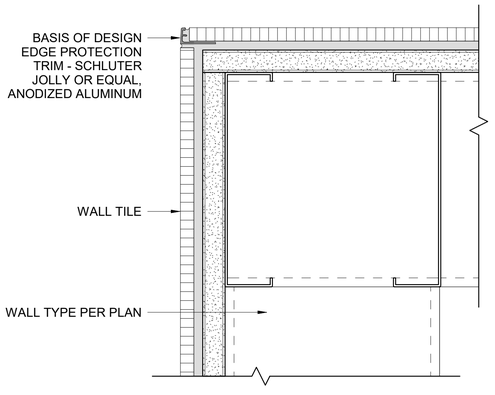
7 COUNTERTOP EDGE DETAIL 2
6" = 1'-0"



4 LACTATION ROOM COUNTERTOP
1" = 1'-0"



15 CPT-1 / VCT-1 TRANSITION
12" = 1'-0"



11 TILE CORNER DETAIL
6" = 1'-0"

8 COUNTERTOP EDGE DETAIL 3
6" = 1'-0"

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RIO SALADO COLLEGE TOWER: Third Floor Remodel

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE: DETAILS

SHEET NUMBER: A600

DRAWN BY:	REVIEWED BY:
EBL	MRD
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

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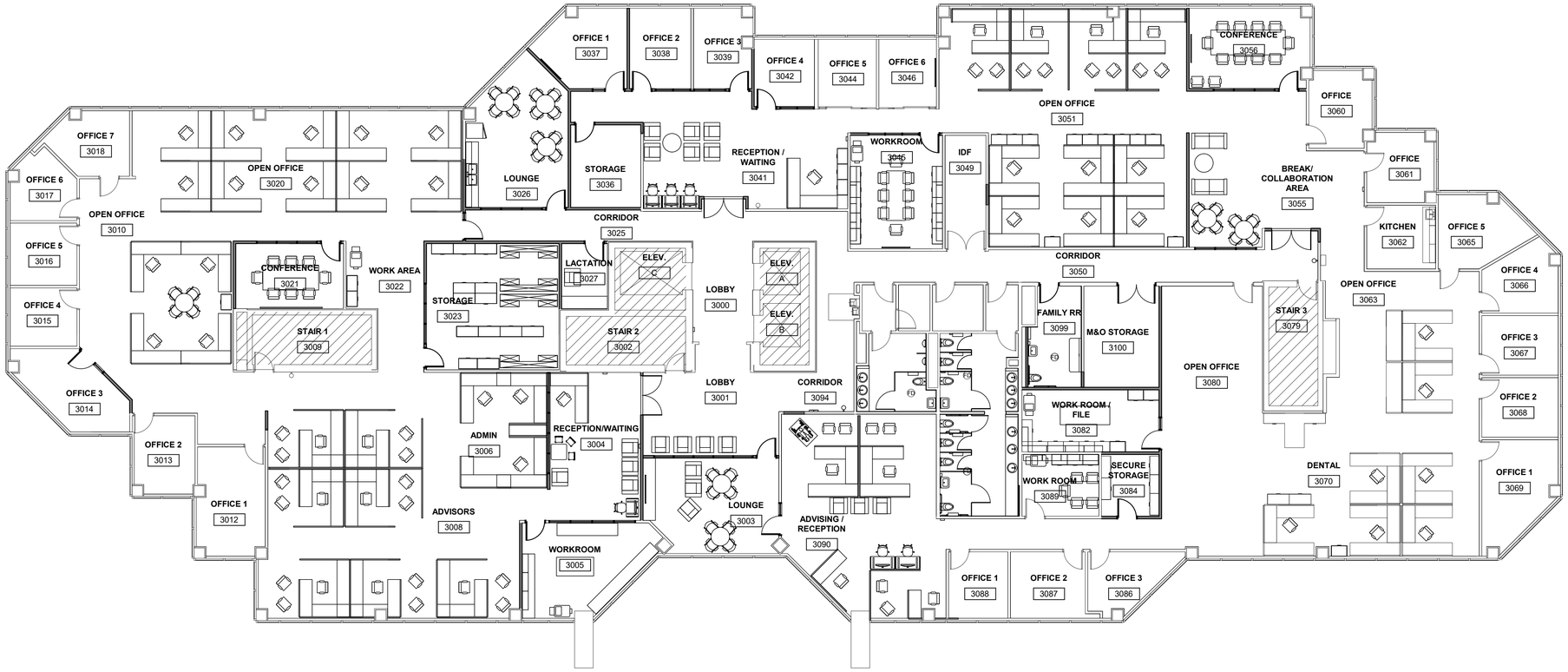

FURNITURE LAYOUT

1" = 10'-0"

0 10 20

SCALE: 1:10

FURNITURE LAYOUT NOTES

1. FURNITURE LAYOUT IS PROVIDED FOR REFERENCE AND COORDINATION ONLY. COORDINATE WITH OWNER FINAL FURNITURE LAYOUT AND SYSTEMS FURNITURE POWER CONNECTIONS

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE: FURNITURE LAYOUT

SHEET NUMBER: A700

DRAWN BY:	REVIEWED BY:
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DATE: 02/08/2021	PROJECT NUMBER: 1831.00

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ABBREVIATIONS

ABBR	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
BD	BALANCING DAMPER
BD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
CD	CONDENSATE DRAIN LINE
CFM	CUBIC FEET PER MINUTE
CONT.	CONTINUATION, CONTINUOUS, CONTINUED
DB	DRY BULB
DIA	ROUND, DIAMETER
DN	RISER DOWN
EA	EXHAUST AIR
ENT	ENTERING
°F	DEGREES FAHRENHEIT
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FSD	COMBINATION FIRE AND SMOKE DAMPER
FT.	FEET
GA	GAUGE
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HP	HEAT PUMP
IN.	INCHES
INV.ELEV.	INVERT ELEVATION
KVA	KILOVOLT-AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LBS	POUNDS
MAX.	MAXIMUM
MIN.	MINIMUM
N/A	NON APPLICABLE
NC	NOISE CRITERIA
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OBD	OPPOSED BLADE DAMPER
OSA / O.A.	OUTSIDE AIR
P.O.C.	POINT OF CONNECTION
PSI	POUNDS PER SQUARE INCH
QTY.	QUANTITY
RA	RETURN AIR
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SOV	SHUT-OFF VALVE
TEMP	TEMPERATURE
TSTAT	THERMOSTAT
TYP.	TYPICAL
UP	RISER UP
U.N.O.	UNLESS NOTED OTHERWISE
WB	WET BULB

MECHANICAL LEGEND

DUCTWORK SYMBOLS

SINGLE	DOUBLE	DESCRIPTION
		RECTANGULAR DUCT
		ROUND DUCT
		TAP FOR BRANCH (RECTANGULAR DUCT)
		TAP FOR BRANCH (ROUND DUCT)
		90 DEG. ELBOW W/ TURNING VANES
		CURVED ELBOW - MIN. RADIUS R=1.5xWIDTH
		FLEXIBLE DUCT CONNECTION
		SUPPLY DIFFUSER
		RETURN GRILLE
		EXHAUST GRILLE
		THERMOSTAT / TEMPERATURE SENSOR
		HUMIDISTAT / HUMIDITY SENSOR
		SENSOR
		RECTANGULAR DUCT RISE
		RECTANGULAR DUCT DROP
		ROUND DUCT RISE
		ROUND DUCT DROP
		COMBINATION FIRE AND SMOKE DAMPER
		FIRE DAMPER
		BALANCING DAMPER
		MOTORIZED DAMPER
		RISER UP
		RISER DOWN
		BREAK
		CONDENSATE DRAIN LINE
		FLOW ARROW
		POINT OF CONNECTION
		ROUND, DIAMETER
		EQUIPMENT TAG

PIPING SYMBOLS

SYMBOL	DESCRIPTION
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN
	PUMP
	REDUCER, CONCENTRIC
	REDUCER, ECCENTRIC STRAIGHT INVERT
	REDUCER, ECCENTRIC STRAIGHT CROWN
	FLOW ARROW
	PIPE CAP
	VALVE
	BALL VALVE
	BUTTERFLY VALVE
	GATE VALVE
	2-WAY CONTROL VALVE
	CHECK VALVE
	PRESSURE REDUCING VALVE
	STRAINER WITH HOSE END VALVE
	BALANCE VALVE & FLOW METER ORIFICE (I.E. CIRCUIT SETTER)
	MANUAL AIR VENT
	FLEXIBLE PIPE CONNECTOR
	PLUG VALVE
	UNION
	THERMOMETER WITH THERMOWELL
	PRESSURE GAUGE WITH COCK
	CIRCUIT SETTER
	CALIBRATED BALANCING / SHUTOFF VALVE
AV	AIR VENT, AUTOMATIC
MV	AIR VENT, MANUAL
PS	PRESSURE SWITCH
	THROUGH WALL / GROUND

MECHANICAL GENERAL NOTES

1. THE CONTRACTOR SHALL DO ALL NECESSARY CUTTING OF WALLS AND CEILING.
2. NO STRUCTURAL MEMBER SHALL BE CUT WITHOUT PERMISSION FROM THE ARCHITECT/STRUCTURAL ENGINEER.
3. PATCH AROUND ALL OPENINGS TO MATCH EXISTING CONSTRUCTION.
4. DUCTWORK CONSTRUCTION AND INSTALLATION INCLUDING SHEET METAL GAUGES, REINFORCEMENT, JOINT SEALING, AIR LEAKAGE AND DETAILS NOT SPECIFICALLY SHOWN ON DRAWINGS SHALL BE IN ACCORDANCE WITH 2018 IMC DUCT CONSTRUCTION STANDARDS.
5. INSULATION CONTRACTOR SHALL TAPE ALL JOINTS AND SEAMS ON THE DUCT INSULATION WRAP (INCLUDING NEW/EXISTING INSULATION) TO MAINTAIN A CONSTANT VAPOR BARRIER.
6. ALL MATERIALS EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH THE TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS PER 2018 IMC 602.2.
7. CONTRACTOR SHALL PROVIDE DAMPERS WHERE NOT SHOWN TO PROVIDE PROPER BALANCING OF SYSTEM.
8. TURNING VANES SHALL BE INSTALLED IN ALL MITERED ELBOWS
9. ALL DUCT DIMENSIONS ARE "CLEAR" INSIDE DIMENSIONS.
10. LIGHTING/SPRINKLER HEADS TAKE PRECEDENCE OVER DIFFUSER LOCATION. CONTRACTOR SHALL MAKE NECESSARY ADJUSTMENTS TO DIFFUSERS TO AVOID ANY CONFLICT WITH LIGHTING LAYOUT/SPRINKLER HEADS. COORDINATE ALL LOCATIONS WITH ARCHITECT.
11. ALL ROUND RUNOUTS SERVING DIFFUSERS SHALL BE SAME SIZE AS NECK DIAMETER.
12. ALL THERMOSTATS/TEMPERATURE SENSORS ARE TO BE MOUNTED AT A HEIGHT OF 48" ABOVE THE FLOOR LEVEL. COORDINATE LOCATIONS WITH OWNER & ARCHITECT.
13. THE CONTRACTOR IS TO FIELD VERIFY EXACT LOCATION OF ALL EQUIPMENT PRIOR TO SUBMITTING BID. LOCATIONS OF EQUIPMENT SHOWN ON DRAWINGS ARE APPROXIMATE. UNITS SHALL BE RELOCATED TO PROVIDE NECESSARY CLEARANCES FOR STRUCTURAL, PLUMBING, FIRE PROTECTION, ELECTRICAL, DEMISING WALLS, HARD CEILINGS, ETC.
14. MOUNTING HEIGHT OF ALL MECHANICAL EQUIPMENT TO BE APPROVED BY BUILDING ENGINEER PRIOR TO CONSTRUCTION.
15. TEMPORARY FILTERS SHALL BE INSTALLED ON ALL RETURN AIR OPENINGS IN SPACE DURING CONSTRUCTION.
16. SMOKE DETECTORS ASSOCIATED WITH SMOKE DAMPERS AND HVAC SHUTOFFS SHALL BE TESTED BY AN APPROVED TESTING AGENCY OR A QUALIFIED THIRD PARTY SPECIAL INSPECTOR. THE SPECIAL INSPECTOR / TESTING AGENCY SHALL BE AN INDEPENDENT THIRD PARTY INDIVIDUAL OR FIRM AND SHALL NOT BE THE INSTALLING CONTRACTOR. A PROFESSIONAL ENGINEER SHALL SUBMIT A FINAL SIGNED AND SEALED REPORT TO THE MECHANICAL INSPECTOR PRIOR TO CITY ISSUANCE OF FINAL INSPECTION APPROVAL OR OCCUPANCY APPROVAL, INCLUDING CONDITIONAL OCCUPANCY APPROVAL
17. CONTRACTOR TO COORDINATE ALL MECHANICAL, PLUMBING AND ELECTRICAL WORK WITH CEILING HEIGHTS. CONTACT ENGINEER WITH ANY DISCREPANCIES PRIOR TO INSTALLATION OF ANY EQUIPMENT.
18. WHERE WALLS ABOVE THE CEILING ARE BEING EXTENDED TO THE DECK. CONTRACTOR SHALL PROVIDE MINIMUM OF (1) 18"x18" OPENING WITH SOUND BOOT IN THE WALL ABOVE THE CEILING FOR RETURN PURPOSES. ADDITIONAL OPENINGS TO BE ADDED AS REQUIRED TO MAINTAIN MAXIMUM OF 500 FPM RETURN AIR VELOCITY.
19. ALL WIRING AND DUCTWORK ABOVE CEILING TO BE PLENUM RATED-2018 IMC 602.2.1.
20. CONTRACTOR SHALL PROVIDE CONDENSATE PUMPS WIRED FROM UNIT ONLY IF REQUIRED TO MEET SLOPE OF CONDENSATE DRAIN. COORDINATE WITH ENGINEER PRIOR.
21. PROVIDE ACCESS PANELS OR DOORS IN HARD CEILINGS OR INACCESSIBLE CEILINGS/CHASES FOR ALL VALVES, TRAPS, DAMPERS, CONTROLS, EQUIPMENT ACCESS, ETC. CONTRACTOR SHALL GROUP EQUIPMENT ABOVE CEILING TOGETHER TO MINIMIZE ACCESS PANELS. ACCESS PANELS SHALL BE LARGE ENOUGH TO REMOVE EQUIPMENT FOR REPLACEMENT. COORDINATE ALL ACCESS PANELS WITH ARCHITECT PRIOR TO ANY INSTALLATION.
22. ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS AND CONNECTIONS IN DUCTWORK, SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS (ADHESIVES), MASTIC-PLUS-EMBEDDED-FABRIC SYSTEMS, LIQUID SEALANTS OR TAPES. TAPES AND MASTICS USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR UL 181B. DUCT CONNECTIONS TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED. UNLISTED DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY METAL DUCTS.
23. HANGERS FOR SHEET METAL DUCTWORK SHALL BE INSTALLED AS REQUIRED PER IMC 2018 SECTION 603.10. REFERENCE SMACNA HVAC DUCT STANDARDS.
24. CONTRACTOR SHALL ENSURE THAT ALL EXISTING MECHANICAL EQUIPMENT IS IN SATISFACTORY WORKING CONDITION SO HE MAY MAKE PROVISION IN HIS BID TO ACCOMMODATE ANY REPLACEMENTS REQUIRED. INSTALL NEW FILTERS ON EXISTING EQUIPMENT TO MATCH EXISTING FOLLOWING COMPLETION OF CONSTRUCTION.
25. CONTRACTOR SHALL COMB FINS/CLEAN COILS ON EXISTING A/C UNITS IN PROJECT AREA.

2018 IECC MANDATORY REQUIREMENTS

HEATING AND COOLING EFFICIENCIES (IECC C403.3);

-ALL EQUIPMENT AND SYSTEMS HAVE BEEN SIZED TO BE NO GREATER THAN NEEDED TO MEET CALCULATED LOADS. (IECC C403.3.1)

-EQUIPMENT SHALL MEET THE MINIMUM EFFICIENCY REQUIREMENTS OF TABLES C403.3.2(1) - C403.3.2(9). (IECC C403.3.2)

HEATING AND COOLING SYSTEM CONTROLS (IECC C403.4);

-THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, AT LEAST ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM. (IECC. C403.4.1).

-WHEN CONTROLLING BOTH HEATING AND COOLING, THERMOSTATIC CONTROLS SHALL PROVIDE A TEMPERATURE RANGE OR DEADBAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS CAPABLE OF BEING SHUT OFF OR REDUCED TO A MINIMUM, WITH EXCEPTION TO THERMOSTATS WITH MANUAL CHANGEOVER (IECC C403.4.1.2).

-ZONES WITH SEPARATE HEATING AND COOLING CONTROLS SHALL BE CONFIGURED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT AND TO MAINTAIN THE A DEADBAND (IECC C403.4.1.3)

-EACH ZONE SHALL BE PROVIDED WITH THERMOSTATIC SETBACK CONTROLS THAT ARE CONTROLLED BY EITHER AN AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROL SYSTEM.

CONSTRUCTION OF HVAC SYSTEM ELEMENTS (IECC C403.11);

-ALL SUPPLY AND RETURN DUCTS AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION AND WITH A MINIMUM OF R-8 INSULATION FOR ANY DUCTWORK OUTSIDE THE BUILDING. **USE R-8 BETWEEN DUCTS AND BUILDING EXTERIOR WHEN DUCTS ARE PART OF THE BUILDING ASSEMBLY. (IECC C403.11.1).

-DUCTWORK SHALL BE CONSTRUCTED AND ERECTED IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE. (IECC C403.11.2)

-LOW PRESSURE DUCT SYSTEMS - ALL LONGITUDINAL AND TRANSVERSE JOINTS, SEAMS AND CONNECTIONS OF SUPPLY AND RETURN DUCTS OPERATING AT A STATIC PRESSURE LESS THAN OR EQUAL TO 2 INCHES W.G. SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS (ADHESIVES), MASTIC-PLUS-EMBEDDED-FABRIC SYSTEMS, OR TAPES INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. PRESSURE CLASSIFICATIONS SPECIFIC TO THE DUCT SYSTEM SHALL BE CLEARLY INDICATED ON THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE. (IECC C403.11.2.1).

-ALL PIPING SERVING AS PART OF A HEATING OR COOLING SYSTEM SHALL BE THERMALLY INSULATED. (IECC C403.11.3)

HOT WATER PIPES (141-200 DEGREES):
MIN. 1.5" INSULATION FOR PIPES LESS THAN 1.5"
MIN. 2" INSULATION FOR PIPES GREATER THAN OR EQUAL TO 1.5"

CHILLED WATER PIPES (40-60 DEGREES):
MIN. .5" INSULATION FOR PIPES LESS THAN 1.5"
MIN. 1" INSULATION FOR PIPES GREATER THAN OR EQUAL TO 1.5"

REFRIGERANT VAPOR (SUCTION) PIPES (40-60 DEGREES):
MIN. .5" INSULATION FOR PIPES LESS THAN 1.5"
MIN. 1" INSULATION FOR PIPES GREATER THAN OR EQUAL TO 1.5"

MAINTENANCE INFORMATION AND SYSTEM COMMISSIONING (IECC C408):

-BUILDING OPERATIONS AND MAINTENANCE DOCUMENTS SHALL BE PROVIDED TO THE BUILDING OWNER. DOCUMENTS SHALL COVER MANUFACTURERS' INFORMATION, SPECIFICATIONS, PROGRAMMING PROCEDURES AND MEANS OF ILLUSTRATING TO OWNER HOW BUILDING, EQUIPMENT AND SYSTEMS ARE INTENDED TO BE INSTALLED, MAINTAINED, AND OPERATED (IECC C408.1.1)

-HVAC SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS. AIR AND WATER FLOW RATES SHALL BE MEASURED AND ADJUSTED TO DELIVER FINAL FLOW RATES WITHIN THE TOLERANCES PROVIDED IN THE SPECIFICATIONS. TEST AND BALANCE ACTIVITIES SHALL INCLUDE AIR SYSTEM AND HYDRONIC SYSTEM BALANCING. (IECC C408.2.2). EACH SUPPLY AIR OUTLET AND ZONE TERMINAL DEVICE SHALL BE EQUIPPED WITH MEANS FOR AIR BALANCING IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 6 OF THE INTERNATIONAL MECHANICAL CODE. (IECC C408.2.2.1).

-ALL MECHANICAL SYSTEMS ARE REQUIRED TO BE TESTED FOR PROPER FUNCTIONALITY TO ENSURE THAT INSTALLED EQUIPMENT MEET PROVISIONS OF SECTION C403. MECHANICAL SYSTEM COMMISSIONING IS TO BE BY A REGISTERED DESIGN PROFESSIONAL OR APPROVAL AGENCY. A COMMISSIONING PLAN SHALL BE DEVELOPED AND SHALL INCLUDE THE FOLLOWING: A NARRATIVE DESCRIPTION OF EACH ACTIVITY, LISTING OF EQUIPMENT TO BE TESTED, FUNCTIONS TO BE TESTED, CONDITIONS FOR TESTS TO BE PERFORMED AND MEASURABLE CRITERIA FOR PERFORMANCE. (IECC C408.2.1)

-THE FOLLOWING DOCUMENTS SHALL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS OF THE DATE OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY: SYSTEM BALANCING REPORT (IECC C408.2.5.1) AND FINAL COMMISSIONING REPORT (IECC C408.2.5.2).

CODE INFORMATION

A. 2018 IBC, 2018 IMC, 2018 IECC, AND AMENDMENTS.

B. PROJECT LOCATED IN CLIMATE ZONE 2B PER 2018 IECC SECTION C301.

C. ALL MATERIALS MUST BE PROVIDED AND INSTALLED PER THE REQUIREMENTS OF THE 2018 IECC AND REQUIREMENTS OF COMCHECK MECHANICAL COMPLIANCE CERTIFICATES.

D. DESIGN HEATING AND COOLING LOADS FOR THIS SPACE ARE CALCULATED USING CARRIER BLOCK LOAD BASED ON ASHRAE METHODS.

E. OUTDOOR AIR VENTILATION PROVIDED AND BASED ON 2018 IMC CHAPTER 4, SECTION 403.3.

F. ALL ROOFTOP EQUIPMENT SHALL BE PERMANENTLY IDENTIFIED AS TO THE AREA SERVED WITH A RUST PROOF METAL NAMEPLATE PER 2018 IMC.

G. DUCT SMOKE DETECTORS REQUIRED BY 2018 IMC SECTION 606 SHALL BE INSTALLED IN THE RETURN AIR DUCT OR PLENUM UPSTREAM OF ANY FILTERS, EXHAUST AIR CONNECTIONS, OUTDOOR AIR CONNECTIONS, OR DECONTAMINATION EQUIPMENT AND APPLIANCES. DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 606.3 AND NFPA 72.

DUCT STATIC PRESSURE CONSTRUCTION

DUCT SYSTEM	LOCATION	PRESSURE CLASS (INCH WG)	SEAL CLASS
SUPPLY	DOWNSTREAM AHU'S (MEDIUM PRESSURE)	3	A
SUPPLY	DOWNSTREAM FAN COILS AND VAVS	1	A
RETURN	CONNECTED TO AHU'S (MEDIUM PRESSURE)	-2	B
RETURN	CONNECTED TO FAN COILS, TERMINAL UNITS	-1	B
EXHAUST	CONNECTED TO EXHAUST FANS	-1.5	B

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MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
MECHANICAL COVER SHEET

SHEET NUMBER:
M001

DRAWN BY:	REVIEWED BY:
RDE	GMS
DATE:	PROJECT NUMBER:
02/08/2021	1831.00

FILE: J:\2020\201003 MCCD Rio Salado Tower 3rd Floor Remodel\M001.dwg
PLOTTED BY: Ryan.Eggink
PLOTTED: 02.05.2021 - 12:11pm

MECHANICAL SPECIFICATIONS

GENERAL REQUIREMENTS
GENERAL PROVISIONS WHICH MAKE SPECIFIC REFERENCE TO ELECTRICAL DIVISION ONLY ARE INCLUDED HEREIN FOR CLARITY AND SIMPLIFICATION OF SPECIFICATIONS WRITING AND ARE NOT PART OF THE MECHANICAL WORK. THE WORK OF DIVISION 15, MECHANICAL, IS SUBJECT TO THE CONDITIONS OF THE CONTRACT, DIVISION 1, GENERAL REQUIREMENTS, AND APPLICABLE REQUIREMENTS OF OTHER PORTIONS OF THE CONTRACT DOCUMENTS. EXAMINE AND BECOME FAMILIAR WITH ALL CONTRACT DOCUMENTS AND COORDINATE THE MECHANICAL WORK ACCORDINGLY.

INTENT
IT IS THE INTENTION OF THE SPECIFICATIONS AND DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION. ANY APPARATUS, APPLIANCE, MATERIAL OR WORK NOT SHOWN ON THE DRAWINGS, BUT MENTIONED IN THE SPECIFICATIONS OR VICE VERSA, OR ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE AND READY FOR OPERATION, EVEN IF NOT PARTICULARLY SPECIFIED, SHALL BE PROVIDED WITHOUT ADDITIONAL EXPENSE TO THE OWNER. SHALL THERE APPEAR TO BE DISCREPANCIES OR QUESTIONS OF INTENT IN THE CONTRACT DOCUMENTS, REFER THE MATTER TO THE ARCHITECT FOR THEIR DECISION BEFORE ORDERING ANY MATERIALS OR EQUIPMENT OR BEFORE THE START OF ANY RELATED WORK. THE DECISION OF THE ARCHITECT SHALL BE FINAL, CONCLUSIVE AND BINDING.

DRAWINGS AND DATA
DRAWINGS ARE GENERALLY DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE OF WORK AND TO INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, DUCTS, CONDUITS, PIPING AND FIXTURES. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET OR FITTINGS OR EVERY STRUCTURAL DIFFICULTY THAT MAY BE ENCOUNTERED DURING INSTALLATION OF THE WORK. LOCATION OF ALL ITEMS NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. EXACT LOCATIONS NECESSARY TO SECURE BEST CONDITIONS AND RESULTS MUST BE DETERMINED AT THE PROJECT SITE AND SHALL HAVE THE APPROVAL OF ARCHITECT BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS. IF SO DIRECTED BY ARCHITECT, WITHOUT EXTRA CHARGE, MAKE REASONABLE MODIFICATIONS IN LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF WORK. INCLUDE MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER INSTALLATION AND OPERATION OF A SYSTEM OR PIECE OF EQUIPMENT IN BID PRICE.

CODES
INCLUDE IN WORK, WITHOUT EXTRA COST TO OWNER, LABOR, MATERIALS, SERVICES, APPARATUS, DRAWINGS (IN ADDITION TO CONTRACT DRAWINGS AND DOCUMENTS) REQUIRED TO COMPLY WITH APPLICABLE LAWS, ORDINANCES, RULES AND REGULATIONS. DRAWINGS AND SPECIFICATIONS TAKE PRECEDENCE WHEN THEY ARE MORE STRINGENT THAN CODES, ORDINANCES, STANDARDS AND STATUTES. CODES, ORDINANCES, STANDARDS AND STATUES TAKE PRECEDENCE WHEN THEY ARE MORE STRINGENT OR CONFLICT WITH DRAWINGS OR SPECIFICATIONS. FOLLOWING INDUSTRY STANDARDS, SPECIFICATIONS AND CODES ARE MINIMUM REQUIREMENTS:

A. APPLICABLE CITY, COUNTY, AND STATE MECHANICAL, ELECTRICAL, GAS, PLUMBING, HEALTH AND SANITARY CODES, LAWS AND ORDINANCES.
B. CITY OR OTHER APPLICABLE BUILDING CODES.
C. 2018 INTERNATIONAL MECHANICAL CODE WITH LOCAL AMENDMENTS.
D. 2018 INTERNATIONAL PLUMBING CODE WITH LOCAL AMENDMENTS.
E. 2018 INTERNATIONAL ENERGY CONSERVATION CODE.
F. 2017 NATIONAL ELECTRIC CODE / NFPA-70 WITH AMENDMENTS.
G. UNDERWRITER'S LABORATORIES, INC. STANDARDS.
H. AMERICAN NATIONAL STANDARDS INSTITUTE.
I. AMERICAN SOCIETY FOR TESTING MATERIALS STANDARDS.
J. STANDARDS AND REQUIREMENTS OF LOCAL UTILITY COMPANIES.
K. AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODES.

REGULATIONS, PERMITS & INSPECTIONS:
COMPLY WITH ALL APPLICABLE CODES, RULES AND REGULATIONS. OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND LICENSES. WHEN REQUIRED BY CODE, ALL WORK MUST BE INSPECTED AND APPROVED BY LOCAL AUTHORITIES.

GENERAL
MATERIALS AND EQUIPMENT STANDARD PRODUCTS OF A REPUTABLE MANUFACTURER REGULARLY ENGAGED IN MANUFACTURE OF THE SPECIFIED ITEMS. WHERE MORE THAN ONE UNIT IS REQUIRED OF ANY ITEM, FURNISH BY THE SAME MANUFACTURER, EXCEPT WHERE SPECIFIED OTHERWISE. INSTALL MATERIAL AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SHOULD VARIANCE BETWEEN PLANS AND SPECIFICATIONS OCCUR WITH THESE, CONTACT ARCHITECT IMMEDIATELY SO THAT VARIATIONS IN INSTALLATION CAN BE KNOWN BY ALL PARTIES CONCERNED. PROVIDE EQUIPMENT FROM MANUFACTURER WHOSE PRODUCTS HAVE LOCAL REPRESENTATION. SHOP DRAWINGS TO BE SUBMITTED ONE COMPLETE PACKAGE. INDIVIDUAL SHOP DRAWINGS WILL NOT BE ACCEPTED.

NOTE: COMPLY WITH BUILDING STANDARDS. NOTIFY THE ENGINEER IF STANDARDS ARE IN CONFLICT WITH WHAT APPEARS ON THESE CONSTRUCTION DOCUMENTS. (PRIOR TO BID)

MECHANICAL CONTRACTOR TO VERIFY AND COORDINATE AVAILABLE VOLTAGE WITH ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT

EXECUTION
PROTECT EXISTING ACTIVE SERVICES (WATER, SEWER, GAS, ELECTRIC, ETC.), WHEN ENCOUNTERED, AGAINST DAMAGE FROM CONSTRUCTION WORK.
DO NOT PREVENT OR DISTURB OPERATION OF ACTIVE SERVICES WHICH ARE TO REMAIN. IF WORK MAKES TEMPORARY SHUTDOWNS OF SERVICES UNAVOIDABLE, CONSULT WITH OWNER AS TO DATES, PROCEDURES, AND ESTIMATED DURATION OF AT LEAST 10 WORKING DAYS IN ADVANCE OF DATE WHEN WORK IS TO BE PERFORMED. ARRANGE WORK FOR CONTINUOUS PERFORMANCE TO ASSURE THAT EXISTING OPERATING SERVICES WILL BE SHUT DOWN ONLY DURING THE TIME REQUIRED TO MAKE NECESSARY CONNECTIONS. IF A SYSTEM CANNOT SHUT DOWN, INSTALL TEMPORARY BYPASSES OR JUMPERS UNTIL CONNECTIONS ARE COMPLETE. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS INCURRED BY ABOVE SHUTDOWNS, INCLUDING BYPASS OR JUMPER INSTALLATIONS, FOR WORK PERFORMED UNDER THIS SECTION.
IF EXISTING ACTIVE UTILITY SERVICES ARE ENCOUNTERED WHICH REQUIRE RELOCATION, MAKE REQUEST TO PROPER AUTHORITIES FOR DETERMINATION OF PROCEDURES. PROPERLY TERMINATE EXISTING SERVICES TO BE ABANDONED IN CONFORMANCE WITH REQUIREMENTS OF AUTHORITIES. WHERE CONNECTIONS OR DISRUPTIONS ARE MADE TO EXISTING SYSTEMS, REACTIVATE, REFILL, AND RECHARGE ALL COMPONENTS AND RESTORE SYSTEMS TO OPERATING CONDITIONS AT TIME OF DISRUPTION.

GUARANTEE
EACH COMPLETE SYSTEM GUARANTEED BY CONTRACTOR FOR A PERIOD OF ONE YEAR, FROM DATE OF ACCEPTANCE OF WORK BY OWNER IN WRITING, TO BE FREE OF DEFECTS OF MATERIALS AND WORKMANSHIP, AND TO PERFORM SATISFACTORILY UNDER ALL CONDITIONS OF LOAD OR SERVICE. THE GUARANTEES PROVIDE THAT ANY ADDITIONAL CONTROLS, PROTECTIVE DEVICES, OR EQUIPMENT BE PROVIDED AS NECESSARY TO MAKE THE SYSTEM OF EQUIPMENT OPERATE SATISFACTORILY, AND THAT ANY FAULTY MATERIALS OR WORKMANSHIP BE REPLACED OR REPAIRED. ON FAILURE OF GUARANTOR TO DO THE ABOVE AFTER WRITTEN NOTICE FROM OWNER, THE OWNER MAY HAVE THE WORK DONE AT THE COST OF GUARANTOR. LOSS OF REFRIGERANT IS CONSIDERED A DEFECT IN WORKMANSHIP AND/OR EQUIPMENT, TO BE CORRECTED AS REQUIRED AT NO EXTRA COST TO THE OWNER.

EXISTING CONDITIONS:
CONTRACTOR TO VISIT SITE PRIOR TO BID. CONTRACTOR SHALL RELOCATE AS NECESSARY ALL EXISTING ITEMS SUCH AS DUCTWORK, SPRINKLER PIPING, PLUMBING, CONDUITS, ETC AS REQUIRED TO MAINTAIN ALL EQUIPMENT CLEARANCES. CONTRACTOR TO PROVIDE A NEAT SKETCH TO ENGINEER SHOWING ANY DEVIATION TO THE CONSTRUCTION DOCUMENTS REQUIRED DUE TO FIELD CONDITIONS. NO ALLOWANCES WILL BE MADE AFTER THE PROJECT HAS BEEN AWARDED FOR FAILURE TO VERIFY EXISTING CONDITIONS.

ALL REFERENCES ON THESE DRAWINGS TO EXISTING EQUIPMENT, DUCTWORK, DIFFUSERS, PIPING, ARE FOR REFERENCE ONLY. CONTRACTOR HAS THE RESPONSIBILITY OF FIELD VERIFYING ALL ITEMS PRIOR TO BID AND INCLUDE IN BID ALL AMOUNT REQUIRED TO ACCOMMODATE EXISTING CONDITIONS.

SPRINKLER
SPRINKLER CONTRACTOR SHALL MODIFY EXISTING SPRINKLER SYSTEM TO ACCOMMODATE NEW CEILING LAYOUT SEE ARCH DRAWINGS FOR AREAS OF WORK. MODIFICATIONS SHALL BE PER NFPA 13. PROVIDE SYSTEMS WITH ALL NECESSARY SUPPORTS, ANCHORS, BRACING AND SUBMIT THE DESIGN TO ARCHITECT FOR REVIEW. COORDINATE NEW EQUIPMENT AND DEVICE LOCATIONS WITH EXISTING BUILDING CONDITIONS. PREPARE COMPLETE FIRE PROTECTION SHOP DRAWINGS AND CALC'S AND SUBMIT TO THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION AND RECEIVE APPROVAL PRIOR TO WORK. CONTRACTOR SHALL PROVIDE PIPING, VALVES, SPRINKLERS, HANGERS AND SUPPORTS FOR A COMPLETE INSTALLATION. VERIFY FINISHES WITH ARCHITECT. COORDINATE WORK WITH ALL TRADES AND REQUIRED POWER WITH ELECTRICAL CONTRACTOR. COORDINATE LOCATIONS OF FLOW AND TAMPER SWITCHES, AND SUPERVISORY CIRCUITS WITH THE FIRE ALARM CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING/PATCHING. ALL EQUIPMENT SHALL BE UL LISTED OR FM APPROVED. THE DESIGN, EQUIPMENT, INSTALLATION, TESTING AND MAINTENANCE OF THE FIRE SPRINKLER SYSTEM SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS IN THE LATEST EDITION OF THE FOLLOWING CODES/STANDARDS: NFPA NO. 13-FIRE SPRINKLER SYSTEMS, UL LISTINGS, AND LOCAL AUTHORITY HAVING JURISDICTION

AIR CONDITIONING, HEATING AND VENTILATING

SCOPE:
WORK UNDER THIS SECTION INCLUDES FURNISHING ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THE REMODELING, INSTALLATION AND PLACING INTO OPERATION THE HEATING, VENTILATING AND AIR CONDITIONING WORK AS SPECIFIED HEREIN AND INDICATED ON THE DRAWINGS.

VERIFICATION OF DIMENSIONS:
SCALED AND FIGURED DIMENSIONS ARE APPROXIMATE ONLY. BEFORE PROCEEDING WITH WORK, CAREFULLY CHECK AND VERIFY AT THE SITE EQUIPMENT AND MATERIALS TOGETHER TO ENSURE THEY WILL FIT, CAREFULLY STUDY DRAWINGS AND PREMISES IN ORDER TO DETERMINE BEST METHODS, EXACT LOCATIONS, ROUTES AND BUILDING OBSTRUCTIONS, PRESERVE HEADROOM, AND KEEP OPENINGS AND PASSAGEWAYS CLEAR.

CUTTING AND PATCHING:
CUT EXISTING WORK AND PATCH AS NECESSARY TO PROPERLY INSTALL THE NEW WORK. AS THE WORK PROGRESSES, LEAVE NECESSARY OPENINGS, HOLES, CHASES, ETC. IN THEIR CORRECT LOCATIONS. IF THE REQUIRED OPENINGS, HOLES, CHASES ETC. ARE NOT IN THEIR CORRECT LOCATIONS, MAKE THE NECESSARY CORRECTIONS AT NO COST TO THE OWNER. AVOID EXCESSIVE CUTTING AND DO NOT CUT STRUCTURAL MEMBERS WITHOUT CONSENT OF ARCHITECT/ENGINEER.

PATCH AROUND ALL OPENINGS TO MATCH EXISTING CONSTRUCTION.

DUCTWORK:
ALL DUCTWORK AND HANGER FABRICATION SHALL BE INSTALLED AS PER LATEST MECHANICAL CODE REQUIREMENTS AND SMACNA MANUAL. DUCTWORK SHALL BE CONSTRUCTED OF NEW HOT-DIPPED GALVANIZED SHEET METAL ASTM A-120 FOR EACH SIDE.

TURNING VANES SHALL BE INSTALLED IN ALL MITERED ELBOWS. TAPE ALL CROSS-JOINTS IN SHEET METAL DUCT WITH HARDCAST.

LOW PRESSURE TAKE-OFF FITTINGS SHALL BE STRAIGHT-SIDED HIGH EFFICIENCY WITH 2" ELEVATED LOCKING QUADRANT DAMPER. BRANCH DUCT SERVING DIFFUSERS SHALL BE SAME SIZE AS NECK DIAMETER. (MIN)

EXTENSION OF EXISTING DUCTWORK SHALL BE MADE WITH SAME MATERIAL.

FLEXIBLE DUCT:
FLEXIBLE FIBROUS GLASS DUCT SHALL BE FACTORY FABRICATED ASSEMBLY, UL 181 LISTED, COMPOSED OF CLASS I AIR DUCT MATERIAL COMPLYING WITH NFPA 90A AND 90B. FLEXIBLE DUCT WRAPPED WITH FLEXIBLE GLASS FIBER INSULATION, R-6 MINIMUM, LINER TO BE CPE LINER BONDED TO HELIX SPRING WIRE. ENCLOSED BY REINFORCED METALIZED FILM VAPOR BARRIER, RATED FOR MIN. 5000 FPM AND MIN. 10" POS (4-12 ID). ATTACHMENT SHALL BE WITH WORM DRIVE CLAMPS. LENGTH SHALL NOT EXCEED 6'-0".
MANUFACTURER: THERMAFLEX TYPE M-KE, FLEXMASTER 1M

DUCT INSULATION: (LINER AND WRAP)
ALL DUCT INSULATION INSIDE BUILDING SHALL BE R-6 MINIMUM AND MINIMUM R-8 FOR EXTERIOR DUCTWORK. EXPOSED DUCTWORK WITHIN THE CONDITIONED SPACE SHALL NOT BE INSULATED, U.N.O.

DUCT SIZES ON DRAWINGS ARE "CLEAR INSIDE." FOR LINED DUCTWORK.

ADHESIVE AND INSULATING MATERIALS SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS MAXIMUM 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED. ADHESIVES SHALL BE WATERPROOF.

ALL SUPPLY AND RETURN AIR DUCTS SHALL BE PROVIDED WITH THE MINIMUM REQUIRED INSULATION THICKNESS TO ACHIEVE THE INSTALLED R-VALUES LISTED ABOVE.

DUCT LINER (EXPOSED AND CONCEALED DUCTS):
LINE THE FIRST 12' OF LOW PRESSURE SUPPLY AND RETURN RECTANGULAR DUCTS AFTER HEAT PUMP UNITS INTERNALLY WITH SEMI-RIGID GLASS FIBER INSULATION, 1 1/2 PCF DENSITY, R-6 MINIMUM, WITH EXPOSED INTERNAL SURFACE OF A THICK, BLACK, FIRE RETARDANT COATING TO BIND FIBERS TIGHTLY AND PROVIDE A SMOOTH AIRFLOW SURFACE. LINER TO BE RATED FOR 6000 FPM AIR VELOCITY. NRC MIN TO BE .85
MANUFACTURERS: JOHNS MANVILLE "LINACOUSTIC RC", CERTAINTEED "TOUGH GUARD R", KNAUF "ATMOSPHERE" OR OWENS CORNING "QUIET R".

DUCT WRAP (CONCEALED DUCTS):
PROVIDE DUCTWRAP WITH VAPOR BARRIER ON ALL ROUND DUCTS AND RECTANGULAR DUCTS NOT LINED. DUCT WRAP SHALL BE GLASS FIBER BLANKET INSULATION, R-6 MINIMUM, WITH FACTORY APPLIED REINFORCED FLAME RETARDANT FOIL VAPOR BARRIER. PROVIDED THE MINIMUM REQUIRED INSULATION THICKNESS TO ACHIEVE THE INSTALLED R-VALUES LISTED ABOVE. PROVIDE 1.5 PCF DENSITY (TYPE 150). WRAP ALL FLEXIBLE CONNECTIONS AT MECHANICAL UNITS.
MANUFACTURES: JOHNS MANVILLE "MICROLITE XG", CERTAINTEED "SOFT TOUCH", KNAUF "ATMOSPHERE" OR OWENS CORNING "SOFT R".

GRILLES AND DIFFUSERS:
ACCEPTABLE MANUFACTURERS ARE TITUS, PRICE, NAILOR OR KRUEGER. ALL UNITS MUST BE FACTORY FINISHED WITH BORDER TO MATCH CEILING STYLE. CONFIRM COLOR WITH ARCHITECT.

EXHAUST FANS:
ACCEPTABLE MANUFACTURERS ARE GREENHECK AND COOK.

SMOKE DETECTORS:
SMOKE DETECTORS AND HVAC SHUTOFFS SHALL BE TESTED BY AN APPROVED TESTING AGENCY OR QUALIFIED THIRD PARTY SPECIAL INSPECTOR. THE SPECIAL INSPECTOR/TESTING AGENCY SHALL BE AN INDEPENDENT THIRD PARTY INDIVIDUAL OR FIRM AND SHALL NOT BE THE INSTALLING CONTRACTOR. A PROFESSIONAL ENGINEER SHALL SUBMIT A FINAL SIGNED AND SEALED REPORT TO THE MECHANICAL INSPECTOR PRIOR TO CITY ISSUANCE OF FINAL INSPECTION APPROVAL OR OCCUPANCY APPROVAL, INCLUDING CONDITIONAL OCCUPANCY APPROVAL PER 2018 IMC (606.1).

CONDENSATE PIPING:
CONDENSATE PIPING SHALL BE SLOPED TOWARD DRAIN AT A RATE OF 1/8" PER 12" OF RUN. CONTRACTOR SHALL COORDINATE EQUIPMENT INSTALLATION TO ACHIEVE REQUIRED SLOPE. CONDENSATE DRAIN PIPING SHALL BE HARD TEMPER COPPER PIPE, TYPE "DWV" FOR SIZES 2" AND LARGER, TYPE "M" FOR SIZES 1 1/2" AND SMALLER. FITTINGS SHALL BE CAST BRASS OR WROUGHT COPPER IN LONG SWEEP DRAINAGE PATTERN FOR "DWV" PIPING, LONG RADIUS AND 45 DEGREE WYE PATTERN FOR TYPE "M" PIPING.

ALL CONDENSATE PIPING SHALL BE INSULATED WITH 3/4" THICK FLEXIBLE ELASTOMARIC INSULATION. THERMAL CONDUCTIVITY AT AT 75°F. MAXIMUM 0.28 BTU/IN./SQ.FT./DEG. F/HR. AND MAXIMUM WATER VAPOR TRANSMISSION OF 0.1 PERMS.

PIPE AND PIPE FITTINGS:
CONDENSER WATER PIPING, 2 1/2" AND SMALLER, ASTM AI20, SCHEDULE 40, BLACK STEEL OR TYPE L HARD COPPER. JOINTS SHALL BE SCREWED, SOLDER FOR COPPER USING 95% TIN - 5% ANTIMONY.

PROVIDE MANUAL VENTS AT ALL HIGH POINTS.

PIPE TESTING:
ENSURE THAT THE TEST PRESSURE WHICH MIGHT DAMAGE EQUIPMENT DOES NOT REACH THE TESTED EQUIPMENT BY VALVING OFF OR OTHERWISE ISOLATING THE EQUIPMENT DURING THE TEST. OPEN AND CLOSE ALL SYSTEM VALVES AT LEAST ONCE WHILE THE SYSTEM IS PRESSURIZED TO TEST VALVE PACKING. TIGHTEN AS REQUIRED. AFTER ALL TESTS ARE COMPLETED AND PRIOR TO BALANCING OR PUTTING PIPING SYSTEMS INTO SERVICE, DRAIN SYSTEMS AND THOROUGHLY FLUSH OUT ALL DIRT, DEBRIS AND FOREIGN MATERIALS. TEST ALL PIPING SYSTEMS REQUIRED BY BUILDING CODE AND AS FOLLOWS: HOLD ALL HYDROSTATIC TESTS FOR A MINIMUM OF FOUR (4) HOURS WITHOUT LOSS OF PRESSURE. TEST ALL CHILLED/CONDENSER WATER PIPING AT 200 PSIG HYDROSTATIC PRESSURE. (AIR PRESSURE TEST IS NOT ACCEPTABLE)

CLEANING OF CHILLED/CONDENSER WATER PIPING:
AFTER ALL EQUIPMENT AND PIPING HAS BEEN INSTALLED, CLEAN PIPING SYSTEMS AS FOLLOWS: PROVIDE TEMPORARY PIPING AS REQUIRED FOR CLEANING AND FLUSHING OF THE CHILLED/CONDENSER WATER PIPES. CIRCULATE A SOLUTION CONTAINING 1 POUND OF TRISODIUM PHOSPHATE PER 50 GALLONS OF WATER FOR 24 HOURS, AT MAXIMUM TEMPERATURE FOR EACH SYSTEM. DRAIN SYSTEM AND THOROUGHLY FLUSH WITH WATER. FILL, OPERATE AND DRAIN SYSTEM REPEATEDLY UNTIL CLEAN. REMOVE MESH ELEMENTS OF STRAINERS AT PUMPS AND ELSEWHERE AND CLEAN OR REPLACE REPEATEDLY UNTIL SYSTEM CAN OPERATE CONTINUOUSLY WITH NO BUILDUP OF DIRT ON STRAINER MESH ELEMENTS. AFTER PIPE CLEANING IS COMPLETED, FLUSH AND INSPECT ALL MECHANICAL SEALS AND PUMP IMPELLERS FOR WEAR AND/OR DAMAGE AND REPLACE WITH NEW PARTS, IF DEFECTIVE. CLEAN PIPING MATERIALS PRIOR TO INSTALLATION IN THE SYSTEM. ENGINEER WILL BE SUPERVISING AND REVIEWING FLUSHING OF THE PIPING BEFORE ALLOWING THE SYSTEM SYSTEM OPEN TO THE BUILDING.

VALVES:
BALL VALVES:
VALVES SHALL BE RATED 300 PSI WORKING PRESSURE AND WILL HAVE CAST BRONZE BODIES, TEFLON SEATS, FULL-PORT, SEPARATE PACKING NUT WITH ADJUSTABLE STEM PACKING, ANTI-BLOWOUT STEMS, AND STAINLESS STEEL BALL. VALVES SHALL BE 2-PIECE MINIMUM, 3-PIECE WHERE REQUIRED. VALVE ENDS SHALL HAVE FULL DEPTH ANSI THREADS OR EXTENDED SOLDER CONNECTIONS AND MANUFACTURED TO COMPLY WITH MSS-SP110.
ACCEPTABLE VALVES: NIBCO - ST-585-70, MILWAUKEE - BA-400S, KITZ - 68 - PREFERRED.

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT:
CONTRACTOR SHALL PROVIDE IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT. IDENTIFICATIONS SHALL INCLUDE EQUIPMENT LABELS, WARNING SIGNS, PIPE LABELS AND VALVE TAGS. LOCATE EQUIPMENT LABELS WHERE ACCESSIBLE AND VISIBLE. INSTALL TAGS ON VALVES AND CONTROL DEVICES IN PIPING SYSTEMS.

EQUIPMENT LABELS: SHALL BE PLASTIC, MULTILAYER, MULTICOLOR, FOR MECHANICAL ENGRAVING, 1/8 INCH THICK, AND HAVING PREDRILLED HOLES FOR ATTACHMENT HARDWARE. LETTER COLOR TO BE WHITE. BACKGROUND COLOR TO BE BLACK. ABLE TO WITHSTAND TEMPERATURES UP TO 160 DEG F. LENGTH AND WIDTH VARY FOR REQUIRED LABEL CONTENT, BUT NOT LESS THAN 2-1/2 BY 3/4 INCH. MINIMUM LETTER SIZE TO BE 1/4 INCH.

THE OBJECTIVE OF LABELING EQUIPMENT IS TO COORDINATE WITH DRAWINGS, INCLUDING PLANS, DETAILS, AND SCHEDULES. INCLUDE EQUIPMENT'S DRAWING DESIGNATION OR UNIQUE EQUIPMENT NUMBER AS INDICATED ON PLANS, DETAILS, AND SCHEDULES.

PIPE LABELS: PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION.
LABELS SHALL INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS, PIPE SIZE, AND AN ARROW INDICATING FLOW DIRECTION. LETTERING SIZE AT LEAST 1-1/2 INCHES HIGH.

VALVE TAGS: STAMPED OR ENGRAVED WITH 1/4-INCH LETTERS FOR PIPING SYSTEM ABBREVIATION AND 1/2-INCH NUMBERS. BRASS, 0.032-INCH MINIMUM THICKNESS, AND HAVING PREDRILLED OR STAMPED HOLES FOR ATTACHMENT HARDWARE. FASTENERS TO BE BRASS BEADED CHAIN.

SYSTEM TESTING AND BALANCING:
THE CONTRACTOR SHALL INCLUDE IN HIS BID THE SERVICES OF AN TESTING AND BALANCING AGENCY. THE AGENCY SHALL BE APPROVED BY THE OWNER AND ARCHITECT. THE TESTING AGENCY SHALL BE ONE WHICH SPECIALIZES IN THE BALANCING AND TESTING OF HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS TO BALANCE, ADJUST AND TEST EQUIPMENT AND AIR DISTRIBUTING AND EXHAUSTING SYSTEMS, AND PIPING SYSTEMS AS HEREIN SPECIFIED. THE TESTING AND BALANCING CONTRACTOR IS RESPONSIBLE FOR ALL AIR AND HYDRONIC SYSTEMS AS WELL AS TESTING AND VERIFICATION OF OPERATION OF ALL THE DUCT SMOKE DETECTORS AND FIRE DAMPERS WITHIN THE SCOPE OF WORK. ALL WORK SHALL BE DONE UNDER DIRECT SUPERVISION OF A REGISTERED PROFESSIONAL HEATING AND VENTILATING ENGINEER OR AABC OR NEBB CERTIFIED COMPANY. A COPY OF THE AIR BALANCE REPORT SHALL BE PROVIDED TO THE ENGINEER OF RECORD, OWNERS REPRESENTATIVE AND THE MECHANICAL INSPECTOR FOR FINAL INSPECTION APPROVAL.

GENERAL PROCEDURES FOR TESTING AND BALANCING SHALL BE IN ACCORDANCE TO THE PROCEDURES CONTAINED IN ASHRAE 111, AND NEBB'S "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS" AND COMPLY WITH REQUIREMENTS IN ASHRAE 62.1-2007, SECTION 7.2.2, "AIR BALANCING."

TOLERANCES OF HVAC SYSTEM'S AIR FLOW RATES AND WATER FLOW RATES ARE AS FOLLOWS: SUPPLY, RETURN, AND EXHAUST AIR SYSTEMS - PLUS OR MINUS 10 PERCENT. COOLING/HEATING-WATER FLOW RATES - MINUS 5 PERCENT.

THE TESTING AND BALANCING CONTRACTOR SHALL BE RESPONSIBLE FOR, DOCUMENT, AND PROVIDE A REPORT ON THE FINAL OPERATION OF THE ENTIRE MECHANICAL SYSTEM. THIS INCLUDES THE TESTING AND BALANCING OF ALL AIR AND HYDRONIC SYSTEMS, NOTIFYING/DOCUMENTING ANY AND ALL DISCREPANCIES BETWEEN INSTALLED CONDITIONS AND CONTRACT DOCUMENTS/DRAWINGS, VERIFICATION OF CONTROLS AND OPERATION OF SEQUENCE OF OPERATIONS AS SET FORTH ON THE MECHANICAL PLANS.

ALL REQUIRED SPECIAL INSPECTIONS TO BE SIGNED BY PROFESSIONAL ENGINEER RETAINED BY TEST AND BALANCE COMPANY. IF ENERGY SYSTEM DESIGN IS TO SIGN SPECIAL INSPECTION FORMS CONTACT FOR FEE.

APPROVED COMPANIES: TECHNICAL AIR BALANCE, ARIZONA AIR BALANCE, PRECISION AIR, GTAB, SOUTHWEST TEST AND BALANCE, SYSTEMS COMMISSIONING AND TESTING AND COMMERCIAL SYSTEM ANALYSIS.

CONTROLS:
A. ALL CONTROLS WORK FOR THIS PROJECT SHALL BE PROVIDED BY JOHNSON CONTROLS AND SHALL INTEGRATE WITH THE EXISTING JOHNSON CONTROLS FACILITY MANAGEMENT SYSTEM. ALL BUILDING CONTROLLERS SHALL COMMUNICATE WITH EXISTING BMS. PROVIDE NECESSARY DEVICES FOR COMPLETE COMMUNICATION. COMPLY WITH BUILDING STANDARDS FOR ALL EQUIPMENT AND PROGRAMMING. COORDINATE WITH BUILDING ENGINEER PRIOR TO BID.
B. PROVIDE ALL NECESSARY COMPLIANT HARDWARE AND SOFTWARE TO MEET THE SYSTEMS FUNCTIONAL SPECIFICATIONS. PROVIDE PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT FOR EVERY CONTROLLER IN SYSTEM, INCLUDING UNITARY CONTROLLERS.
C. PREPARE INDIVIDUAL HARDWARE LAYOUTS, INTERCONNECTION DRAWINGS, AND SOFTWARE CONFIGURATION FROM PROJECT DESIGN DATA.
D. IMPLEMENT THE DETAILED DESIGN FOR ALL ANALOG AND BINARY OBJECTS, SYSTEM DATABASES, GRAPHIC DISPLAYS, LOGS, AND MANAGEMENT REPORTS BASED ON CONTROL DESCRIPTIONS, LOGIC DRAWINGS, CONFIGURATION DATA, AND BID DOCUMENTS.
E. DESIGN, PROVIDE AND INSTALL ALL EQUIPMENT CABINETS, PANELS, DATA COMMUNICATION NETWORK CABLES NEEDED, AND ALL ASSOCIATED HARDWARE.
F. PROVIDE AND INSTALL ALL INTERCONNECTING CABLES BETWEEN SUPPLIED CABINETS, APPLICATION CONTROLLERS, AND INPUT/OUTPUT DEVICES IN EMT CONDUIT.

COMMISSIONING:
PER 2018 IECC SECTION C408.2, ALL MECHANICAL SYSTEMS ARE REQUIRED TO BE TESTED FOR PROPER FUNCTIONALITY TO ENSURE THAT INSTALLED EQUIPMENT MEET PROVISIONS OF SECTION C403. GENERAL CONTRACTOR TO INCLUDE COST OF COMMISSIONING IN BASE BID. THE COMMISSIONING AGENT SHALL BE UNDER CONTRACT WITH THE GENERAL CONTRACTOR, NOT THE MECHANICAL CONTRACTOR. COMMISSIONING REQUIREMENTS INCLUDE THE FOLLOWING:

A. COMMISSIONING PLAN: THE COMMISSIONING PLAN SHALL BE DEVELOPED BY A REGISTERED DESIGN PROFESSIONAL AND SHALL INCLUDE A NARRATIVE DESCRIPTION OF ACTIVITIES TO BE ACCOMPLISHED, LISTING OF SPECIFIC EQUIPMENT AND/OR SYSTEMS TO BE TESTED AND DESCRIPTIONS OF TESTS TO BE PERFORMED, FUNCTIONS TO BE TESTED SUCH AS CALIBRATIONS AND ECONOMIZER CONTROLS, MEASURABLE CRITERIA FOR PERFORMANCE AND CONDITIONS UNDER WHICH TESTS SHALL BE PERFORMED. AT A MINIMUM, TESTING SHALL AFFIRM WINTER AND SUMMER DESIGN CONDITIONS AND FULL OUTSIDE AIR CONDITIONS.

B. SYSTEMS ADJUSTING AND BALANCING: HVAC SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS. AIR AND WATER FLOW RATES SHALL BE MEASURED AND ADJUSTED TO DELIVER FINAL FLOW RATES WITHIN THE TOLERANCES PROVIDED IN THE PRODUCT SPECIFICATIONS. TEST AND BALANCE ACTIVITIES SHALL INCLUDE AIR AND HYDRONIC SYSTEM BALANCING.

C. FUNCTIONAL PERFORMANCE TESTING:

C.1. EQUIPMENT: TESTING SHALL DEMONSTRATE THE INSTALLATION AND OPERATION OF COMPONENTS, SYSTEMS, AND SYSTEM TO SYSTEM INTERFACING RELATIONSHIPS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS SUCH THAT OPERATION, FUNCTION, AND MAINTENANCE SERVICEABILITY FOR EACH OF THE COMMISSIONED SYSTEMS IS CONFIRMED. TESTING SHALL INCLUDE ALL MODES AND SEQUENCE OF OPERATION, INCLUDE UNDER FULL LOAD, PART LOAD AND EMERGENCY CONDITIONS.

C.2. CONTROLS: CONTROL SYSTEMS SHALL BE TESTED TO DOCUMENT THAT CONTROL DEVICES, COMPONENTS, EQUIPMENT, AND SYSTEMS ARE CALIBRATED, ADJUSTED AND OPERATE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. SEQUENCES OF OPERATION SHALL BE FUNCTIONALLY TESTED TO DOCUMENT THEY OPERATE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

C.3. ECONOMIZERS: AIR ECONOMIZERS SHALL UNDERGO A FUNCTIONAL TEST TO DETERMINE THAT THEY OPERATE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

D. PRELIMINARY COMMISSIONING REPORT: THE PRELIMINARY COMMISSIONING REPORT SHALL BE COMPLETED AND CERTIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND PROVIDED TO THE BUILDING OWNER. THE REPORT SHALL IDENTIFY DEFICIENCIES FOUND DURING TESTING THAT HAVE NOT BEEN CORRECTED AT THE TIME OF REPORT PREPARATION, DEFERRED TESTS THAT CANNOT BE PERFORMED AT THE TIME OF REPORT PREPARATION BECAUSE OF CLIMATIC CONDITIONS, AND CLIMATIC CONDITIONS REQUIRED FOR PERFORMANCE OF THE DEFERRED TESTS.

E. DOCUMENTATION REQUIREMENTS: THE FOLLOWING DOCUMENTS SHALL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS OF THE DATE OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY.

E.1. DRAWINGS: CONSTRUCTION DOCUMENTS SHALL INCLUDE THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT.

E.2. MANUALS: AN OPERATING AND MAINTENANCE MANUAL SHALL BE PROVIDED AND INCLUDE THE FOLLOWING: SUBMITTAL DATA FOR EACH PIECE OF EQUIPMENT, MANUFACTURER'S OPERATION AND MAINTENANCE MANUALS, NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY, HVAC CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION, AND A NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING RECOMMENDED SETPOINTS.

E.3. SYSTEM BALANCING REPORT: A WRITTEN REPORT DESCRIBING THE ACTIVITIES AND MEASUREMENTS COMPLETED.

E.4. FINAL COMMISSIONING REPORT: A REPORT OF TEST PROCEDURES AND RESULTS WHICH SHALL INCLUDE THE RESULTS OF FUNCTIONAL PERFORMANCE TESTS, DISPOSITION OF DEFICIENCIES FOUND DURING TESTING INCLUDING DETAILS OF CORRECTIVE MEASURES USED OR PROPOSED, AND FUNCTIONAL PERFORMANCE TEST PROCEDURES USED DURING THE COMMISSIONING PROCESS INCLUDING MEASURABLE CRITERIA FOR TEST ACCEPTANCE, PROVIDED HEREIN FOR REPEATABILITY.

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MARICOPA COMMUNITY COLLEGES
RIO SALADO COLLEGE TOWER:
Third Floor Remodel
2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
MECHANICAL SPECIFICATIONS

SHEET NUMBER:
M002

DRAWN BY:	REVIEWED BY:
RDE	GMS
DATE:	PROJECT NUMBER:
02/08/2021	1831.00

FILE: J:\2020\201003 MCCD Rio Salado Tower 3rd Floor Remodel\M002.dwg
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PLOTTED: 02.05.2021 - 12:12pm

FILE: J:\2020\201003 MCCD Rio Salado Tower 3rd Floor Remodel\M003.dwg

PLOTTED BY: Ryan.Egglnk

PLOTTED: 02.05.2021 – 12:12pm

WATER SOURCE HEAT PUMP SCHEDULE

EQUIP. NO.	MANUF.	MODEL NO.	NOMINAL TON	CFM	MIN. OSA CFM	E.S.P. (IN WG)	FAN HP	COOLING CAPACITY TOTAL MBH	COOLING CAPACITY SENS. MBH	COOLING CAPACITY ENT. AIR DB	COOLING CAPACITY ENT. AIR WB	COOLING CAPACITY ENT. WATER TEMP.	HEATING CAPACITY TOTAL MBH	HEATING CAPACITY ENT. AIR/ WATER TEMP.	GPM	WPD (FT. W.C.)	ELECTRICAL F.L.A.	ELECTRICAL MCA	ELECTRICAL MOCP	ELECTRICAL VOLTS/ PHASE	AHRI EER	AHRI COP	OPER. WEIGHT (LBS)	REMARKS
HP–12	CLIMATEMASTER	TCH024	2.0	800	(8)	0.60	1/2	23.8	18.8	80°F	67°F	90°F	30.7	70°F	6.0	10.7	6.8	7.7	15.0	460/3	14.3	4.9	200	(1)(2)(3)(4)(5)(6)(7)
HP–8,19	CLIMATEMASTER	TCH030	2.5	1000	(8)	0.60	1/2	28.8	23.6	80°F	67°F	90°F	37.8	70°F	7.5	6.0	7.4	8.5	15.0	460/3	14.3	4.8	210	(1)(2)(3)(4)(5)(6)(7)
HP–14	CLIMATEMASTER	TCH036	3.0	1200	(8)	0.50	3/4	33.9	30.3	80°F	67°F	90°F	48.1	70°F	9.0	7.9	10.5	11.9	15.0	460/3	14.0	4.5	230	(1)(2)(3)(4)(5)(6)(7)
HP–1,3,4,6,7, 15,17,18	CLIMATEMASTER	TCH042	3.5	1400	(8)	0.50	3/4	41.1	33.9	80°F	67°F	90°F	43.1	70°F	10.5	12.0	10.7	12.2	15.0	460/3	14.9	4.5	240	(1)(2)(3)(4)(5)(6)(7)
HP–2,9,10,13	CLIMATEMASTER	TCH048	4.0	1600	(8)	0.60	1	48.1	38.4	80°F	67°F	90°F	59.3	70°F	12.0	11.1	12.2	13.8	20.0	460/3	14.2	4.8	290	(1)(2)(3)(4)(5)(6)(7)
HP–5,11,16	CLIMATEMASTER	TCH060	5.0	2000	(8)	0.50	1	58.2	47.3	80°F	67°F	90°F	81.6	70°F	14.0	19.3	13.8	15.8	20.0	460/3	14.8	4.4	340	(1)(2)(3)(4)(5)(6)(7)

1. COORDINATE WITH CONTROLS CONTRACTOR TO PROVIDE CONTROLLER AND ZONE SENSOR, AND INTERFACE WITH THE BUILDING'S ENERGY MANAGEMENT SYSTEM. SEE CONTROLS SCOPE OF WORK.
2. PROVIDE WITH HOSE KIT, 2–POSITION MOTOR–OPERATED VALVE AND MOUNTING KIT, SEE SPECS. SIZE HOSE KIT FOR MAXIMUM 10' PRESSURE DROP INCLUDING VALVES (SHOW IN SUBMITTAL). MINIMUM HOSE KIT SIZE IS 3/4" FOR UNITS 3 TON UNITS AND BELOW. 1" HOSE KIT FOR 3.5 AND 4 TON UNITS. 1.5" HOSE KIT FOR 5 TON UNITS. HOSE KITS TO BE PLENUM RATED.
3. PROVIDE WITH NEOPRENE ISOLATOR ON UNIT MOUNTING BRACKETS. PROVIDE ULTRA–QUIET PACKAGE.
4. PROVIDE DUCT DETECTOR IN RETURN AIR DUCT. FURNISHED BY FIRE ALARM CONTRACTOR, INSTALLED BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR. DETECTOR SHALL BE INTERLOCKED WITH FAN TO SHUT DOWN FAN WHEN SMOKE IS DETECTED IN RETURN DUCT.
5. PROVIDE WITH INTEGRAL CONDENSATE OVERFLOW SWITCH TO SHUT DOWN UNIT COMPRESSOR UPON WATER DETECTION. PROVIDE CONDENSATE PUMP ONLY WHERE ABSOLUTELY NECESSARY AND APPROVED BY BUILDING ENGINEER. FIELD VERIFY PRIOR TO BID AND CONFIRM ALL CONDENSATE DRAINS WILL MEET CORE AND SHELL PIPING RISERS
6. PROVIDE 1" AIR FILTER FRAME BASE MFG. WITH HINGED SWING DOOR FOR AIR TIGHT SEAL AT FILTER.
7. FAN SHALL INCLUDE AN ECM MOTOR RATED AT 265 VAC, COORDINATE WITH ELECTRICAL TO PROVIDE NEUTRAL WIRE TO EACH UNIT.
8. SEE OUTSIDE AIR SCHEDULE FOR QUANTITIES.

OUTSIDE AIR FAN COIL UNIT SCHEDULE

MARK	MANUF.	MODEL	BLOWER CFM	BLOWER E.S.P.	BLOWER HP	BLOWER V/PH	CONDENSER WATER COIL SENS. MBH	TOT. MBH	GPM	EWT/LWT	EAT	LAT	MIN. ROWS	FINS/ IN	PIPE DIA	AIR PD	H2O PD	WEIGHT LBS	REMARKS
OAF–1	GREENHECK	LFC–20–FC–15	1050	1.0	1 1/2	480/3	28.2	28.2	5.7	85/95	115	90.4	6	12	0.625	0.48	7.9	375	(1)(2)(3)
OAF–2	GREENHECK	LFC–25–FC–10	1300	1.0	1	480/3	34.5	34.5	6.9	85/95	115	90.7	6	12	0.625	0.47	10.7	425	(1)(2)(3)

1. BELT DRIVE UNIT WITH SPRING ISOLATORS AND 2" FILTER RACK WITH MERV 13 FILTERS. PROVIDE ALL NECESSARY BELTS AND SHEAVES TO BALANCE UNIT TO AIRFLOW SHOWN. DOUBLE WALL CONSTRUCTION. COORDINATE MOUNTING WITH FIELD CONDITIONS PRIOR TO ORDER. PREM EFF MOTOR.
2. FAN COIL UNIT SHALL BE CONTROLLED BY BMS. PROVIDE BACKDRAFT DAMPER ON SUPPLY DUCTWORK.
3. SMOKE DETECTORS SHALL BE INSTALLED DOWNSTREAM OF THE AIR FILTERS AND AHEAD OF ANY BRANCH CONNECTIONS IN THE SYSTEM IN ACCORDANCE WITH 2018 IMC SECTION 606. SMOKE DETECTORS SHALL BE PROVIDED AND WIRED/COMMISSIONED BY FIRE ALARM CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR.

DUCTLESS SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE

FAN COIL UNIT EQUIP. NO.	SERVICE	MANUF.	MODEL NO.	CFM	EXT. S.P. IN WG	VOLTS/ PHASE	CONDENSING UNIT EQUIP. NO.	MANUF.	MODEL NO.	VOLTS/ PHASE	COOLING CAPACITY ENT AIR DB	ENT AIR WB	TOTAL MBH	SENS. MBH	AMBIENT TEMP	MCA/MOCP	SEER	WEIGHT LBS IN/OUT	MAX PIPE LENGTH/ HEIGHT FT	REMARKS
AC–1	IDF ROOM	MITSUBISHI	PKA–A24KA	775	0	208/1	CU–1	MITSUBISHI	PUY–A24NHA	208/1	80°	67°	21.9	17.7	115°F	18/30	17.0	50/165	225/100	(1)(2)(3)(4)(5)(6)(7)

1. CONDENSING UNIT TO BE LOCATED ON THE ROOF. INSTALL CONDENSING UNIT ON C–PORT "AIR–PORT" UTILITY PAD AND SECURE TO ROOF.
2. SIZE AND INSTALL REFRIGERANT LINES AS RECOMMENDED BY MANUFACTURER'S WRITTEN INSTRUCTIONS. INSULATE PIPING WITH 3/4" ARMAFLEX INSULATION. PROVIDE HEAVY GAUGE ALUMINUM JACKET ON ALL PIPING EXPOSED OUTDOORS.
3. PROVIDE WITH SINGLE POINT POWER CONNECTION, INTEGRAL STARTER. INDOOR UNIT IS POWERED FROM THE OUTDOOR UNIT. PROVIDE 14 AWG 3+GROUND WIRE BETWEEN INDOOR AND OUTDOOR UNITS. REFER TO ELECTRICAL PLANS FOR DISCONNECT.
4. PROVIDE CONDENSATE PUMP WIRED TO UNIT.
5. PROVIDE ELECTRONIC HARDWIRED THERMOSTAT AND 5 YEAR WARRANTY ON COMPRESSOR.
6. PROVIDE LOW AMBIENT COOLING OPERATION DOWN TO 23°F.
7. PROVIDE WALL MOUNTED BMS TEMPERATURE SENSOR TIED TO BMS TO SEND ALARM UPON HIGH TEMP LIMIT.

GRILLES/REGISTERS/DIFFUSERS SCHEDULE

MARK	DESCRIPTION	MODULE SIZE	TYPE	MAX. NC AT DESIGN CFM	OBD/ FACE DMPR	FRAME (1)	MATERIAL	FINISH (2)	MANUF.	MODEL	REMARKS
CD–1	SUPPLY DIFFUSER	24"x24"	SQUARE CONE	25	NO	LAY–IN	STEEL	WHITE	TITUS	TMS	(1)(2)(4)
CD–2	SUPPLY DIFFUSER	12"x12"	SQUARE CONE	25	YES	LAY–IN	STEEL	WHITE	TITUS	TMS	(1)(2)(4)
RG–1	RETURN GRILLE	24"x24"	PERFORATED	25	NO	LAY–IN	STEEL	WHITE	TITUS	PAR	(1)(2)(3)
EG–1	EXHAUST GRILLE	12"x12"	LOUVERED	25	YES	LAY–IN	STEEL	WHITE	TITUS	350RL	(1)(2)

1. PROVIDE FRAME STYLE TO SUIT CEILING TYPE. REFER TO ARCHITECTURAL DRAWINGS. HARD LID CEILINGS REQUIRE AUXILIARY MOUNTED FRAMES AND STANDARD LAY–IN DIFFUSERS. PROVIDE FACE DAMPER ON GRILLES AND DIFFUSERS LOCATED IN HARD LID CEILINGS.
2. CONFIRM FINISH WITH ARCHITECT PRIOR TO ORDERING.
3. PROVIDE WITH FULL SIZE SOUND BOOT BY MECHANICAL CONTRACTOR. REFER TO DETAIL.
4. RUNOUTS TO BE SAME SIZE OR LARGER THAN NECK SIZE. UNLESS NOTED OTHERWISE. REFER TO SUPPLY DIFFUSER NECK SCHEDULE.

CD–1,2 SUPPLY DIFFUSER SCHEDULE: (4)

250 CFM AND BELOW 8"ø NECK
251 CFM– 400 CFM 10"ø NECK
401 CFM– 600 CFM 12"ø NECK
601 CFM– 800 CFM 14"ø NECK
801 CFM– 1000 CFM 15"ø NECK

USE SCHEDULE U.N.O ON DRAWINGS

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MARICOPA COMMUNITY COLLEGES
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2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

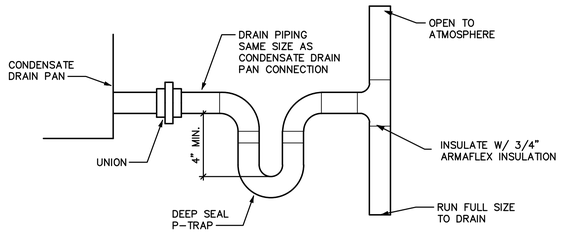
BIDDING SET

KEY:

SHEET TITLE:
MECHANICAL SCHEDULES

SHEET NUMBER:
M003

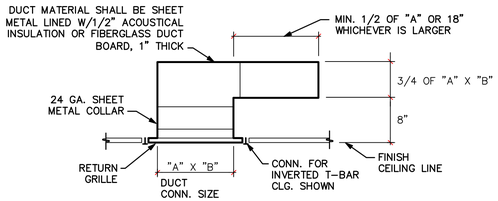
DRAWN BY:	REVIEWED BY:
RDE	GMS
DATE: 02/08/2021	PROJECT NUMBER: 1831.00



CONDENSATE PIPING DETAIL

SCALE: NOT TO SCALE

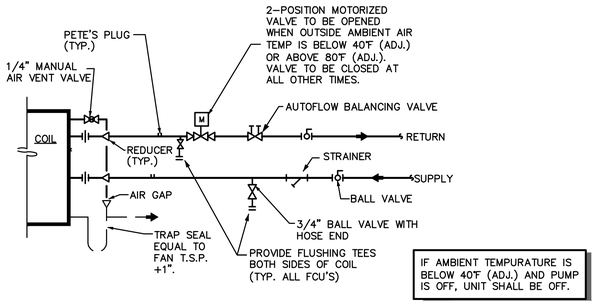
6 / M004



RETURN AIR BOOT DETAIL

SCALE: NOT TO SCALE

5 / M004



IF AMBIENT TEMPURATURE IS BELOW 40°F (ADJ.) AND PUMP IS OFF, UNIT SHALL BE OFF.

CONDENSER WATER FAN COIL PIPING DETAIL

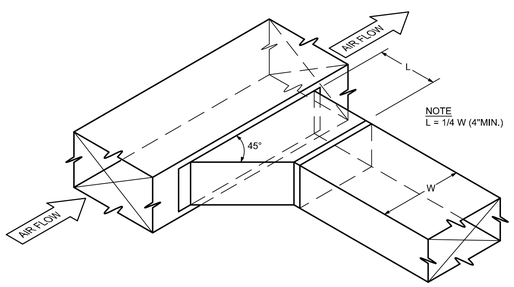
SCALE: NOT TO SCALE

4 / M004

REQUIRED OUTDOOR VENTILATION PER 2018 IMC 403.3

UNIT MARK	OCCUPANCY CLASSIFICATION	ZONE FLOOR AREA (SQ.FT.) Az	DEFAULT OCCUPANCY (#/1000S.F.)	NUMBER OF OCCUPANTS Pz	OCCUPANT OUTDOOR AIR RATE Rp (CFM/PERSON)	AREA OUTDOOR AIR RATE Ra (CFM/SQ.FT.)	ZONE AIR DISTRIBUTION EFF. Ez	ZONE OUTDOOR AIRFLOW Vot (CFM)	OUTDOOR AIRFLOW REQUIRED (CFM)	OUTDOOR AIRFLOW PROVIDED (CFM)
HP-1	OFFICE	628	5	3	5	0.06	0.8	66	66	70
HP-2	OFFICE	1370	5	7	5	0.06	0.8	147	217	225
	CONFERENCE	181	50	9	5	0.06	0.8	70		
HP-3	OFFICE	584	5	3	5	0.06	0.8	63	63	70
HP-4	OFFICE	1305	5	7	5	0.06	0.8	142	142	150
HP-5	OFFICE	846	5	4	5	0.06	0.8	89	89	95
HP-6	STORAGE	434	–	–	–	0.12	0.8	65	230	240
	MAIN ENTRY LOBBY	496	10	5	5	0.06	0.8	69		
	RECEPTION AREA	360	30	11	5	0.06	0.8	96		
HP-7	OFFICE	604	5	3	5	0.06	0.8	64	70	70
HP-8	OFFICE	780	5	4	5	0.06	0.8	84	84	95
HP-9	OFFICE	780	5	4	5	0.06	0.8	84	84	95
HP-10	OFFICE	351	5	2	5	0.06	0.8	39	252	260
	CORRIDOR	307	–	–	–	0.06	0.8	23		
	STORAGE	150	–	–	–	0.12	0.8	23		
	RECEPTION AREA	638	30	19	5	0.06	0.8	167		
HP-11	OFFICE	830	5	4	5	0.06	0.8	88	88	95
HP-12	CONFERENCE	250	50	13	5	0.06	0.8	100	100	110
HP-13	OFFICE	1456	5	8	5	0.06	0.8	160	160	170
HP-14	OFFICE	394	5	2	5	0.06	0.8	42	42	50
HP-15	OFFICE	558	5	3	5	0.06	0.8	61	61	70
HP-16	OFFICE	343	5	2	5	0.06	0.8	39	129	140
	CORRIDOR	608	–	–	–	0.06	0.8	46		
	STORAGE	289	–	–	–	0.12	0.8	44		
HP-17	OFFICE	1380	5	7	5	0.06	0.8	148	148	155
HP-18	OFFICE	834	5	4	5	0.06	0.8	88	88	95
HP-19	OFFICE	356	5	2	5	0.06	0.8	40	40	50

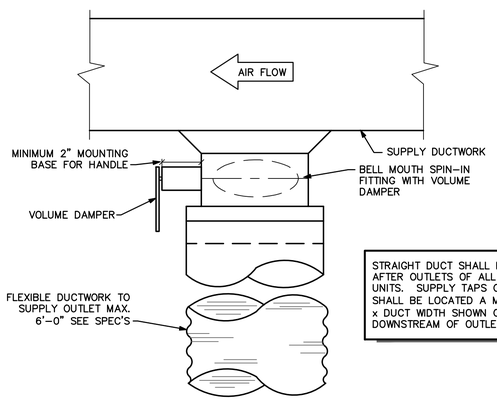
BALANCE OUTSIDE AIR TO EACH UNIT TO AIRFLOWS SHOWN IN "PROVIDED" COLUMN.



SUPPLY AIR DUCT CONNECTION DETAIL

SCALE: NOT TO SCALE

3 / M004

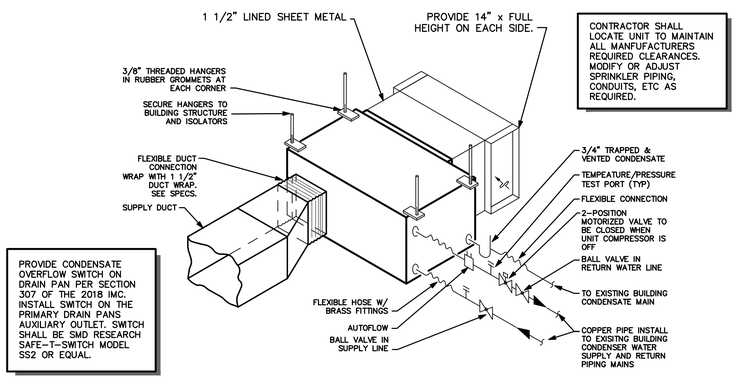


STRAIGHT DUCT SHALL BE PROVIDED AFTER OUTLETS OF ALL ROOFTOP UNITS. SUPPLY TAPS OR ELBOWS SHALL BE LOCATED A MINIMUM OF (2 x DUCT WIDTH SHOWN ON PLAN) DOWNSTREAM OF OUTLETS.

BRANCH DUCT TAKE-OFF DETAIL

SCALE: NOT TO SCALE

2 / M004



CONTRACTOR SHALL LOCATE UNIT TO MAINTAIN ALL MANFUFACTURERS REQUIRED CLEARANCES. MODIFY OR ADJUST SPRINKLER PIPING, CONDUITS, ETC AS REQUIRED.

PROVIDE CONDENSATE OVERFLOW SWITCH ON DRAIN PAN PER SECTION 307 OF THE 2018 IMC. INSTALL SWITCH ON THE PRIMARY DRAIN PANS AUXILIARY OUTLET. SWITCH SHALL BE SMD RESEARCH SAFE-T-SWITCH MODEL SS2 OR EQUAL.

HEAT PUMP UNIT DETAIL

SCALE: NOT TO SCALE

1 / M004

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MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
MECHANICAL SCHEDULES AND DETAILS

SHEET NUMBER:
M004

DRAWN BY:	REVIEWED BY:
RDE	GMS
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

FILE: J:\2020\201003 MCCD Rio Salado Tower 3rd Floor Remodel\M004.dwg
PLOTTED BY: Ryan.Eggink
PLOTTED: 02.05.2021 - 12:12pm

CONTROLS SCOPE OF WORK:

THE CONTROLS CONTRACTOR SHALL UPGRADE THE EXISTING CONTROLS SYSTEM CONSISTING OF A HIGH-SPEED, PEER-TO-PEER NETWORK OF DDC CONTROLLERS AND A WEB-BASED OPERATOR INTERFACE. THE EXISTING NAE SHALL INTEGRATE WITH EXISTING ADX WEB SERVER GATHERING DATA FROM THIS SYSTEM AND GENERATE WEB PAGES ACCESSIBLE THROUGH A CONVENTIONAL WEB BROWSER ON EACH PC CONNECTED TO THE NETWORK. OPERATORS SHALL BE ABLE TO PERFORM ALL NORMAL OPERATOR FUNCTIONS THROUGH THE WEB BROWSER INTERFACE.

THE SYSTEM SHALL DIRECTLY CONTROL HVAC EQUIPMENT AS SPECIFIED IN THE SEQUENCE OF OPERATIONS FOR HVAC CONTROLS INCLUDED IN THESE DOCUMENTS.

PROVIDE NEW CONTROLLER FOR EACH HEAT PUMP AND FAN COIL. EACH ZONE CONTROLLER SHALL PROVIDE OCCUPIED AND UNOCCUPIED MODES OF OPERATION BY INDIVIDUAL ZONE. NEW CONTROLLERS ARE TO BE REPROGRAMMED TO ACCOMPLISH THE SEQUENCE AND POINTS LISTS INCLUDED IN THESE DOCUMENTS. INCLUDE ANY GRAPHICS UPDATES TO REPRESENT FLOOR PLAN CHANGES AND EQUIPMENT PROVIDED

A LINE ITEM PRICE SHALL BE INCLUDED FOR REPLACEMENT OF EXISTING N2 CONTROLLERS TO NEW BACNET MS/TP._N2 COMPATIBLE. NEW CONTROLLERS SHALL DO BOTH MSTP OR N2 COMMUNICATIONS.

NEW TEMPERATURE SENSORS SHALL BE MCCCD STANDARD DEVICES THROUGHOUT THE BUILDING.

PROVIDE NEW FIELD DEVICES, SENSORS, ENGINEERING AND COMMISSIONING SERVICES AT THE NEW HEAT PUMP UNITS AS INDICATED TO ACCOMPLISH SEQUENCE AND POINTS LISTS AS OUTLINED IN THESE DOCUMENTS.

MODIFICATIONS TO EXISTING CONTROLS AT FLUID COOLER, PUMPS, ETC. ARE NOT IN THE SCOPE. MODIFICAITON TO THE EXISTING CONTROLS ON THE OTHER FLOORS IS ALSO NOT INCLUDED IN THIS SCOPE.

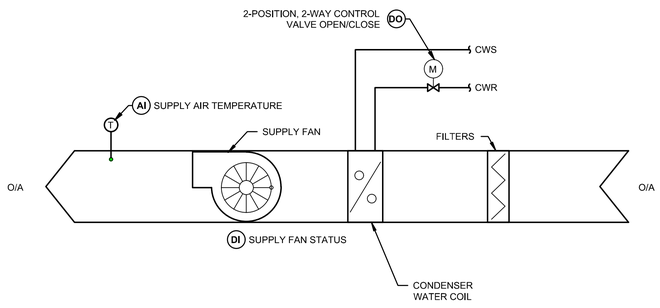
1. ALL EXISTING CONTROLS OUTSIDE THIS PROJECT SCOPE SHALL REMAIN OPERATIONAL AS IS (N2). ALL NEW CONTROLS SHALL BE N2 COMMUNICATIONS.
2. IN THE BASE SCOPE, THE EXISTING HEAT PUMP CONTROLLERS ARE TO BE REMOVED AND TURNED OVER TO THE CAMPUS. A NEW CGM SHALL BE PROVIDED AT EACH OF THE NEW HEAT PUMP UNITS AND FAN COIL UNITS. THE NEW HEAT PUMP UNITS AND FCU'S SHALL HAVE ALL OF THE ASSOCIATED ANCILLARY POINTS TERMINATED TO NEW CGM'S AND ASSOCIATED IOM'S AT EACH UNIT. ALL NEW CONTROLLERS SHALL BE SETUP TO COMMUNICATE N2 TO EXISTING BUIDLING NAE.
3. ALL NEW SPACE TEMPERATURE SENSORS SHALL BE SA BUS DEVICES, TERMINATED TO THE ASSOCIATED CGM AND/OR ONE OF THE ASSOCIATED IOM'S.
4. JCI SHALL RFI ANY AND ALL CONFLICTS, MISUNDERSTANDINGS OR CLARIFICATIONS THEY IDENTIFY, FOR INCLUSION IN THIS SCOPE PRIOR TO FINAL PROPOSAL.

SEQUENCE OF OPERATIONS

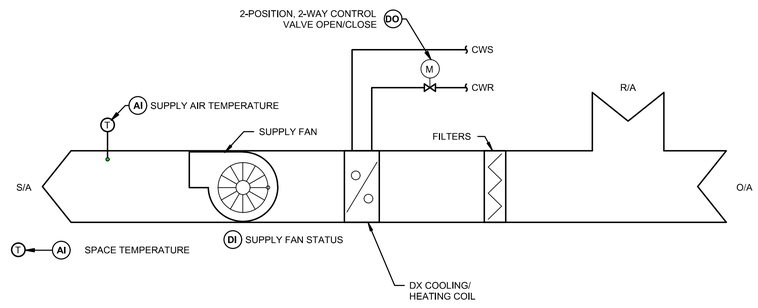
1. OPERATION: OPERATE HEAT PUMPS FROM THE BUILDING AUTOMATION SYSTEM TIME PROGRAM DURING OCCUPIED HOURS. PROGRAMMED START/STOP CONTROL SHALL HAVE ADJUSTABLE ADVANCED START SETPOINT/TIME. PROGRAMMED START/STOP BY INDIVIDUAL HEAT PUMP.
2. OCCUPIED MODE: SET POINT 75°F (ADJ.) FOR COOLING AND 70°F (ADJ.) FOR HEATING. CONTROLS SHALL PROVIDE AUTOMATIC CHANGEOVER BETWEEN HEATING AND COOLING MODES, WITH A MINIMUM 5°F DEADBAND. DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL RUN CONTINUOUSLY. THE CONTROL VALVE SHALL OPEN AND THE DX COOLING/HEATING SHALL STAGE TO MAINTAIN THE OCCUPIED SPACE TEMPERATURE SETPOINT.
3. UNOCCUPIED MODE: SETBACK SET POINT 85°F (ADJ.) FOR COOLING AND 63°F (ADJ.) FOR HEATING. SETBACK SET POINT FOR COOLING SHALL NOT EXCEED 85°F AND SETBACK SET POINT FOR HEATING SHALL NOT FALL BELOW 55°F.
ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS
TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS. AUTOMATIC START CONTROLS SHALL BE PROVIDED FOR EACH UNIT AND SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE UNIT IN ORDER TO BRING THE SPACE TO THE DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO OCCUPANCY. DURING UNOCCUPIED PERIODS, THE SUPPLY FAN SHALL CYCLE ON/OFF AS REQUIRED. THE DX COOLING/HEATING SHALL STAGE TO MAINTAIN THE UNOCCUPIED SPACE TEMPERATURE SETPOINT, WITH THE CONTROL VALVE OPENING WHEN THE COMPRESSOR IS ENERGIZED.
4. SMOKE DETECTOR SHUTDOWN: THE UNIT SHALL SHUT DOWN IN RESPONSE TO A SIGNAL FROM THE SMOKE DETECTOR INDICATING THE PRESENCE OF SMOKE. THE SMOKE DETECTOR SHALL BE INTERLOCKED TO THE UNIT THROUGH THE DRY CONTACTS OF THE SMOKE DETECTOR. A MANUAL RESET OF THE SMOKE DETECTOR SHALL BE REQUIRED TO RESTART THE UNIT. SMOKE DETECTOR SHALL BE INTERLOCKED WITH BUILDING FIRE ALARM SYSTEM.
5. POINTS LIST:
   A. SUPPLY AIR TEMPERATURE
   B. SUPPLY FAN STATUS
   C. CONTROL VALVE OPEN/CLOSE
   D. SPACE TEMPERATURE

SEQUENCE OF OPERATIONS

1. OPERATION: OPERATE FAN COILS FROM THE BUILDING AUTOMATION SYSTEM TIME PROGRAM DURING OCCUPIED HOURS. PROGRAMMED START/STOP CONTROL SHALL HAVE ADJUSTABLE ADVANCED START SETPOINT/TIME.
2. OCCUPIED MODE: FAN TO RUN CONTINUOUSLY. TWO POSITION CONTROL VALVE SHALL BE OPEN WHENEVER IN OCCUPIED MODE AND THE OUTSIDE TEMPERATURE IS BELOW 40 DEG F (ADJ) AND ABOVE 80 DEG F (ADJ). OTHERWISE THE VALVE WILL BE CLOSED.
3. UNOCCUPIED MODE: FAN SHALL BE OFF AND VALVE CLOSED.
4. SMOKE DETECTOR SHUTDOWN: THE UNIT SHALL SHUT DOWN IN RESPONSE TO A SIGNAL FROM THE SMOKE DETECTOR INDICATING THE PRESENCE OF SMOKE. THE SMOKE DETECTOR SHALL BE INTERLOCKED TO THE UNIT THROUGH THE DRY CONTACTS OF THE SMOKE DETECTOR. A MANUAL RESET OF THE SMOKE DETECTOR SHALL BE REQUIRED TO RESTART THE UNIT. SMOKE DETECTOR SHALL BE INTERLOCKED WITH BUILDING FIRE ALARM SYSTEM.
5. POINTS LIST:
   A. SUPPLY AIR TEMPERATURE
   B. SUPPLY FAN STATUS
   C. CONTROL VALVE OPEN/CLOSE



2 OUTSIDE AIR FAN COIL UNIT CONTROLS DIAGRAM
NOT TO SCALE



1 WATER SOURCE HEAT PUMP UNIT CONTROLS DIAGRAM
NOT TO SCALE

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Project #
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No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
MECHANICAL CONTROLS

SHEET NUMBER:
M005

DRAWN BY:	REVIEWED BY:
RDE	GMS
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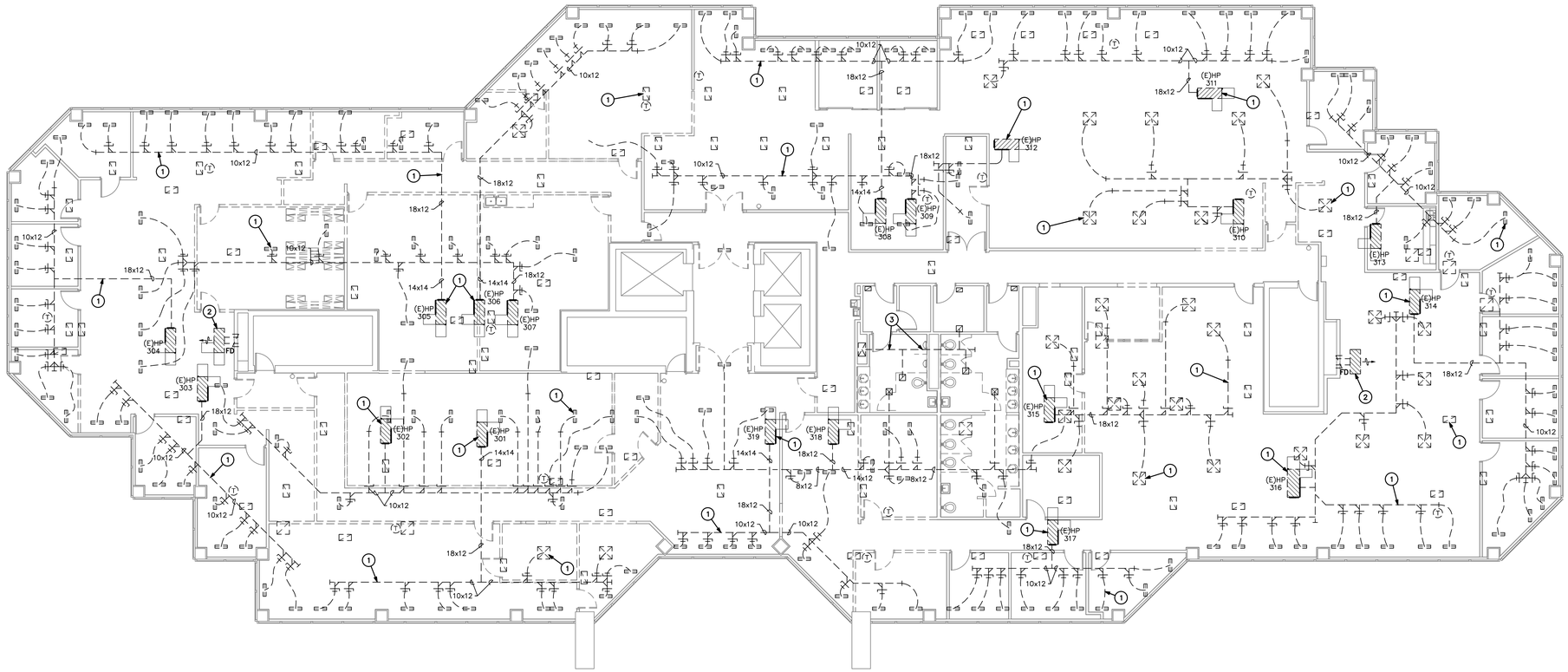

MECHANICAL DEMO PLAN - 3RD FLOOR

SCALE: 1"=10'-0"

N

KEYED NOTES

1. ALL EXISTING MECHANICAL EQUIPMENT, DUCTWORK, AND AIR DISTRIBUTION DEVICES SHOWN LIGHT AND DASHED TO BE REMOVED EXCEPT WHERE SHOWN ON NEW PLAN. REFER TO NEW PLAN. DISPOSE OF ALL EQUIPMENT AS DIRECTED BY OWNER. DEMO ALL CONDENSER WATER PIPING RUNOUTS AND HOSE KITS BACK TO MAIN AND CAP AS REQUIRED. MAINS ARE TO REMAIN. REMOVE ALL UNUSED EQUIPMENT, DUCTWORK, AND PIPING SUPPORTS. CONTRACTOR TO FIELD VERIFY. (TYPICAL)
2. REMOVE EXISTING OUTSIDE AIR FAN COIL UNIT AND ASSOCIATED DUCTWORK AND FIRE DAMPER.
3. EXISTING EXHAUST DUCTWORK TO REMAIN.

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No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
MECHANICAL DEMO PLAN 3RD FLOOR

SHEET NUMBER:
M100

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DATE:	PROJECT NUMBER:
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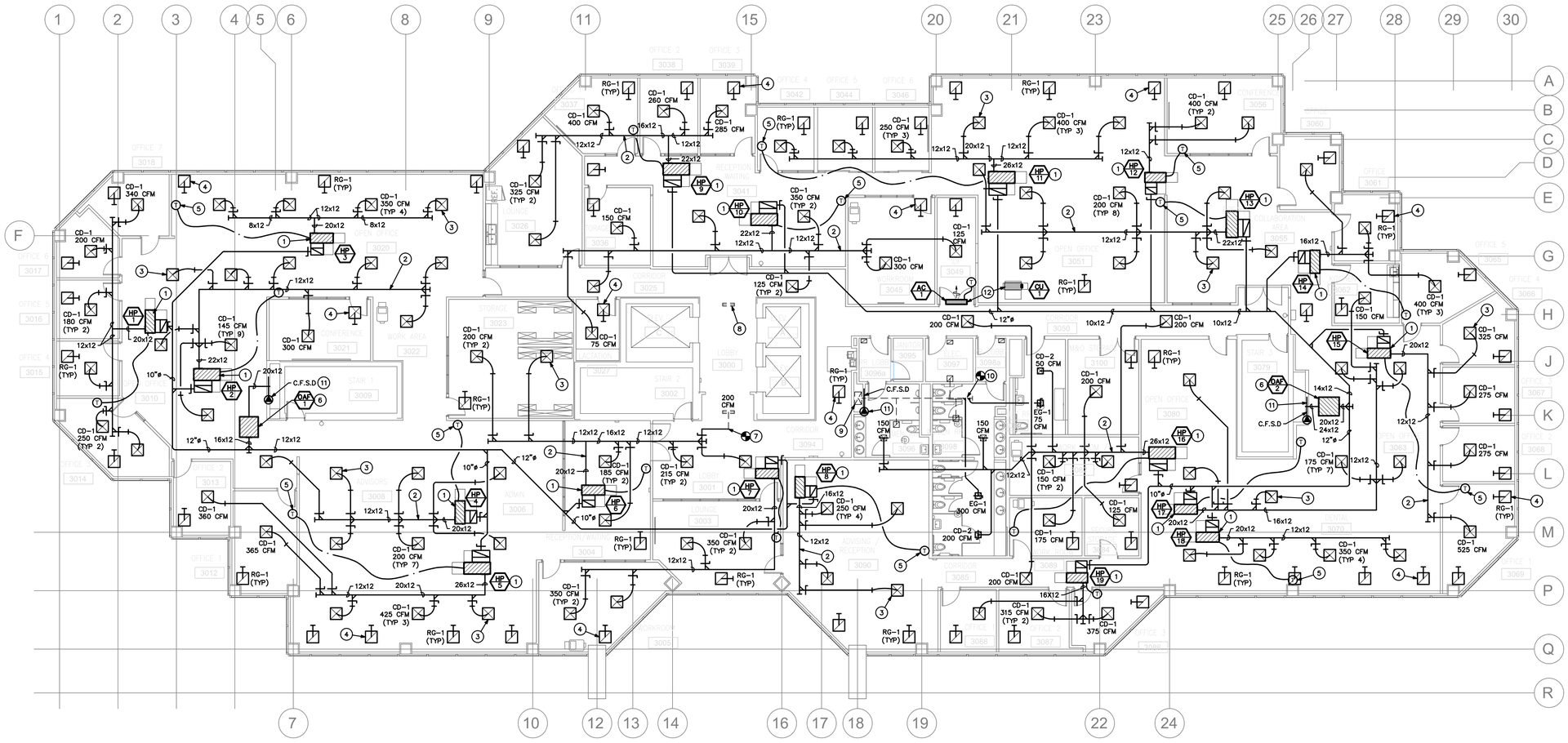

MECHANICAL FLOOR PLAN - 3RD FLOOR

SCALE: 1"=10'-0"

NOTE: NO COMBUSTIBLE MATERIALS INCLUDING ABS, PVC, CPVC, ETC. SHALL BE LOCATED ABOVE CEILINGS WHETHER EXISTING OR NEW. CONTRACTOR TO NOTIFY OWNER IF NON-COMPLIANT MATERIALS ARE DISCOVERED DURING CONSTRUCTION. 2012 IMC SECTION 602.2.1

NOTE:
CEILING SPACE IS BEING USED AS A RETURN AIR PLENUM.

-MATERIALS INSTALLED IN OPEN PLENUMS ABOVE CEILING TILES REQUIRE LIMITED FLAME SPREAD. (IMC 602.2.1)

-ALL PIPING AND MATERIALS INSTALLED IN AN AIR PLENUM SPACE SHALL BE LISTED FOR PLENUM USE. (IMC 602.2.1)

-ALL WIRING SHALL COMPLY WITH 2005 NEC 300-22(b)

CONTROLS:
CONTRACTOR TO UPDATE EMS INCLUDING GRAPHIC INTERFACE TO REFLECT CHANGES TO FLOOR PLAN AND HVAC EQUIPMENT IN SCOPE OF WORK.

PATCH AND REPAIR ANY DAMAGED DUCTWORK. SEAL OPENINGS AIRTIGHT AND INSULATE TO MATCH EXISTING.

KEYED NOTES

1. INSTALL NEW WATER SOURCE HEAT PUMP UNIT. REFER TO SCHEDULE. COORDINATE INSTALLED LOCATIONS AND LEFT/RIGHT HAND CONFIGURATION WITH FIELD CONDITIONS. REFER TO PIPING PLAN M300 FOR NEW CONDENSOR WATER PIPING. (TYPICAL)
2. EXTEND NEW LOW PRESSURE SUPPLY DUCTWORK AS SHOWN. COORDINATE WITH FIELD CONDITIONS. (TYPICAL)
3. INSTALL NEW SUPPLY DIFFUSER AT LOCATION SHOWN. EXTEND NEW SUPPLY RUNOUT FROM SUPPLY MAIN AND CONNECT. BALANCE TO AIRFLOWS INDICATED. (TYPICAL)
4. INSTALL NEW RETURN GRILLE AT LOCATION SHOWN. PROVIDE WITH SOUND BOOT. REFER TO SOUND BOOT DETAIL. RETURN GRILLES AT EXTERIOR LOCATIONS SHALL BE PLACED AS CLOSE TO EXTERIOR GLASS AS POSSIBLE. (TYPICAL)
5. INSTALL NEW TEMPERATURE SENSOR AT LOCATION SHOWN. EXTEND PLENUM RATED CONTROL WIRING BACK TO ASSOCIATED UNIT. COORDINATE WITH SYSTEMS FURNITURE. VERIFY FINAL LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION. (TYPICAL) INTERFACE WITH BUILDING AUTOMATION SYSTEM.
6. INSTALL NEW OUTSIDE AIR FAN COIL UNIT AS SHOWN. COORDINATE WITH FIELD CONDITIONS. EXTEND DUCTWORK BACK TO MECHANICAL SHAFT AND PROVIDE COMBINATION FIRE/SMOKE DAMPER. EXTEND OUTSIDE AIR DUCTWORK TO HEAT PUMP UNITS AS SHOWN AND CONNECT TO RETURN PLENUMS WITH BALANCING DAMPER. BALANCE OUTSIDE AIR TO EACH UNIT TO AIRFLOWS ON VENTILATION SCHEDULE. (TYPICAL)
7. CONNECT NEW SUPPLY DUCT TO EXISTING SUPPLY DIFFUSER AND BALANCE TO CFM SHOWN.
8. EXISTING RETURN GRILLE TO REMAIN.
9. EXISTING EXHAUST RISER TO REMAIN.
10. EXTEND NEW EXHAUST DUCTWORK AS SHOWN.
11. PROVIDE NEW COMBINATION FIRE/SMOKE DAMPER AT EXISTING SHAFT PENETRATION. SEE DETAIL.
12. WALL MOUNTED MINI-SPLIT SYSTEM A/C UNIT WITH CONDENSING UNIT MOUNTED ON ROOF. COORDINATE WITH EQUIPMENT VENDOR AND EQUIPMENT IN ROOM FOR FINAL INSTALLED LOCATION. MOUNT AS HIGH AS POSSIBLE. PROVIDE WITH CONDENSATE PUMP WIRED TO INDOOR UNIT. ROUTE REFRIGERANT PIPING UP TO ROOF AND CONNECT TO OUTDOOR UNIT. FIELD VERIFY FOR CONDENSING UNIT LOCATION AND REFRIGERANT PIPING ROUTING AND COORDINATE WITH FACILITY ENGINEER. PROVIDE WALL MOUNTED TEMPERATURE SENSOR TIED TO BMS TO SEND ALARM UPON HIGH TEMP LIMIT.

CONTRACTOR SHALL SIZE O.A. RUNOUTS TO HEAT PUMPS AS SHOWN:

O.A. RUNOUT SCHEDULE
160 CFM OR LESS – 8"ø
161-300 CFM – 10"ø
301-400 CFM – 12"ø

REFER TO SHEET M300 FOR CONDENSATE DRAIN AND CONDENSER WATER PIPING

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No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
MECHANICAL FLOOR PLAN 3RD FLOOR

SHEET NUMBER:
M200

DRAWN BY:	REVIEWED BY:
RDE	GMS
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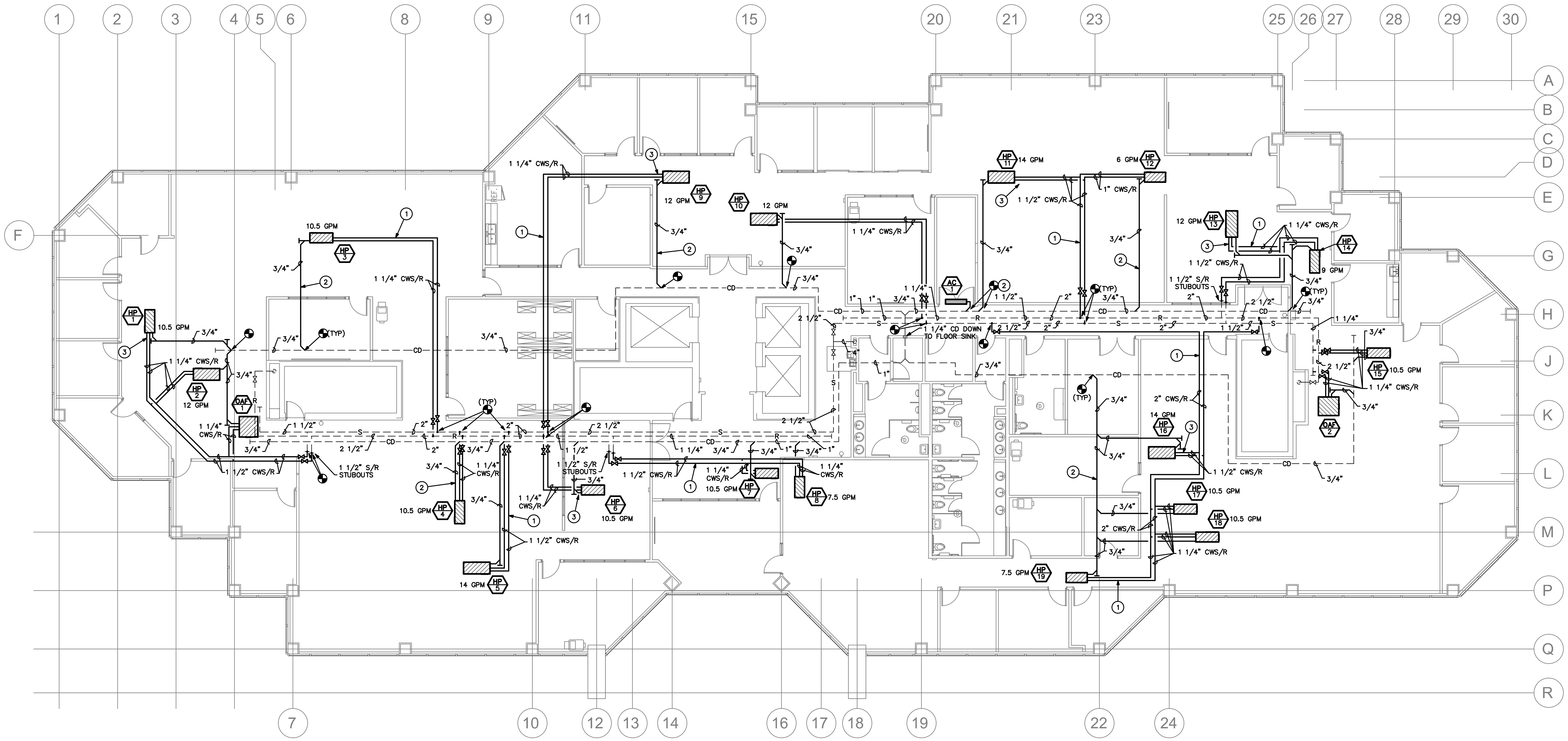

MECHANICAL PIPING PLAN - 3RD FLOOR

SCALE: 1"=10'-0"

N

KEYED NOTES

1. EXTEND NEW SUPPLY AND RETURN CONDENSER WATER PIPING OF SIZE SHOWN AND CONNECT TO EXISTING MAINS OF SIZE INDICATED. FIELD VERIFY EXACT LOCATION AND PIPE SIZE BEFORE CONNECTIONS. PROVIDE NEW SHUT OFF VALVES AT ALL BRANCH PIPING. VALVES TO BE IN ACCESSIBLE LOCATION. (TYPICAL)
2. EXTEND 3/4" CONDENSATE DRAIN PIPING TO EXISTING MAIN. CONTRACTOR TO VERIFY THAT ADEQUATE SLOPE IS AVAILABLE. (TYPICAL)
3. SEE DETAIL FOR NEW VALVE AND CONDENSER WATER PIPING REQUIREMENTS. (TYPICAL)

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Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
MECHANICAL PIPING PLAN 3RD FLOOR

SHEET NUMBER:
M300

DRAWN BY:	REVIEWED BY:
RDE	GMS
DATE:	PROJECT NUMBER:
02/08/2021	1831.00

FIRE PROTECTION NOTES

A. SCOPE OF WORK:

1. REFER TO ARCHITECTURAL DRAWINGS FOR ALL AREAS WHERE WORK IS REQUIRED.

2. MODIFY THE EXISTING WET PIPE FIRE SPRINKLER SYSTEM TO CONFORM TO THE NEW PARTITION LAYOUT AND REFLECTED CEILING PLAN.

5. PROVIDE SYSTEMS WITH ALL NECESSARY SUPPORTS, ANCHORS AND BRACING AND SUBMIT THE DESIGN TO THE ARCHITECT FOR REVIEW. COORDINATE NEW EQUIPMENT AND DEVICE LOCATIONS WITH THE EXISTING BUILDING CONDITIONS.

6. PREPARE COMPLETE FIRE PROTECTION SHOP DRAWINGS AND CALCULATIONS AND SUBMIT TO THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION AND RECEIVE APPROVAL PRIOR TO BEGINNING ANY WORK.

7. CONTRACTOR SHALL PROVIDE ALL PIPING, VALVES, SPRINKLERS, HANGERS AND SUPPORTS NECESSARY FOR A COMPLETE INSTALLATION.

8. IN ALL AREAS WITH SUSPENDED CEILINGS, PROVIDE CONCEALED SPRINKLERS WITH WHITE COVER PLATE. PROVIDE ROUGH BRONZE UPRIGHT SPRINKLERS IN AREAS WITH NO CEILINGS. VERIFY FINISHES WITH ARCHITECT.

9. COORDINATE WORK WITH ALL OTHER TRADES. COORDINATE POWER REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR. COORDINATE LOCATIONS OF FLOW AND TAMPER SWITCHES, AND SUPERVISORY CIRCUITS WITH THE FIRE ALARM CONTRACTOR.

10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING.

11. ALL EQUIPMENT SHALL BE UL LISTED OR FM APPROVED.

12. THE DESIGN, EQUIPMENT, INSTALLATION, TESTING AND MAINTENANCE OF THE FIRE SPRINKLER SYSTEM SHALL BE IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS SET FORTH IN THE LATEST EDITION OF THE FOLLOWING CODES AND STANDARDS:

NFPA NO. 13–FIRE SPRINKLER SYSTEMS
UL LISTINGS
LOCAL AUTHORITY HAVING JURISDICTION

PLUMBING FIXTURE CONN. SCHEDULE

MARK	DESCRIPTION	TRAP SIZE	W	V	CW	HW
WC1	WATER CLOSET	–	4"	2"	2"	–
WC2	WATER CLOSET (ADA)	–	4"	2"	2"	–
UR1	URINAL (ADA)	–	2"	2"	3/4"	–
LV1	LAVATORY (ADA)	1 1/4"	2"	2"	1/2"	1/2"
LV2	LAVATORY (ADA)	1 1/4"	2"	2"	1/2"	1/2"
SK1	SINK (ADA)	1 1/2"	2"	2"	1/2"	1/2"

PLUMBING GENERAL NOTES

1. ALL MATERIALS AND SYSTEMS INSTALLED SHALL COMPLY WITH ALL CODES AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION, INCLUDING THE 2018 INTERNATIONAL PLUMBING CODE (IPC) AS AMENDED BY THE CITY OF PHOENIX, ARIZONA.

2. CONSTRUCTION NOTES:

A. THE PLUMBING CONTRACTOR SHALL COORDINATE HIS WORK WITH ADJACENT WORK AND COOPERATE WITH THE OTHER TRADES SO AS TO FACILITATE THE GENERAL PROGRESS OF THE WORK AND TO AVOID CONFLICT OF ALLOWABLE SPACE FOR OTHER TRADES (ELECTRICAL, ETC). REFER TO ARCHITECTURAL DRAWINGS FOR ALL FIXTURE LOCATIONS.
B. DO NOT LOCATE ANY FLOOR CLEAN–OUTS UNDER OR BEHIND ANY FIXTURES, OR EQUIPMENT.
C. CLEAN–OUTS SHALL BE PROVIDED AT LOCATIONS AS SHOWN, AND SHALL BE AS SPECIFIED. NO PLASTIC CLEAN–OUT COVERS WILL BE ALLOWED. CLEAN–OUT PLUGS SHALL BE BRONZE. ALL CLEAN–OUTS TO BE EQUAL TO THE SIZE OF LINE IN WHICH INSTALLED (4" MAXIMUM), UNLESS NOTED OTHERWISE.
D. EXACT LOCATION OF PLUMBING FIXTURES SHALL BE DETERMINED FROM THE ARCHITECTURAL DRAWINGS.
E. PROVIDE ALL REQUIRED RISERS/DROPS TO INSTALL CONCEALED PIPING WITHIN BUILDING CONSTRUCTION. REFER TO THE REFLECTED CEILING PLANS, SECTIONS AND SCHEDULES ON THE ARCHITECTURAL DRAWINGS TO DETERMINE REQUIRED PLACEMENT OF PIPING. PIPING IN EXPOSED AREAS SHALL BE SUPPORTED AS HIGH AS POSSIBLE TO THE UNDERSIDE OF THE OVERHEAD STRUCTURE.
F. PROVIDE STOP VALVES AT ALL FIXTURES.
G. REFER TO THE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL AREA SEPARATION, FIRE AND SMOKE WALLS. PROVIDE UL LISTED FIRE STOPPING PER THE DETAILS ON THE ARCHITECTURAL DRAWINGS AND AS SPECIFIED IN THE ARCHITECTURAL AND MECHANICAL SPECIFICATIONS.
H. THE CONTRACTOR HAS THE RESPONSIBILITY OF REVIEWING ALL OF THE CONTRACT DOCUMENTS CONCERNING THIS PROJECT AND SHALL INCLUDE ALL REQUIRED WORK IN HIS BID.
I. PLUMBING CONTRACTOR SHALL VERIFY THE INVERT ELEVATION OF THE EXISTING DRAINS TO WHICH NEW WASTE LINES ARE TO BE CONNECTED PRIOR TO INSTALLING THE NEW WASTE SYSTEM. VERIFY THAT THE SYSTEM CAN BE INSTALLED AS SHOWN. IF AFTER INVESTIGATION THE PLUMBING CONTRACTOR DETERMINES THAT REQUIRED INVERTS AND SLOPES CANNOT BE MET, HE SHALL ADVISE THE ENGINEER IMMEDIATELY.
J. CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING SEWER AND WATER LINES SHOWN ON PLANS, PRIOR TO INSTALLATION OF NEW WORK.
K. CORE DRILL OR SAWCUT FLOORS AND PATCH AS REQUIRED TO INSTALL NEW DRAIN LINES AS SHOWN.
L. CONTRACTOR SHALL COORDINATE WITH BUILDING MANAGER PRIOR TO INSTALLATION OF WORK THAT AFFECTS EXISTING OR ADJACENT TENANTS.
M. PATCH ALL SURFACES DAMAGED BY THIS CONSTRUCTION TO MATCH EXISTING OR REMODELED SURFACES.

3. DOMESTIC WATER PIPING & RO PIPING:

NOTE: ALL COMPONENTS OF THE POTABLE DOMESTIC WATER SYSTEM MUST MEET NSF 61 AND/OR NSF 372 TEST STANDARDS AND FEDERAL ACT S.3874 KNOWN AS "REDUCTION OF LEAD IN DRINKING WATER ACT".

A. ABOVE FLOOR: TYPE "L" HARD TEMPER SEAMLESS COPPER TUBING PER ASTM B–88. WROUGHT SOLDER JOINT FITTINGS PER ANSI B16.22, OR CAST BRONZE SOLDER JOINT FITTINGS PER ANSI B16.8. USE 95–5 TIN–ANTIMONY SOLDER W/ LESS THAN .2% LEAD CONTENT.
B. BELOW GRADE, OUTSIDE BUILDING: TYPE "K" HARD TEMPER SEAMLESS COPPER TUBING PER ASTM B–88. WROUGHT SOLDER JOINT FITTINGS PER ANSI B16.22, OR CAST BRONZE SOLDER JOINT FITTINGS PER ANSI B16.8. USE 1000 DEGREE F SILVER SOLDER.
C. INSIDE BUILDING, BELOW FLOOR SLAB ON GRADE (1–1/2" AND SMALLER): TYPE "K", ASTM B–88 SOFT TEMPER WITH NO JOINTS BELOW FLOOR.
D. USE OF FERROUS NIPPLE BUSHINGS, UNIONS, ETC. IS NOT PERMITTED WITH COPPER PIPING.
E. DIELECTRIC INSULATING FITTINGS SHALL BE INSTALLED AT ALL WATER CONNECTIONS BETWEEN FERROUS AND COPPER PIPING.
F. SHUT–OFF VALVES SHALL BE SHALL BE EQUAL TO NIBCO NO. S/T–585–70–66–LF, 150#, 600 PSI WOG, FULL–PORT, SOLDER END, BALL VALVE, 1/2" THRU 2".

4. SANITARY WASTE & VENT PIPING AND RAINWATER PIPING:

A. ABOVE AND BELOW FLOOR – ALL SIZES:
CAST IRON SOIL PIPE AND FITTINGS, BEARING THE SEAL OF THE CAST IRON SOIL PIPE INSTITUTE, IN CONFORMANCE WITH CISPI 301–00 AND ASTM 888 STANDARDS FOR HUBLESS PIPE AND FITTINGS. COUPLINGS: STAINLESS STEEL COUPLINGS CONFORMING TO CISPI 310–97 WITH NEOPRENE SEALING GASKETS CONFORMING TO ASTM STANDARD C564.
B. SANITARY DRAIN PIPING 3" AND SMALLER SHALL SLOPE AT 1/4" PER FT. MINIMUM. SANITARY DRAIN PIPING 4" AND LARGER SHALL SLOPE AT 1/8" PER FT. UNLESS OTHERWISE NOTED.
C. INSTALLATION SHALL CONFORM TO REQUIREMENTS OF THE 2018 IPC.
D. CLEAN–OUTS SHALL BE SAME SIZE AS PIPE INSTALLED IN, 4" MAXIMUM. CLEAN–OUTS SHALL BE PROVIDED ON RUNS OF PIPING EXCEEDING 30' IN LENGTH. PROVIDE ADDITIONAL CLEAN–OUT IN EACH LINE EXCEEDING 135 DEGREES CHANGE OF DIRECTION.

PLUMBING FIXTURE SPECS.

USE POLISHED CHROME PLATED, ADJUSTABLE BRASS P–TRAPS AND WASTE ARMS WITH WALL ESCUTCHEONS AT ALL EXPOSED LOCATIONS. USE POLISHED CHROME PLATED FAUCETS WITH REMOVABLE TRIM, BRASS BODY AND BRASS HANDLES. FIXTURES AND SUPPLY FITTING SHALL BE AS SPECIFIED. PROVIDE DIAPHRAGM TYPE POLISHED CHROME PLATED FLUSH VALVES WITH INTEGRAL VACUUM BREAKERS AND SCREW DRIVER STOPS. PROVIDE FIXTURE STOPS AND VALVES AHEAD OF ALL EQUIPMENT OR FIXTURES. AFTER FIXTURES ARE SET IN PLACE AND ARE SECURED, CAULK ALL AROUND BETWEEN FIXTURES AND WALL/FLOOR WITH EITHER "DOW CORNING N. 780" OR "G.E. CONSTRUCTION SEALANT" WHITE SILICONE CAULKING COMPM OUND. ALL FIXTURES THAT ARE WHEELCHAIR ACCESSIBLE SHALL BE MOUNTED PER A.D.A. (AMERICAN DISABILITIES ACT) STANDARDS. ALL PLUMBING FIXTURES SHALL BE LOW FLOW TYPE FIXTURES AS REQUIRED BY U.P.C. CHAPTER 18.

CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL PLUMBING FIXTURES AND EQUIPMENT FOR REVIEW. NO SUBSTITUTIONS WITHOUT PRIOR APPROVAL

WC1 WATER CLOSET:
FIXTURE: AMERICAN STANDARD 'AFWALL MILLENIUM' MODEL #2257.101, WALL HUNG, VITREOUS CHINA, 1½" TOP INLET SPUD, 1.28 GPF. REFER TO ARCHITECTURAL DRAWINGS FOR INSTALLATION DIMENSIONS.
FLUSH VALVE: SLOAN MODEL #111 SMO–1.28, BATTERY POWERED, SENSOR ACTIVATED, EXPOSED FLUSH VALVE WITH ELECTRIC OVERRIDE, 1.28 GPF CONSUMPTION, POLISHED CHROME, FOR 1½" INLET TOP SPUD.
SEAT: OPEN, ELONGATED, SELF SUSTAINING CHECK HINGE.
CARRIER: ZURN, 500 LB RATING

WC2 WATER CLOSET (ADA):
FIXTURE: SAME AS WC1, EXCEPT INSTALLED TO MEET ADA REQUIREMENTS.

UR1 URINAL (ADA):
FIXTURE: AMERICAN STANDARD 'WASHBROOK' MODEL #6590.001, WALL HUNG, VITREOUS CHINA, ¾" TOP INLET SPUD, 0.125 GPF. REFER TO ARCHITECTURAL DRAWINGS FOR INSTALLATION DIMENSIONS.
FLUSH VALVE: SLOAN #186–SMO–0.125, BATTERY POWERED, SENSOR OPERATED, EXPOSED FLUSH VALVE, POLISHED CHROME, 0.125 GPF MAX. CONSUMPTION, FOR ¾" TOP SPUD.
PROVIDE WITH WALL HANGER AS REQUIRED.

UR2 URINAL (ADA):
FIXTURE: SAME AS UR1, EXCEPT INSTALLED TO MEET ADA REQUIREMENTS.

LV1 LAVATORY (ADA):
FIXTURE: AMERICAN STANDARD 'AQUALYN' MODEL #0475.047, SELF RIMMING DROP–IN W/ FRONT OVERFLOW, VITREOUS CHINA, SINGLE HOLE FAUCET INSTALLATION. REFER TO ARCHITECTURAL DRAWINGS FOR INSTALLATION DIMENSIONS. INSTALL TO MEET ADA REQUIREMENTS.
FAUCET: SLOAN # SF–2450–4–BAT–CP–0.5GPM, BATTERY POWERED, INFRARED SENSOR ACTIVATED LAVATORY FAUCET WITH 0.5 GPM SPRAY HEAD, 4" TRIM PLATE. PROVIDE WITH ASSE 1070 LISTED THERMOSTATIC MIXING VALVE ON HW SUPPLY TO FIXTURE.
TRAP: 1–1/4" X 1–1/2" ADJUSTABLE CAST BRASS P–TRAP WITH CLEAN–OUT PLUG, ESCUTCHEON, CHROME FINISH.
SUPPLIES: 1/2" X 3/8" CHROME PLATED BRASS, QUARTER–TURN, BALL–TYPE ANGLE STOP WITH LOOSE KEY FLEXIBLE STAINLESS STEEL BRAIDED RISER.
INSULATION: ADA CONFORMING, WHEELCHAIR ACCESSIBLE LAVATORY P–TRAP AND ANGLE STOP VALVE ASSEMBLIES SHALL BE COVERED W/ PROTECTIVE PIPE COVERINGS CONFORMING TO THE REQUIREMENTS OF ATSM E–84 25/450. COLOR TO BE SPECIFIED BY ARCHITECT.

LV2 LAVATORY (ADA):
FIXTURE: AMERICAN STANDARD 'LUCERNE' MODEL #0355.012, WALL HUNG (HANGER INCLUDED), VITREOUS CHINA, 'D' SHAPED BOWL W/ FRONT OVERFLOW, 4" CENTER FAUCET INSTALLATION. REFER TO ARCHITECTURAL DRAWINGS FOR INSTALLATION DIMENSIONS. INSTALL TO MEET ADA REQUIREMENTS.
FAUCET: SLOAN # SF–2450–4–BAT–CP–0.5GPM, BATTERY POWERED, INFRARED SENSOR ACTIVATED LAVATORY FAUCET WITH 0.5 GPM SPRAY HEAD, 4" TRIM PLATE. PROVIDE WITH ASSE 1070 LISTED THERMOSTATIC MIXING VALVE ON HW SUPPLY TO FIXTURE.
TRAP: 1–1/4" X 1–1/2" ADJUSTABLE CAST BRASS P–TRAP WITH CLEAN–OUT PLUG, ESCUTCHEON, CHROME FINISH.
SUPPLIES: 1/2" X 3/8" CHROME PLATED BRASS, QUARTER–TURN, BALL–TYPE ANGLE STOP WITH LOOSE KEY FLEXIBLE STAINLESS STEEL BRAIDED RISER.
INSULATION: ADA CONFORMING, WHEELCHAIR ACCESSIBLE LAVATORY P–TRAP AND ANGLE STOP VALVE ASSEMBLIES SHALL BE COVERED W/ PROTECTIVE PIPE COVERINGS CONFORMING TO THE REQUIREMENTS OF ATSM E–84 25/450. COLOR TO BE SPECIFIED BY ARCHITECT.

SK1 SINK (SINGLE BOWL)(ADA):
FIXTURE: ELKAY MODEL #LRAD212565PD, SINGLE BOWL W/ PERFECT DRAIN, DROP–IN, 18 GAUGE TYPE 304 STAINLESS STEEL, SINGLE FAUCET HOLE PUNCH, REAR CENTER DRAIN. REFER TO ARCHITECTURAL DRAWINGS FOR INSTALLATION DIMENSIONS. INSTALL TO MEET ADA REQUIREMENTS.
FAUCET: CHICAGO FAUCET MODEL #116.223.AB.1, DECK MOUNTED, 5–14" RIGID/SWING GOOSENECK SPOUT, WITH OPTIONAL 1.5 GPM AERATOR, FOR SINGLE HOLE INSTALLATION, 6 VOLT LITHIUM BATTERY POWERED, FOR HOT AND COLD WATER SUPPLYS, POLISHED CHROME PLATED.
DRAIN: CHROME PLATED BRASS BASKET STRAINER WITH 1–1/2" OFFSET TAILPIECE.
TRAP: 1 1/2" X 1 1/2" ADJUSTABLE CAST BODY P–TRAP WITH CLEAN–OUT PLUG, ESCUTCHEON, CHROME FINISH.
SUPPLIES: 1/2" X 3/8" CHROME PLATED BRASS, QUARTER–TURN, BALL–TYPE ANGLE STOP WITH LOOSE KEY FLEXIBLE STAINLESS STEEL BRAIDED RISER.

FD1 FLOOR DRAIN
FIXTURE: ZURN #Z415B DURA COATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLLAR WITH SEEPAGE SLOTS AND TYPE B POLISHED NICKEL BRONZE, ROUND HEAL PROOF LIGHT DUTY STRAINER.
PROVIDE WITH SURE SEAL #SS2009V TRAP SEALER.

WCO WALL CLEAN–OUT:
FIXTURE: ZURN MODEL #Z1446–VP, DURA–COATED CAST IRON BODY, GAS AND WATER TIGHT BRONZE TAPERED THREAD PLUG, ROUND AND SMOOTH STAINLESS STEEL ACCESS COVER W/ VANDAL–PROOF SECURING SCREW.

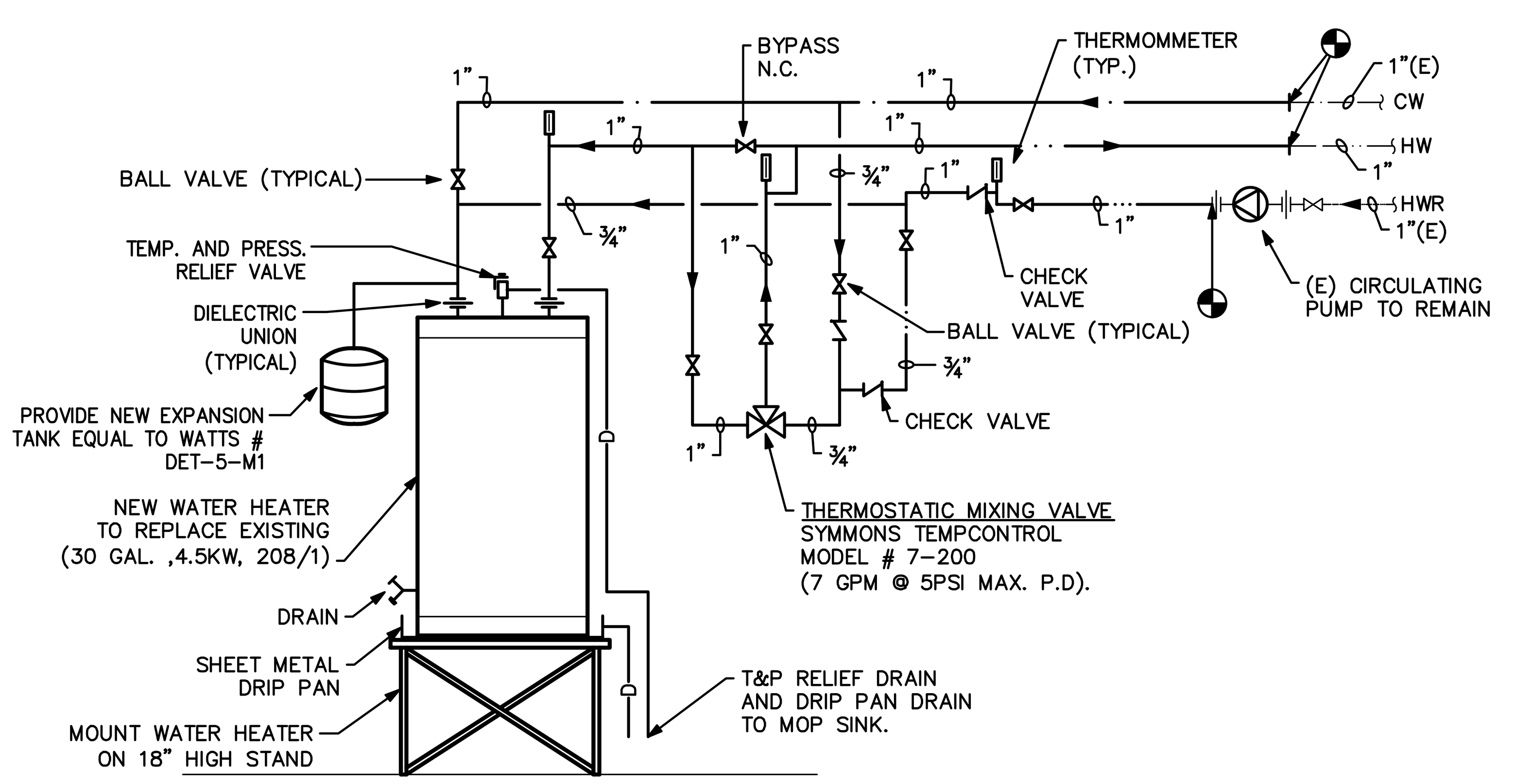
WHA WATER HAMMER ARRESTOR:
ARRESTOR: ZURN 'SHOKTROL' BELLOWS TYPE, SIZED IAW PDI STANDARD WH–201

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	DN	PIPE DOWN
	UP	PIPE UP
	W	SANITARY WASTE
—GW—	GW	GREASE WASTE
—IW—	IW	INDUSTRIAL WASTE
– – – – – –	V	SANITARY VENT
—RW—	RW	RAINWATER PIPING
—RW(OF)—	RW(OF)	RAINWATER PIPING (OVERFLOW)
	RD/OD	ROOF DRAIN / OVERFLOW DRAIN
	FCO / SCO	FLOOR / SURFACE CLEAN–OUT
	WCO	WALL CLEAN–OUT
	FD	FLOOR DRAIN
	VTR	VENT THROUGH ROOF
—ESPD—	ESPD	ELEVATOR SUMP PUMP DISCHARGE
	CW	COLD WATER
	HB / WH	HOSE BIBB / WALL HYDRANT
—PCW—	PCW	PUMPED COLD WATER
—RO—	RO	REVERSE OSMOSIS
—ICW—	ICW	INDUSTRIAL COLD WATER
	HW	HOT WATER
—140°—	140° HW	140° HOT WATER
	HWR	HOT WATER RETURN
—140°—	140° HWR	140 °HOT WATER RETURN
	–	HOT WATER BALANCING VALVE
	CP	CIRCULATING PUMP
—G—	G	NATURAL GAS
—MPG—	MPG	MEDIUM PRESSURE NATURAL GAS
	TMV	THERMOSTATIC MIXING VALVE
—F—	F	FIRE SERVICE (BELOW GRADE)
—F—	FDC	FIRE DEPARTMENT CONNECTION
	–	BOTTOM CONNECTION
	–	TOP CONNECTION
	–	DROP / RISE
	U	UNION
	–	CHECK VALVE
	S.O.V.	SHUT–OFF VALVE
	I.E. / IE:	INVERT ELEVATION
	IAW	IN ACCORDANCE WITH
	A.F.F. / B.F.F.	ABOVE / BELOW FINISHED FLOOR
	P.O.C.	POINT OF CONNECTION

WATER HAMMER ARRESTOR SIZING CHART

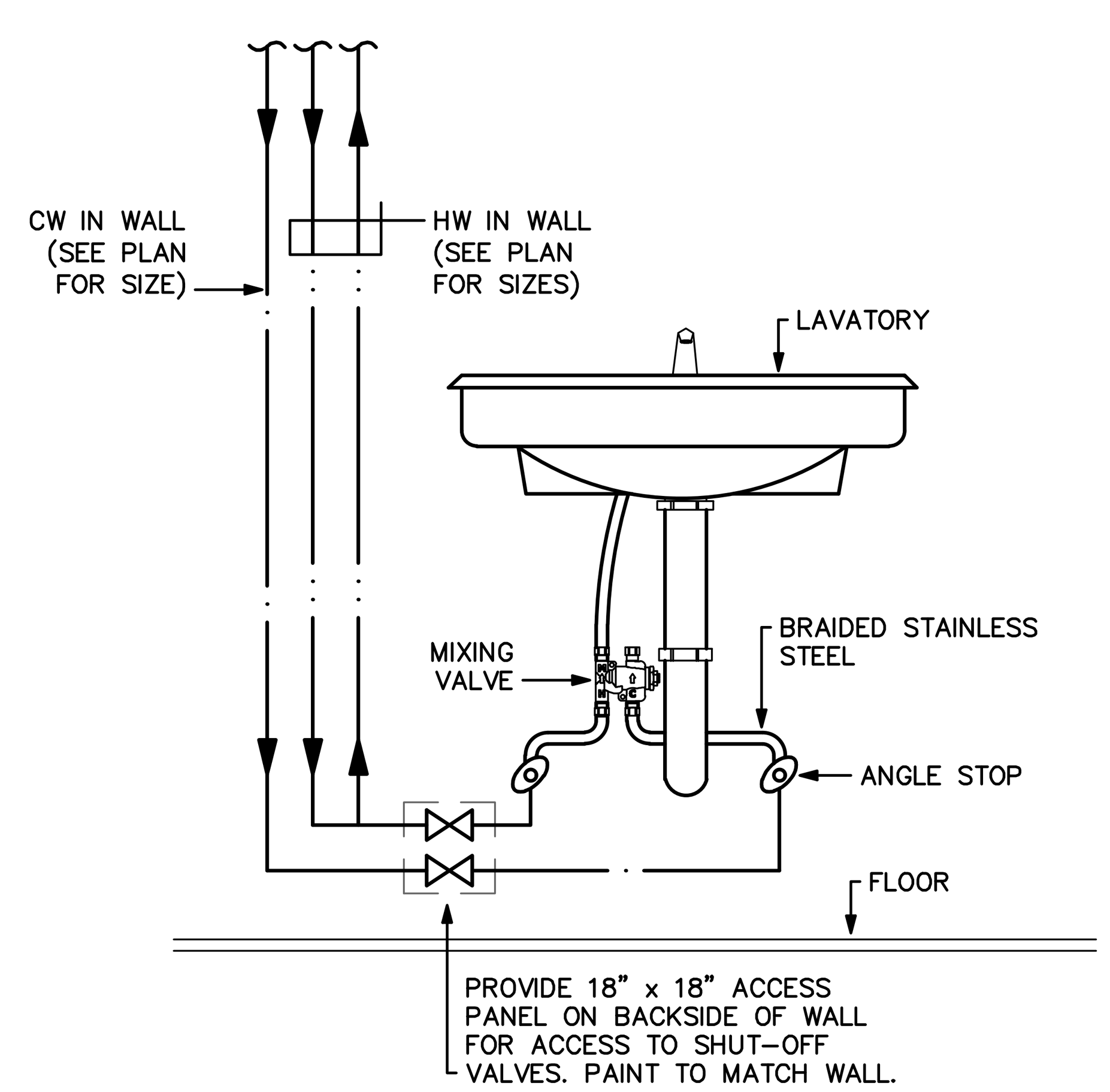
SIZE	CROSS FIXTURE UNITS	PDI SIZE
½"	1–11	'A'
¾"	12–32	'B'
1"	33–60	'C'
1¼"	61–113	'D'
1½"	114–154	'E'
2"	155–330	'F'



REFER TO KEYNOTE 16 ON SHEET P300 FOR FURTHER INFO

ELECTRIC WATER HEATER REPLACEMENT (2)

NOT TO SCALE



SHUT-OFF VALVES AT LAVATORY (1)

NOT TO SCALE

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Registered Professional Engineer (Mechanical) CERTIFICATE NO. 20981 G.MONTE STURDEVANT Date Signed 2/8/2021 ARIZONA U.S.A.
EXPIRES 6–30–2022

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Project # 201003

MARICOPA COMMUNITY COLLEGES
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RIO SALADO COLLEGE
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SHEET NUMBER:
P000

DRAWN BY:	REVIEWED BY:
RJS	MCK
DATE:	PROJECT NUMBER:
02/08/2021	1831.00

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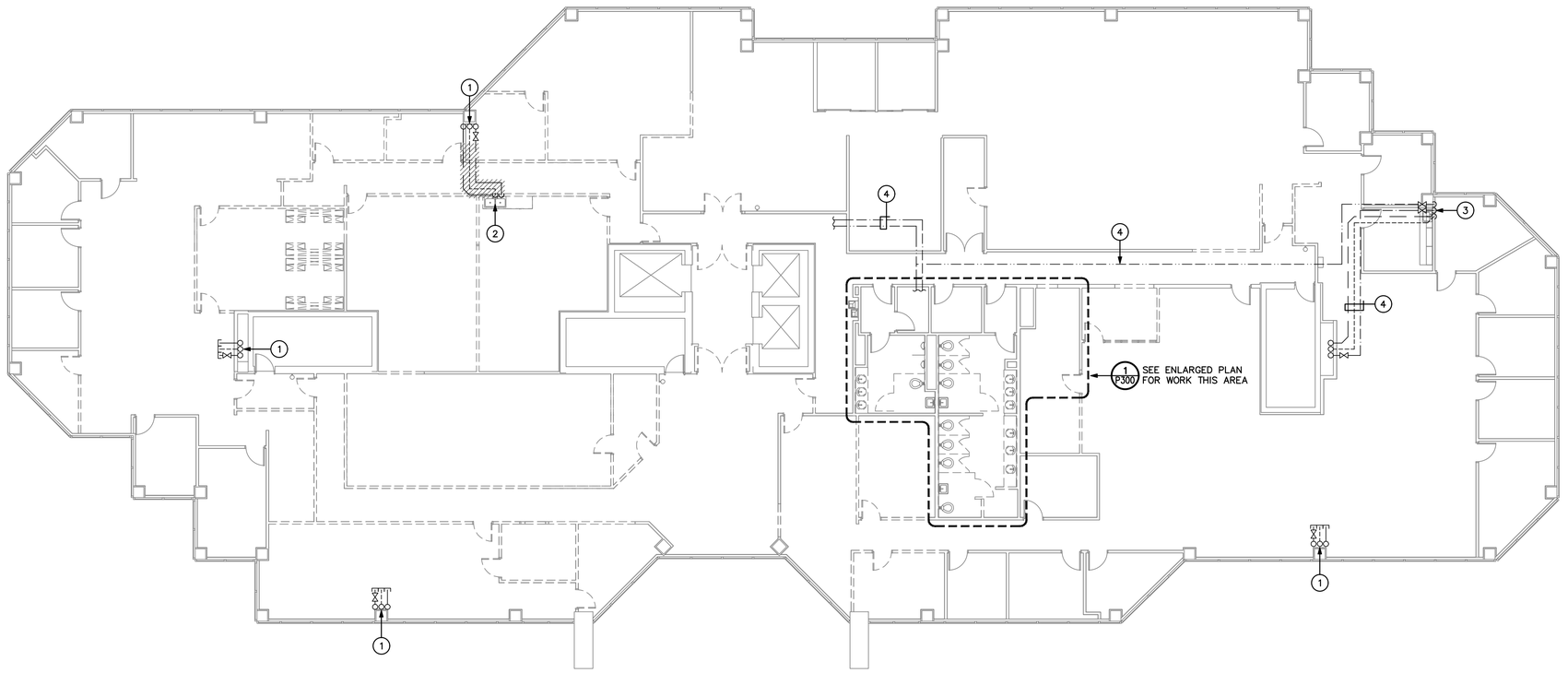
PLOTTED BY: joyson.joy
PLOTTED: 02.08.2021 – 3:21pm



PLUMBING DEMO PLAN - 3RD FLOOR

SCALE: 3/32" = 1'-0"

N

KEYED NOTES

1. EXISTING WET STACKS TO REMAIN (4" SANITARY, 3" VENT, 3" CW).
2. EXISTING SINK TO BE REMOVED. DEMO ALL PIPING INCLUDING TRAP, TRAP ARM, CW & HW STOPS AND SUPPLIES. DEMO PIPING SHOWN HATCHED BACK TO POINTS OF CONNECTION AT WET STACK, CAP TIGHT.
3. EXISTING SINK TO REMAIN.
4. EXISTING PIPING TO REMAIN. SHOWN FOR REFERENCE ONLY.

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RIO SALADO COLLEGE TOWER: Third Floor Remodel

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RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

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PLUMBING DEMO PLAN

SHEET NUMBER:
P100

DRAWN BY:	REVIEWED BY:
RJS	MCK
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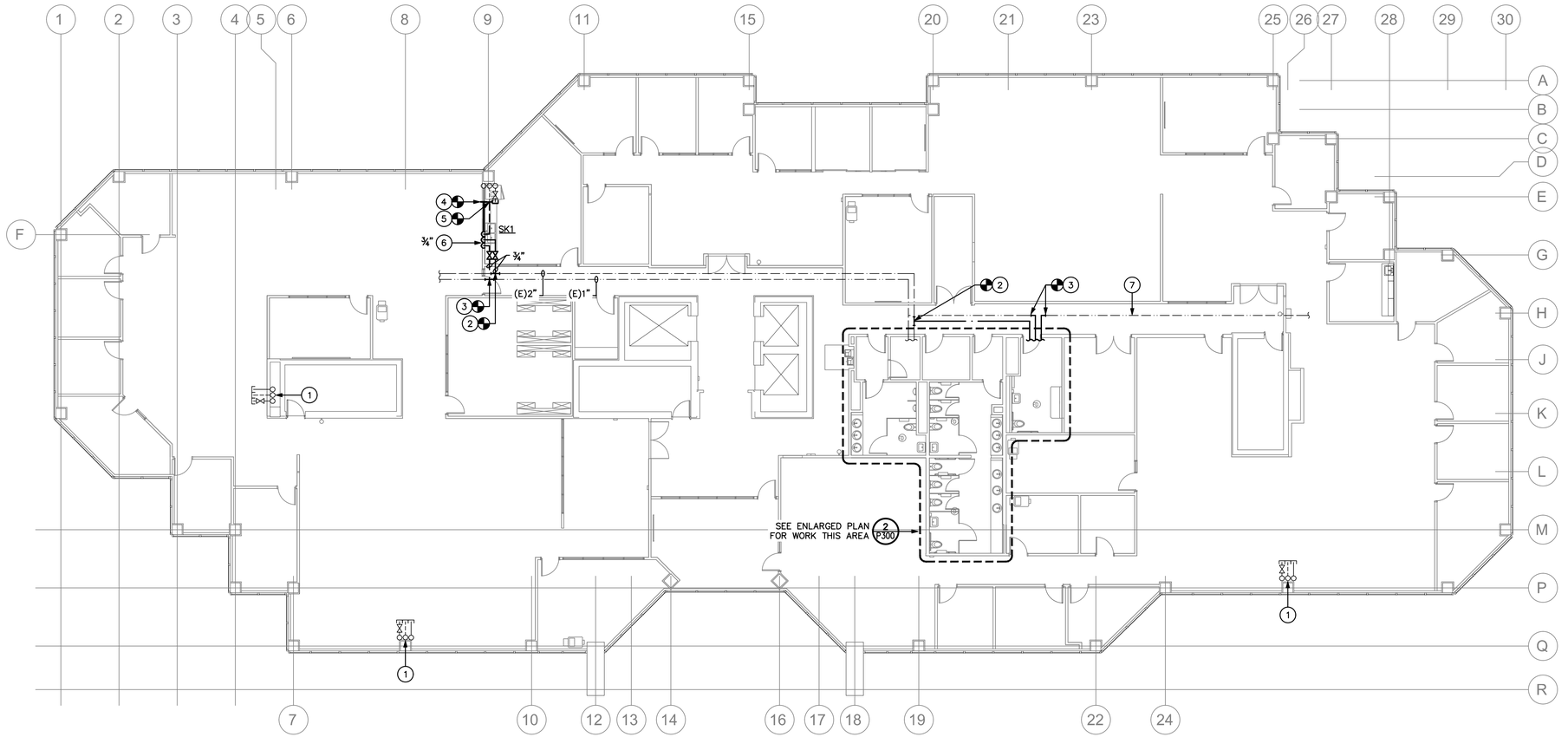

PLUMBING PLAN - 3RD FLOOR

SCALE: 3/32" = 1'-0"

N

KEYED NOTES

1. EXISTING WET STACKS TO REMAIN (4" SANITARY, 3" VENT, 3" CW).
2. CONNECT CW TO EXISTING 2" CW ABOVE CEILING THIS AREA. COORDINATE WORK WITH BUILDING ENGINEER.
3. CONNECT HW TO EXISTING 1" HW ABOVE CEILING THIS AREA. COORDINATE WORK WITH BUILDING ENGINEER.
4. CONNECT SANITARY WASTE PIPING TO EXISTING 4" WASTE STUB-OUT BELOW FLOOR/ABOVE CEILING OF FLOOR BELOW. COORDINATE WORK WITH BUILDING ENGINEER.
5. CONNECT SANITARY VENT TO EXISTING 2" VENT STUB-OUT ABOVE CEILING.
6. CW AND HW DROPS TO SERVE SINK.

SHEET NOTES

1. MODIFY THE EXISTING WET PIPE FIRE SPRINKLER SYSTEM TO CONFORM TO THE NEW PARTITION LAYOUT AND REFLECTED CEILING PLAN.
2. THE PLUMBING CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID, TO FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING WASTE SIZE, INVERT & LOCATION, AND VENT SIZE & LOCATION.
3. ALL REFERENCES ON THESE DRAWINGS TO EXISTING WASTE, WATER, AND VENT PIPING IS FOR REFERENCE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL THESE ITEMS PRIOR TO BID AND INCLUDE IN HIS BID ANY AND ALL AMOUNTS REQUIRED TO ACCOMMODATE EXISTING CONDITIONS.
4. NO ALLOWANCE WILL BE MADE AFTER THE PROJECT HAS BEEN AWARDED FOR FAILURE TO VERIFY EXISTING CONDITIONS.
5. ANY DISCREPANCIES WHICH MAY AFFECT THE CONTRACTORS BID SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND ARCHITECT FOR DIRECTION.
6. COORDINATE ANY REQUIRED INTERRUPTIONS IN ADJACENT OCCUPIED TENANT SPACES WITH BUILDING ENGINEER.

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PLUMBING PLAN - OVERALL 3RD FLOOR

SHEET NUMBER:
P200

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RJS	MCK
DATE:	PROJECT NUMBER:
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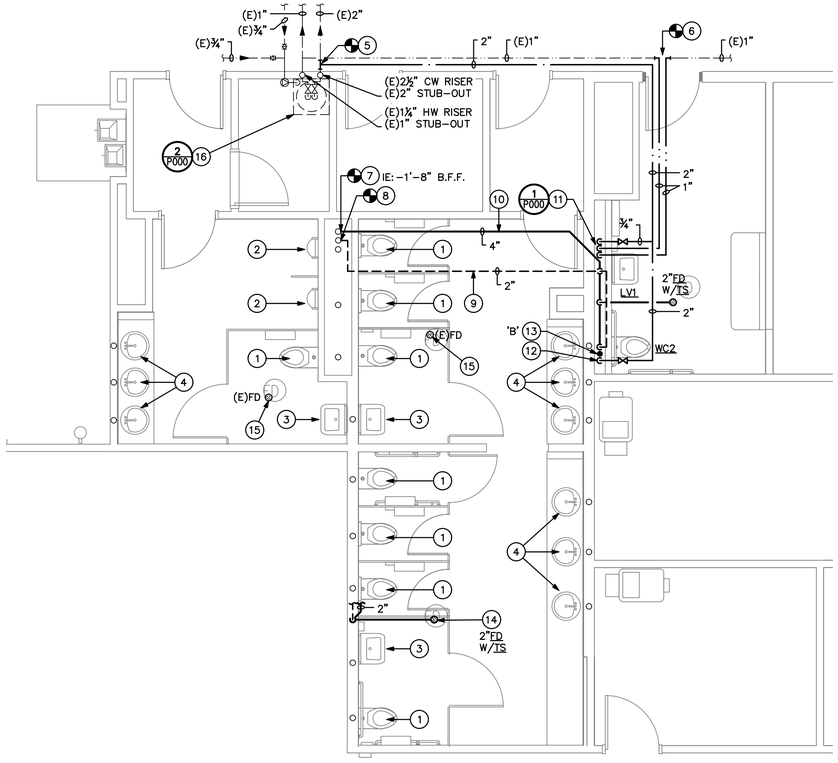
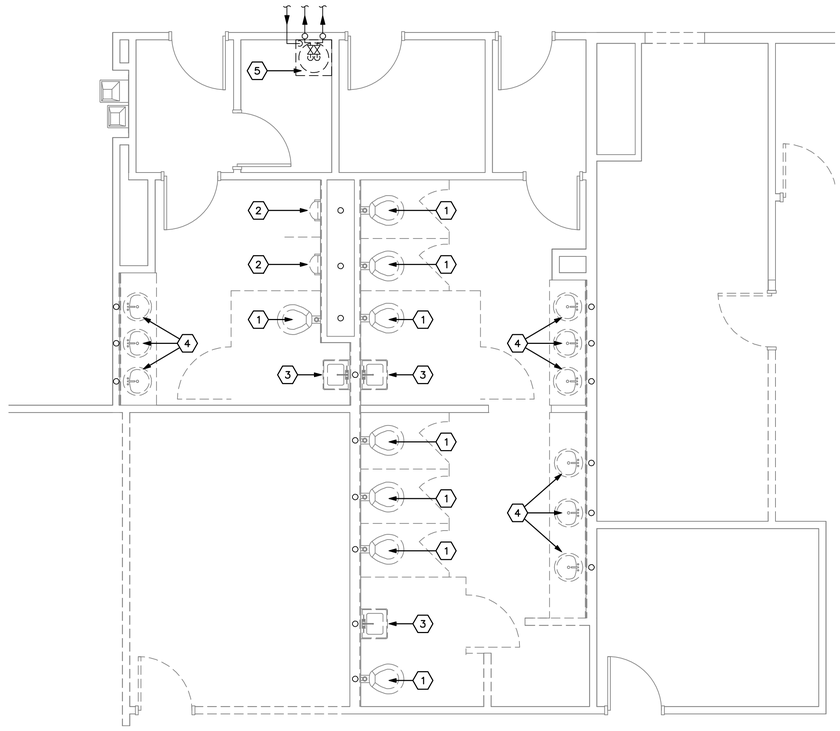


ENLARGED PLUMBING PLAN - RESTROOMS - 3RD FLOOR

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

2



ENLARGED DEMO PLAN - RESTROOM - 3RD FLOOR

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

1

KEYED NOTES

1. INSTALL NEW WATER CLOSET AND FLUSH VALVE.
2. INSTALL NEW URINAL AND FLUSH VALVE.
3. INSTALL NEW WALL HUNG LAVATORY AND FAUCET. PROVIDE NEW SHUT-OFF VALVES, MIXING VALVE (TMV1), AND SUPPLIES. COORDINATE WORK WITH BUILDING ENGINEER.
4. INSTALL NEW LAVATORY AND FAUCET. PROVIDE NEW SHUT-OFF VALVES, MIXING VALVE (TMV1), AND SUPPLIES. COORDINATE WORK WITH BUILDING ENGINEER.
5. CONNECT CW TO EXISTING 2" CW ABOVE CEILING THIS AREA. COORDINATE WORK WITH BUILDING ENGINEER.
6. CONNECT HW TO EXISTING 1" CW ABOVE CEILING THIS AREA. COORDINATE WORK WITH BUILDING ENGINEER.
7. CONNECT SANITARY WASTE PIPING TO EXISTING 4" WASTE STACK IN CHASE AT FLOOR BELOW. ROUTE PIPING ABOVE CEILING AT FLOOR BELOW AS SHOWN. COORDINATE WORK WITH BUILDING ENGINEER.
8. CONNECT SANITARY VENT TO EXISTING 4" VENT STACK IN CHASE.
9. PIPING ABOVE CEILING.
10. PIPING BELOW FLOOR/ABOVE CEILING AT FLOOR BELOW.
11. CW AND HW DROPS IN WALL TO SERVE LAVATORY.
12. CW DROP IN WALL TO SERVE WATER CLOSET.
13. WATER HAMMER ARRESTOR (PDI SIZE NOTED) ON CW SUPPLY. PROVIDE ACCESS PANEL IN WALL. COORDINATE ACCESS PANEL LOCATION WITH ARCHITECT.
14. INSTALL NEW 2" FLOOR DRAIN WITH TRAP SEAL. EXTEND 2" DRAIN BELOW FLOOR AND CONNECT TO EXISTING SANITARY WASTE THIS AREA. FIELD VERIFY EXACT LOCATION. CONNECT NEW SANITARY VENT TO EXISTING IN WALL.
15. EXISTING FLOOR DRAIN TO REMAIN. PROVIDE TRAP SEAL IN EXISTING DRAIN.
16. REPLACE EXISTING WATER HEATER WITH NEW 30 GALLON HEATER, 4.5KW, 208/1PH. TO MATCH EXISTING, AND PROVIDE NEW MASTER MIXING VALVE WITH CONNECTIONS TO EXISTING HOT WATER SUPPLY. REFER TO DETAIL FOR MORE INFO.

DEMO KEYED NOTES

1. EXISTING WATER CLOSETS AND FLUSH VALVES TO BE REMOVED AND REPLACED WITH NEW.
2. EXISTING URINALS AND FLUSH VALVES TO BE REMOVED AND REPLACED WITH NEW.
3. EXISTING WALL HUNG LAVATORY AND FAUCET TO BE REMOVED AND REPLACED WITH NEW. REPLACE VALVES AND SUPPLIES. COORDINATE WATER SHUT-OFF TIMES WITH BUILDING ENGINEER.
4. EXISTING LAVATORY AND FAUCET TO BE REMOVED AND REPLACED WITH NEW. REPLACE VALVES AND SUPPLIES. COORDINATE WATER SHUT-OFF TIMES WITH BUILDING ENGINEER.
5. EXISTING WATER HEATER, CIRCULATION PUMP, AND ALL ASSOCIATED PIPING TO REMAIN.

SHEET NOTES

1. MODIFY THE EXISTING WET PIPE FIRE SPRINKLER SYSTEM TO CONFORM TO THE NEW PARTITION LAYOUT AND REFLECTED CEILING PLAN.
2. THE PLUMBING CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID, TO FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING WASTE SIZE, INVERT & LOCATION, AND VENT SIZE & LOCATION.
3. ALL REFERENCES ON THESE DRAWINGS TO EXISTING WASTE, WATER, AND VENT PIPING IS FOR REFERENCE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL THESE ITEMS PRIOR TO BID AND INCLUDE IN HIS BID ANY AND ALL AMOUNTS REQUIRED TO ACCOMMODATE EXISTING CONDITIONS.
4. NO ALLOWANCE WILL BE MADE AFTER THE PROJECT HAS BEEN AWARDED FOR FAILURE TO VERIFY EXISTING CONDITIONS.
5. ANY DISCREPANCIES WHICH MAY AFFECT THE CONTRACTORS BID SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND ARCHITECT FOR DIRECTION.
6. COORDINATE ANY REQUIRED INTERRUPTIONS IN ADJACENT OCCUPIED TENANT SPACES WITH BUILDING ENGINEER.

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MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ENLARGED PLUMBING PLANS - 3RD FLOOR

SHEET NUMBER:
P300

DRAWN BY:	REVIEWED BY:
RJS	MCK
DATE:	PROJECT NUMBER:
02/08/2021	1831.00

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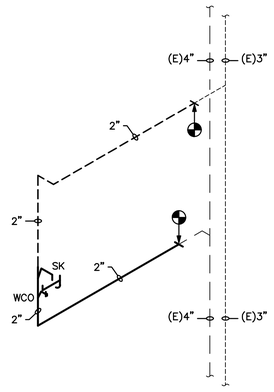
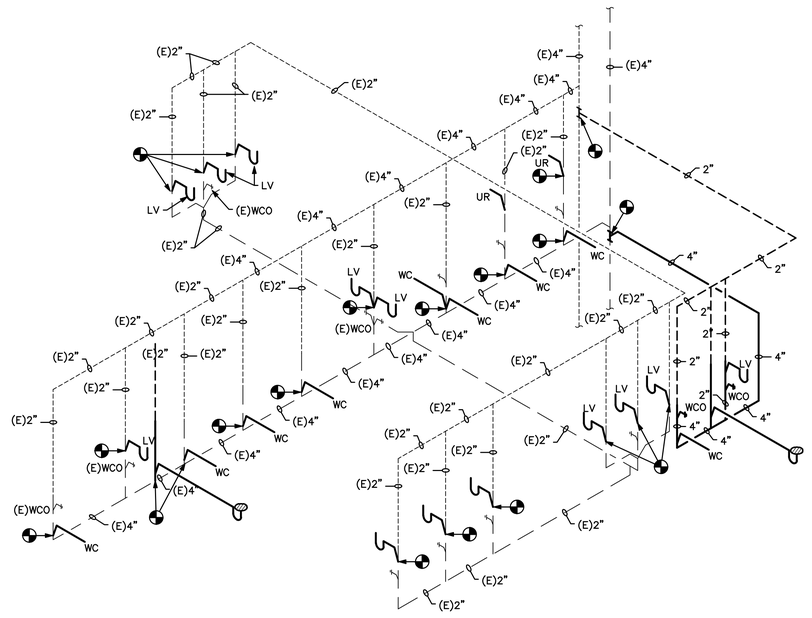
PLOTTED: 02.08.2021 - 3:21pm



WASTE AND VENT DIAGRAM - BREAKROOM (NORTH) - 3RD FLOOR

NOT TO SCALE

2



WASTE AND VENT DIAGRAM - RESTROOMS - 3RD FLOOR

NOT TO SCALE

1

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REVISIONS

No.	Description	Date

BIDDING SET

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SHEET TITLE:
PLUMBING DIAGRAMS

SHEET NUMBER:
P400

DRAWN BY:	REVIEWED BY:
RJS	MCK
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ELECTRICAL SYMBOLS

NOTE: NOT ALL SYMBOLS ARE USED.

WALL LIGHT/OUTLET FIXTURE. UPPER CASE LETTER WITH NUMBER INDICATES TYPE. SEE LIGHT FIXTURE SCHEDULE FOR TYPE. LOWER CASE LETTER INDICATES SWITCHING. NUMBER INDICATES BRANCH CIRCUIT(S).

DOWN LIGHT FIXTURE. UPPER CASE LETTER WITH NUMBER INDICATES TYPE. SEE LIGHT FIXTURE SCHEDULE FOR TYPE. LOWER CASE LETTER INDICATES SWITCHING. NUMBER INDICATES BRANCH CIRCUIT(S).

WALL WASH LUMINAIRE. UPPER CASE LETTER WITH NUMBER INDICATES TYPE. SEE LIGHT FIXTURE SCHEDULE FOR TYPE. LOWER CASE LETTER INDICATES SWITCHING. NUMBER INDICATES BRANCH CIRCUIT(S).

LINEAR LUMINAIRE. UPPER CASE LETTER WITH NUMBER INDICATES TYPE. SEE LIGHT FIXTURE SCHEDULE FOR TYPE. LOWER CASE LETTER INDICATES SWITCHING. NUMBER INDICATES BRANCH CIRCUIT(S).

TRACK LIGHTING SYSTEM. TRIANGLES DENOTE TRACK HEADS. UPPER CASE LETTER WITH NUMBER INDICATES TYPE. SEE LIGHT FIXTURE SCHEDULE FOR TYPE. LOWER CASE LETTER INDICATES SWITCHING. NUMBER INDICATES BRANCH CIRCUIT(S).

EMERGENCY LUMINAIRE. EMERGENCY LUMINAIRE IS EITHER CONNECTED TO A LIFE SAFETY GENERATOR SYSTEM, INVERTER, OR BATTERY PACK. UPPER CASE LETTER WITH NUMBER INDICATES TYPE, WHERE AN "E" OR "G" ALSO DENOTES AN EMERGENCY LUMINAIRE. LOWER CASE LETTER INDICATES SWITCHING CONTROL. THE "NL" ANNOTATION DENOTES THE LUMINAIRE SHALL NOT BE CONTROLLED AND SHALL ALWAYS BE ON. EMERGENCY LUMINAIRE SHALL NOT BE SWITCHED OFF, BUT MAY BE DIMMED TO A MINIMUM OF ONE FOOT CANDLE AT FINISHED FLOOR, UNO.

EXIT SIGN. SHADED PORTION INDICATES FACE OF SIGN. SEE LIGHT FIXTURE SCHEDULE.

EMERGENCY LIGHT BATTERY PACK WITH TWIN LAMP HEADS. SEE LIGHT FIXTURE SCHEDULE.

JUNCTION BOX IN ACCESSIBLE LOCATION ABOVE CEILING WITH FLEXIBLE CONDUIT CONNECTION TO LIGHT FIXTURE.

JUNCTION BOX IN ACCESSIBLE LOCATION.

SINGLE POLE SWITCH.

TWO (2) POLE SWITCH.

THREE–WAY SWITCH.

FOUR–WAY SWITCH.

SINGLE POLE DIMMER SWITCH.

FLEXIBLE CONDUIT CONNECTION TO EQUIPMENT. "WP" INDICATES LIQUID TIGHT AND WEATHERPROOF COVER.

SINGLE RECEPTACLE. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER.

DUPLEX RECEPTACLE. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER.

FOURPLEX RECEPTACLE. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER.

ISOLATED GROUND DUPLEX RECEPTACLE. SLASH LINE INDICATES MOUNTING IN ABOVE COUNTER.

ISOLATED GROUND FOURPLEX RECEPTACLE. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER.

FLUSH FLOOR OUTLET WITH DEVICE SYMBOLIZED. PROVIDE ITS BRASS DEVICE PLATE AND CARPET FLANGE, IN CARPETED AREAS. TELEPHONE AND DATA OUTLETS SHALL HAVE MIN. 1"C. WITH PULL STRINGS STUBBED UP INTO ACCESSIBLE CEILING SPACE. PROVIDE CONDUIT BUSHINGS ABOVE CEILING.

SPECIAL PURPOSE RECEPTACLE WITH NEMA CONFIGURATION NOTED, i.e.; 6–50, 15–20, ETC.

MULTI OUTLET ASSEMBLY. PROVIDE RECEPTACLES AS NOTED. PROVIDE ALL COMPONENTS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.

NOTE: REFER TO ABBREVIATIONS FOR RECEPTACLE SUBSCRIPTS.

DATA OUTLET. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER. PROVIDE JUNCTION BOX (SINGLE GANG MUD RING) IN WALL AND 1–1/4" CONDUIT WITH PULL STRING UP INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING.

TELEPHONE OUTLET. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER. "P" INDICATES PAYPHONE PROVIDE #6 CU GROUND PER NEC #800. PROVIDE JUNCTION BOX (SINGLE GANG MUD RING) IN WALL AND 1–1/4" CONDUIT WITH PULL STRING INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING.

DATA AND COMMUNICATIONS JACK. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER. PROVIDE JUNCTION BOX (SINGLE GANG MUD RING) IN WALL AND 1–1/4" CONDUIT WITH PULL STRING INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING.

TMB — 4'x4'X3/4" THICK FIRE RATED TELEPHONE BOARD. MOUNT AT 6" BELOW CEILING. PROVIDE #6 SOLID CU GROUND PER NEC #800.

TTC — TELEPHONE TERMINAL CABINET. NEMA 3R HINGED DOOR. COORDINATE SIZE WITH SERVING UTILITY. PROVIDE #6 SOLID CU GROUND PER NEC #800–100.

CIRCUITS IN CONDUIT CONCEALED IN FLOOR OR BELOW GRADE.

CIRCUITS IN CONDUIT CONCEALED IN WALLS OR ABOVE CEILING.

HOMERUN TO PANELBOARD OR AS NOTED.

HACHURES INDICATE NUMBER OF PHASE AND NEUTRAL CONDUCTORS ONLY. WHERE NO HACHURES ARE SHOWN PROVIDE 2 #12 Cu, 1 #12 Cu G. WHERE WIRE IS NOTED ON HOMERUN TO BE LARGER THAN #12, PROVIDE SIZE WIRE AND CONDUIT INDICATE FOR ENTIRE LENGTH OF CIRCUIT. MINIMUM CONDUIT SIZE IS 3/4". PROVIDE A GROUNDING CONDUCTORS SIZED PER NEC 250 IN ALL RACEWAYS. GROUNDING CONDUCTORS ARE NOT NORMALLY SHOWN ON THE DRAWINGS.

HEAVY DUTY DISCONNECT SWITCH. HORSEPOWER, VOLTAGE AND PHASE RATED. FUSED UNLESS NOTED "NF" (NON FUSED). SIZE FUSES PER EQUIPMENT MANUFACTURES NAMEPLATE RECOMMENDATIONS. PROVIDE NEMA 3R WHERE OUTSIDE.

CONDUIT STUB–UP.

CONDUIT STUB–OUT. CAP AND MARK FOR FUTURE USE.

PANELBOARD. SURFACE OR FLUSH AS SCHEDULED.

MOTOR. SIZE AND RATING AS SHOWN. "EF" INDICATES 150 WATT EXHAUST FAN.

TELEVISION OUTLET. SLASH LINE INDICATES MOUNTING IS ABOVE COUNTER. PROVIDE 3/4"C. WITH PULL STRING UP INTO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE CONDUIT BUSHING ABOVE CEILING.

BF — PROVIDE SYSTEM FURNITURE POWER AND VOICE/DATA BASE FEEDS. PROVIDE SINGLE GANG MUDRING WITH PULL TAPE TO ACCESSIBLE CEILNG SPACE FOR VOICE/DATA CABLING TO SYSTEM FURNITURE, UNO. MAKE FINAL CONNECTIONS AS REQUIRED.

DEMOLITION NOTES

1. ANY ELECTRICAL DEVICE OR EQUIPMENT NOT NOTED TO BE REMOVED OR RELOCATED SHALL REMAIN UNCHANGED. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CONTACT THE ARCHITECT/ENGINEER REGARDING ANY ITEM IN QUESTION.
2. WHERE ITEMS ARE NOTED TO BE REMOVED, ELECTRICAL CONTRACTOR SHALL:
   - A) REMOVE INDICATED ITEM.
   - B) REMOVE ANY ASSOCIATED CONDUIT AND WIRING WHERE SURFACE MOUNTED OR ABOVE AN ACCESSIBLE CEILING.
   - C) PULL OUT ASSOCIATED WIRING, CUT OFF, CAP, and ABANDON CONDUIT WHERE CONCEALED IN WALLS OR PARTITIONS WHICH ARE REMAINING.
   - D) RETURN ALL REMOVED EQUIPMENT TO OWNER OR DISPOSE OF AS DIRECTED BY OWNER.
3. WHERE ELECTRICAL CONTRACTOR REMOVES AN ITEM AND CIRCUITING TO OTHER ITEMS WILL BE INTERRUPTED, ELECTRICAL CONTRACTOR SHALL PROVIDE NEW CONDUIT, WIRE, BOXES, ETC. AS REQUIRED AND RECONNECT REMAINING ITEMS SO THEY WILL NOT BE INTERRUPTED.
4. WHERE AN ITEM IS SHOWN TO BE RELOCATED, ELECTRICAL CONTRACTOR SHALL EXTEND WIRING AND CONDUIT TO THE APPROPRIATE NEW LOCATION AND PROVIDE ALL NECESSARY CONDUIT, WIRE, BOXES, ETC. AS REQUIRED. RECONNECT TO EXISTING CIRCUIT OR RECIRCUIT AS SHOWN. IF DEVICE IS NOT SALVAGEABLE, ELECTRICAL CONTRACTOR SHALL PROVIDE A NEW DEVICE.
5. THE FOLLOWING DEMOLITION SYMBOLS MAY BE USED AS WELL AS KEYED NOTES:

"R" = NEW LOCATION OF RELOCATED ITEM.

"X" = EXISTING ITEM TO REMAIN.

"XR" = EXISTING ITEM TO BE REMOVED.

"XRP" = EXISTING ITEM TO BE REPLACED WITH NEW IN SAME LOCATION AS SHOWN. EXTEND EXISTING CIRCUIT TO MATCH EXISTING U.N.O.

"XRR" = RELOCATE EXISTING ITEM TO NEW LOCATION AS SHOWN. EXTEND EXISTING CIRCUIT TO MATCH EXISTING U.N.O.

DEVICE MOUNTING HEIGHTS

NOTE: ALL HEIGHTS ARE ABOVE FINISHED FLOOR AND TO THE CENTERLINE OF THE INSTALLED DEVICE U.N.O. THE ELECTRICAL CONTRACTOR SHALL ADJUST THE J–BOX MOUNTING HEIGHT ACCORDINGLY.

RECEPTACLES	+18"
TELEPHONE OUTLETS	+18"
DATA OUTLETS	+18"
ABOVE COUNTER RECEPTACLES, TELEPHONE, AND DATA OUTLETS VERIFY WITH ARCHITECT PRIOR TO ROUGH–IN.	
SWITCHES	+46"
DIMMERS	+46"
OTHER CONTROLS	+46"
TIME SWITCHES	+60"
RECEPTACLE(S) LOCATED AT TMB	+46"
FA MANUAL PULL STATION	+46"
FA VISUAL DEVICES *TO BOTTOM OF LENS*	+80"
FA AUDIO DEVICES *TO BOTTOM OF LENS*	+80"
TELEVISION OUTLETS	+96"
INTERCOM SPEAKERS	+96"
CLOCKS	+96"

FIRE STOP/RESISTIVE NOTES

1. ALL PENETRATIONS OF FIRE RESISTIVE FLOORS, SHAFTS, ROOF STRUCTURES, WALLS AND PARTITIONS SHALL BE PROTECTED IN ACCORDANCE WITH UNIFORM BUILDING CODE REQUIREMENTS INCLUDING BUT NOT LIMITED TO THE FOLLOWING REQUIREMENTS.
2. THE CONTRACTORS SHALL BE RESPONSIBLE TO REVIEW EXISTING FACILITY DOCUMENTS AND DETERMINE THE LOCATIONS AS WELL AS THE FIRE RESISTIVE TIME AND TEMPERATURE RATINGS OF ALL FIRE RESISTIVE FLOORS, SHAFTS, WALLS, PARTITIONS, ETC. THE PROPER UL SYSTEM NUMBER FOR EACH TYPE OF PENETRATION FIRE STOP SHALL THEN BE DETERMINED AND PROVIDED. SHOP DRAWINGS SHALL BE PREPARED AND SUBMITTED TO INDICATE ALL NECESSARY FIRE STOP COMBINATIONS INCLUDING THE UL SYSTEM NUMBERS AND TYPICAL INSTALLATION DETAILS.
3. FIRE RESISTIVE AND FIRE STOP MATERIALS SHALL BE IN ACCORDANCE WITH UNDERWRITERS' LABORATORIES (UL) LISTINGS FOR THROUGH– PENETRATION FIRE PROTECTION SYSTEMS. THE INSTALLATION OF ALL FIRE RESISTIVE AND FIRE STOP MATERIALS SHALL BE IN ACCORDANCE WITH THE UL LISTING AND MANUFACTURERS' REQUIREMENTS. THE CONTRACTOR SHALL OBTAIN SHOP DRAWING INSTALLATION DETAILS FROM THE MANUFACTURER WHICH INDICATE CONFORMANCE WITH THE UL REQUIREMENTS AND SPECIFY ALL INSTALLATION REQUIREMENTS WITH ALL VARIABLES DEFINED. THESE DRAWINGS SHALL BE AVAILABLE ON SITE FOR REVIEW BY THE LOCAL AUTHORITIES, THE OWNER AND ARCHITECT.
4. OUTLETS (OPENINGS) IN WALLS OR PARTITIONS REQUIRING PROTECTED OPENINGS SHALL NOT EXCEED 100 SQUARE INCHES FOR ANY 100 SQUARE FEET OF WALL OR PARTITION AREA.

ABBREVIATIONS

AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
BF	BASE FEED
C	CEILING MOUNTED DEVICE
CAC/CRAC	COMPUTER ROOM AIR CONDITIONING
CF	COMPACT FLUORESCENT
DW	DISHWASHER
DISP	DISPOSAL
EC	EVAPORATIVE COOLER
EDF	ELECTRIC DRINKING FOUNTAIN
EF	EXHAUST FAN
EMT	ELECTRICAL METALLIC TUBING
EP	EMERGENCY PHONE
EUH	ELECTRIC UNIT HEATER
G/GRD	COPPER GROUNDING/BONDING CONDUCTOR
GF/GFP	GROUND FAULT PROTECTED
GFI/GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HID	HIGH INTENSITY DISCHARGED
HPS	HIGH PRESSURE SODIUM
IG	ISOLATED GROUND CONDUCTOR/RECEPTACLE
IM	ICE MACHINE/MAKER
LC	LIGHTING CONTACTOR
LKH	LOCK ON DEVICE FOR CIRCUIT BREAKER
LOTO	LOCK OUT TAG OUT DEVICE FOR CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MH	METAL HALIDE
N	NEUTRAL CONDUCTOR
NF	NON–FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
PNL	PANEL
PVC	RIGID PVC CONDUIT, SCHEDULE 40 UNO
RA	RETURN AIR FAN
RAF	RAISED ACCESS FLOOR
RMC	RIGID METAL CONDUIT
SES	SERVICE ENTRANCE SWITCHBOARD
SF	SUPPLY FAN
ST	SHUNT TRIP
SWBD	SWITCHBOARD
TC	TIME CLOCK
TS	TIME SWITCH
UNO	UNLESS NOTED OTHERWISE
VFD	VARIABLE FREQUENCY DRIVE
WH	WATER HEATER
WP	WEATHERPROOF
XFMR	TRANSFORMER

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Registered Professional Engineer — Certificate No. 53328 — NATHAN A. SHORT — 2/08/2021 — Arizona U.S.A.

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE: ELECTRICAL SYMBOLS AND NOTES

SHEET NUMBER: E000

DRAWN BY:	REVIEWED BY:
AJN	NAS
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

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PLOTTED BY: andy.nathal
PLOTTED: 02.05.2021 – 11:09am

ELECTRICAL SPECIFICATIONS

1. SUMMARY & GENERAL REQUIREMENTS

1.1 THE WORK UNDER THIS DIVISION INCLUDES FURNISHING ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY FOR THE INSTALLATION AND PLACING INTO OPERATION OF THE ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS.

1.2 THE WORK SHALL ALSO INCLUDE THE COMPLETION OF SUCH MINOR DETAILS OF ELECTRICAL WORK NOT MENTIONED OR SHOWN WHICH ARE NECESSARY FOR THE SUCCESSFUL OPERATION OF ALL ELECTRICAL SYSTEMS DESCRIBED ON THE DRAWINGS OR REQUIRED BY THESE SPECIFICATIONS.

1.3 ALL BRANCH CIRCUITS SHALL BE MINIMUM: #12 THHN/THWN COPPER W/ #12 COPPER BOND IN 1/2" CONDUIT UNLESS NOTED OTHERWISE. ALL CONDUCTORS, REGARDLESS OF SIZE SHALL BE COPPER WITH 90 DEGREE C INSULATION (THHN/THWN OR XHHW). ALL WIRING SHALL BE IN CONDUIT WITH N.E.C. SIZED BONDING CONDUCTORS UNLESS NOTED OTHERWISE.

1.4 ELECTRICAL CONTRACTOR SHALL COORDINATE ALL DEVICE AND LIGHTING FIXTURE FINISHES AND DIMENSIONS WITH ARCHITECT PRIOR TO PURCHASING ANY EQUIPMENT. CEILING SPACE IS VERY LIMITED IN THIS PROJECT AREA. ALSO CONFIRM THE EXACT CEILING TYPE PRIOR TO ORDERING ANY FIXTURES.

1.5 PLAN AND INSTALL WORK IN SUCH A MANNER AS TO PREVENT OBSTRUCTIONS, AND KEEP OPENINGS AND PASSAGEWAYS CLEAR. CONSULT GENERAL CONTRACT DRAWINGS FOR CONDITIONS AFFECTING THIS WORK AND VERIFY SPACES IN WHICH WORK WILL BE INSTALLED. NOTIFY ENGINEER IMMEDIATELY OF POSSIBLE CONFLICTS. WHERE INTERFERENCE WITH STRUCTURAL, MECHANICAL OR OTHER FEATURES EXIST, OR WHERE JOB CONDITIONS REQUIRE REASONABLE CHANGES IN LOCATIONS AND ARRANGEMENT OF INDICATED EQUIPMENT, CONDUIT, OUTLETS OR WIRING, THE CONTRACTOR SHALL MAKE SUCH CHANGES WITHOUT EXTRA COST TO OWNER, ARCHITECT OR ENGINEER.

1.6 EXISTING CONDUIT RUNS (IF ANY) WHICH MUST BE MODIFIED AS PART OF THIS PROJECT SHALL NOT BE ATTACHED TO NOR SUSPENDED BY ANY WIRE OR CABLE WHICH IS USED TO SUSPEND THE CEILING GRID. NEW CONDUIT SUPPORTS OR CONDUIT SUPPORT WIRES AND APPROVED SUPPORTING DEVICES SHALL BE PROVIDED AS NECESSARY FOR ALL NEW OR EXISTING (TO BE MODIFIED) CONDUIT RUNS.

1.7 THE CONTRACTOR SHALL NOT INTERRUPT OR REMOVE ANY EXISTING CIRCUITS OR EQUIPMENT UNLESS NOTED OTHERWISE ON PLANS. ANY DAMAGED OR DISRUPTED CIRCUITS OR EQUIPMENT SHALL BE RESTORED TO LIKE-NEW CONDITION AT NO ADDITIONAL COST TO OWNER, ARCHITECT OR ENGINEER.

1.8 ALL PENETRATIONS OF FIRE-RESISTIVE FLOORS OR SHAFT WALLS SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAILS THAT CONFORM TO UNDERWRITERS LABORATORIES LISTINGS FOR "THROUGH-PENETRATION FIRE STOP SYSTEMS". THE CONTRACTOR SHALL SUBMIT SHOP DRAWING DETAILS, FURNISHED BY THE MANUFACTURER OF THE FIRE STOP MATERIAL, WHICH SHOW COMPLETE CONFORMANCE TO THE UL TO THE ARCHITECT. THE DRAWINGS SHALL BE SPECIFIC FOR EACH PENETRATION, WITH ALL VARIABLES DEFINED.

1.9 THE CONTRACTOR SHALL PROVIDE NEW, TYPED, PANELBOARD DIRECTORIES FOR ALL NEW AND/OR EXISTING PANELS WITHIN THE SCOPE OF THIS PROJECT. THE DIRECTORIES SHALL INDICATE THE LOAD TYPE AND AREA SERVED. PROVIDE ALL FIELD VERIFICATION WORK AS NECESSARY.

1.10 THE FINAL DETERMINATION OF EXIT LIGHTING LOCATIONS AND EGRESS PATHWAYS SHALL BE THE RESPONSIBILITY OF THE ARCHITECT. THE CONTRACTOR SHALL CONFIRM AND VERIFY THE LOCATIONS OF ALL EXIT AND EMERGENCY LIGHTING WITH THE ARCHITECT PRIOR TO ANY INSTALLATION.

1.11 IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE THE DRAWINGS AND EXISTING PREMISES PRIOR TO BIDDING. NO SUBSEQUENT ALLOWANCES WILL BE MADE FOR NOT BEING KNOWLEDGEABLE OF EXISTING CONDITIONS.

1.12 THE CONTRACTOR SHALL FIELD VERIFY THE SOURCE OF ALL EXISTING LIGHTING AND POWER CIRCUITS (IF ANY), BY PANEL AND POLE NUMBERS, WHETHER EXISTING OR NEW, FOR THE ENTIRE CONTRACT AREA. THE CONTRACTOR SHALL FIELD VERIFY THE SOURCE OF ALL ELECTRICAL EQUIPMENT, I.E. PANELBOARDS, TRANSFORMERS, ETC. AFFECTED FOR THE ENTIRE CONTRACT AREA.

1.13 TERMS USED THROUGHOUT THE PLAN DOCUMENTS ARE INTENDED TO BE INTERPRETED SPECIFICALLY AS HEREINAFTER DEFINED AND WHERE NOT SPECIFICALLY MENTIONED, PER INDUSTRY COMMON INTERPRETATIONS. DEFINITIONS ARE AS FOLLOWS:

1.13.1 CONCEALED: HIDDEN FROM SIGHT, AS IN TRENCHES, CHASES, HOLLOW CONSTRUCTION, ABOVE FURRED SPACES, SUSPENDED CEILINGS (ACOUSTICAL OR PLASTIC TYPE), OR EXPOSED TO VIEW ONLY IN TUNNELS, ATTICS, SHAFTS, CRAWL SPACES, UNFINISHED SPACES, OR OTHER AREAS SOLELY FOR MAINTENANCE AND REPAIR.

1.13.2 EXPOSED: NOT CONCEALED.

1.13.3 UNFINISHED SPACE: A ROOM OR SPACE THAT IS ORDINARILY ACCESSIBLE ONLY TO BUILDING MAINTENANCE PERSONNEL, A ROOM NOTED ON THE "FINISH SCHEDULE" WITH EXPOSED AND UNPAINTED CONSTRUCTION FOR WALLS, FLOOR OR CEILINGS, OR SPECIFICALLY MENTIONED AS "UNFINISHED".

1.13.4 FINISHED SPACES: ANY SPACE ORDINARILY VISIBLE TO THE VISITING PUBLIC, INCLUDING EXTERIOR AREAS.

1.13.5 "WIRING" OR "CIRCUITRY" INCLUDES, IN ADDITION TO CONDUCTORS, ALL RACEWAYS, CONDUIT, FITTINGS, BOXES, SWITCHES, HANGERS AND OTHER ACCESSORIES RELATED TO SUCH WIRING.

1.13.6 "REGULATING AUTHORITIES" MEANS ALL GOVERNMENT, UTILITY, AND FIRE PROTECTION AUTHORITIES HAVING JURISDICTION.

1.13.7 "PROVIDE" MEANS TO SUPPLY, ERECT, INSTALL, AND CONNECT UP COMPLETE, THE PARTICULAR WORK REFERRED TO, IN READINESS FOR REGULAR OPERATION.

1.13.8 "FURNISH" MEANS TO SUPPLY AND DELIVER TO THE JOB.

1.13.9 "INSTALL" MEANS TO SET IN PLACE, ERECT, AND CONNECT UP COMPLETE, THE PARTICULAR WORK REFERRED TO, IN READINESS FOR REGULAR OPERATION.

1.13.10 "APPROVED EQUAL" MEANS EQUIPMENT OR MATERIALS WHICH, IN THE OPINION OF THE ARCHITECT AND ENGINEER, IS EQUAL IN QUALITY, DURABILITY, APPEARANCE, STRENGTH, DESIGN AND PERFORMANCE TO EQUIPMENT OR MATERIAL SPECIFIED AND WHICH WILL FUNCTION ADEQUATELY IN ACCORDANCE WITH THE GENERAL DESIGN.

1.13.11 "COMMON HANDLE TIE" REFERS TO A COMMON TRIP FOR A MULTIPLE POLE CIRCUIT BREAKER OR UL LISTED DEVICE TO CONNECT ALL OF THE SINGLE POLE CIRCUIT BREAKER HANDLES TOGETHER FOR A MULTIPLE WIRE BRANCH CIRCUIT OR FEEDER, REFER TO NEC 210.4.

2. CODES AND REQUIREMENTS

2.1 ALL ELECTRICAL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE AHJ LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE, LOCAL BUILDING CODE, OR AS SPECIFIED HEREIN, WHICHEVER IS MORE STRINGENT.

2.2 THE ELECTRICAL CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE GENERAL SUPPLEMENTAL CONDITIONS OF THE PROJECT SPECIFICATIONS.

2.3 ALL ELECTRICAL CONDUIT, DEVICES AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY. DO NOT SCALE PRECISE DETAILS FROM THE DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY ACTUAL LOCATIONS WITH ARCHITECT / OWNER PRIOR TO ANY ROUGH IN.

2.4 THE ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR PERMITS, FEES, INSPECTIONS, AND THE LIKE.

3. EQUIPMENT

3.1 THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND ACCESSORIES NECESSARY, WHETHER SPECIFICALLY STATED OR NOT, TO MAKE THE REQUIRED ELECTRICAL SYSTEMS COMPLETE AND OPERATIONAL.

3.2 ALL EQUIPMENT PROVIDED SHALL BE NEW EXCEPT AS OTHERWISE STATED ON THE DRAWINGS. ALL EQUIPMENT PROVIDED SHALL BE UL LISTED WHEN SUCH STANDARDS EXIST FOR THE TYPE OF EQUIPMENT FURNISHED AND SHALL BE ACCEPTABLE FOR INSTALLATION BY THE LOCAL BUILDING SAFETY AND FIRE DEPARTMENT AUTHORITIES.

4. WARRANTY

4.1 THE ELECTRICAL CONTRACTOR SHALL PROVIDE FOR THE OWNER A ONE-YEAR (FROM THE DATE OF FINAL ACCEPTANCE) WARRANTY AND GUARANTEE OF ALL ELECTRICAL EQUIPMENT AND SYSTEMS PROVIDED UNDER THIS CONTRACT. ALL DEFECTIVE EQUIPMENT OR MATERIALS WITH THE EXCEPTION OF LIGHTING FIXTURE LAMPS SHALL BE REPLACED OR REPAIRED BY THE ELECTRICAL CONTRACTOR IN A TIMELY FASHION, WITH NO ADDITIONAL COST TO THE OWNER.

5. CONDUIT

5.1 ALL CONDUCTORS SHALL BE ENCLOSED BY CONDUIT SIZED IN ACCORDANCE WITH THE PROPER TABLES CONTAINED IN THE NATIONAL ELECTRICAL CODE FOR THE TYPE OF INSULATION USED. CONDUIT SHALL BE A MINIMUM OF 3/4" EXCEPT FOR FACTORY FURNISHED LIGHTING FIXTURE CONDUIT, WHICH MAY BE 3/8".

5.1.1 GALVANIZED RIGID CONDUIT (GRC) AND INTERMEDIATE METAL CONDUIT (IMC) SHALL BE UTILIZED FOR ABOVE GROUND APPLICATIONS IN ACCORDANCE THE NATIONAL ELECTRICAL CODE. FURTHER, RIGID CONDUIT AND INTERMEDIATE METAL CONDUIT SHALL BE INSTALLED IN ALL AREAS THAT ARE OR MAY BE SUBJECT TO PHYSICAL DAMAGE AND FOR ALL CONDUIT RISERS MOVING BETWEEN FLOOR LEVELS. ALL COUPLINGS SHALL BE THREADED.

5.1.2 RIGID PVC CONDUIT MINIMUM SCHEDULE 40 SHALL BE PERMITTED ONLY UNDERGROUND OR AS NOTED ON DRAWINGS. PROVIDE TAPE WRAPPED RIGID STEEL ELBOWS AND RISERS (NO MINIMUM SIZE). UNDERGROUND CHANGE IN DIRECTION SHALL BE MADE WITH MANUFACTURER ELBOWS. FIELD BENDING WITH HEAT IS NOT ALLOWED. SIZE AND PROVIDE EQUIPMENT GROUNDING CONDUCTOR PER 250-122 AND INCREASE CONDUIT SIZE IF REQUIRED.

5.1.3 ELECTRICAL METALLIC TUBING (EMT) SHALL BE UTILIZED FOR ALL DRY, ABOVE GRADE OR ABOVE FLOOR APPLICATIONS IN ACCORDANCE WITH ARTICLE 358 OF THE NATIONAL ELECTRICAL CODE. COUPLINGS AND CONNECTORS SHALL BE COMPRESSION-TYPE, STEEL, WATERTIGHT FITTINGS SHALL BE USED FOR EMT.PROVIDE GROUND CONDUCTOR FOR ALL RUNS OF EMT CONDUIT.

5.1.4 FLEXIBLE METAL CONDUIT SHALL BE UTILIZED FOR ALL CONNECTIONS TO VIBRATING EQUIPMENT SUCH AS MOTORS AND TRANSFORMERS (MINIMUM OF 2'-0" - MAXIMUM OF 6'-0"), AND CONNECTIONS TO LAY-IN TYPE LIGHT FIXTURES OR IN REMODEL AREAS SPECIFICALLY NOTED FOR "FISHING" IN EXISTING WALLS OR NON-ACCESSIBLE CEILINGS.

5.1.5 SURFACE METALLIC RACEWAYS SHALL BE USED IN AREAS SPECIFICALLY NOTED AND OF SIZE AND TYPE SPECIFIED ON THE DRAWINGS. PAINT TO MATCH SURFACE INSTALLATION.

5.2 ALL EXPOSED CONDUIT (INCLUDING CONDUIT INSTALLED IN CEILING PLENUMS) SHALL BE ROUTED PARALLEL OR PERPENDICULAR TO THE BUILDING WALLS. SUPPORT CONDUIT AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.

5.3 CARE IN PLACEMENT OF CONCEALED CONDUIT SHALL BE USED TO PREVENT EXCESSIVE BUNCHING OF CONDUITS WHICH WILL AFFECT THE CONDUCTOR AMPACITY.

5.4 PROVIDE EXPANSION TYPE FITTINGS FOR ALL CONDUITS WHICH CROSS EXPANSION JOINTS.

6. CONDUCTORS

6.1 MINIMUM SIZE SHALL BE #12 AWG EXCEPT FOR CONTROL CIRCUITS WHICH MAY BE #14 AWG OR SIGNAL CIRCUITS WHICH SHALL BE AS INDICATED. ALL CONDUCTORS SHALL BE COPPER WITH THE 90 DEGREE C INSULATION TYPES AS INDICATED ON THE DRAWINGS OR AS SPECIFIED BELOW. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND INCREASE THE CONDUCTOR SIZE AS NECESSARY TO LIMIT BRANCH CIRCUIT VOLTAGE DROP TO A MAXIMUM OF 3% AND FEEDER VOLTAGE DROP TO A MAXIMUM OF 2%.

6.2 CONDUCTOR INSULATION SHALL BE OF A TYPE RECOGNIZED BY THE NATIONAL ELECTRICAL CODE AND AS APPROVED FOR ITS PARTICULAR APPLICATION OR AS REQUIRED BY THE LOCAL BUILDING SAFETY AUTHORITIES, WHICHEVER IS MORE STRINGENT. UNLESS NOTED OTHERWISE ON THE DRAWINGS. CONDUCTOR INSULATION TYPE SHALL BE THHN/THWN-2 OR XHHW-2, 90 DEGREE C RATED.

6.3 SPLICES AND MAKE-UP JOINTS FOR #8 AND SMALLER CONDUCTORS SHALL BE EQUAL PRESSURE TYPE SOLDER-LESS CONNECTORS (BUCHANAN, SCOTCHLOK, WING NUT OR AS APPROVED). SPLICES OR MAKE-UP JOINTS #6 AWG AND LARGER SHALL BE MADE USING APPROVED SOLDER-LESS TYPE PRESSURE CONNECTORS (BURNDY OR APPROVED) OR HYDRAULIC COMPRESSION TYPE BARREL SPLICES WHEN SPECIFIED ON THE DRAWINGS. ALL UNINSULATED TYPE SPLICES SHALL BE INSULATED USING APPROVED HEAT OR COLD SHRINK COVERS FOLLOWED BY A MINIMUM OF THREE ½ LAPPED LAYERS OF PLASTIC ELECTRICAL TAPE (SCOTCH #33+). IN ADDITION SPLICES OR JOINTS IN DAMP OR WET LOCATIONS SHALL FURTHER BE COVERED BY THREE ½ LAPPED LAYERS OF RUBBER TAPE. FEEDERS LARGER THAN #6 AWG SHALL NOT BE SPLICED (INSTALLED IN ONE CONTINUOUS RUN) UNLESS SPECIFICALLY NOTED OR IMPLIED ON THE DRAWINGS.

6.4 ALL WIRING THROUGHOUT SHALL BE COLOR CODED AS FOLLOWS:

	480V SYSTEM	208V SYSTEM
A PHASE	BROWN	BLACK
B PHASE	ORANGE	RED
C PHASE	YELLOW	BLUE
NEUTRAL	GREY	WHITE
GROUND	GREEN	GREEN
ISOLATED GROUND	---	GREEN W/YELLOW STRIPE

6.5 GROUNDING CONDUCTORS SHALL BE PROVIDED IN ALL CONDUIT RUNS. GROUNDING CONDUCTORS SHALL BE PROVIDED IN THE SIZES AS INDICATED ON THE DRAWINGS OR THE MINIMUM SIZE AS ALLOWED BY THE N.E.C. IF NO PARTICULAR SIZE IS NOTED.

7. SEPARATE CONDUIT SYSTEMS

7.1 EACH SYSTEM SHALL BE CONTAINED IN A SEPARATE CONDUIT SYSTEM. THIS INCLUDES EACH POWER SYSTEM, EACH LIGHTING SYSTEM, EACH SIGNAL SYSTEM OF WHATEVER NATURE, TELEPHONE / DATA, CONTROL SYSTEM, FIRE ALARM SYSTEM, FUTURE EMS, SECURITY SYSTEM, ETC.

8. FEEDER AND BRANCH CIRCUITS

8.1 RISER DIAGRAMS, ONE LINE DIAGRAMS AND CIRCUIT RUNS ARE INDICATIVE ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT ROUTING OF FEEDERS AND BRANCH CIRCUITS SO AS TO BEST FIT THE LAYOUT OF THE JOB.

8.2 A LAYOUT OF BRANCH CIRCUIT WIRING AND ROUTING IS INDICATED. GENERALLY RECEPTACLES AND APPLIANCES ARE ON SEPARATE CIRCUITS FROM LIGHTING.

8.3 BRANCH PANEL CIRCUITS ARE NUMBERED TO MATCH NEMA POLE NUMBERING SYSTEM: POLES 1 AND 2 - PHASE A; POLES 3 AND 4 - PHASE B; POLES 5 AND 6 - PHASE C; ETC. ACTUAL FIELD NUMBERING OF CIRCUIT DIRECTORIES SHALL BE PHASED AND POLE CONNECTED AS SHOWN.

8.4 WHERE SPECIFIC CONDUCTOR SIZE IS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS AND IS LARGER THAN CODE MINIMUM, THE LARGER CONDUCTOR SIZE SHALL BE USED.

8.5 CIRCUITS MAY BE ARRANGED IN 4-WIRE FEEDS (3 CIRCUITS AND COMMON NEUTRAL) IN COLOR CODE AS NOTED IN SECTION 6.4 AND SUPPLIED FROM A COMMON HANDLE TIE CIRCUIT BREAKER; MORE THAN 3 CIRCUITS IN CONDUIT BY SPECIFIC APPROVAL ONLY OR WHERE SHOWN ON THE DRAWINGS.

8.6 CONDUCTORS FOR BRANCH CIRCUIT LIGHTING, RECEPTACLE, POWER AND MISCELLANEOUS SYSTEMS MUST BE A MINIMUM OF #12 AWG. WIRE INDICATED SPECIFICALLY TO BE LARGER THAN #12 AWG MUST BE INCREASED THE ENTIRE LENGTH OF THE CIRCUIT.

8.7 CONDUCTOR SIZES FOR LIGHTING, RECEPTACLES, AND SMALL MOTOR BRANCH CIRCUITS WITH LESS THAN 20A CONNECTED LOAD MAY NOT BE SHOWN. CONDUCTORS FOR SUCH CIRCUITS ARE SIZED AS FOLLOWS: FOR BRANCH CIRCUITS (120/208V) 65 FEET IN LENGTH FROM BRANCH CIRCUIT PANEL TO CENTER OF LOAD, NOT SMALLER THAN #12 AWG, UP TO 100 FEET NOT SMALLER THAN #10 AWG, UP TO 165 FEET NOT SMALLER THAN #8 AWG.

8.8 DRAWINGS, IN GENERAL, INDICATE LOCATION OF MOTOR STARTING EQUIPMENT. EXACT LOCATIONS OF MOTORS AND OTHER DEVICES ARE TO BE DETERMINED IN FIELD BY THE CONTRACTOR. PROVIDE AN ELECTRICAL FEED FOR ALL EQUIPMENT, NOT SMALLER THAN SHOWN OR NOTED HEREIN OR NEC SIZE WHERE SIZE IS NOT INDICATED, TOGETHER WITH A SUITABLE CIRCUIT PROTECTIVE DEVICE. VERIFY PANEL SCHEDULES AND LAYOUT, MAINTAINING NUMBER OF SPARE BRANCHES INDICATED.

8.9 PROVIDE PROPER SIZE AND TYPE OF FEEDS FOR ALL ACCEPTED EQUIPMENT AND PROPER SOURCES FOR ALL SUCH ITEMS INDICATED, CHECKING DRAWINGS OF ALL TRADES TO ENSURE INCLUSION OF ALL ITEMS.

8.10 WHERE MULTIPLE BRANCH CIRCUITS ARE RUN IN THE SAME CONDUIT, EACH SET OF (3) BRANCH CIRCUITS REPRESENTING PHASE A, B, C, SHALL HAVE A SEPARATE NEUTRAL CONDUCTOR OR SUPPLIED FROM A COMMON HANDLE TIE CIRCUIT BREAKER.

8.11 WHERE ISOLATED GROUND BRANCH CIRCUITS ARE TO BE PROVIDED, EACH BRANCH CIRCUIT IS TO HAVE A SEPARATE NEUTRAL CONDUCTOR. ALL BRANCH CIRCUIT OR FEEDER CONDUIT RUNS SHALL BE ROUTED FROM THE SWITCHBOARD OR PANELBOARD (OR EXTENSION CABINET) TO THE LOAD OR OUTLET DEVICE. THE USE OF LARGE JUNCTION BOXES, PULL BOXES OR WIREWAYS AS A COLLECTION POINT FOR CONDUIT RUNS SHALL NOT BE PERMITTED EXCEPT WHERE SHOWN. MULTIPLE CIRCUITS SHALL NOT BE INSTALLED IN THE SAME PULL OR JUNCTION BOX EXCEPT FOR THE MULTIPLE CIRCUIT CONDUIT RUNS NOTED ABOVE (MAXIMUM OF (3) CIRCUITS).

8.12 SYSTEM (ENERGIZED) FURNITURE REQUIRING MULTIPLE BRANCH CIRCUITS AND SHARED NEUTRAL SHALL BE FED FROM A COMMON HANDLE TIE CIRCUIT BREAKER.

9. BOXES

9.1 4" SQUARE OR OCTAGONAL, ZINC COATED SHEET STEEL BOXES.

9.2 PROVIDE 3/8" NO-BOLT FIXTURE STUDS.

9.3 PROVIDE PLASTER RINGS, COVERS AND/OR PLATES SET TO COME FLUSH WITH FINISH WALLS.

9.4 UTILITY OR SECTIONAL SWITCH BOXES ONLY WHERE PERMITTED.

9.5 ALL JUNCTION BOXES AND PULL BOXES SHALL BE CLEARLY LABELED WITH INDELIBLE, BLACK INK TO INDICATE THE PANEL IDENTIFICATION & CIRCUIT NUMBER OR BUS DUCT IDENTIFICATION & SWITCH NUMBER, ETC. IN ADDITION, ALL CONDUCTORS INSIDE THE PULL OR JUNCTION BOXES AND ALL CONDUCTORS BROUGHT TO DEVICE OUTLET BOXES SHALL BE WIRE TAGGED TO INDICATE THE CIRCUIT OR SWITCH NUMBER.

9.6 ALL AUXILIARY CONDUIT AND BOX SYSTEMS, INCLUDING COMMUNICATIONS OR DATA SHALL BE CLEARLY LABELED TO INDICATE FUNCTION AND USE. LABEL ALL CONDUIT SYSTEMS AS INDICATED ABOVE AND LABEL THE COVERS OF ALL JUNCTION OR PULL BOXES USING INDELIBLE, BLACK INK.

10. DEVICES

10.1 ALL WIRING DEVICES SHALL BE UL APPROVED AND OF THE TYPE AND NUMBER SHOWN ON THE DRAWINGS. ALL NEW DEVICES SHALL BE 20A SPECIFICATION GRADE RATED AT 277V OR 120V AS NECESSARY.

10.2 ALL DEVICES SHALL BE WHITE COLOR OR AS OTHERWISE REQUIRED BY THE ARCHITECT OR OWNER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM ALL DEVICE AND PLATE COLORS WITH THE ARCHITECT OR OWNER PRIOR TO PURCHASE AND INSTALLATION.

10.2.1 SPECIFICATION GRADE RECEPTACLES, HUBBELL 5362-W OR EQUAL BY LEVITON.

10.2.2 A.C. QUIET OPERATING TYPE SWITCHES, HUBBELL 1221OR EQUAL BY LEVITON.

10.2.3 RECEPTACLE WITH INTEGRAL USB CHARGER PORTS - DUPLEX POWER OUTLET WITH (2) VERTICAL USB PORTS WITH 3.0A MINIMUM CHARGING CAPACITY. LEVITON #T5832 OR HUBBELL #USB20X2xx OR EQUAL, UNO.

10.3 DEVICE PLATES SHALL BE NYLON OR SATIN STAINLESS STEEL, AS MANUFACTURED BY THE DEVICE MANUFACTURER. COORDINATE WITH ARCHITECT.

10.4 MOUNT DEVICES IN ACCORDANCE WITH THE FOLLOWING SCHEDULE EXCEPT WHERE OTHERWISE NOTED ON THE DRAWINGS, I.E. DEVICE MOUNTING HEIGHTS:

10.4.1 CONVENIENCE RECEPTACLES WITH LONG AXIS VERTICAL MEASURE TO CENTER OF OUTLET 18" A.F.F.*

10.4.2 LIGHT SWITCHES MEASURE TO CENTER OF OUTLET 46" A.F.F.*

10.4.3 TELEPHONE OUTLETS MEASURE TO CENTER OF OUTLET 18" A.F.F.*

*EXCEPT IN AREAS WITH COUNTERS, BASEBOARD HEATERS OR IN AREAS OF BLOCK OR BRICK CONSTRUCTION. IN NO CASE SHALL HEIGHT EXCEED 48" A.F.F. TO CENTER. COORDINATE AND VERIFY THE MOUNTING HEIGHTS OF ALL COUNTER MOUNTED DEVICES WITH THE ARCHITECT OR OWNER.

11. GROUNDING

11.1 FURNISH AND INSTALL GROUNDING AND GROUNDING CONDUCTORS AS SPECIFIED HEREIN AND AS SHOWN ON THE DRAWINGS.

11.2 ALL PANELBOARD CABINETS, EQUIPMENT, ENCLOSURES, AND CONDUIT SYSTEMS SHALL BE GROUNDED SECURELY IN ACCORDANCE WITH PERTINENT SECTIONS OF ARTICLE 250 OF NEC, AS AMENDED BY ANY LOCAL CODES. CONDUCTORS SHALL BE COPPER. ALL ELECTRICALLY OPERATED EQUIPMENT SHALL BE BONDED TO THE GROUNDED CONDUIT SYSTEM. ALL NON-CURRENT CARRYING CONDUCTIVE SURFACES THAT ARE LIKELY TO BECOME ENERGIZED AND SUBJECT TO PERSONAL CONTACT SHALL BE GROUNDED BY ONE OR MORE OF THE METHODS DETAILED IN ARTICLE 250 NEC. ALL GROUND CONNECTIONS SHALL HAVE CLEAN CONTACT SURFACES. INSTALL ALL GROUNDING CONDUCTORS IN CONDUIT AND MAKE CONNECTIONS READILY ACCESSIBLE FOR INSPECTION. FURNISH AND INSTALL GROUNDING ELECTRODES AS DESCRIBED ON THE DRAWINGS.

11.3 GROUNDING OF METAL RACEWAYS SHALL BE ASSURED BY MEANS OF GROUNDING BUSHINGS ON FEEDER CONDUIT TERMINATIONS AT THE SERVICE ENTRANCE, DISTRIBUTION SWITCHBOARDS AND PANELBOARDS, AND BY MEANS OF A CONTINUOUS, STRANDED, COPPER GROUNDING WIRE EXTENDED FROM THE GROUND BUS IN THE ENCLOSURE TO THE CONDUIT GROUNDING BUSHINGS.

11.4 A SEPARATE INSULATED GROUNDING CONDUCTOR, SIZED PER NEC 250-122, SHALL BE INSTALLED IN ALL ELECTRICAL METALLIC TUBING (EMT).

11.5 PROVIDE SEPARATE, INSULATED, ISOLATED GROUNDING CONDUCTORS FOR ALL ISOLATED GROUND BRANCH CIRCUITS OR FEEDERS.

12. NOT USED.

13. NOT USED.

14. NOT USED.

15. LIGHTING, CONTROLS AND ACCESSORIES

15.1 FURNISH AND INSTALL ALL LIGHTING FIXTURES WITH LAMPS AS SPECIFIED AND AS SHOWN ON THE DRAWINGS. FIXTURES SHALL BE COMPLETE INCLUDING CANOPIES, HANGERS, DIFFUSERS, BALLASTS, ETC.

15.1.1 FURNISH AND INSTALL ALL LIGHTING CONTROLS AS SPECIFIED AND AS SHOWN ON THE DRAWINGS. CONTROLS SHALL BE COMPLETE INCLUDING CONTACTORS, ENCLOSURES, CONTROL WIRING, ETC.

15.2 SUBMIT SHOP DRAWINGS FOR ALL LIGHTING FIXTURES, LAMPS, BALLASTS, CONTACTORS, CONTROLLERS AND DIMMING SYSTEM. SUBMITTALS SHALL INCLUDE CATALOG CUTS ILLUSTRATING CONFORMANCE WITH THE SPECIFICATIONS AS WELL AS DRAWINGS AND INFORMATION REFLECTING THE MATERIALS, ASSEMBLY, FINISH AND DIMENSIONS.

15.3 ALL CATALOG NUMBERS ARE GIVEN FOR MANUFACTURER'S IDENTIFICATION AND DO NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY OF FULL CONFORMANCE TO ALL APPLICABLE WRITTEN DESCRIPTION REQUIREMENTS GOVERNING MATERIAL AND FABRICATION, EITHER IN THE GENERAL OR SPECIFIC SECTIONS. WHERE CATALOG NUMBERS ARE INDICATED AS MODIFIED, NO MODIFICATION WILL BE REQUIRED IF THE STANDARD UNIT FULLY CONFORMS TO DESCRIPTIVE REQUIREMENTS IN THE SPECIFICATIONS AND MATCHES SPECIFIED CEILING.

15.3.1 ALL FIXTURES OF THE SAME TYPE SHALL BE OF ONE MANUFACTURER AND OF IDENTICAL FINISH AND APPEARANCE. TYPE AS SHOWN IN THE LIGHT FIXTURE SCHEDULE.

15.3.2 ALL FIXTURES AND COMPONENT PARTS SHALL BEAR THE UL LABEL.

15.4 ALL STEEL PARTS SHALL BE PHOSPHATE TREATED IN MULTI-STAGE POWER SPRAY SYSTEM FOR CORROSION RESISTANCE AND PAINT ADHESION. FINAL FINISH SHALL BE ELECTROSTATICALLY APPLIED BAKED WHITE ENAMEL OF NOT LESS THAN 87 PERCENT REFLECTANCE ON REFLECTING SURFACES.

15.4.1 EACH FIXTURE SHALL HAVE A CONTINUOUS LIGHT-SEAL GASKET SEATED IN SUCH MANNER AS TO PREVENT ANY LIGHT LEAK THROUGH ANY PORTION OR AROUND ANY EDGE OF THE TRIM FRAME.

15.4.2 DIFFUSERS SHALL BE FRAMED IN A HINGED CONTINUOUS ASSEMBLY. DIFFUSER FRAME LATCHES SHALL BE LOADED OR CAM OPERATED.

15.4.3 ALL FIXTURE SOCKETS SHALL BE SECURELY FASTENED TO THE FIXTURE BODY TO PREVENT MOVEMENT DURING RELAMPING.

15.4.5 THE FINISH OF ALL LIGHTING FIXTURES IS SUBJECT TO FINAL APPROVAL BY THE ARCHITECT. FURNISH PAINT CHIPS TO THE ARCHITECT FOR SELECTION, IF REQUESTED.

15.5 PROVIDE BALLASTS, LAMPS, LENSES AND ACCESSORIES, AND CANOPIES, STEMS, HANGERS AND ACCESSORIES INCLUDING ALL STRUCTURAL MEMBERS AND FASTENERS REQUIRED FOR PROPER MOUNTING.

15.5.1 THE CONTRACTOR SHALL BE THOROUGHLY FAMILIAR WITH ALL LIGHT FIXTURES AND MOUNTING REQUIREMENTS TO BE INSTALLED ON THIS PROJECT. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES, VERIFY EXACT CEILING TYPES AND VERIFY RECESSED MOUNTING AREAS FOR PROPER CLEARANCES.

15.5.2 THOROUGHLY CLEAN ALL LUMINARIES, LAMPS AND LENSES PRIOR TO FINAL ACCEPTANCE.

15.6 PROVIDE LAMP TYPES AS SHOWN ON THE DRAWINGS; VERIFY WATTAGE, BASE TYPES, PIN CONFIGURATION, ETC., AND CONFIRM COMPATIBILITY WITH THE LIGHT FIXTURE BEING INSTALLED. LAMPS FROM G.E., PHILLIPS, OSRAM/SYLVANIA, OR VENTURE ARE ACCEPTABLE.

15.6.1 L.E.D.: RETROFIT LED LAMPS SHALL BE PROVIDED WHERE INDICATED ON SCHEDULE OR PLANS. RETROFIT LAMP SHALL BE "EQUIVALENT WATTAGE EQUAL" WITH LAMP STYLE/BASE (E.G. A19, PAR30, ETC) AND LUMEN OUTPUT APPROXIMATELY EQUAL TO THAT OF THE STANDARD LAMP OPTION. LAMP LIFE (L70) SHALL BE RATED FOR MINIMUM 25,000 HOURS. CRI SHALL BE MINIMUM 70. REFER TO SCHEDULE FOR CCT, BEAM ANGLE, AND/OR CBCP INFORMATION AS APPLICABLE. CCT SHALL BE WITHIN 7-STEP MACADAM ELLIPSE. DIMMABILITY IS REQUIRED WHERE SPECIFIED OR PART OF CONTROLS SYSTEM.

15.6.2 H.I.D.: UNLESS NOTED OTHERWISE ON THE FIXTURE SCHEDULE, PROVIDE COATED LAMPS FOR CLEAR LENS FIXTURES AND CLEAR LAMPS FOR OPTICAL LENS FIXTURES.

15.6.3 REPLACE ANY LAMPS BURNING FOR CONSTRUCTION PURPOSES WITH NEW LAMPS AT TIME OF AND JUST PRIOR TO PROJECT CLOSE-OUT. LAMPS TO BE IN NEW OPERATING CONDITION FOR A PERIOD OF 15 DAYS AFTER PROJECT CLOSE-OUT.

15.6.4 BALLASTS SHALL BE CBM CERTIFIED AND BEAR THE UL LAB 1.1.1 BALLASTS SHALL BE CBM CERTIFIED AND BEAR THE UL LABEL.

15.6.5 FLUORESCENT AND INDOOR H.I.D. BALLASTS SHALL HAVE A SOUND RATING OF "A".

15.6.6 ALL BALLASTS SHALL BE CLASS 'P', SOLID-STATE, 20% MAX. THD.

15.7 L.E.D. (INTEGRAL TO LUMINAIRE)

15.7.1 COLOR RENDERING INDEX (CRI) SHALL BE MINIMUM 70, OR AS SCHEDULED.

15.7.2 EFFICACY (IN LUMENS PER WATT, LPW) SHALL BE MINIMUM 50 LPW FOR DECORATIVE LUMINAIRES, AND 55 LPW FOR ALL OTHERS.

15.7.3 LAMP LIFE (L70) SHALL BE RATED FOR MINIMUM 35,000 HOURS.

15.7.4 CCT, LUMEN OUTPUT (FLUX), BEAM ANGLE, AND/OR CENTER BEAM CANDLE POWER (CBCP) AS APPLICABLE SHALL BE AS SCHEDULED. CCT SHALL FALL WITHIN 4-STEP MACADAM ELLIPSE.

15.7.5 WARRANTY FOR LUMINAIRE SHALL BE MINIMUM THREE YEARS.

15.8 EXIT SIGNS AND EMERGENCY LIGHTING SHALL CONFORM TO LOCAL CODE REQUIREMENTS.

16. DISCONNECTS, STARTERS, CONTACTORS AND METERING

16.1 ALL DISCONNECTS SHALL BE HEAVY DUTY RATED AS MANUFACTURED BY SQUARE D, CUTLER-HAMMER, GENERAL ELECTRIC OR SIEMENS.

16.2 ALL MANUAL MOTOR SWITCHES, MOTOR STARTERS, CONTACTORS AND MOTOR CONTROLS SHALL BE NEMA RATED AS MANUFACTURED BY SQUARE D, CUTLER-HAMMER, GENERAL ELECTRIC OR SIEMENS.

16.3 ALL METERING DEVICES INCLUDING CT'S, PT'S AND METERS. ELECTRICAL CONTRACTOR SHALL INSTALL CT'S AND PT'S AS REQUIRED.

17. NOT USED.

18 . NOT USED.

19. CLEANUP OF PREMISES

19.1 CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES CLEAR OF WASTE MATERIALS AND DEBRIS CAUSED BY HIS EMPLOYEES AND OPERATION. EQUIPMENT NOT REQUIRED IN THE WORK SHALL BE REMOVED PRIOR TO THE TERMINATION OF THE CONTRACT.

20. TESTS AND INSPECTIONS

20.1 CONTRACTOR SHALL TEST WIRING AND DEVICES AS SECTIONS ARE COMPLETED AND SHALL CORRECT ALL DEFECTS IMMEDIATELY AT HIS OWN EXPENSE, INCLUDING ANY DAMAGE TO WALLS, CEILINGS, FLOOR OR OTHER PORTIONS OF THE BUILDING WHICH MAY RESULT FROM REPLACING DEFECTIVE EQUIPMENT.

20.2 FURNISH ALL METERS, CABLE, CONNECTIONS AND APPARATUS NECESSARY FOR MAKING TESTS.

1.20.3 TEST SYSTEM FOR SHORTS AND GROUNDS. FAULTY WIRING SHALL BE REMOVED AND REPLACED. ANY DEVICE, APPARATUS OR FIXTURE INSTALLED SHOWING SUBSTANDARD PERFORMANCE SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER.

20.4 MEGGER ALL SYSTEMS NEUTRALS TO ENSURE THE NEUTRAL IS NOT GROUNDED WITHIN THE SYSTEM.

20.5 AFTER THE ELECTRICAL WIRING SYSTEM INSTALLATION IS COMPLETED AND AT SUCH TIME AS THE ARCHITECT/ENGINEER OR HIS AUTHORIZED REPRESENTATIVE MAY DIRECT, THE CONTRACTOR SHALL CONDUCT AN OPERATING TEST FOR APPROVAL. EQUIPMENT SHALL BE DEMONSTRATED TO OPERATE IN ACCORDANCE WITH REQUIREMENTS OF SPECIFICATIONS. TEST SHALL BE PERFORMED IN PRESENCE OF ARCHITECT OR HIS REPRESENTATIVE.

21. LABELING

21.1 LABELS SHALL BE ENGRAVED, BLACK ON WHITE MELAMINE PLASTIC LAMINATE, 1/16in MINIMUM THICKNESS FOR SIGNS UP TO 20in2 OR 8in LONG; 1/8in THICK FOR LARGER SIZES. ENGRAVED LEGEND SHALL BE IN WHITE LETTERS ON BLACK FACE WITH MINIMUM 3/16in HIGH LETTERS. LABELS SHALL BE PUNCHED AND FASTENED TO EQUIPMENT WITH ALUMINUM RIVETS OR SELF TAPPING STAINLESS STEEL SCREWS OR #10/32 STAINLESS STEEL MACHINE SCREWS WITH NUTS, FLAT AND LOCK WASHERS.

21.2 LABEL EQUIPMENT WITH NAME, AMPERAGE, VOLTAGE, PHASE, AND WIRES (I.E. PANEL "A", 400A, 120/208V, 3ø,4W).

21.3 EQUIPMENT TO BE LABELED SHALL INCLUDE DISCONNECTS, CONTACTORS, AND TIMESWITCHES. LABEL OTHER EQUIPMENT AS NOTED ON PLANS.

21.4 ALL JUNCTION BOXES SHALL BE LABELED WITH CIRCUITS INSTALLED (I.E. 'LB1'-1,3,5) WITH INDELIBLE INK ON THE BOX COVER.

21.5 PROVIDE SIGNAGE IDENTIFYING MULTIPLE POWER SOURCES ARE FEEDING THE ELECTRICAL EQUIPMENT ON THE PREMISE PER NEC 700.8. (I.E. UTILITY AND A GENERATOR OR PHOTOVOLTIAC SYSTEM)

21.6 PROVIDE ARC FLASH SIGNAGE ON ALL ELECTRICAL EQUIPMENT PER NEC 110.16.

21.7 ALL BRANCH CIRCUIT BREAKERS FEEDING EMERGENCY LUMINAIRES SHALL BE CLEARLY LABELED AT THE DISTRIBUTION PANEL PER NEC 700.12(F).

22. DRAWINGS OF RECORD (AS-BUILT)

22.1 AS-BUILT DRAWINGS SHALL BE SUBMITTED IN ACCORDANCE WITH AND IF REQUIRED BY DIVISION 1 - GENERAL REQUIREMENTS.

23. INSTRUCTIONS

23.1 CONTRACTOR SHALL INSTRUCT THE OWNER IN THE PROPER OPERATING AND MAINTENANCE OF THE EQUIPMENT.

23.2 CONTRACTOR SHALL PROVIDE TWO (2) SETS OF OPERATING AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT PROVIDED BY THIS DISCIPLINE, ONLY WHEN SUCH MANUALS ARE AVAILABLE FROM THE MANUFACTURER.

23.3 ALL MANUALS TO BE BOUND IN A 3-HOLE BINDER AND TABULATED IN AN ORDERLY MANNER.

END OF SPECIFICATIONS

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RIO SALADO COLLEGE TOWER:
Third Floor Remodel
2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ELECTRICAL SPECIFICATIONS

SHEET NUMBER:
E001

DRAWN BY:	REVIEWED BY:
AJN	NAS
DATE:	PROJECT NUMBER:
02/08/2021	1831.00

LUMINAIRE SCHEDULE

MARK	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	LAMPS	VOLTAGE	INPUT WATTAGE	MOUNTING	NOTES
L1	HUBBELL LIGHTING	CFP24-5540	2'x4' FLAT PANEL, LED, 4000K, 5500 LUMEN, DIMMING	LED	277	50	RECESSED GRID	[2] (PROVIDED BY OWNER)
L2	HUBBELL LIGHTING	CFP22-4040	2'x2' FLAT PANEL, LED, 4000K, 4000 LUMEN, DIMMING	LED	277	40	RECESSED GRID	[2] (PROVIDED BY OWNER)
L3	PRESCOLITE	LF6SL-DM1-6LFSL-15L-40K-8	6" DOWN LIGHT, LED, 4000K, 1500 LUMEN, DIMMING	LED	277	16	RECESSED GRID	
L4	COLUMBIA LIGHTING	MPS-4-40-ML-C-W-E-U	4' STRIP LIGHT, LED, 4000K, 4800 LUMEN	LED	277	40	PENDANT	
X	DUAL LITE	LES-*-*-R-*-W-E	EDGE LIT LED EXIT FIXTURE	LED	277	5	SURFACE	[1]

LUMINAIRE SCHEDULE KEYED NOTES

[1] VERIFY MOUNTING TYPE AND DIRECTIONAL CHEVRONS WITH DRAWINGS PRIOR TO ORDERING. EXIT SIGN WATTAGE SHALL NOT EXCEED 5 WATTS PER SIDE. COLOR SHALL MATCH BUILDING STANDARD.

[2] SPECIFIED FIXTURE IS CORPORATE STANDARD, PROVIDED BY OWNER FROM PRE-PURCHASED, ON-HAND, STOCKPILE. VERIFY QUANTITY OF AVAILABLE LIGHT FIXTURES AND AVAILABLE LIGHT FIXTURES EQUIPPED WITH INTEGRAL BATTERY BACK-UP WITH CLIENT AND PROVIDE NEW TO MATCH IF NECESSARY. INCLUDE CONTRACTOR PROCURED FIXTURES IN LIGHTING FIXTURE SUBMITTAL.

LUMINAIRE SCHEDULE GENERAL NOTES

1. ELECTRICAL CONTRACTOR SHALL VERIFY FINISHES OF ALL LIGHTING PRODUCTS WITH ARCHITECT.
2. ELECTRICAL CONTRACTOR SHALL VERIFY MOUNTING DETAILS OF ANY ATYPICAL LIGHT FIXTURES.
3. ELECTRICAL CONTRACTOR SHALL VERIFY FINAL LUMINAIRE SELECTION WITH ARCHITECT AND GENERAL CONTRACTOR. NOTIFY ELECTRICAL ENGINEER WITH ANY LAMP WATTAGE CHANGES.

COMcheck Software Version 4.1.1.0

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: Rio Salado College Tower: Third Floor Remodel
Project Type: Alteration

Construction Site:
2323 W. 14th Street
Tempe, AZ 85281

Owner/Agent:
DWL Architects
2333 North Central Avenue
Phoenix, AZ 85004
602.264.9731

Designer/Contractor:
Energy Systems Design
7135 E. Camelback Rd.
Suite 275
Scottsdale, AZ 85251
480.481.4900

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Office	20235	0.79	15986
		Total Allowed Watts =	15986

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Office (20235 sq.ft.)				
LED 1: L1: 2X4 LED FLAT PANEL: Other:	1	205	50	10250
LED 2: L2: 2X2 LED FLAT PANEL: Other:	1	3	40	120
LED 3: L3: 6" LED DOWNLIGHT: Other:	1	25	16	400
LED 4: L4: 4' LED STRIP LIGHT: Other:	1	8	40	320
			Total Proposed Watts =	11090

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2018 IECC requirements in COM*check* Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

Project Title: Rio Salado College Tower: Third Floor Remodel — Report date: 06/11/20
Data filename: J:\2020\201003 MCCD Rio Salado Tower 3rd Floor Remodel\Filing\3 Electrical\Lighting\RIO_SALADO_3RDFLR_REMODEL_COMcheck.cck — Page 1 of 6

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ELECTRICAL LUMINAIRE SCHEDULE

SHEET NUMBER:
E002

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AJN	NAS
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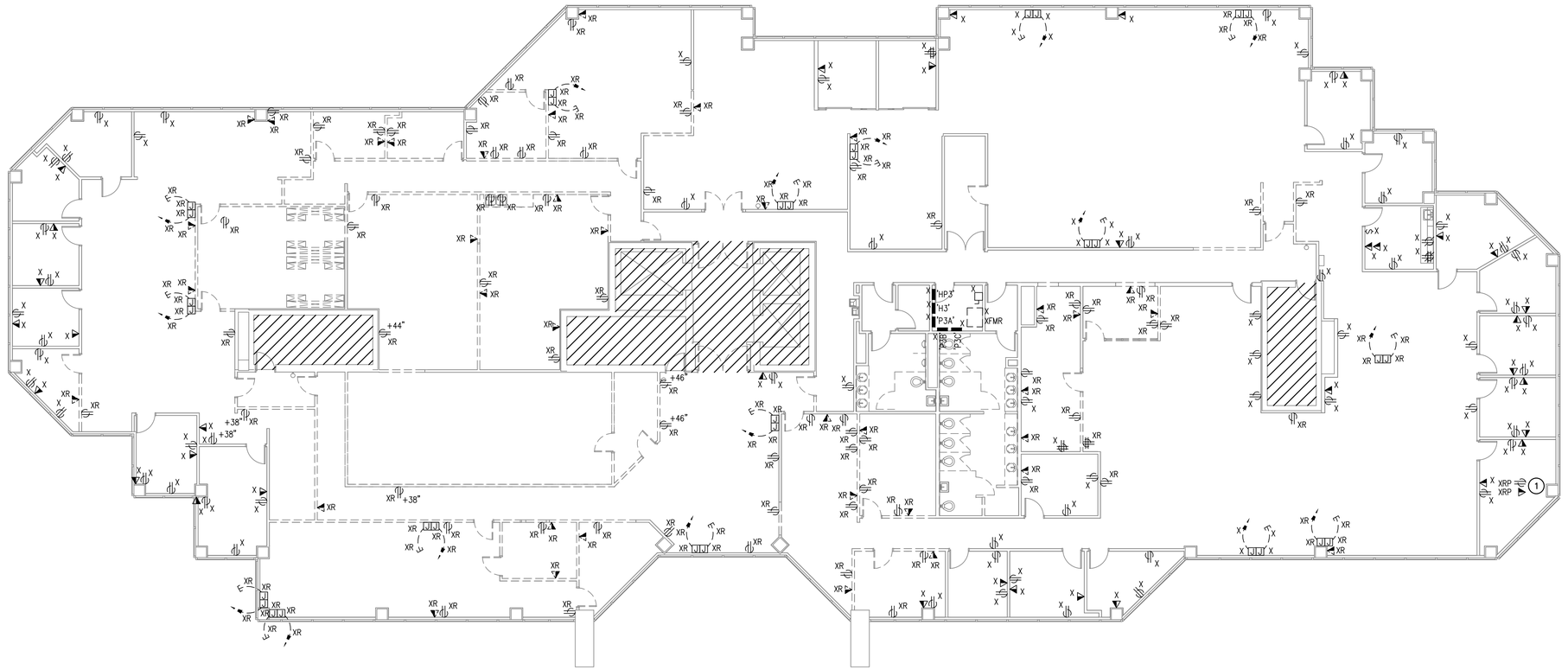

ELECTRICAL DEMOLITION POWER PLAN - 3RD FLOOR

SCALE: 1"=10'-0"

N

KEYED NOTES (#)

1. EXISTING CEILING MOUNTED PROJECTOR TO BE REPLACED WITH NEW AND RELOCATED TO NEW LOCATION. EXISTING CIRCUIT AND WIRING TO BE REUSED. SEE SHEET E101 FOR ADDITIONAL INFORMATION.

SHEET NOTES

A. ALL ELECTRICAL DEVICES MAY NOT BE ACCOUNTED FOR DUE TO SPACE BEING OCCUPIED DURING FIELD SURVEY. ELECTRICAL DEVICES LOCATED ON IN DEMOLISHED WALLS SHALL BE REMOVED BACK TO SOURCE OR NEAREST JUNCTION BOX/DEVICE. MAINTAIN INTEGRITY OF CIRCUITING TO EXISTING DEVICES TO REMAIN, IF APPLICABLE.

B. EXISTING BRANCH CIRCUITING MAY BE REUSED FOR CONNECTION TO NEW LIGHT FIXTURES IF THE CONDUCTORS ARE IN GOOD CONDITION, COPPER AND ROUTED IN EMT CONDUIT. REFER TO LIGHTING PLAN FOR ADDITIONAL INFORMATION.

C. ALL BRANCH CIRCUITING, JUNCTION BOXES, CONDUIT, HANGERS, SUPPORTS, ETC. THAT ARE NOT BEING REUSED SHALL BE REMOVED. BRANCH CIRCUITING SHALL BE REMOVED BACK TO NEAREST JUNCTION BOX OR BACK TO SOURCE.

D. REUSE EXISTING DEVICE BACK BOXES FOR NEW DEVICES WHERE POSSIBLE. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.

E. HATCHED AREA INDICATES EXISTING AREA TO REMAIN AS-IS, NOT IN PROJECT SCOPE.

F. SALVAGE (4) EXISTING MASS NOTIFICATION ALERT BEACONS FOR REINSTALLATION. REFER TO POWER INSTALLATION PLAN FOR ADDITIONAL INFORMATION.

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ELECTRICAL DEMO POWER PLAN - 3RD FLOOR

SHEET NUMBER:
E100

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AJN	NAS
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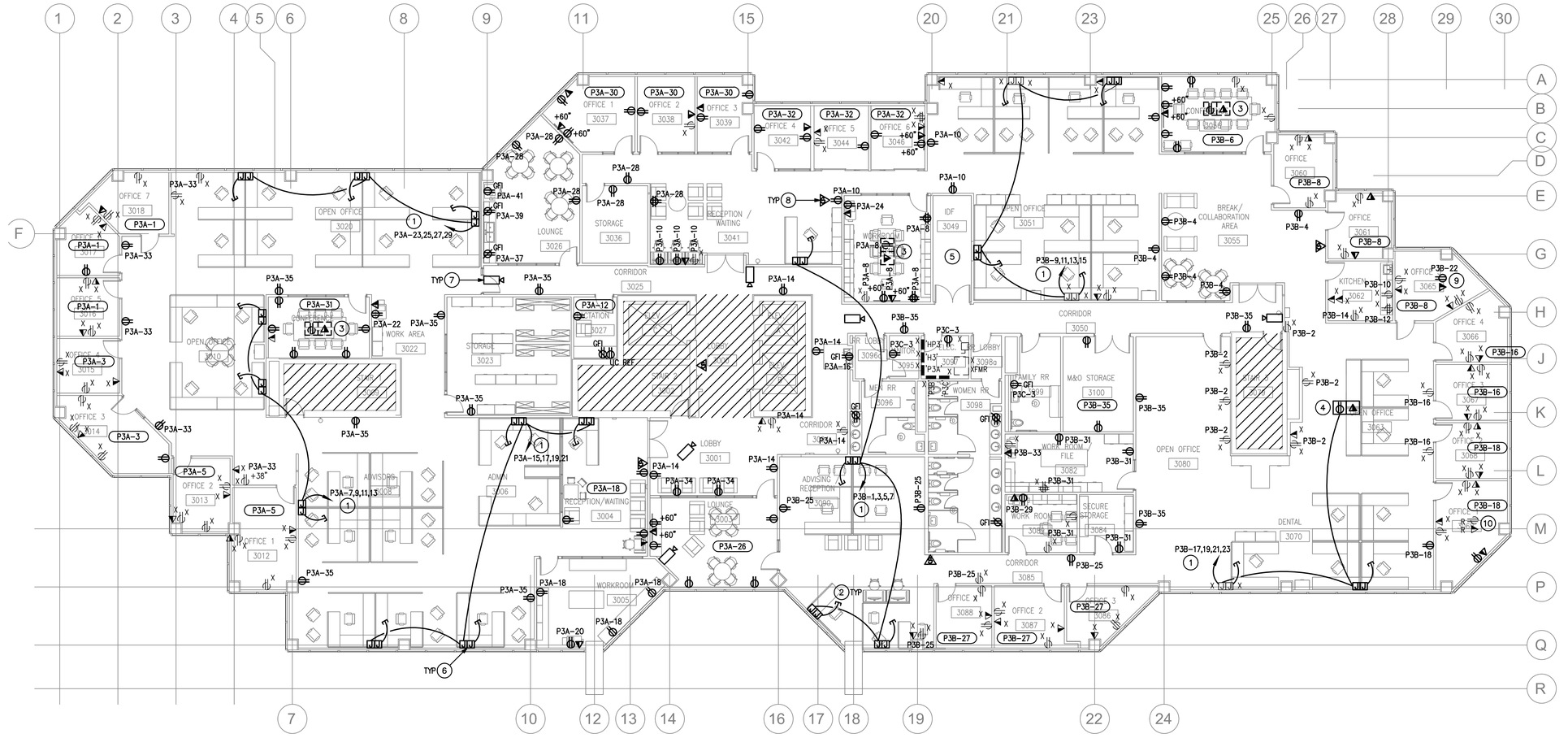

ELECTRICAL NEW POWER PLAN - 3RD FLOOR

SCALE: 1"=10'-0"

KEYED NOTES (#)

1. (4)#10 PHASE, (2)#10 NEUTRAL, (2)#10 GROUND, 3/4" CONDUIT.
2. PROVIDE (1)1-1/4" CONDUIT STUBBED TO ACCESSIBLE CEILING SPACE FOR LOW VOLTAGE COMMUNICATION CABLING.
3. PROVIDE MULTI-SERVICE POKE THRU DEVICE, LEGRAND 6AT EVOLUTION SERIES, OR EQUAL, WITH (1) 5-20R RECEPTACLE AND LOW VOLTAGE COMPARTMENT. PROVIDE LOW VOLTAGE DEVICES AND CABLING PER OWNERS SPECIFICATIONS. PROVIDE (1) 1-1/2" CONDUIT FROM LOW VOLTAGE COMPARTMENT TO ACCESSIBLE SPACE.
4. PROVIDE MULTI-SERVICE COLUMN, LEGRAND SMALL VISTA COLUMN WITH ROUND END CHANNELS, OR EQUAL, CONFIGURED FOR POWER AND LOW VOLTAGE FURNITURE FEED.
5. EXISTING ROOM TO REMAIN AS-IS. IDF ROOM ELECTRICAL DEVICES ARE SERVED FROM UPS BACKED PANELS LOCATED ON A DIFFERENT LEVEL.
6. PROVIDE WALL MOUNTED JUNCTION BOXES AND FURNITURE FEED DEVICE PLATES FOR POWER AND COMMUNICATIONS CONNECTIONS TO SYSTEMS FURNITURE. COORDINATE MOUNTING LOCATION PRIOR TO ROUGH-IN. PROVIDE CONNECTION TO SYSTEMS FURNITURE PER MANUFACTURERS SPECIFICATIONS.
7. LOW VOLTAGE SECURITY CAMERA. COORDINATE EXACT MOUNTING LOCATION WITH RSC SECURITY PERSONNEL PRIOR TO ROUGH-IN.
8. MASS NOTIFICATION ALERT BEACON. REUSE (4) ALERT BEACONS SALVAGED FROM DEMOLITION PHASE AND PROVIDE (1) NEW. PROVIDE BACK-BOX AND CONDUIT PER RSC SECURITY PERSONNEL SPECIFICATIONS. COORDINATE MOUNTING LOCATION WITH RSC PERSONNEL PRIOR TO ROUGH-IN.
9. PROVIDE CEILING MOUNTED RECEPTACLE AND DATA BACK BOX FOR NEW PROJECTOR. PROJECTOR PROVIDED BY OWNER. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH OWNER.
10. EXISTING CEILING MOUNTED PROJECTOR RELOCATED TO NEW LOCATION. MOVE CEILING MOUNTED RECEPTACLE AND DATA BOX AND REUSE AND EXTEND EXISTING WIRING AS REQUIRED. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH OWNER.

SHEET NOTES

A. PROVIDE PLASTIC BUSHING ON STUBBED END OF ALL LOW VOLTAGE CONDUIT FOR PROTECTION OF CABLING.

B. HATCHED AREA INDICATES EXISTING TO REMAIN AS-IS, NOT IN PROJECT SCOPE.

C. PROVIDE (1) 1-1/4" CONDUIT STUBBED TO ACCESSIBLE CEILING FROM EACH COMMUNICATION DEVICE, UNLESS NOTED OTHERWISE.

D. ELECTRICAL DEVICES SHOWN AS EXISTING TO REMAIN SHALL BE INSPECTED AND REPLACED IF DAMAGED OR NOTICEABLY PHYSICALLY OR FUNCTIONALLY WORN.

E. THE FIRE ALARM SYSTEM IS A DEFERRED SUBMITTAL ITEM. THE FIRE ALARM CONTRACTOR SHALL PROVIDE PLANS AND REQUIRED CALCULATIONS STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE SATE OF ARIZONA. THE DEFERRED FIRE ALARM SYSTEM SHALL NOT BE INSTALLED UNTIL THE DESIGN AND SUBMITTALS DOCUMENTS HAVE BEEN APPROVED BY THE AUTHORITY HAVING JURISDICTION

DUE TO THE LACK OF EXISTING CIRCUITING DISTRIBUTION INFORMATION THERE IS NO RELIABLE METHOD OTHER THAN CIRCUIT TRACING TO DETERMINE WHICH BRANCH CIRCUITS SERVE SPECIFIC DEVICES. EXISTING CIRCUITING MAY BE REUSED CONTINGENT ON THE FOLLOWING:

- CONDUCTORS ARE #12 COPPER (MIN)
- CONDUCTORS AND CONDUIT ARE IN SOUND, REUSABLE CONDITION
- CONDUIT RUNS ARE NOT DIAGONAL AND RUN PARALLEL/PERPENDICULAR TO BUILDING ELEMENTS AND OVERALL INSTALLATION IS IN A NEAT WORKMANLIKE MANNER.
- CIRCUITING IS MODIFIED TO SERVE DEVICES AS SPECIFIED ON PLAN
- SOURCE ELECTRICAL PANEL IS AS SPECIFIED ON PLAN
- RACEWAYS ARE PROPERLY SUPPORTED OR MODIFIED TO BE AS SUCH

ALL BRANCH CIRCUITING, JUNCTION BOXES, CONDUIT, HANGERS, SUPPORTS, ETC. THAT ARE NOT BEING REUSED SHALL BE REMOVED. BRANCH CIRCUITING SHALL BE REMOVED BACK TO NEAREST JUNCTION BOX OR BACK TO SOURCE.

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REVISIONS

No.	Description	Date

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KEY:

SHEET TITLE:
ELECTRICAL NEW POWER PLAN - 3RD FLOOR

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E101

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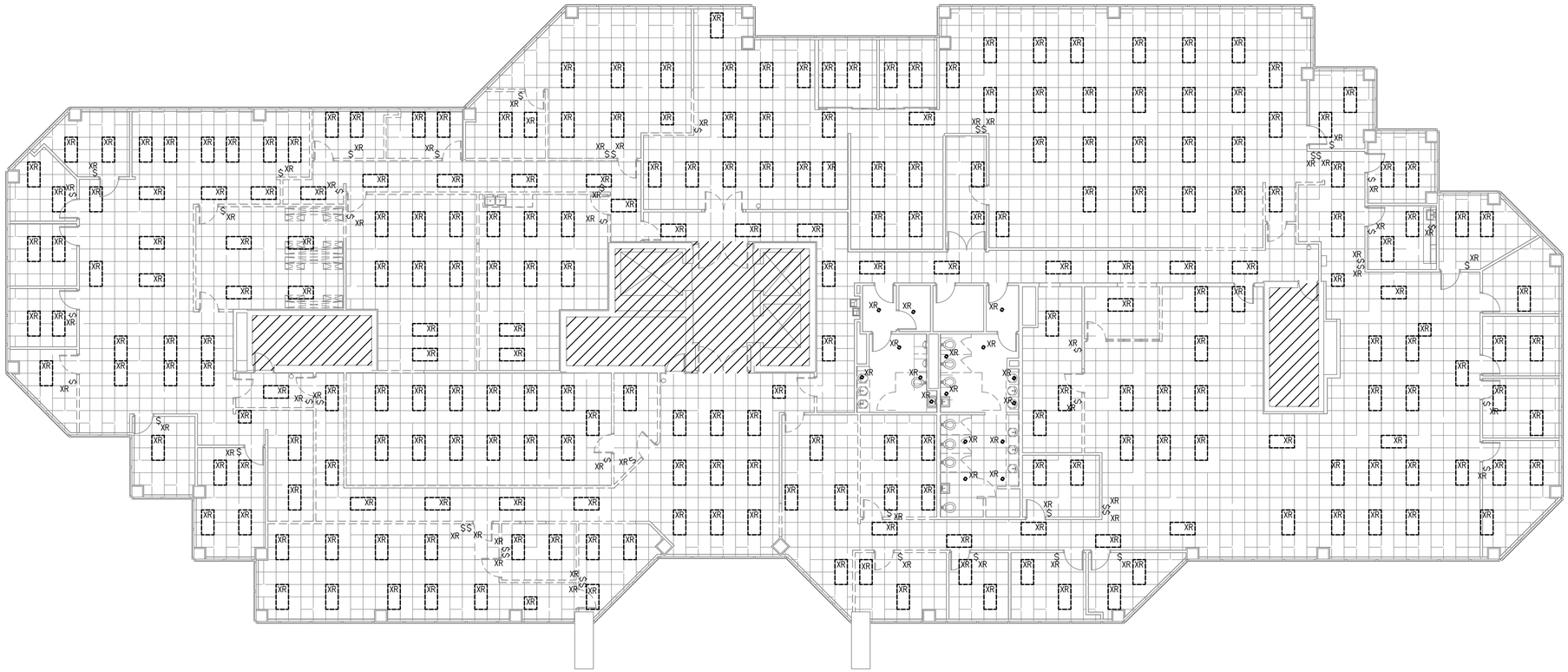

ELECTRICAL DEMOLITION LIGHTING PLAN - 3RD FLOOR

SCALE: 1"=10'-0"

N

SHEET NOTES

A. ALL EXISTING LIGHTING FIXTURES AND LIGHTING CONTROL DEVICES WITHIN SCOPE OF WORK ARE TO BE DEMOLISHED.

B. EXISTING LIGHTING BRANCH CIRCUITING MAY BE REUSED FOR CONNECTION TO NEW LIGHT FIXTURES IF THE CONDUCTORS ARE IN GOOD CONDITION, COPPER AND ROUTED IN EMT CONDUIT. REFER TO LIGHTING PLAN FOR ADDITIONAL INFORMATION. EXISTING LIGHTING FIXTURE WHIP CONNECTIONS MAY NOT BE REUSED.

C. ALL BRANCH CIRCUITING, JUNCTION BOXES, CONDUIT, HANGERS, SUPPORTS, ETC. THAT ARE NOT BEING REUSED SHALL BE REMOVED. BRANCH CIRCUITING SHALL BE REMOVED BACK TO NEAREST JUNCTION BOX OR BACK TO SOURCE.

D. REUSE EXISTING LIGHTING CONTROL BACK BOXES FOR NEW LIGHTING CONTROL DEVICES WHERE POSSIBLE. REFER TO LIGHTING PLAN FOR ADDITIONAL INFORMATION.

E. HATCHED AREA INDICATES EXISTING AREA TO REMAIN AS-IS, NOT IN PROJECT SCOPE.

F. ALL EXIT LIGHT FIXTURES ARE TO BE REMOVED.

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No.	Description	Date

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SHEET TITLE:
ELECTRICAL DEMO LIGHTING PLAN - 3RD FLOOR

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E200

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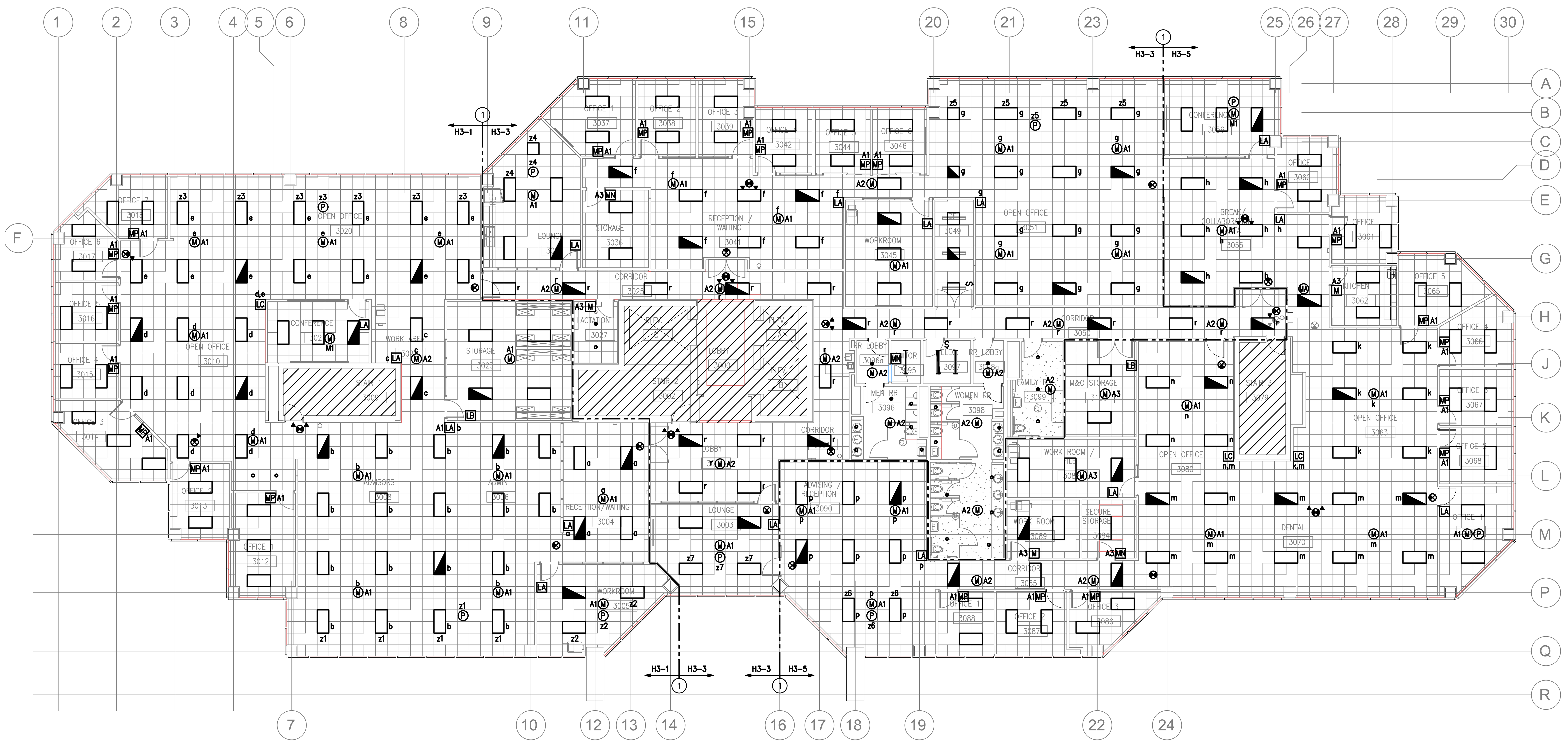

ELECTRICAL NEW LIGHTING PLAN - 3RD FLOOR

SCALE: 1"=10'-0"

N

KEYED NOTES (#)

1. LINE OF DELINEATION AND SPECIFIED CIRCUITS INDICATE LIGHTING BRANCH CIRCUIT DISTRIBUTION.

DUE TO THE LACK OF EXISTING CIRCUITING DISTRIBUTION INFORMATION THERE IS NO RELIABLE METHOD OTHER THAN CIRCUIT TRACING TO DETERMINE WHICH BRANCH CIRCUITS SERVE SPECIFIC LIGHT FIXTURES. EXISTING CIRCUITING MAY BE REUSED CONTINGENT ON THE FOLLOWING:

- CONDUCTORS ARE #12 COPPER (MIN)
- CONDUCTORS AND CONDUIT ARE IN SOUND, REUSABLE CONDITION
- CONDUIT RUNS ARE NOT DIAGONAL AND RUN PARALLEL/PERPENDICULAR TO BUILDING ELEMENTS AND OVERALL INSTALLATION IS IN A NEAT WORKMANLIKE MANNER.
- CIRCUITING IS MODIFIED TO SERVE DEVICES AS SPECIFIED ON PLAN
- SOURCE ELECTRICAL PANEL IS AS SPECIFIED ON PLAN
- RACEWAYS ARE PROPERLY SUPPORTED OR MODIFIED TO BE AS SUCH

ALL BRANCH CIRCUITING, JUNCTION BOXES, CONDUIT, HANGERS, SUPPORTS, ETC. THAT ARE NOT BEING REUSED SHALL BE REMOVED. BRANCH CIRCUITING SHALL BE REMOVED BACK TO NEAREST JUNCTION BOX OR BACK TO SOURCE.

SHEET NOTES

A. COORDINATE LIGHTING INSTALLATION WITH ALL FIRE PROTECTION AND HVAC DEVICES PRIOR TO COMMENCING WORK.

B. REFER TO LIGHTING FIXTURE FOR ADDITIONAL INFORMATION.

C. HATCHED AREA INDICATES EXISTING TO REMAIN AS-IS, NOT IN PROJECT SCOPE.

D. EXTEND UNSWITCHED LEG OF SPECIFIED LIGHTING CIRCUIT TO LED EMERGENCY DRIVERS AND EXIT LIGHTING FIXTURES.

E. CONTRACTOR SHALL INCLUDE ALL REQUIRED LOW VOLTAGE DIMMER WIRE (VIOLET AND GRAY, CAT 5E, OR PER MANUFACTURER) FROM ALL CONTROL DEVICES THAT INCLUDE DIMMING RAISE/LOWER CONTROL AND TO THE RESPECTIVE LUMINAIRES IN THE ROOM/ZONE. -THE SAME CONDUIT AS LINE VOLTAGE WIRE MAY BE USED IF THE LOW VOLTAGE WIRE HAS THE SAME INSULATION CLASS, ALL COMPONENTS OF THE SYSTEM ARE RATED FOR CLASS 1, AND INSTALLATION IS MADE IN ACCORDANCE WITH NEC 725.48. IN A WIRELESS SYSTEM, CONTRACTOR SHALL CONNECT AND PROGRAM ALL LUMINARES AND CONTROL DEVICES AS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM.

F. PROVIDE SUFFICIENT RELAYS/POWER PACKS FOR INSTALLATION SHOWN.

G. ALL RELAY/POWER PACKS SHALL INCLUDE INTERNAL FUSE PROTECTION TO PROTECT DEVICE SCCR WHERE LOCATED WITHIN 15' OF THE SOURCE POWER PANEL, OR ANY SITUATION WHERE AVAILABLE FAULT CURRENT AT RELAY/POWER PACK EXCEEDS 5,000.

LIGHTING FIXTURE & LIGHTING FIXTURE CONTROL LEGEND

FIXTURE TYPE L1

FIXTURE TYPE L2

FIXTURE TYPE L3

FIXTURE TYPE L4

ALL EXIT LIGHT FIXTURES ARE TYPE X

1/2 SHADING INDICATES FIXTURE IS EQUIPPED WITH LED EMERGENCY DRIVER. PROVIDE MAX LUMEN RATING BATTERY THAT IS COMPATIBLE WITH LIGHT FIXTURE, UNLESS NOTED OTHERWISE.

LA LOW VOLTAGE, WALL MOUNTED SWITCH CONFIGURED FOR ON/OFF/DIMMING CONTROL.

LB LOW VOLTAGE, WALL MOUNTED SWITCH CONFIGURED FOR ON/OFF CONTROL.

LC LOW VOLTAGE, WALL MOUNTED SWITCH CONFIGURED FOR COMMON GROUP AND INDIVIDUAL ON/OFF/DIMMING CONTROL OF ALL DESIGNATED CONTROL ZONES. CONTROL ZONES DENOTED BY LOWER CASE LETTERS ADJACENT TO CONTROL DEVICE(S) AND LIGHTING FIXTURE(S), AS APPLICABLE.

M LOW VOLTAGE, MULTI DETECTION TECHNOLOGY, WALL SWITCH MOUNTED OCCUPANCY SENSOR WITH MANUAL ON/OFF/DIMMING CONTROL.

MN LOW VOLTAGE, MULTI DETECTION TECHNOLOGY, WALL SWITCH MOUNTED OCCUPANCY SENSOR WITH MANUAL ON/OFF CONTROL.

MP LOW VOLTAGE, MULTI DETECTION TECHNOLOGY, WALL SWITCH MOUNTED OCCUPANCY SENSOR WITH MANUAL ON/OFF/DIMMING CONTROL AND INTEGRAL PHOTOCELL FOR AUTOMATIC DAYLIGHT RESPONSIVE DIMMING CONTROL.

(M) LOW VOLTAGE, MULTI DETECTION TECHNOLOGY, CEILING MOUNTED OCCUPANCY SENSOR. CONTROL ZONES DENOTED BY LOWER CASE LETTERS, AS APPLICABLE.

(P) LOW VOLTAGE, CEILING MOUNTED PHOTOCELL FOR AUTOMATIC DAYLIGHT RESPONSIVE DIMMING CONTROL. z# DENOTES ASSOCIATED LIGHT FIXTURES.

A1 AUTOMATIC ON AT 50% LIGHT OUTPUT, 20 MINUTE TIMEOUT.

A2 AUTOMATIC ON AT 100% LIGHT OUTPUT, 20 MINUTE DELAY.

A3 AUTOMATIC ON AT 50% LIGHT OUTPUT, 10 MINUTE TIMEOUT.

M1 MANUAL ON, AUTOMATIC OFF, 20 MINUTE DELAY

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Project # 201003

MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER:
Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ELECTRICAL NEW LIGHTING PLAN - 3RD FLOOR

SHEET NUMBER:
E201

DRAWN BY:	REVIEWED BY:
AJN	NAS
DATE:	PROJECT NUMBER:
02/08/2021	1831.00

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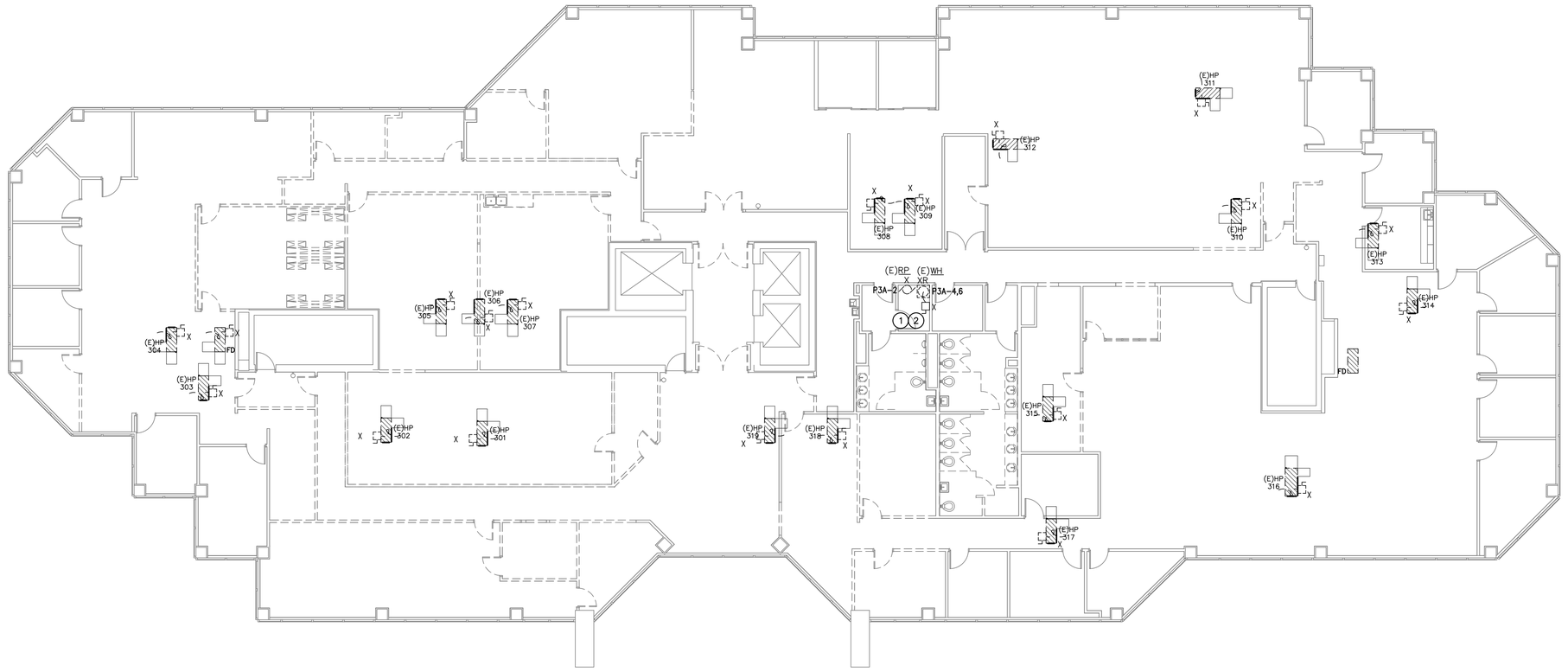
PLOTTED: 02.05.2021 - 11:09am



ELECTRICAL DEMOLITION HVAC PLAN - 3RD FLOOR

SCALE: 1"=10'-0"

N

KEYED NOTES (#)

1. EXISTING WATER HEATER TIME SWITCH, HOT WATER RECIRC PUMP AND ALL ASSOCIATED ELECTRICAL DEVICES AND BRANCH CIRCUITING FOR EXISTING WATER HEATER TO REMAIN.
2. EXISTING WATER HEATER TO BE REMOVED AND REPLACED WITH NEW WATER HEATER OF EQUIVALENT ELECTRICAL CHARACTERISTICS. ALL EXISTING ELECTRICAL INFRASTRUCTURE SERVING WATER HEATER TO BE REUSED.

SHEET NOTES

A. EXISTING BRANCH CIRCUITING MAY BE REUSED FOR CONNECTION TO NEW EQUIPMENT IF THE CONDUCTORS ARE IN GOOD CONDITION, COPPER AND ROUTED IN EMT CONDUIT. REFER TO POWER PLAN FOR ADDITIONAL INFORMATION.

B. ALL BRANCH CIRCUITING, JUNCTION BOXES, CONDUIT, HANGERS, SUPPORTS, ETC. THAT ARE NOT BEING REUSED SHALL BE REMOVED. BRANCH CIRCUITING SHALL BE REMOVED BACK TO NEAREST JUNCTION BOX OR BACK TO SOURCE.

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EXPIRES 6-30-2021

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No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ELECTRICAL DEMO HVAC PLAN 3RD - FLOOR

SHEET NUMBER:
E300

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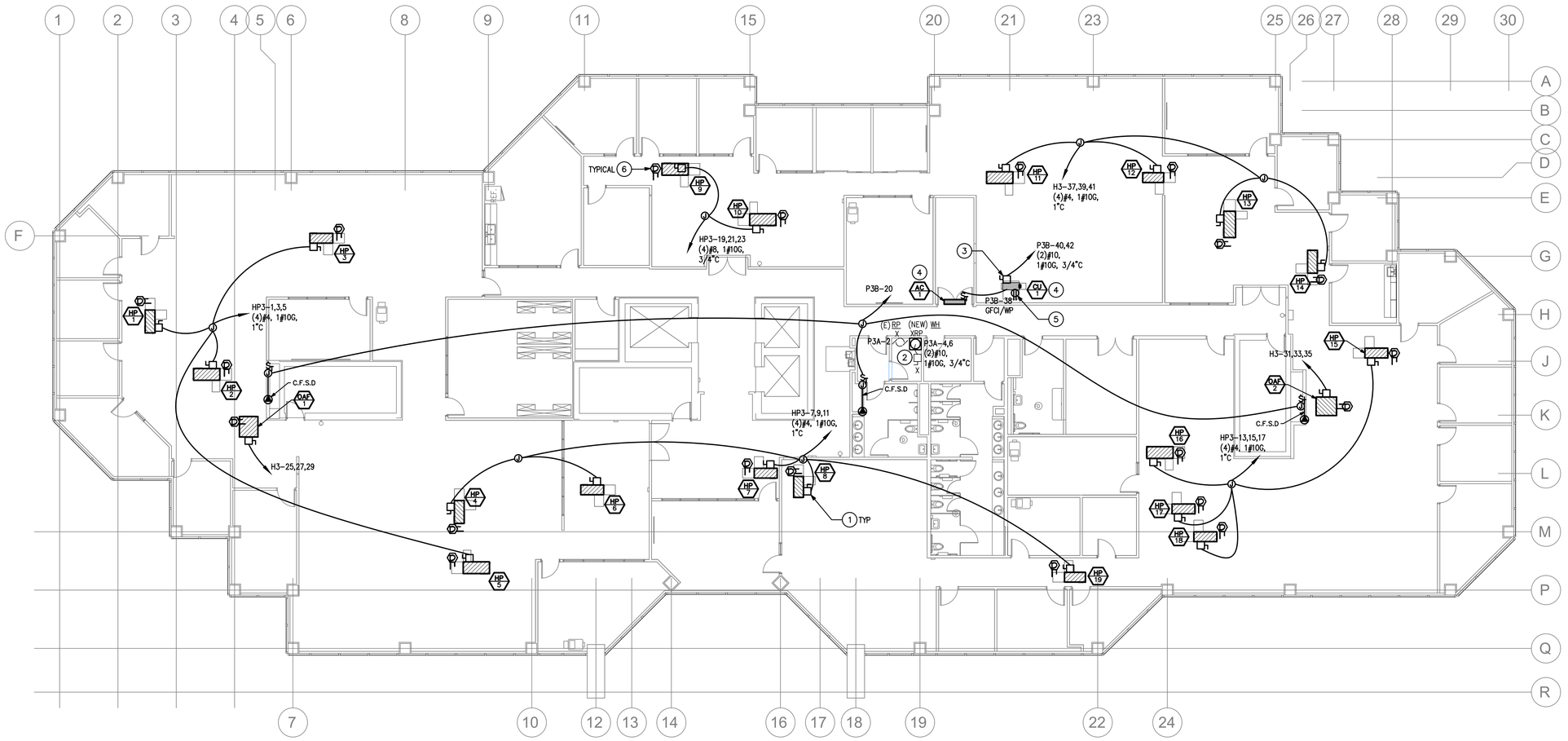

ELECTRICAL NEW M&P EQUIPMENT POWER PLAN - 3RD FLOOR

SCALE: 1"=10'–0"

N

KEYED NOTES (#)

1. PROVIDE 30A/600V/3P/HD/NEMA–1 FUSED DISCONNECT SWITCH WITH RK1 FUSES. FUSE AMPACITY PER EQUIPMENT MANUFACTURERS NAMEPLATE SPECIFICATIONS.
2. EXISTING WATER HEATER TO BE REPLACED WITH NEW WATER HEATER OF EQUIVALENT ELECTRICAL CHARACTERISTICS. ALL EXISTING ELECTRICAL INFRASTRUCTURE SERVING WATER HEATER TO BE REUSED IF SIZED AS SPECIFIED. PROVIDE NEW IF REQUIRED.
3. PROVIDE 30A/250V/3P/HD/NEMA–3R FUSED DISCONNECT SWITCH WITH RK1 FUSES. FUSE AMPACITY PER EQUIPMENT MANUFACTURERS NAMEPLATE SPECIFICATIONS.
4. OUTDOOR UNIT, CU–1, LOCATED ON ROOF. INDOOR UNIT, AC–1, IS POWERED FROM OUTDOOR UNIT. PROVIDE CIRCUITING FROM CU–1 TO AC–1 PER EQUIPMENT MANUFACTURERS SPECIFICATIONS. PROVIDE MEANS OF DISCONNECT AS INDICATED.
5. ROOF TOP SERVICE RECEPTACLE MAY BE ELIMINATED IF AN EXISTING ROOF TOP SERVICE RECEPTACLE IS LOCATED WITHIN 25' OF CU–1.
6. DUCT SMOKE DETECTOR PROVIDED AND WIRED BY ELECTRICAL CONTRACTOR. INSTALLED BY MECHANICAL CONTRACTOR. COORDINATE EXACT VOLTAGE AND WIRING REQUIREMENTS WITH FIRE ALARM CONTRACTOR/VENDOR.

SHEET NOTES

A. COORDINATE INSTALLATION WITH MECHANICAL AND PLUMBING CONTRACTOR PRIOR TO COMMENCING WORK.

EXISTING CIRCUITING MAY BE REUSED CONTINGENT ON THE FOLLOWING:

- CONDUCTORS ARE COPPER AND SIZE IS AS SPECIFIED
- CONDUCTORS AND CONDUIT ARE IN SOUND, REUSABLE CONDITION
- CONDUIT RUNS ARE NOT DIAGONAL AND RUN PARALLEL/PERPENDICULAR TO BUILDING ELEMENTS AND OVERALL INSTALLATION IS IN A NEAT WORKMANLIKE MANNER.
- CIRCUITING IS MODIFIED TO SERVE EQUIPMENT AS SPECIFIED ON PLAN
- SOURCE ELECTRICAL PANEL IS AS SPECIFIED ON PLAN
- RACEWAYS ARE PROPERLY SUPPORTED OR MODIFIED TO BE AS SUCH

ALL BRANCH CIRCUITING, JUNCTION BOXES, CONDUIT, HANGERS, SUPPORTS, ETC. THAT ARE NOT BEING REUSED SHALL BE REMOVED. BRANCH CIRCUITING SHALL BE REMOVED BACK TO NEAREST JUNCTION BOX OR BACK TO SOURCE.

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REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ELECTRICAL NEW M&P EQUIP POWER PLAN 3RD - FLOOR

SHEET NUMBER:
E301

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AJN	NAS
DATE:	PROJECT NUMBER:
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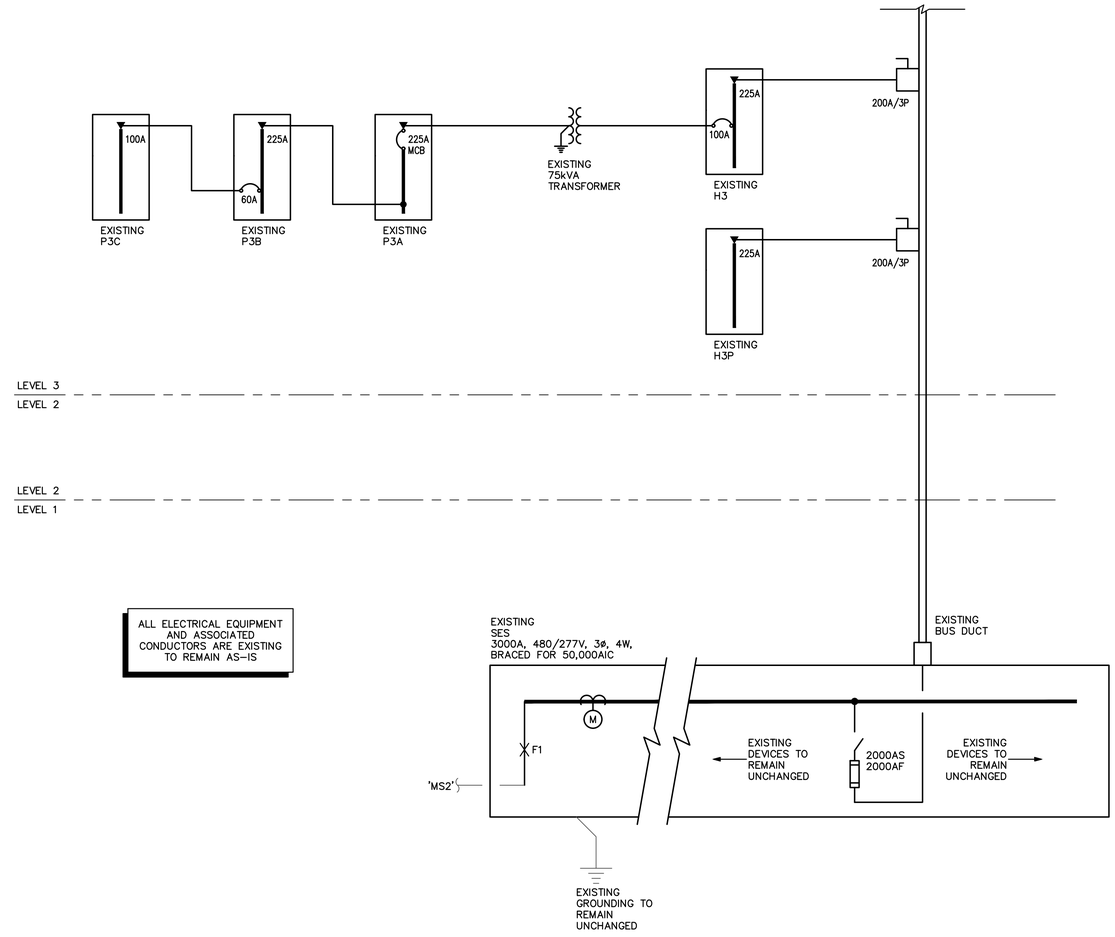

PARTIAL ONE-LINE DIAGRAM

SCALE: NTS

Short-Circuit Calculations

The following calculations are based on the "Point-by Point" method where:

Isc = Isc x M **M= 1/(1+f)** **f = 1.732 x L x I / C x E** **XFMR: IP(sca)= IP(sca)x Vp x%Z / 100,000xKVA** **IS(sca)= Vp x M x IS(sca) / Vs**

SOURCE VALUE DERIVED FROM SRP FAULT TABLE

Fault Point	Panel Transformer	Source (Fault Point)	Source I (amps)	Conduit Type	Wire/Bus Size	Wire/Bus Type	'C' value	E (volts)	L (length)	X'FMR KVA	X'FMR Z	f	M	Isc
1	SES													43490
2	BUS DUCT	1	43490	M	1 Set(s) of 2000 A BUS	CU	142900	480	75			0.082	0.92	40181
3	HP3	2	40181	M	1 Set(s) of 3/0	CU	12843	480	15			0.169	0.86	34362
4	H3	2	40181	M	1 Set(s) of 3/0	CU	12843	480	12			0.135	0.88	35387
5	XFMR PRI	4	35387	M	1 Set(s) of 2	CU	5906	480	6			0.130	0.89	31324
6	XFMR SEC	5	31324		Set(s) of	CU	#N/A	208		75	4.5	15.607	0.06	4353

SES LOAD CALCULATION

BUILDING SERVICE LOAD CALCULATION			**amps @480v**
EXISTING 12 MONTH MAX DEMAND FROM UTILITY COMPANY (SRP METER 2367073)			
EXISTING SES 657 kW/.8PF=	821.25 kVA x	125 % = 1026.56 kVA =	**1235 amps**
REMOVED GENERAL POWER LOAD			
3 va * 20235 SQ FT		= 60.71 kVA	**73 amps**
REMOVED HVAC EQUIPMENT LOAD			
CALUCULATED AT 50% OF EXISTING OCPD RATING		= 105.92 kVA	**127 amps**
REMOVED LIGHTING LOAD			
(246) 2'x4', 3 LAMP T8		= 23.62 kVA	**28 amps**
ADDED LOAD PANEL H3		= 129.47 kVA	**156 amps**
ADDED LOAD PANEL HP3		= 157.73 kVA	**190 amps**
Total		1123.52 kVA	
	1123.52 kVA	=	**1352 amps @ 480v/3ph**

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No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE:
ELECTRICAL ONE-LINE DIAGRAM

SHEET NUMBER:
E400

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AJN	NAS
DATE:	PROJECT NUMBER:
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PLOTTED: 02.05.2021 - 11:10am

SHEET NOTES

1. SHORT CIRCUIT WITHSTAND RATING OF EXISTING DEVICES WITHIN PANELS H3 AND HP3 WERE NOT ABLE TO BE DETERMINED WITHOUT REMOVAL OF THE DEAD-FRONT COVER. THE ELECTRICAL CONTRACTOR SHALL DETERMINE IF THE DEVICES ARE PROTECTED AGAINST THE CALCULATED FAULT VALUE SHOWN IN PROVIDED FAULT CALCULATIONS BY MEANS OF FULLY OR SERIES RATINGS. NEW DEVICES MOUNTED IN THESE PANELS SHALL MATCH THE EXISTING DEVICE RATINGS. IMMEDIATELY CONTACT ENGINEER OF RECORD IF EXISTING DEVICE SHORT CIRCUIT RATINGS ARE FOUND TO BE INADEQUATE FOR PROVIDING PROTECTION AGAINST CALCULATED FAULT VALUE.

PANELBOARD SYMBOL SCHEDULE

T	INDICATES PROVIDE NEW 'LOCK-DOG' ON CIRCUIT BREAKER, LKH OR LOTO.
●	INDICATES NEW LOAD ADDED TO EXISTING CIRCUIT BREAKER.
○	INDICATES NEW LOAD AND NEW CIRCUIT BREAKER ADDED TO EXISTING BUSSED SPACE.
□	INDICATES EXISTING LOAD REMOVED AND BREAKER TO BECOME SPARE.
■	INDICATES EXISTING LOAD AND BREAKER REMOVED AND REPLACED WITH NEW BREAKER AND POSSIBLY NEW LOAD.
△	INDICATES EXISTING LOAD & CIRCUIT BREAKER TO REMAIN – NO REVISION. EXISTING LOADS MAY HAVE BEEN ESTIMATED.
▲	CIRCUIT THRU LIGHTING CONTACTOR. SEE WIRING DIAGRAM(S).
{	BREAKERS WITH COMMON HANDLE-TIES OR MULTI-POLE BREAKER WHERE HANDLE-TIES ARE NOT AVAILABLE OR PANELBOARD IS EXISTING. PROVIDE PER NEC 210.4(B).
C	INDICATES CONTINUOUS LOAD.
N	INDICATES NON-CONTINUOUS LOAD.
SR	INDICATES SPARE CIRCUIT BREAKER.
BSP	INDICATES BUSSED SPACE FOR FUTURE CIRCUIT BREAKER.
M	INDICATES MOTOR LOAD.
R	INDICATES GENERAL PURPOSE RECEPTACLE LOAD.

PHASE: 3 **VOLTS:** 277/480Y **WIRE:** 4 **MAIN:** LUGS ONLY — **225A BUS**

EXISTING H3

TYPE	DESCRIPTION	QTY	Q TYP	BKR	CKT	A PH	B PH	C PH	CKT	BKR	Q TYP	QTY	DESCRIPTION	TYPE
C	LTG NORTH			20 1	1	3582			2	20 1			SPARE	--
C	LTG MID			20 1	3		3828		4	20 1			SPARE	--
C	LTG SOUTH			20 1	5			3600	6	20 1			SPARE	--
--	SPARE			20 1	7	0			8	20 1			SPARE	--
--	SPARE			20 1	9		0		10	20 1			SPARE	--
--	SPARE			20 1	11			0	12	20 1			SPARE	--
--	SPARE			20 1	13	0			14	20 1			SPARE	--
--	SPARE			20 1	15		0		16	20 1			SPARE	--
--	SPARE			20 1	17			0	18	20 1			SPARE	--
--	SPARE			20 1	19	0			20	20 1			SPARE	--
--	SPARE			20 1	21		0		22	20 1			SPARE	--
--	SPARE			20 1	23			0	24	20 1			SPARE	--
M	OAF-1			20	25	831			26	20 1			SPARE	--
M					27		831		28	20 1			SPARE	--
M				3	29			831	30	20 1			SPARE	--
M	OAF-2			20	31	582			32	20 1			SPARE	--
M					33		582		34	20 1			SPARE	--
M				3	35			582	36	20 1			SPARE	--
M	HP-11,12,13,14			60	37	12949 24430			38	100			P3A	PNL
M					39		12949 28265		40				P3A	PNL
M				3	41			12949 28515	42	3			P3A	PNL

TOTAL CODE LOAD: 129.54 KVA / (1.73 * 480 V) = 155.81 AMPS
All Phases: CONTINUOUS LOAD = 12510 VA connected * 1.25 = 15.64 KVA code load
A Phase: CONTINUOUS LOAD = 4482 VA connected * 1.25 = 5.60 KVA code load
B Phase: CONTINUOUS LOAD = 4128 VA connected * 1.25 = 5.16 KVA code load
C Phase: CONTINUOUS LOAD = 3900 VA connected * 1.25 = 4.88 KVA code load
All Phases: MOTOR LOAD 47330 VA CONNECTED + (38847 * 0.25)
A Phase: MOTOR LOAD 14612 VA CONNECTED + (12949 * 0.25)
B Phase: MOTOR LOAD 16234 VA CONNECTED + (12949 * 0.25)
C Phase: MOTOR LOAD 16484 VA CONNECTED + (12949 * 0.25)
All Phases: RECEPTACLE LOAD 47220 VA CONNECTED: (10000 * 1.00) + (37220 * 0.50) = 28.61 KVA code load.
A Phase: RECEPTACLE LOAD 17520 VA CONNECTED: (10000 * 1.00) + (7520 * 0.50) = 13.76 KVA code load.
B Phase: RECEPTACLE LOAD 14280 VA CONNECTED: (10000 * 1.00) + (4280 * 0.50) = 12.14 KVA code load.
C Phase: RECEPTACLE LOAD 15420 VA CONNECTED: (10000 * 1.00) + (5420 * 0.50) = 12.71 KVA code load.
All Phases: NONCONTINUOUS LOAD = 28246 VA connected * 1 = 28.25 KVA code load
A Phase: NONCONTINUOUS LOAD = 5760 VA connected * 1 = 5.76 KVA code load
B Phase: NONCONTINUOUS LOAD = 11813 VA connected * 1 = 11.81 KVA code load
C Phase: NONCONTINUOUS LOAD = 10673 VA connected * 1 = 10.67 KVA code load

http://www.panelschedules.com

PHASE: 3 **VOLTS:** 120/208Y **WIRE:** 4 **MAIN:** 225A MAIN CB / FTL — **225A BUS**

EXISTING P3A

10000 AIC

TYPE	DESCRIPTION	QTY	Q TYP	BKR	CKT	A PH	B PH	C PH	CKT	BKR	Q TYP	QTY	DESCRIPTION	TYPE
R	RCPT 3016-18			20 1	1	1080 250			2	20 1			HW RECIRC PUMP	M
R	RCPT 3014,15			20 1	3		1080 2813		4	30			WATER HEATER	N
R	RCPT 3012,13			20 1	5			1080 2813	6					N
R	SYS FURN 3008 N, 3010			20	7	960 1440			8	20 1			RCPT 3045	R
R					9		960 1080		10	20 1			RCPT 3041 W,S, 3051 N	R
R				3	11			960 960	12	20 1			RCPT 3027	R
N	SYS FURN 3008 N, 3010			20 1	13	1600 1080			14	20 1			RCPT 3001,25,50,94	R
R	SYS FURN 3004,06,08 S			20	15		840 600		16	20 1			RCPT EDF 3094	N
R					17			840 1080	18	20 1			RCPT 3004,05	R
R				3	19	840 1500			20	20 1			RCPT COPIER 3005	N
N	SYS FURN 3004,06,08 S			20 1	21		1400 1500		22	20 1			RCPT COPIER 3022	N
R	SYS FURN 3020			20	23			1200 1500	24	20 1			RCPT COPIER 3045	N
R					25	1200 960			26	20 1			RCPT 3003	R
R				3	27		1200 1260		28	20 1			RCPT 3026,36,41	R
N	SYS FURN 3020			20 1	29			2000 1260	30	20 1			RCPT 3037-39	R
R	RCPT 3021			20 1	31	1080 1440			32	20 1			RCPT 3042,44,46	R
R	RCPT PERIMETER N			20 1	33		1080 360		34	20 1			RCPT 3001 S	R
R	RCPT PERIMETER N			20 1	35			1080 250	36	20 1			EXISTING HW RECIRC PUMP	M
N	RCPT CNTR TOP 3026			20 1	37	500 600			38	20 1			EXISTING MECH CONTROL PANEL	C
N	RCPT CNTR TOP 3026			20 1	39		500 300		40	20 1			EXISTING FIRE ALARM	C
N	RCPT REFRIG 3026			20 1	41			960 300	42	20 1			EXISTING SECURITY PANEL	C
--	NON USABLE SPACE			0 1	43	0 9900			44	0		FTL	P3B	PNL
--	NON USABLE SPACE			0 1	45		0 13292		46			FTL	P3B	PNL
--	NON USABLE SPACE			0 1	47			0 12232	48	3		FTL	P3B	PNL

TOTAL CODE LOAD: 63.97 KVA / (1.73 * 208 V) = 177.57 AMPS
All Phases: CONTINUOUS LOAD = 1500 VA connected * 1.25 = 1.88 KVA code load
A Phase: CONTINUOUS LOAD = 900 VA connected * 1.25 = 1.13 KVA code load
B Phase: CONTINUOUS LOAD = 300 VA connected * 1.25 = 0.38 KVA code load
C Phase: CONTINUOUS LOAD = 300 VA connected * 1.25 = 0.38 KVA code load
All Phases: MOTOR LOAD 4244 VA CONNECTED + (3994 * 0.25)
A Phase: MOTOR LOAD 250 VA CONNECTED + (250 * 0.25)
B Phase: MOTOR LOAD 1872 VA CONNECTED + (1872 * 0.25)
C Phase: MOTOR LOAD 2122 VA CONNECTED + (1872 * 0.25)
All Phases: RECEPTACLE LOAD 47220 VA CONNECTED: (10000 * 1.00) + (37220 * 0.50) = 28.61 KVA code load.
A Phase: RECEPTACLE LOAD 17520 VA CONNECTED: (10000 * 1.00) + (7520 * 0.50) = 13.76 KVA code load.
B Phase: RECEPTACLE LOAD 14280 VA CONNECTED: (10000 * 1.00) + (4280 * 0.50) = 12.14 KVA code load.
C Phase: RECEPTACLE LOAD 15420 VA CONNECTED: (10000 * 1.00) + (5420 * 0.50) = 12.71 KVA code load.
All Phases: NONCONTINUOUS LOAD = 28246 VA connected * 1 = 28.25 KVA code load
A Phase: NONCONTINUOUS LOAD = 5760 VA connected * 1 = 5.76 KVA code load
B Phase: NONCONTINUOUS LOAD = 11813 VA connected * 1 = 11.81 KVA code load
C Phase: NONCONTINUOUS LOAD = 10673 VA connected * 1 = 10.67 KVA code load

http://www.panelschedules.com

PHASE: 3 **VOLTS:** 277/480Y **WIRE:** 4 **MAIN:** LUGS ONLY — **225A BUS**

EXISTING HP3

TYPE	DESCRIPTION	QTY	Q TYP	BKR	CKT	A PH	B PH	C PH	CKT	BKR	Q TYP	QTY	DESCRIPTION	TYPE
M	HP-1,2,3,5			60	1	14085 0			2	15			SPARE	--
M					3		14085 0		4					--
M				3	5			14085 0	6	3				--
M	HP-4,6,7,8,19			60	7	13711 0			8	15			SPARE	--
M					9		13711 0		10					--
M				3	11			13711 0	12	3				--
M	HP-15,16,17,18			60	13	13669 0			14	0 1			BUSSED SPACE	--
M					15		13669 0		16	40			SPARE	--
M				3	17			13669 0	18	2				--
M	HP-9,10			40	19	7590 0			20	0 1			BUSSED SPACE	--
M					21		7590 0		22	0 1			BUSSED SPACE	--
M				3	23			7590 0	24	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	25	0 0			26	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	27		0 0		28	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	29			0 0	30	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	31	0 0			32	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	33		0 0		34	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	35			0 0	36	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	37	0 0			38	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	39		0 0		40	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	41			0 0	42	0 1			BUSSED SPACE	--

TOTAL CODE LOAD: 157.73 KVA / (1.73 * 480 V) = 189.72 AMPS
All Phases: MOTOR LOAD 147165 VA CONNECTED + (42255 * 0.25)
A Phase: MOTOR LOAD 49055 VA CONNECTED + (14085 * 0.25)
B Phase: MOTOR LOAD 49055 VA CONNECTED + (14085 * 0.25)
C Phase: MOTOR LOAD 49055 VA CONNECTED + (14085 * 0.25)

http://www.panelschedules.com

PHASE: 3 **VOLTS:** 120/208Y **WIRE:** 4 **MAIN:** LUGS ONLY — **225A BUS**

EXISTING P3B

10000 AIC

TYPE	DESCRIPTION	QTY	Q TYP	BKR	CKT	A PH	B PH	C PH	CKT	BKR	Q TYP	QTY	DESCRIPTION	TYPE
R	SYS FURN 3041,90			20	1	720 1080			2	20 1			RCPT 3080 S, 63 N	R
R					3		720 960		4	20 1			RCPT 3055	R
R				3	5			720 1440	6	20 1			RCPT 3056	R
N	SYS FURN 3041,90			20 1	7	1200 1080			8	20 1			RCPT 3060,61,65	R
R	SYS FURN 3051			20	9		1200 500		10	20 1			RCPT CNTR TOP 3062	N
R					11			1200 500	12	20 1			RCPT CNTR TOP 3062	N
R				3	13	1200 960			14	20 1			RCPT REFRIG 3062	N
N	SYS FURN 3051			20 1	15		2000 1080		16	20 1			RCPT 3063 S, 66,67	R
R	SYS FURN 3063,70			20	17			840 1080	18	20 1			RCPT 3068,69,70 S	R
R					19	840 300			20	20 1			CFSD	C
R				3	21		840 1000		22	20 1			RCPT PROJECTOR 3065	N
N	SYS FURN 3063,70			20 1	23			1400 0	24	20 1			SPARE	--
R	RCPT 3085,90			20 1	25	1080 0			26	20 1			SPARE	--
R	RCPT 3086-88			20 1	27		1080 0		28	20 1			SPARE	--
N	RCPT COPIER 3089			20 1	29			1500 0	30	20 1			SPARE	--
R	RCPT 3082,84,89			20 1	31	1260 0			32	20 1			SPARE	--
N	RCPT COPIER 3082			20 1	33		1500 0		34	20 1			SPARE	--
R	RCPT 3050,80,100			20 1	35			1140 0	36	20 1			SPARE	--
PNL	P3C			60	37	0 180			38	20 1			RCPT ROOF	R
PNL	P3C				39		540 1872		40	30			CU-1 (ROOF), AC-1 (3RD FLR)	M
PNL	P3C			3	41			540 1872	42	2				M

TOTAL CODE LOAD: 31.03 KVA / (1.73 * 208 V) = 86.12 AMPS
All Phases: CONTINUOUS LOAD = 300 VA connected * 1.25 = 0.38 KVA code load
A Phase: CONTINUOUS LOAD = 300 VA connected * 1.25 = 0.38 KVA code load
All Phases: MOTOR LOAD 3744 VA CONNECTED + (3744 * 0.25)
B Phase: MOTOR LOAD 1872 VA CONNECTED + (1872 * 0.25)
C Phase: MOTOR LOAD 1872 VA CONNECTED + (1872 * 0.25)
All Phases: RECEPTACLE LOAD 20820 VA CONNECTED: (10000 * 1.00) + (10820 * 0.50) = 15.41 KVA code load.
A Phase: RECEPTACLE LOAD 7440 VA CONNECTED: (7440 * 1.00) = 7.44 KVA code load.
B Phase: RECEPTACLE LOAD 6420 VA CONNECTED: (6420 * 1.00) = 6.42 KVA code load.
C Phase: RECEPTACLE LOAD 6960 VA CONNECTED: (6960 * 1.00) = 6.96 KVA code load.
All Phases: NONCONTINUOUS LOAD = 10560 VA connected * 1 = 10.56 KVA code load
A Phase: NONCONTINUOUS LOAD = 2160 VA connected * 1 = 2.16 KVA code load
B Phase: NONCONTINUOUS LOAD = 5000 VA connected * 1 = 5.00 KVA code load
C Phase: NONCONTINUOUS LOAD = 3400 VA connected * 1 = 3.40 KVA code load

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PHASE: 3 **VOLTS:** 120/208Y **WIRE:** 4 **MAIN:** LUGS ONLY — **100A BUS**

EXISTING P3C

10000 AIC

TYPE	DESCRIPTION	QTY	Q TYP	BKR	CKT	A PH	B PH	C PH	CKT	BKR	Q TYP	QTY	DESCRIPTION	TYPE
N	SPARE			20 1	1	0 0			2	20 1			SPARE	--
R	RCPT 3095,97,99			20 1	3		540 0		4	20 1			SPARE	--
R	RCPT 3096,98			20 1	5			540 0	6	20 1			SPARE	--
--	SPARE			20 1	7	0 0			8	0 1			BUSSED SPACE	--
--	SPARE			20 1	9		0 0		10	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	11			0 0	12	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	13	0 0			14	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	15		0 0		16	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	17			0 0	18	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	19	0 0			20	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	21		0 0		22	0 1			BUSSED SPACE	--
--	BUSSED SPACE			0 1	23			0 0	24	0 1			BUSSED SPACE	--

TOTAL CODE LOAD: 1.08 KVA / (1.73 * 208 V) = 3.00 AMPS
All Phases: RECEPTACLE LOAD 1080 VA CONNECTED: (1080 * 1.00) = 1.08 KVA code load.
B Phase: RECEPTACLE LOAD 540 VA CONNECTED: (540 * 1.00) = 0.54 KVA code load.
C Phase: RECEPTACLE LOAD 540 VA CONNECTED: (540 * 1.00) = 0.54 KVA code load.

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Registered Professional Engineer — CERTIFICATE NO. 53328 — NATHAN A. SHORT — 2/08/2021 — Date Signed — ARIZONA U.S.A.
EXPIRES 6-30-2021

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MARICOPA COMMUNITY COLLEGES

RIO SALADO COLLEGE TOWER: Third Floor Remodel

2323 W. 14th Street, Tempe, AZ 85281

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

REVISIONS

No.	Description	Date

BIDDING SET

KEY:

SHEET TITLE: ELECTRICAL PANEL SCHEDULES

SHEET NUMBER: E401

DRAWN BY:	REVIEWED BY:
AJN	NAS
DATE: 02/08/2021	PROJECT NUMBER: 1831.00

PLOTTED: 02.05.2021 - 11:10am PLOTTED BY: andy.nathal FILE: J:\2020\201003 MCCD Rio Salado Tower 3rd Floor Remodel\E400.dwg