PACIFIC OFFICE AUTOMATION

T.I. IMPROVEMENT

4501 E. MCDOWELL RD.

PHOENIX, ARIZONA 85034

GOVERNING JURISDICTION

CITY OF PHOENIX
200 WEST WASHINGTON STREET
PHOENIX, ARIZONA 85003

GOVERNING CODES

2012 INTERNATIONAL BUILDING CODE
2012 INTERNATIONAL RESIDENTIAL CODE
2012 INTERNATIONAL FIRE CODE
2012 INTERNATIONAL ENERGY CONSERVATION CODE
2012 INTERNATIONAL GREEN BUILDING CODE
2012 INTERNATIONAL MECHANICAL CODE
2012 INTERNATIONAL FUEL GAS CODE
2012 INTERNATIONAL EXISTING BUILDING CODE
2012 INTERNATIONAL PERFORMANCE CODE
2012 INTERNATIONAL CONSTRUCTION CODE ADMINISTRATIVE PROVISIONS
2006 INTERNATIONAL AND UNIFORM PLUMBING CODES
2011 NATIONAL ELECTRIC CODE / NFPA-70
2010 ASME A17.1 SAFETY CODE FOR ELEVATORS AND ESCALATORS
2009 ICC/ANSI A117.1
2010 STANDARDS FOR ACCESSIBLE DESIGN
INCLUDING THE CITY OF PHOENIX AMENDMENTS TO THE ABOVE CODES.

(5) BUILDING CODES

ISSUE / REVISIONS: 1ST CITY SUBMITTAL 12/22/2017 (all sheets listed below marked •)

(6) SHEET INDEX

1. WE CERTIFY TO THE BEST OF OUR KNOWLEDGE AND BELIEF THAT THE DESIGN OF THIS PROJECT COMPLIES WITH THE APPLICABLE PROVISIONS OF THE 2012 IBC, CHAPTER 11 ACCESSIBILITY, ICC/ANSI 117.1 2009 EDITION, AND THE D.O.J. 2010 ADA STANDARDS.
2. CONTRACTOR SHALL BECOME FAMILIAR WITH OWNERS REQUIREMENTS PRIOR TO BIDDING AND SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THESE REQUIREMENTS.
3. CONTRACTOR ACKNOWLEDGES AND UNDERSTANDS THAT THE CONTRACT DOCUMENTS MAY REPRESENT IMPERFECT DATA AND MAY CONTAIN ERRORS, OMISSIONS, CONFLICTS, INCONSISTENCIES, CODE VIOLATIONS AND IMPROPER USE OF MATERIALS. SUCH DEFICIENCIES WILL BE CORRECTED WHEN IDENTIFIED. CONTRACTOR AGREES TO CAREFULLY STUDY AND COMPARE THE INDIVIDUAL CONTRACT DOCUMENTS AND REPORT AT ONCE IN WRITING TO THE OWNER ANY DEFICIENCIES THAT MAY BE DISCOVERED. CONTRACTOR FURTHER AGREES TO REQUIRE EACH SUBCONTRACTOR TO LIKEWISE STUDY THE DOCUMENTS AND REPORT AT ONCE ANY DEFICIENCIES DISCOVERED.
4. ITEMS NOT INDICATED IN THESE DOCUMENTS THAT CAN BE LEGITIMATELY AND REASONABLY INFERRED TO COMPLETE THE WORK AT HAND SHALL BE FURNISHED BY THE CONTRACTOR AS THOUGH IT WERE DETAILED HEREIN.
5. CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO BIDDING AND SHALL BECOME FAMILIAR WITH EXISTING CONDITIONS AND SHALL NOTIFY ARCHITECT OF ANY / ALL DISCREPANCIES BETWEEN THESE PLANS AND EXISTING CONDITIONS.
6. CONTRACTOR WILL INSPECT THE PREMISES TO CHECK EXISTING WORKING CONDITIONS. SHOULD CONTRACTOR FIND CONDITIONS WHICH HE BELIEVES WOULD IMPEDE HIS WORK, SUCH CONDITIONS MUST BE REPORTED IMMEDIATELY TO THE ARCHITECT PRIOR TO START OF CONSTRUCTION WITH FOLLOW-UP IN WRITING WITHIN TWO (2) WORKING DAYS. FAILURE TO SO WILL CONSTITUTE NOTICE THAT CONTRACTOR IS FULLY SATISFIED WITH THE EXISTING CONDITIONS AND THAT HE INTENDS TO PERFORM HIS OBLIGATIONS WITH NO ALLOWANCE EITHER IN TIME OR MONEY FOR ANY IMPEDIMENTS TO HIS WORK.
7. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN FIELD IF DIMENSIONAL ERROR OCCURS OR CONDITION NOT COVERED IN THE DRAWINGS IS ENCOUNTERED, CONTRACTOR SHALL NOTIFY THE ARCHITECT BEFORE COMMENCING THAT PORTION OF THE WORK.
8. DIMENSIONS TAKE PRECEDENCE OVER SCALE ON CONSTRUCTION DOCUMENTS.
9. SUPPLIERS AND CONTRACTORS SHALL ENSURE THAT ALL FEDERAL AND / OR LOCAL A.D.A. STANDARDS ARE MET IN EQUIPMENT AND / OR MATERIALS SUPPLIED AND INSTALLED. SUPPLIERS AND CONTRACTORS SHALL NOT SCALE DRAWINGS. IF A DIMENSION IS NOT PROVIDED, CONTACT THE ARCHITECT / ENGINEER PRIOR TO PROCEEDING. A.D.A. STANDARDS THAT ARE REASONABLY IMPLIED ON THE DRAWINGS AND NOT MET BY EITHER THE SUPPLIERS AND / OR CONTRACTOR SHALL BE CORRECTED BY THE SUPPLIER AND / OR CONTRACTOR AT NO COST TO THE OWNER.
10. CONTRACTOR SHALL RESOLVE ALL REPORTED DEFICIENCIES WITH ARCHICON ARCHITECTURE & INTERIORS, L.C. PRIOR TO AWARDING ANY SUBCONTRACTS OR STARTING ANY WORK WITH THE CONTRACTOR'S OWN EMPLOYEES. IF ANY DEFICIENCIES CAN NOT BE RESOLVED BY THE CONTRACTOR WITHOUT ADDITIONAL TIME OR ADDITIONAL EXPENSE, THE CONTRACTOR SHALL SO INFORM THE OWNER IN WRITING. ANY WORK PERFORMED PRIOR TO RECEIPT OF INSTRUCTION FROM THE OWNER WILL BE DONE AT THE CONTRACTOR'S OWN RISK.
11. THIS DOCUMENT SET SHALL BE ISSUED TO ALL PARTIES IN ITS ENTIRETY PER THE SHEET INDEX. CONTRACTOR SHALL ENSURE THAT ALL SUBCONTRACTORS HAVE REVIEWED THE ENTIRE DOCUMENT SET FOR THEIR RESPONSIBILITIES AND THAT NO PARTIAL SETS HAVE BEEN ISSUED. ANY DISCREPANCIES THAT ARISE SHALL BE THE FULL RESPONSIBILITY OF THE GENERAL CONTRACTOR TO REMEDY IN RELATION TO SCHEDULE AND COST IMPACTS.
12. CONTRACTOR SHALL SUPERVISE AND DIRECT WORK, USING HIS BEST SKILL AND ATTENTION. HE SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION AND / OR INSTALLATION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF WORK UNDER THE CONTRACT.
13. ALL WORK SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
14. ALL MANUFACTURED ARTICLES, MATERIALS AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, USED, CLEANED AND CONDITIONED IN ACCORDANCE WITH THE MANUFACTURERS' WRITTEN SPECIFICATIONS OR INSTRUCTIONS UNLESS HEREIN AFTER SPECIFIED TO THE CONTRARY.
15. ALL WORK SHALL BE EXECUTED IN A NEAT AND WORKMAN LIKE MANNER ACCEPTABLE TO OWNER.
16. WHEN WORK NOT SPECIFICALLY CALLED OUT IS REQUIRED TO COMPLETE THE PROJECT, IT SHALL BE PROVIDED AND BE OF THE BEST MATERIALS AND WORKMANSHIP.
17. CONTRACTOR SHALL GUARANTEE ALL WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION (IN WRITING).
18. UNLESS OTHERWISE SPECIFICALLY NOTED, CONTRACTOR SHALL PROVIDE AND PAY FOR ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, CONSTRUCTION EQUIPMENT AND MACHINERY, TRANSPORTATION, AND OTHER FACILITIES AND SERVICES NECESSARY FOR PROPER EXECUTION AND COMPLETION OF THE WORK.
19. THE TENANT SHALL PAY ALL FEES FOR PERMITS, ETC., NECESSARY FOR PROPER COMPLETION OF THE WORK UNLESS OTHERWISE INFORMED.
20. CONTRACTOR SHALL REVIEW THE FINAL FINISH SAMPLES FOR THE PROJECT WITH THE TENANT PRIOR TO INSTALLATION.
21. CONTRACTOR WARRANTS TO THE OWNER AND THE ARCHITECT THAT ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT WILL BE NEW UNLESS OTHERWISE SPECIFIED, AND THAT ALL WORK WILL BE GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS. ALL WORK NOT SO CONFORMING TO THESE STANDARDS MAY BE CONSIDERED DEFECTIVE. IT IS UNDERSTOOD THAT NO INFERIOR OR NON-CONFORMING WORK OR MATERIALS WILL BE ACCEPTED WHETHER DISCOVERED AT THE TIME THEY ARE INCORPORATED IN THE WORK OR AT ANY TIME BEFORE OR AFTER THE FINAL ACCEPTANCE. IF REQUIRED BY THE ARCHITECT, THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT
22. THE WARRANTIES AND GUARANTEES PROVIDED IN THE CONSTRUCTION DOCUMENTS SHALL BE IN ADDITION TO AND NOT IN LIMITATION OF ANY OTHER WARRANTY OR GUARANTY OR REMEDY REQUIRED BY LAW.
23. CONTRACTOR SHALL PROVIDE PROPER SHORING AND DISCONNECTION OF ANY / ALL UTILITIES AS REQUIRED BEFORE ANY DEMOLITION.
24. CONTRACTOR SHALL PATCH, REPAIR, REPLACE AND FINISH ANY FLOOR, WALL AND / OR CEILING TO MATCH ADJACENT AS REQUIRED DUE TO ANY DEMOLITION.
25. ALL MILLWORK ITEMS SHALL BE CONSTRUCTED PER A.W.I. SPECIFICATIONS FOR PREMIUM GRADE.
26. ARCHITECT ASSUMES CONTRACTOR HAS INCLUDED IN HIS BID THE HIGHEST QUALITY AND GREATEST QUALITY FOR PURPOSE OF RESOLVING CONFLICTS IN THE CONSTRUCTION DOCUMENTS WHICH ARE IMPLIED OR UNDEFINED.
27. IT IS CONTRACTOR'S RESPONSIBILITY TO COORDINATE, LOCATE, AND CONFIRM THE LOCATION OF ALL FLOOR SINKS, UNDERGROUND, OVERHEAD PLUMBING AND ELECTRICAL STUB-UPS.
28. FIRE SPRINKLER PROTECTION WILL BE EXTENDED TO PROVIDE PROTECTION TO ALL NEW AREAS INCLUDING CONCEALED SPACES. PLANS SHALL BE SUBMITTED TO AND APPROVED BY DEPARTMENT OF BUILDING SAFETY, BEFORE ISSUANCE OF CERTIFICATE OF OCCUPANCY IS GRANTED.
29. IF BUILDING IS EQUIPPED WITH A FIRE ALARM SYSTEM THE G.C. IS RESPONSIBLE FOR EXTENDING FIRE ALARM SYSTEM INTO NEW BUILD OUT AREA, INSTALL PER CODE.
30. STUD PARTITIONS TO BE ANCHORED SO AS TO RESIST A LATERAL LOAD OF 5 P.S.F. AS DETAILED HEREIN. IN SEISMIC ZONES PARTITIONS SHALL MEET REQUIREMENTS OF IBC SECTION 1613 AND PARTITIONS SHALL RESIST SEISMIC MOTION IN ACCORDANCE WITH ASCE STANDARD 7-05.
31. METAL STUD FRAMING (NON-LOAD BEARING) SHALL BE IN ACCORDANCE WITH ASTM C-645 AND ASTM C-754.
32. ALL GLASS AND GLAZING SHALL WITH IBC CHAPTER 24. SAFETY GLAZING SHALL COMPLY WITH CPSC TITLE 16 CFR PART 1201,
33. GLASS IN HAZARDOUS LOCATIONS AS DEFINED AND DESCRIBED IN IBC SECTION 2406.3 SHALL BE TEMPERED OR SAFETY GLAZING.

(19) GENERAL NOTES & REQUIREMENTS

1. A.D.A. ACCESS TO THESE FACILITIES SHALL BE PROVIDED AT PRIMARY ENTRANCES AND ALL REQUIRED EXITS.
2. THE SLOPE OF PUBLIC WALKS (OTHER THAN RAMPS AND CURB RAMPS) SHALL NOT EXCEED 2% IN ANY DIRECTION.
3. WALKING SURFACES SLOPING GREATER THAN 6% SHALL BE SLIP RESISTANT.
4. THE SLOPE OF RAMPS SHALL NOT EXCEED 8.33%.
5. RAMPS SHALL HAVE A NON-SLIP SURFACE.
6. RAMPS SHALL BE 48" WIDE MIN.
7. EVERY REQUIRED EXIT DOORWAY SHALL BE SIZED FOR A DOOR NOT LESS THAN 3 FT. WIDE BY NOT LESS THAN 6'-8" HIGH CAPABLE OF OPENING 90 DEGREES AND MOUNTED SO THAT THE CLEAR WIDTH OF THE EXITWAY IS 32" MIN.
8. THRESHOLD SHALL BE A MAX. 1/2" ABOVE THE ADJACENT FLOOR WITH 1/4" CHAMFERED EDGES.
9. MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR FOR SIDE HINGED, SLIDING OR FOLDING DOORS. WHEN FIRE DOORS ARE REQUIRED THE MAXIMUM EFFORT MAY BE INCREASED, BUT SHALL NOT EXCEED 15 LBS.
10. THE BOTTOM 10" OF ALL DOORS EXCEPT AUTOMATIC AND SLIDING SHALL HAVE A SMOOTH UNINTERRUPTED SURFACE.
11. PROVIDE LEVER TYPE HARDWARE, PANIC BARS, PUSH-PULL ACTIVATING BARS, OR OTHER HARDWARE DESIGNED TO PROVIDE EASY OPERATION WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST.
12. DOOR HARDWARE SHALL BE MOUNTED AT 34" MINIMUM TO 48" MAXIMUM ABOVE FINISHED FLOOR.
13. DOOR CLOSERS SHALL BE ADJUSTED SO THAT THE TIME REQUIRED TO CLOSE THE DOOR FROM A 90° POSITION TO A 12° POSITION FROM THE LATCH IS 5 SECONDS MINIMUM.

(9) ACCESSIBILITY NOTES

1. ALL EXIT DOORS SHALL SWING IN THE DIRECTION OF TRAVEL.
2. ALL EXIT DOORS SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. MANUALLY OPERATED EDGE OR SURFACE FLUSH BOLTS AND SURFACE BOLTS ARE PROHIBITED.
3. PROVIDE EXIT SIGNS ABOVE EXITS WITH MIN. 3/4" X 6" LETTERS ON CONTRASTING BACKGROUND. EXIT SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED AS REQUIRED.
4. PROVIDE MAXIMUM ROOM CAPACITY SIGN IN A CONSPICUOUS LOCATION. (ASSEMBLY OCCUPANCIES ONLY)
5. PROVIDE EXIT LIGHTING GIVING A VALUE OF ONE FOOT-CANDLE AT FLOOR LEVEL. SEE ELECTRICAL PLANS.
6. AISLES AND AISLE WIDTHS SHALL COMPLY WITH IBC SECTION 1017 AISLES IN ASSEMBLY OCCUPANCIES SHALL COMPLY WITH SECTION 1028.9 OR 1028.10 - THE REQUIRED WIDTH OF AISLES SHALL BE UNOBSTRUCTED.
7. THE OCCUPANCY NOTIFICATION SYSTEM CONTRACTOR SHALL SUBMIT PLANS AND CUT SHEETS TO THE FIRE DEPARTMENT.
8. ALL FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND ANY OTHER WALL THAT REQUIRES PROTECTED OPENINGS SHALL BE LABELED IN ACCORDANCE WITH 2012 IBC SECTION 703.7 WITH 3" MIN. HIGH LETTERING.

INTERIOR WALL AND CEILING FINISH REQUIREMENTS PER IBC 2012 SECTION 803.1 AND TABLE 803-5

GROUP B OCCUPANCY (BUSINESS)

CLASS 'A' = FLAME SPREAD 0 - 25, SMOKE DEVELOPED 0 - 450
CLASS 'B' = FLAME SPREAD 26 - 75, SMOKE DEVELOPED 0 - 450
CLASS 'C' = FLAME SPREAD 76 - 200, SMOKE DEVELOPED 0 - 450

SPRINKLERED
EXIT ENCLOSURES AND EXIT PASSAGEWAYS = B
CORRIDORS = C
ROOMS AND ENCLOSED SPACES = C

NONSPRINKLERED
EXIT ENCLOSURES AND EXIT PASSAGEWAYS = A
CORRIDORS = B
ROOMS AND ENCLOSED SPACES = C

(21) FIRE SAFETY NOTES

SCOPE OF WORK:
THIA TENANT IMPROVEMENT IS CONSISTING OF MINIMAL NEW WALL PARTITIONS, STRUCTURAL, MECHANICAL, PLUMBING AND ELECTRICAL AS APART OF THIS SUBMITTAL FOR BOTH THE SHOW ROOM AND WAREHOUSE. THERE WILL NO CHANGES TO THE EXISTING OCCUPANCY AND SITE.

PROJECT: PACIFIC OFFICE AUTOMATION

ADDRESS: 4501 E. MCDOWELL RD. PHOENIX, AZ. 85034

ZONING : C-2

TOTAL BUILDING AREA:
SHOWROOM : 24,745 S.F.
WAREHOUSE : 39,721 S.F.

PROJECT AREA:
SHOWROOM : 3,265 S.F.
WAREHOUSE : 1,766 S.F.

OCCUPANCY TYPE: B - BUSINESS - SHOW ROOM; S1 - STORAGE - WAREHOUSE

CONSTRUCTION TYPE: III-B (FULLY SPRINKLERED) SHOW ROOM; III-B (FULLY SPRINKLERED) WAREHOUSE

OCCUPANCY LOAD - PER 2012 I.B.C. TABLE 1004.1.2
GROUP 'B' | SHOWROOM 24,745 SF/100 = 248
GROUP 'S1' | WAREHOUSE 39,721 SF/500 = 80

EXITS (PER 2012 I.B.C. - TABLE 1015.1) SHOWROOM
REQUIRED: 2
PROVIDED: 4

EXITS (PER 2012 I.B.C. - TABLE 1015.1) WAREHOUSE
REQUIRED: 2
PROVIDED: 7

FIRE ALARM SYSTEM: EXISTING (DEFERRED SUBMITTAL)

FIRE SPRINKLER SYSTEM: EXISTING (DEFERRED SUBMITTAL)

PARKING ANALYSIS:
EXISTING PARKING TO REMAIN UNCHANGED - NO CHANGE OF USE.

SIGNAGE:
ALL SIGNAGE UNDER SEPARATE PERMIT

PLUMBING FIXTURE CALCULATIONS: SHOW ROOM

OCCUPANCY LOAD BUSINESS GROUP B - UP TO AND INCLUDING FIRST 100	100
OCCUPANCY LOAD BUSINESS GROUP B - IN EXCESS OF 100	148
TOTAL OCCUPANCY LOAD BUSINESS GROUP B	248

OCCUPANCY TYPE	OCCUPANT LOAD			WATER CLOSETS			LAVATORIES		
	TOTAL	M	F	MIN. REQ.	M	F	MIN. REQ.	M	F
GROUP B BUSINESS	100.00	50.00	50.00	1:25	2.00	2.00	1:40	1.25	1.25
GROUP B BUSINESS	148.00	74.00	74.00	1:50	1.48	1.48	1:80	0.93	0.93
	TOTAL REQUIRED				3.48	3.48		2.68	2.68
	TOTAL PROVIDED				4	4		3	3
SERVICE SINKS			REQUIRED			1	PROVIDED		1
DRINKING FOUNTAINS 1:100			REQUIRED			2.48	PROVIDED		3

PLUMBING FIXTURE CALCULATIONS: WAREHOUSE

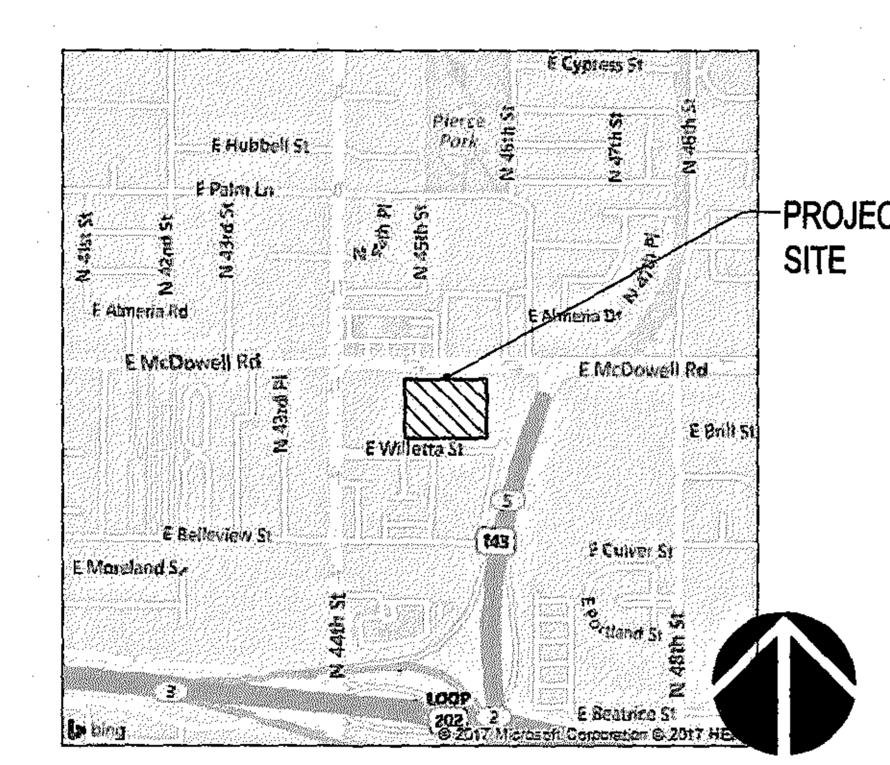
OCCUPANCY LOAD BUSINESS GROUP S1	80
	0
TOTAL OCCUPANCY LOAD BUSINESS GROUP S1	80

OCCUPANCY TYPE	OCCUPANT LOAD			WATER CLOSETS			LAVATORIES		
	TOTAL	M	F	MIN. REQ.	M	F	MIN. REQ.	M	F
GROUP S1 STORAGE	80	40.00	40.00	1:100	1.60	1.60	1:100	1.00	1.00
	TOTAL REQUIRED				1.60	1.60		1.50	1.50
	TOTAL PROVIDED				2	2		2	2
SERVICE SINKS			REQUIRED			1	PROVIDED		1
DRINKING FOUNTAINS 1:100			REQUIRED			2.48	PROVIDED		3

(22) PROJECT DATA

Symbol	Description
ROOM NAME [101]	ROOM TAG
X / A3.X	DETAIL NO.; DETAIL REFERENCE TAG; SHEET NO.
(XX)	KEY NOTE
(XX)	DOOR TAG
<XX>	FINISHES TAG - SEE SCHEDULE SHEETS
X / A4.X	INTERIOR ELEVATION TAG
0'-0" FINISH FLOOR	VERTICAL ELEVATION
+ X'-X"	CEILING HEIGHT
X / X.X	EXTERIOR ELEVATION TAG

(17) SYMBOL LEGEND



(23) VICINITY MAP

OWNER/DEVELOPER :
PACIFIC OFFICE AUTOMATION
60 E. RIO SALADO PARKWAY
TEMPE, AZ.
CONTACT: ADAM PRITCHETT
T: 480.321.8962
E: Adam.Pritchett@pacificoffice.com

ARCHITECT :
ARCHICON ARCHITECTURE & INTERIORS, L.C.
5055 E. WASHINGTON STREET
SUITE #200
PHOENIX, AZ. 85034
CONTACT: Orlando Taylor
T: 602-222-4266
E: OrlandoT@archicon.com

STRUCTURAL:
DESERT FOX, LLC
969 EAST SARATOGA STREET,
GILBERT, AZ. 85296
CONTACT: MEL DECENA
T: 480-205-2094
F: 480-633-9328
E: melrd@dfoxonline.com

MP&E :
ASEI ENGINEERING
2410 W. ROYAL PALM RD., SUITE A
PHOENIX, AZ 85021
CONTACT: DAVE MARTIN
T: 602-287-0300

(34)

LPB1 1800094

(18) PROJECT TEAM

ACCESSIBILITY REQUIREMENTS

Accessible routes of travel and toilet rooms are required to the altered areas where the major activities for the building or space occur. The cost of providing the accessible route and toilet rooms are not required to exceed 20 percent of the cost of the alterations.

CITY OF PHOENIX
PLANNING & DEVELOPMENT DEPARTMENT
This set of plans must be reviewed on site prior to construction and shall be kept at the construction site. Such review shall not prevent the City from requiring correction of errors in the plans where such errors are subsequently found to be in violation of any law, ordinance, health, safety, or other design issues.

Inspector: ________ Number: ________ Date: ________

(24) CITY APPROVAL STAMP

ARCHICON
Architecture & Interiors, L.C.

5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION
T.I. IMPROVEMENT
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Sheet Description
COVER SHEET

REGISTERED ARCHITECT CERTIFICATION NO. 23519 JERE W. PLANCK DATE SIGNED 12/22/2017 ARIZONA U.S.A.
EXPIRES: 12/31/2018

Sheet No.
T1.0

Issue Date: 12.15.17

1ST CITY SUBMITTAL SET 12.22.17

A. DIVISION 1 - GENERAL RE□UIREMENTS:

1. THE GENERAL CONTRACTOR SHALL INSPECT THE PROJECT SITE IMMEDIATELY TO CHECK THE EXISTING CONDITIONS. ANY DISCREPANCIES OR CONFLICTS FOUND THE GENERAL CONTRACTOR SHALL NOTIFY THE ARCHITECT IN WRITING FAILURE TO DO SO WILL CONSTITUTE NOTICE THAT THE GENERAL CONTRACTOR IS FULLY SATISFIED WITH THE EXISTING CONDITIONS AND THAT HE INTENDS TO PERFORM HIS OBLIGATIONS WITH NO ALLOWANCE EITHER IN TIME OR COSTS FOR ANY IMPEDIMENTS TO THE WORK.
2. ALL CONTRACTORS SHALL VISIT THE SITE AND SHALL FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND THE RE□UIREMENTS OF THE WORK PRIOR TO SUBMITTING THEIR BID. MATERIAL □UANTITIES SHALL BE BASED ON ACTUAL FIELD CONDITIONS AND MEASUREMENTS.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN FIELD. IF DIMENSIONAL CONFLICTS OCCUR OR CONDITIONS NOT COVERED IN THE DRAWINGS IS ENCOUNTERED, THEN CONTRACTOR SHALL NOTIFY THE ARCHITECT BEFORE COMMENCING THE WORK. DIMENSIONS TAKE PRECEDENCE OVER SCALE ON CONSTRUCTION DOCUMENTS.
4. ALL CONTRACTORS SHALL TAKE CARE TO PROTECT ADJACENT AREAS FROM DUST AND DAMAGE DURING THE CONSTRUCTION PROCESS AND SHALL CLEAN UP AFTER THEMSELVES AT THE END OF EACH WORKING DAY. ADJACENT AREAS NOT INCLUDED IN THE SCOPE OF WORK SHALL BE PROTECTED AND SEPARATED FROM THE WORK. THE GENERAL CONTRACTOR SHALL PROVIDE BARRIERS TO ELIMINATE DUST & DAMAGE TO ADJACENT AREAS. PROJECT SITE SHALL BE KEPT CLEAN DURING CONSTRUCTION AND BE SECURED & CLEANED DURING OFF HOURS. ALL WORK SHALL TAKE PLACE DURING NORMAL BUSINESS HOURS UNLESS WORK RE□UIRES AFTER HOURS AND SHALL BE APPROVED BY OWNER & AUTHORITIES HAVING JURISDICTION.
5. ALL WORK SHALL COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES INCLUDING LOCAL AMENDMENTS.
6. UNLESS OTHERWISE SPECIFICALLY NOTED, THE CONTRACTOR SHALL PROVIDE AND PAY FOR ALL LABOR, MATERIALS, E□UIPMENT, TOOLS, CONSTRUCTION E□UIPMENT AND MACHINERY, TRANSPORTATION AND OTHER FACILITIES AND SERVICES NECESSARY FOR PROPER EXECUTION AND COMPLETION OF THE WORK.
7. THE OWNER SHALL PAY ALL FEES FOR PERMITS, ETC., NECESSARY FOR PROPER COMPLETION OF THE WORK UNLESS OTHERWISE STATED.
8. THE CONTRACTOR WARRANTS TO THE OWNER AND THE ARCHITECT THAT ALL MATERIALS AND E□UIPMENT FURNISHED UNDER THIS CONTRACT WILL BE NEW UNLESS OTHERWISE SPECIFIED AND THAT ALL WORK WILL BE BEST □UALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS. ALL WORK NOT IN CONFORMANCE WITH THESE STANDARDS MAY BE CONSIDERED DEFECTIVE. IT IS UNDERSTOOD THAT NO INFERIOR OR NON-CONFORMING WORK OR MATERIALS WILL BE ACCEPTED WHETHER DISCOVERED AT THE TIME THEY ARE INCORPORATED IN THE WORK OR AT ANY TIME BEFORE OR AFTER THE FINAL ACCEPTANCE. IF RE□UIRED BY THE THE ARCHITECT, THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND □UALITY OF MATERIAL AND E□UIPMENT.
□ THE WARRANTIES AND GUARANTEES PROVIDED IN THE CONSTRUCTION DOCUMENTS SHALL BE IN ADDITION TO, AND NOT IN LIMITATION OF, ANY OTHER WARRANTY OR GUARANTEE OR REMEDY RE□UIRED BY LAW.
10. ALL DRAWINGS HEREIN CREATE AN ENTIRE PACKAGE. ALL TRADES SHALL BE RESPONSIBLE FOR REVIEWING THEIR RESPECTIVE RE□UIREMENTS AND COORDINATE THEIR HIDDEN OR EXPOSED WORK WITH OTHER RELATED TRADES.
11. GENERAL CONTRACTOR TO COORDINATE ALL WORK OF THE VARIOUS TRADES AND SUBCONTRACTORS TO ASSURE EFFICIENT AND ORDERLY INSTALLATION. PROVIDE ACCOMMODATIONS FOR ITEMS INSTALLED AT A LATER DATE. VERIFY THAT CHARACTERISTICS OF ELEMENTS OR INTERRELATED OPERATING E□UIPMENT ARE COMPATIBLE. COORDINATE WORK OF VARIOUS SECTIONS WHICH HAVE INTERDEPENDENT RESPONSIBILITIES FOR INSTALLING, CONNECTION TO, AND PLACING IN SERVICE, SUCH E□UIPMENT. COORDINATE SPACE RE□UIREMENTS AND INSTALLATION OF MECHANICAL WORK, ELECTRICAL WORK,AND FIRE SPRINKLER SYSTEMS WHICH ARE INDICATED, DETAILED OR IMPLIED DIAGRAMMATICALLY ON DRAWINGS.
12. THE GENERAL CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING HIS BEST SKILL AND ATTENTION. HE SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION AND INSTALLATION MEANS, METHODS, TECHNI□UES, SE□UENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
13. GENERAL CONTRACTOR SHALL PURCHASE AND MAINTAIN INSURANCE COVERAGE IN ACCORDANCE WITH THE RE□UIREMENTS OF THE LANDLORD AND THE TENANT. VERIFY AND COORDINATE WITH THE TENANT□S PROJECT MANAGER FOR ANY ADDITIONAL RE□UIREMENTS.
14. GENERAL CONTRACTOR SHALL FURNISH ALL RE□UIRED TEMPORARY FACILITIES AND ALL TEMPORARY UTILITIES IMMEDIATELY AFTER RECEIPT OF NOTICE TO PROCEED FOR USE AND CONVENIENCE OF ALL THOSE ENGAGED IN THE PROJECT WORK.
15. WHEN CONSTRUCTION BARRIERS ARE RE□UIRED AS PART OF THE WORK, ALL CONTRACTORS MUST STAY BEHIND THE CONSTRUCTION BARRIERS AND MAINTAIN ACCESS TO SUCH AREAS CLEAN AND FREE OF CONSTRUCTION MATERIALS AND DEBRIS. FAILURE TO MAINTAIN CLEAN STOREFRONT WILL RESULT IN BUILDING MANAGEMENT HAVING SUCH MATERIAL AND DEBRIS REMOVED AND ALL CHARGES FOR MAINTENANCE WILL BE BILLED TO GENERAL CONTRACTOR.
16. COORDINATE ALL CONSTRUCTION, SCHEDULING, STORAGE/STAGING AREAS, USE OF BUILDING UTILITIES, PARKING AREAS & DISPOSAL OF CONSTRUCTION REFUSE WITH BUILDING MANAGER REVIEWING ALL SCHEDULED ACTIVITIES PRIOR TO, AND THROUGHOUT CONSTRUCTION.
17. ALLOWABLE TOLERANCES - UNLESS OTHERWISE NOTED OR INDICATED, THE FOLLOWING TOLERANCES SHALL APPLY TO ALL WORK:
   a. ALL VERTICAL SURFACES SHALL BE PLUMB OR CONSTRUCTED TO THE EXACT SLOPES OR ANGLES INDICATED.
   b. THE MAXIMUM DEVIATION FROM THE TRUE PLANE FOR VERTICAL AND HORIZONTAL SURFACES SHALL NOT BE GREATER THAN 1/8" IN 10□0" AS MEASURED BY A STRAIGHT EDGE PLACED ANYWHERE ON THE SURFACE.
   c. ALL HORIZONTAL SURFACES SHALL BE LEVEL OR CONSTRUCTED TO THE EXACT ANGLE INDICATED OR RE□UIRED.
   d. WALL AND SOFFITS INTERSECTIONS SHALL BE □0 DEGREES OR THE EXACT ANGLE INDICATED OR INTENDED.
   e. ALL SURFACES, CORNERS AND EDGES SHALL BE STRAIGHT AND TRUE WITHOUT DENTS, WAVES OR BULGES OR OTHER BLEMISHES.
   □ ALL JOINTS SHALL BE TIGHT, STRAIGHT, EVEN AND SMOOTH.
   g. ALL OPERABLE ITEMS SHALL OPERATE SMOOTHLY WITHOUT STICKING OR BINDING AND WITHOUT EXCESSIVE "PLAY" OR LOOSENESS.
18. THE FOLLOWING MATERIALS SHALL BE LEFT AT THE JOBSITE. THEY SHALL BE TAKEN FROM THE SAME MATERIAL LOT, OR RUN, USED TO FINISH THE PROJECT:
   a. SIX □6□YARDS OF CARPET □IF USED□
   b. FOUR □4□FULL LENGTH STRIPS OR RUBBER BASE □IF USED□
   c. FOUR □4□FULL CEILING TILES OF EACH TYPE □IF USED□
   d. ONE □1□□UART OF EACH COLOR PAINT IN A TIGHTLY SEALED AND MARKED CONTAINER.
   e. MATERIAL SHALL BE LEFT IN ONE □1□LOCATION PER OWNER□S DIRECTION.
1□. THE OWNER OR THE OWNER□S OWN FORCES, SUBCONTRACTORS, INSTALLER□S MAY OCCUPY PORTIONS OF THE PROJECT FOR THE PURPOSES OF INSTALLING OWNER PROVIDED ITEMS THE GENERAL CONTRACTOR SHALL MAKE ACCESS AS RE□UIRED FOR COORDINATION OF OWNER WORK & GENERAL CONTRACTORS WORK DURING THE FINAL STAGE OF CONSTRUCTION.
20. GENERAL CONTRACTOR SHALL PROVIDE PROPER SHORING OF ALL NEW WORK AND DEMOLITION WORK. ANY UTILITY DISRUPTION OR DISCONNECTIONS SHALL BE APPROVED & COORDINATED WITH BUILDING OWNER.
21. PERFORM ALL WORK IN ACCORDANCE WITH ACCEPTABLE INDUSTRY TRADE PRACTICE TO INSURE THE HIGHEST □UALITY FINISHED PRODUCT □EXPRESSED OR IMPLIED□ PERFORM ALL WORK BY SKILLED MECHANICS IN ACCORDANCE WITH ESTABLISHED STANDARDS OF WORKMANSHIP IN EACH OF THE VARIOUS TRADES.
22. COORDINATE BLOCKING RE□UIREMENTS WITH ADJACENT OR RELATED TRADES, ACCESSORIES, E□UIPMENT AND FIXTURES. INSTALL RE□UIRED BLOCKING AT NO ADDITIONAL COST TO THE CONTRACT.
23. GENERAL CONTRACTORS SHALL PATCH, REPAIR, REPLACE AND FINISH ANY FLOOR, WALL OR CEILING TO MATCH ADJACENT, EXISTING CONSTRUCTION DUE TO ANY DAMAGE CAUSED BY DEMOLITION. REPAIR PROPERTY DAMAGE BY THE INSTALLERS TO A LIKE NEW CONDITION OR REPLACE DAMAGED SURFACES AND MATERIALS OF THE PREVIOUSLY INSTALLED WORK BY OTHER TRADES, INSTALLERS AND SUB-CONTRACTORS.
24. WHERE RE□UESTED BY THE OWNER TO CERTIFY CONFORMANCE TO TRADE STANDARDS OF THE PROJECT RE□UIREMENTS, THE CONTRACTOR SHALL ENLIST A TESTING LABORATORY AT THE OWNER□S COST. IF THE RE□UESTED TEST SHOWS NON-CONFORMANCE TO GENERALLY ACCEPTED TRADE STANDARDS OR THE PROJECT RE□UIREMENTS, THE CONTRACTOR SHALL CORRECT THE DEFICIENCY AT NO ADDITIONAL COST TO THE OWNER AND REIMBURSE ALL COSTS OF THE TESTING TO THE OWNER UNLESS THE CONTRACTOR HAS USED PRODUCTS INCORRECTLY LABELED BY THE MANUFACTURER OR HAS MADE PREVIOUSLY APPROVED CHANGES.
25. PROVIDE SECURITY OF THE WORK, INCLUDING TOOLS AND UNINSTALLED MATERIALS. PROTECT THE WORK, STORED PRODUCTS, CONSTRUCTION E□UIPMENT AND OWNER□S PROPERTY FROM THEFT AND VANDALISM AND THE PREMISES FROM ENTRY BY UNAUTHORIZED PERSONNEL UNTIL FINAL ACCEPTANCE BY THE OWNER.
26. MAINTAIN ACTIVE FIRE EXTINGUISHERS AT THE PROJECT AS RE□UIRED BY LOCAL GOVERNING AGENCIES.
27. ALL MANUFACTURED ARTICLES, MATERIALS AND E□UIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, USED, CLEANED AND CONDITIONED IN ACCORDANCE WITH THE MANUFACTURER□S WRITTEN SPECIFICATIONS OR INSTRUCTIONS UNLESS HEREINAFTER SPECIFIED TO THE CONTRARY.
28. ALL PRODUCTS SHALL BE DELIVERED IN UNDAMAGED CONDITION AND STORED IN ACCORDANCE WITH MANUFACTURER□S INSTRUCTIONS SUCH AS TEMPERATURE & HUMIDITY TO AVOID DISRUPTION OF THE WORK OR DAMAGE TO THE ITEMS. REPLACE DAMAGED OR UNFIT MATERIALS AT NO COST TO THE OWNER.
2□ NOTIFY THE OWNER WHEN THE WORK IS SUBSTANTIALLY COMPLETE AND READY FOR INSPECTION. UPON INSPECTION, PROVIDE WRITTEN OPERATION AND MAINTENANCE INSTRUCTIONS AND GUARANTEES FOR ALL E□UIPMENT AND MATERIALS INSTALLED. PROVIDE WRITTEN GUARANTEES FOR A PERIOD OF ONE □1□YEAR FROM DATE OF FINAL ACCEPTANCE OF THE WORK FOR ALL WORKMANSHIP AND MATERIALS.
30. PROVIDE FINAL CLEAN-UP AND DAMAGE REPAIR AT THE PROJECT CONCLUSION. LEAVE THE PREMISES NEAT, CLEAN AND CLEAR OF TOOLS, E□UIPMENT AND SURPLUS MATERIALS, UNLESS RE□UESTED BY THE OWNER. CLEAN-UP SHALL INCLUDE AND NOT BE LIMITED TO:
   a. POWER VACUUMING THE ENTIRE SPACE.
   b. HAND DUSTING AND CLEANING OF ALL SHELVING, CABINETRY, CASEWORK, GLASS AND MIRRORS BOTH INSTALLED UNDER THIS CONTRACT OR EXISTING, WALLS, CEILINGS, FIXTURES, ETC.
   c. REPAIR OR REPLACEMENT OF PROPERTY DAMAGED DURING FINAL COMPLETION OF THE PROJECT.

DIVISION 2 - SITE - NOT USED

DIVISION 3 - CONCRETE REPAIR AND REPLACEMENT

1. WORK INCLUDES FILLING AND LEVELING JOINTS AND CRACKS, SAWCUTS, PATCHES AND LEAVE-OUT SLAB INSTALL, ABANDONED ELECTRICAL BOXES AND ANY HOLES.
2. USE "RAECO - LEVEL FLEX LATEX" AS UNDERLAYMENT FOR PATCHING OR APPROVED E□UAL. MIX SHALL BE TWO COMPONENTS. MIX AND INSTALL PER MANUFACTURER□S LATEST WRITTEN AND RECOMMENDED DIRECTIONS.

DIVISION 4 - MASONRY - NOT USED

DIVISION 5 - METAL FABRICATIONS

1. PROVIDE ALL MISCELLANEOUS METAL ITEMS INCLUDING MATERIALS, FABRICATIONS, FASTENINGS AND ACCESSORIES RE□UIRED FOR FINISHED INSTALLATION AS INDICATED OR SPECIFIED.
2. STEEL SHALL BE ASTM A1008/A1008M STANDARD SPECIFICATION FOR STEEL, FREE FROM SCALE, RUST AND PITTING AND OTHER DEFECTS AFFECTING APPEARANCE.
3. TUBING SHALL CONFORM TO RE□UIREMENTS OF ASTM A500 OR A501 AS APPROVED.
4. WHERE METAL ITEMS ARE TO BE ERECTED AND IN CONTACT WITH DISSIMILAR MATERIALS, PROVIDE CONTACT SURFACES WITH COATING OF APPROVED ZINC CHROMATE PRIMER IN MANNER TO OBTAIN NOT LESS THAN 1.0 MIL DRY FILM THICKNESS.
5. SHEET STEEL SHALL CONFORM TO RE□UIREMENTS OF ASTM A606.
6. CARBON STEEL BARS SHALL CONFORM TO RE□UIREMENTS OF ASTM A2□/A2□M.
7. ALUMINUM EXTRUSIONS SHALL CONFORM TO ASTM B221-08. REVEALS TO BE BLACK ANODIZED FINISH □UNLESS OTHERWISE INDICATED□
8. FASTENERS SHALL BE AS RE□UIRED FOR ASSEMBLY AND INSTALLATION OF FABRICATED ITEMS, INSTALL PER MANUFACTURES & CURRENT ICBO/ICC RE□UIREMENTS.
□ BOLTS SHALL BE LOW CARBON STEEL EXTERNALLY AND INTERNALLY THREADED FASTENERS CONFORMING WITH RE□UIREMENTS OF ASTM A307, INCLUDE NECESSARY NUTS AND PLAIN HARDENED WASHERS. FOR MEMBERS FOR SUPPORT OF STRUCTURAL MEMBERS OR CONNECTION THERETO, USE FASTENERS CONFORMING WITH ASTM A325. FOR STAINLESS STEEL AND NON-FERROUS ITEMS, USE TYPE 302 AND 304 STAINLESS STEEL FASTENERS.
10. MISCELLANEOUS MATERIALS: PROVIDE ALL INCIDENTAL ACCESSORY MATERIALS, TOOLS, METHODS AND E□UIPMENT RE□UIRED FOR FABRICATION AND INSTALLATION OF MISCELLANEOUS METAL ITEMS AS INDICATED ON DRAWINGS.
11. VERIFY DIMENSIONS PRIOR TO FABRICATION OR CASTING. FORM METAL ITEMS TO ACCURATE SIZES AND CONFIGURATIONS AS INDICATED ON DRAWINGS AND OTHERWISE RE□UIRED FOR PROPER INSTALLATION & FIT. FABRICATE WITH ALL LINES STRAIGHT AND ANGLES SHARP, CLEAN AND TRUE. DRILL, COUNTERSINK, TAP AND OTHERWISE PREPARE ITEMS FOR CONNECTION WITH WORK OF OTHER TRADES. MAKE PERMANENT CONNECTIONS BY WELDING AND GRIND ALL EXPOSED WELDS SMOOTH & DRESS TO MATCH ADJACENT SURFACES. ROUGH JOINT SURFACES NOT PERMITTED. AVOID USING BOLTS AND SCREWS UNLESS SPECIFICALLY INDICATED OR APPROVED. WHEN USED, DRAW UP TIGHT AND TIE THREADS TO PREVENT LOOSENING.
12. ALL FERROUS METAL ITEMS SHALL BE SHOP FINISHED. TOUCH-UP OR REPAIR DAMAGED AREAS PRIOR TO INSTALLATION WITH SAME MATERIAL.
13. PROVIDE CONTACT SURFACES WITH CONCRETE MASONRY OR OTHER DISSIMILAR MATERIALS WITH A MINIMUM ONE POINT ZERO □1.0□MIL DRY THICKNESS OF AN APPROVED ZINC CHROMATE PRIMER.
14. PROVIDE ALL STEEL BLOCKING AND BRACING IN METAL STUD FRAME PARTITIONS NECESSARY FOR A COMPLETE INSTALLATION. INCLUDE AS RE□UIRED, FOR SUPPORT OF ALL WALL-MOUNTED E□UIPMENT AND FABRICATIONS AS INDICATED ON DRAWINGS. PROVIDE SUPPORTS AT JAMBS OF DOORS, DOOR STOPS AND ELSEWHERE, AS RE□UIRED.
15. FABRICATE ALL MISCELLANEOUS FRAMING AND BRACING ITEMS TO DETAIL OF STRUCTURAL SHAPES, PLATES, AND BARS. WELD JOINTS WHERE PRACTICAL AND PROVIDE BOLTS AND OTHER CONNECTION DEVICES AS RE□UIRED. INCLUDE ANCHORAGES, CLIP ANGLES, SLEEVES, ANCHOR PLATE, AND SIMILAR DEVICES, WHETHER IMPLIED OR INDICATED. SET ACCURATELY IN POSITION AS RE□UIRED AND ANCHOR SECURELY TO BUILDING CONSTRUCTION WITH FASTENERS APPROPRIATE TO THE INSTALLATION.

DIVISION 6 - WOOD AND PLASTICS

1. PROVIDE ROUGH LUMBER AND PLYWOOD IN STANDARD DIMENSIONS. MOISTURE CONTENT NOT MORE THAN 1□□.
2. PROVIDE ALL NECESSARY ROUGH HARDWARE IN SIZES AND □UANTITIES RE□UIRED BY LOCAL CODE OR APPROVED BY ARCHITECT.
3. USE FINISH OR CASING NAILS FOR EXPOSED WORK. USE TYPE "S" TRIM HEAD SCREWS FOR ATTACHMENT OF WOOD TRIM TO METAL STUDS, RUNNERS, OR FURRING.
4. RELIEVE BACKS OF WOOD TRIM□KERF BACKS OF MEMBERS MORE THAN 5" WIDE AND 1" NOMINAL THICKNESS, EASE ALL EXTERNAL CORNERS.
5. INSTALL LAMINATES ONLY WHEN RECEIVING SURFACES ARE IN A SATISFACTORY CONDITION FOR INSTALLATION INCLUDING TEMPERATURE.
6. USE ADHESIVES RECOMMENDED BY THE MANUFACTURER FOR THE PARTICULAR APPLICATION, INSTALL IN ACCORDANCE WITH MANUFACTURER□S MOST CURRENT PRINTED APPLICATION INSTRUCTIONS.
7. WHEN COMPLETE PROVIDE PROTECTION COVERING TO LIMIT DAMAGE BY OTHER TRADES WORKING ADJACENT TO THE INSTALLATION. REPLACE DAMAGED SURFACES.
8. REMOVE EXCESS ADHESIVE AND CLEAN SURFACES USING MANUFACTURER□S RECOMMENDED SOLVENT AND CLEANING PROCEDURES.
□ FILL IN ALL SEAMS WITH MANUFACTURER□S APPROPRIATE COLOR SEAM COMPOUND.
10. INSTALL WOODS AND PLASTICS IN CONFORMANCE WITH DETAILS, WITH THE FOLLOWING CONSIDERATIONS AND RE□UIREMENTS:
   a. INSTALL ALL MATERIALS WITH TIGHT JOINTS
   b. MITER CASINGS MOLDINGS
   c. ALL RUNNING TRIM TO BE ONE □1□PIECE UP TO 10□0". MATCH GRAIN AND COLOR PIECE TO PIECE.
   d. USE FINISH NAILS EXCEPT WHERE SCREWS ARE SPECIFICALLY CALLED FOR OR WHERE SCREWS ARE NOR VISIBLE.
   e. SINK FASTENERS FOR PUTTYING.
   □ WHERE SCREW ATTACHMENT IS RE□UIRED, SPACE SCREWS AT E□UAL INTERVALS, SINK AND PUTTY IN FINISH WOOD SURFACES.
   g. ALL MEMBERS AND LINES SHALL BE LEVEL AND PLUMB.
   h. SELECT AND CUT MATERIAL TO EXCLUDE DAMAGED, MARKED OR DEFECTIVE AREAS.
   i. FINISH EXPOSED SURFACES SMOOTH, FREE FROM TOOL AND MACHINE MARKS.
   j. EASE ALL EXPOSED WOOD EDGES 1/8" MINIMUM RADIUS.
   k. INSTALL FIRE RATED DOORS IN ACCORDANCE WITH RE□UIREMENTS OF NFPA RECOMMENDATIONS.
   □ FIRE TREATED CLASS "A" □FLAME SPREAD INDEX 25 OR LESS□WOOD SHALL BE USED IN THE ROUGH FRAMING OR CONSTRUCTION OF THIS FACILITY INCLUDING BACKING AND BLOCKING WHERE RE□UIRED BY CODE.
   m. ALL WOOD DOORS SHALL MEET AWI STANDARDS FOR "CUSTOM" GRADE FLUSH DOORS□SEE FINISH SPECIFICATION FOR DOOR TYPE, SPECIES & FINISHES.

DIVISION 7 - THERMAL AND MOISTURE PROTECTION
SEALANTS AND CAULKING

1. PROVIDED NON-SAG SEALANT COMPLYING WITH RE□UIREMENTS OF FEDERAL SPECIFICATION FS TT-S-00230 TYPE "II", CLASS "A". PROVIDE ACOUSTICAL SEALANT WHICH SHALL BE NON-HARDENING, NON-DRYING SYNTHETIC RUBBER SEALING COMPOUND WITH MINIMUM □0□ SOLIDS. USE AT ALL INTERIOR JOINTS AND INTERSECTIONS BETWEEN PLANES AND AROUND DOOR AND WINDOW FRAMES. PRIMER SHALL BE RECOMMENDED BY SEALANT MANUFACTURER FOR SPECIFIC CONDITIONS AND SUBSTRATES.
2. PROVIDE BACKING MATERIAL BY DOW "ETHAFOAM" OR APPROVED E□UAL. APPLY SEALANT OVER BACKING TO UNIFORM THICKNESS IN CONTINUOUS BEADS FILLING ALL JOINTS AND VOIDS SOLID. SUPERFICIAL POINTING WITH THE SKIM BEAD WILL NOT BE ACCEPTED.
3. ALL SURFACES SHALL BE ADE□UATELY CLEANED AND PREPARED IN ACCORDANCE WITH MANUFACTURER□S WRITTEN INSTRUCTIONS PRIOR TO INSTALLATION.

DIVISION 8 - DOORS AND WINDOWS
WOOD AND HOLLOW METAL DOORS AND FRAMES

1. PROVIDE METAL DOORS OF SIZES AND TYPES INDICATED ON DRAWINGS, FULLY WELDED SEAMLESS CONSTRUCTION WITH NO VISIBLE SEAMS OR JOINTS ON FACES OR VERTICAL EDGES, THICKNESS AS SCHEDULED ON DRAWINGS.
2. FACE STIFFENERS, EDGES AND HARDWARE REINFORCEMENT SHALL BE THE HIGHEST □UALITY WORKMANSHIP AND MATERIALS. PROVIDE IN ACCORDANCE WITH BEST TRADE PRACTICE AND MANUFACTURER□S WRITTEN RECOMMENDATIONS FOR THE USE INTENDED.
3. PROVIDE CUSTOM MADE WELDED HOLLOW METAL UNITS WITH INTEGRAL TRIM, SIZES AND SHAPES AS INDICATED ON DRAWINGS, FABRICATE UNITS S□UARE, TRUE AND FREE FROM DEFECTS.
4. HARDWARE REINFORCEMENT AND ANCHORS □ERECTION, FLOOR AND JAMB□ SHALL BE AS RE□UIRED FOR A SECURE INSTALLATION AND SHALL BE IN ACCORDANCE WITH TRADE RE□UIREMENTS FOR THE SPECIFIED HARDWARE AND INTENDED USE.
5. AFTER FABRICATION, DRESS, FILL AND SAND EXPOSED SURFACES, BODY-PUTTY HOLES AND IMPERFECTIONS. APPLY UNIFORM COAT OF MANUFACTURER□S STANDARD PRIME COAT TO ALL EXPOSED SURFACES. LEAVE READY TO RECEIVE FINISH PAINTING.
6. INSTALL WOOD DOORS, FRAMES AND TRIM. SIZE AND THICKNESS AS SCHEDULED ON THE DRAWINGS.
7. PREPARE DOORS FOR FINISH HARDWARE. OBTAIN TEMPLATES FROM HARDWARE MANUFACTURER AND CONFIRM TYPE, LOCATION, AND SPECIAL RE□UIREMENTS OF HARDWARE FOR EACH DOOR PRIOR TO CUTTING.
8. HANG DOORS AS SCHEDULED ON DRAWINGS, IN ACCURATE LOCATIONS WITH 1/8" CLEARANCE AT TOPS AND 3/8" CLEARANCE AT BOTTOM, UNLESS SPECIFICALLY NOTED FOR "UNDERCUTS" OR OTHER DEVIATIONS IN FIT. VERIFY CLEARANCES RE□UIRED FOR CARPETING AND MAKE NO JOBSITE FIT IN CUTS UNLESS APPROVED. HANG PAIRS OF DOORS AS SPECIFIED WITH 3/32" CLEARANCE AT MEETING EDGES. DEMONSTRATE THAT DOORS OPEN FREELY WITHOUT BINDING, AND WHEN CLOSED, LATCH PROPERLY.
□ ACCESS DOORS □PROVIDED BY GENERAL CONTRACTOR□BY MILCOR OR E□UAL. USE STYLE DW AT WALLS AND CEILINGS □OR AS RE□UIRED FOR RATING□ SIZE AS INDICATED. FRAME SHALL BE GALVANIZED STEEL DRYWALL BEAD FOR FRAME CONCEALMENT. PANEL SHALL BE 14 GA. STEEL WITH SPRINT TYPE CONCEALED HINGES OPENING TO 175 DEGREES.
10. PROVIDE LOCKS ONLY IF SPECIFIED.

HARDWARE

1. ALL FINISH HARDWARE FOR COMPLETE WORK SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS. □UANTITIES LISTED IN ANY INSTANCE ARE FOR THE CONTRACTORS CONVENIENCE ONLY AND ARE NOT GUARANTEED. ITEMS NOT SPECIFICALLY MENTIONED BUT NECESSARY TO COMPLETE THE WORK SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.
2. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER OPERATION AND FITTING OF HARDWARE IN LOCATIONS SPECIFIED. THE GENERAL CONTRACTOR MUST SUPPLY A ROOM UNDER LOCK AND KEY TO STORE ALL FINISH HARDWARE UNTIL INSTALLATION IS MADE. THE HARDWARE SUPPLIER MUST 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.
3. PROVIDE HARDWARE FOR FIRE-RATED OPENINGS IN COMPLIANCE WITH RE□UIREMENTS OF NFPA 80. THIS RE□UIREMENT TAKES PRECEDENCE OVER OTHER RE□UIREMENTS FOR SUCH HARDWARE.
4. HARDWARE FINISH SHALL BE SATIN CHROME, U.N.O.
5. HARDWARE SUPPLIER WILL PROVIDE APPROVED SCHEDULES AND PAPER TEMPLATES TO THE CONTRACTOR FOR DOOR AND FRAME PREPARATION.
6. EACH ITEM OF HARDWARE SHALL BE PACKAGED SEPARATELY WITH ALL NECESSARY SCREWS, BOLTS, TAMPINS, KEYS AND INSTALLATION TEMPLATES. DELIVER PACKAGES CLEARLY IDENTIFIED, WITH HEADING NUMBER AS APPROVED ON HARDWARE SCHEDULE.
7. INSTALL EACH ITEM IN ACCORDANCE WITH THE MANUFACTURER□S WRITTEN INSTRUCTIONS AND RECOMMENDATIONS AND LOCATE IN ACCORDANCE WITH RECOMMENDED LOCATIONS. 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.
8. MAKE FINAL ADJUSTMENT AND CHECK OF HARDWARE DURING THE WEEK IMMEDIATELY PRIOR TO ACCEPTANCE. CLEAN AND RE-LUBRICATE OPERATING ITEMS AS NECESSARY, TO RESTORE PROPER FUNCTIONING AND FINISH OF HARDWARE AND DOORS. MAKE FINAL ADJUSTMENT OF LOCK SETS AND THE CLOSURES TO COMPENSATE FOR OPERATION OF HEATING AND VENTILATION SYSTEMS UNDER THE SUPERVISION OF MANUFACTURER□S REPRESENTATIVE.
□ LUBRICATE ALL MOVING PARTS WITH GRAPHITE-TYPE LUBRICANT, UNLESS OTHERWISE RECOMMENDED BY THE MANUFACTURER. REPLACE ALL HARDWARE THAT CANNOT BE LUBRICATED AND ADJUST TO OPERATE FREELY AND SMOOTHLY.
10. ALL HARDWARE TO COMPLY WITH ADA "ACCESSIBILITY STANDARDS" AND LOCAL CODES/ACCESSIBILITY STANDARDS.

ALL GLASS ENTRANCE AND STOREFRONTS

PART 1 GENERAL
1.01 SUBMITTALS
A. PRODUCT DATA: MANUFACTURER'S DESCRIPTIVE LITERATURE FOR EACH COMPONENT IN ALL-GLASS ENTRANCE ASSEMBLY.
B. SHOP DRAWINGS: DRAWINGS SHOWING LAYOUT, DIMENSIONS, IDENTIFICATION OF COMPONENTS, AND INTERFACE WITH ADJACENT CONSTRUCTION.
1. INCLUDE FIELD MEASUREMENTS OF OPENINGS.
2. INCLUDE DETAILS OF:
   a. REQUIREMENTS FOR SUPPORT AND BRACING AT OPENINGS.
   b. INSTALLATION DETAILS.
C. SELECTION SAMPLES: TWO SETS, REPRESENTING MANUFACTURER'S FULL RANGE OF AVAILABLE METAL MATERIALS AND FINISHES.
D. CERTIFICATES: CONTRACTOR'S CERTIFICATION THAT INSTALLER OF ENTRANCE ASSEMBLIES MEETS SPECIFIED QUALIFICATIONS.
E. OPERATION AND MAINTENANCE DATA: FOR MANUFACTURER-SUPPLIED OPERATING HARDWARE.
1.02 QUALITY ASSURANCE
A. INSTALLER QUALIFICATIONS: MINIMUM THREE YEARS OF EXPERIENCE INSTALLING ENTRANCE ASSEMBLIES SIMILAR TO THOSE SPECIFIED IN THIS SECTION.
1.03 DELIVERY, STORAGE, AND HANDLING
A. STORE PRODUCTS IN MANUFACTURER'S UNOPENED PACKAGING UNTIL INSTALLATION.
PART 2 PRODUCTS
2.01 MANUFACTURERS
A. ALL-GLASS ENTRANCES:
1. HERCULITE
2. SERIES 1301 TEMPERED GLASS DOORS, BLUMCRAFT OF PITTSBURGH; 460 MELWOOD AVENUE, PITTSBURGH, PA 15213; TEL. (412)681-2400, WWW.BLUMCRAFT.COM.
2.02 ASSEMBLIES
A. ENTRANCES: FACTORY FABRICATED ASSEMBLIES CONSISTING OF FRAMELESS GLASS PANELS FASTENED WITH METAL STRUCTURAL FITTINGS IN CONFIGURATION INDICATED ON THE DRAWINGS.
1. OPERATIONAL LOADS: DESIGNED TO WITHSTAND DOOR OPERATION UNDER NORMAL TRAFFIC WITHOUT DAMAGE, RACKING, SAGGING, OR DEFLECTION.
2. PREPARED FOR ALL SPECIFIED HARDWARE WHETHER SPECIFIED IN THIS SECTION OR NOT.
3. FINISHED METAL SURFACES PROTECTED WITH STRIPPABLE FILM.
4. FACTORY ASSEMBLED TO GREATEST EXTENT PRACTICABLE; MAY BE DISASSEMBLED TO ACCOMMODATE SHIPPING CONSTRAINTS.

2.03 FITTINGS
A. EXPOSED FITTINGS: S.S. 60/40, US9, POLISHED FINISH.
B. SWINGING DOOR FITTINGS: CONTINUOUS RAIL AT TOP AND BOTTOM OF DOOR.
1. RAIL CROSS-SECTION: 3/4" HIGH.
C. CEILING CHANNEL: CONCEALED, C-7500 BY BLUMCRAFT.
2.04 DOOR HARDWARE
A. FINISH OF EXPOSED METALS: MATCH FINISH OF FITTINGS.
B. SWINGING DOOR HARDWARE: PROVIDED BY STOREFRONT MANUFACTURER:
1. PIVOT HINGES: RECESSED BOTTOM PIVOT, BP-13.
2. FLOOR CLOSERS: RIXSON, DORMA OR JACKSON AS REQUIRED BY DOOR SIZES.
3. PUSH/PULLS (AT DOUBLE DOORS): P-751A BY MANUFACTURER, 1 1/8" DIAMETER ON BOTH SIDES OF DOORS.
4. LOCK AT SINGLE DOORS: CH800 CENTER LOCK HOUSING WITH ELECTRIC STRIKE OR CYLINDER LOCK AND CH800 STRIKE HOUSING. SEE DRAWINGS.
5. ELECTRIC STRIKES: FOLGER ADAMS 310-1 MOUNTED IN THE HEADER.
2.05 MATERIALS
A. GLASS: TEMPERED FLOAT GLASS MEETING REQUIREMENTS OF ASTM C 1036, TYPE I, QUALITY Q3, FULLY TEMPERED IN ACCORDANCE WITH ASTM C 1048, KIND FT, AND AS FOLLOWS:
1. THICKNESS: TEMPERED, 1/2 INCH.
2. COLOR: CLEAR, CLASS 1.
3. PREPARE GLAZING PANELS FOR INDICATED FITTINGS AND HARDWARE BEFORE TEMPERING.
4. POLISH EDGES THAT WILL BE EXPOSED IN FINISHED WORK TO BRIGHT FLAT POLISH.
5. TEMPER GLASS MATERIALS HORIZONTALLY; VISIBLE TONG MARKS OR TONG MARK DISTORTIONS ARE NOT PERMITTED.
B. STAINLESS STEEL COMPONENTS: CONFORMING TO ASTM B 455, UNS C38500, .
PART 3 EXECUTION
3.01 EXAMINATION
A. VERIFY THAT OPENINGS ARE ACCEPTABLE.
B. DO NOT BEGIN INSTALLATION UNTIL SUBSTRATES AND OPENINGS HAVE BEEN PROPERLY PREPARED.
C. IF SUBSTRATE PREPARATION IS THE RESPONSIBILITY OF ANOTHER INSTALLER, NOTIFY ARCHITECT OF UNSATISFACTORY PREPARATION BEFORE PROCEEDING.
3.02 PREPARATION
A. CLEAN SUBSTRATES THOROUGHLY PRIOR TO INSTALLATION.
3.03 INSTALLATION
A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. TOLERANCES:
1. HORIZONTAL COMPONENTS AND SIGHT LINES: NOT MORE THAN 1/8 INCH IN 10 FEET VARIATION FROM LEVEL, NON-CUMULATIVE.
2. VERTICAL COMPONENTS AND SIGHT LINES: NOT MORE THAN 1/8 INCH IN 10 FEET VARIATION FROM PLUMB, NON-CUMULATIVE.
3. VARIATION FROM PLANE OR INDICATED LOCATION: NOT MORE THAN 1/16 INCH.
3.04 ADJUSTING
A. ADJUST DOORS TO OPERATE CORRECTLY, WITHOUT BINDING TO FRAME, SILL, OR ADJACENT DOORS.
B. ADJUST DOOR HARDWARE FOR SMOOTH OPERATION.
3.05 CLEANING AND PROTECTION
A. CLEAN INSTALLED WORK TO LIKE-NEW CONDITION.
B. PROTECT INSTALLED PRODUCTS UNTIL COMPLETION OF PROJECT.
C. TOUCH-UP, REPAIR OR REPLACE DAMAGED PRODUCTS BEFORE SUBSTANTIAL COMPLETION.
END OF SECTION 08450

GLASS AND GLAZING

7. PROVIDE TEMPERED GLASS. SIZE, THICKNESS AND CONFIGURATION AS INDICATED ON DRAWINGS.
8. ALL GLASS EDGES SHALL BE GROUND SMOOTH AND POLISHED.
□ GENERAL GLASS SHALL BE □3 IN ACCORDANCE WITH CURRENT FEDERAL SPECIFICATIONS AND GANA GLAZING MANUAL.
10. STOREFRONT GLASS SHALL BE AS RE□UIRED FOR THE SIZES AND CONDITIONS DETAILED. FRAME SECTION SHALL BE CONCEALED WHERE INDICATED.
11. PROVIDE RESILIENT NEOPRENE BLOCKS 70-□0 SHORE □A□DUROMETER HARDNESS AND RESILIENT ACCESSORIES DESIGNED FOR POSITIONING GLASS IN RABBETS.
12. PROVIDE CLIPS OF NON-CORROSIVE METAL WITH ROUNDED EDGES DESIGNED FOR CONTACT BLOCKS, NOT GLASS.
13. PROVIDE STANDARD PREFORMED GLAZING TAPE, STANLOCKE 400, TREMCO 440, OR APPROVED E□UAL.
14. PROVIDE NON-SHRINKING ELECTROMETRIC TAPE WHERE RE□UIRED.
15. USE SILICONE SEALANT DOW □7□5 OR GE SILPRUF, COLOR AS SPECIFIED, OR APPROVED E□UAL.
16. ALL EDGES, DRILLED HOLES AND NOTCHES SHALL BE FACTORY CUT AND/OR FACTORY FORMED. TOUCH-UP "RAW" EDGES TO MATCH FRAME.
17. INSTALL IN ACCORDANCE WITH GANA RECOMMENDATIONS UNLESS NOTED OTHERWISE.
18. VERIFY THAT FRAMES TO RECEIVE GLAZING ARE S□UARE AND TRUE, THAT PERIMETER CLEARANCES ARE SUFFICIENT TO PREVENT "POINT LOADING", AND THAT SURFACES ARE CLEAN, DRY AND READY TO RECEIVE GLAZING MATERIALS. REMOVE ALL PROTECTIVE COATINGS FROM FRAMING SURFACES.
1□ CENTER GLASS IN RABBETS AND POSITION SO AS TO MAINTAIN CLEARANCES ON ALL SIDES, INDOORS AND OUT, IN ACCORDANCE WITH GANA RECOMMENDATIONS. SHIM AS RE□UIRED TO POSITION AGAINST FIXED STOPS AND FRAME BARS.
20. SET ALL EXTRUSIONS IN CORRECT LOCATIONS AS SHOWN IN THE DETAILS. THEY SHALL BE LEVEL, FLUSH, S□UARE, PLUMB AND IN ALIGNMENT WITH OTHER WORK.
21. UPON COMPLETION, REMOVE ALL EXCESS SEALANT AND MATERIALS FROM SURFACES□WASH AND CLEAN ALL GLASS FRAMING MEMBERS AND GLASS.

DIVISION □- FINISHES
METAL SUPPORT SYSTEMS

1. PROVIDE CHANNEL-SHAPED ROLL FORMED SHEET STEEL MEMBERS CONFORMING WITH ASTM A1031, HOT DIPPED FINISH WHERE EXPOSED TO MOISTURE, NOT LESS THAN 20 GA. UNLESS NOTED OTHERWISE ON PLANS. PROVIDE 16 GA. AT DOOR JAMBS.
2. PROVIDE COLD ROLLED STEEL CHANNELS NOT LESS THAN 16 GAUGE.
3. PROVIDE TIE WIRES OF GALVANIZED ANNEALED WIRES NOT LESS THAN 16 GA.
4. PROVIDE GALVANIZED HANGARS OF STEEL WIRE IN ACCORDANCE WITH ASTM C754.
5. PROVIDE JACK STUDS BETWEEN BOTTOM TRACK AND WINDOW AND/OR RELIEF SILLS BETWEEN LINTELS AND HEADERS IN TOP TRACKS.
6. PROVIDE BLOCKING AND FRAMING FOR ALL WALL MOUNTED FINISH HARDWARE AND E□UIPMENT, INCLUDING DOOR STOPS.
7. PROVIDE CEILING SEISMIC BRACING IN ACCORDANCE WITH RE□UIREMENTS OF APPLICABLE CODES AND AS INDICATED ON DRAWINGS.
8. PROVIDE DOUBLE BEAD OF BUTYL SEALANT AT FLOOR TRACKS. APPLY DOUBLE BEAD TO CEILING TRACK AND TO STUDS ABUTTING OTHER CONSTRUCTION.
□ PROVIDE CHANNEL SHAPED BLOCKING SUPPORT OR GALVANIZED STRIP SUPPORT OF WALL-HUNG CABINETS, E□UIPMENT, FIXTURES AND ACCESSORIES OF NOT LESS THAN 22 GA. MATERIAL. PROVIDE SUPPORT IN WALL OR PARTITION FRAMING SYSTEM WHEREVER WALL HUNG CABINETS AND E□UIPMENT ARE INDICATED ON DRAWINGS. AND WHERE RE□UIRED FOR MOUNTING OF MISCELLANEOUS ITEMS RE□UIRING BACKING.
10. SET FLOOR TRACKS IN ACCURATE LOCATIONS AND SECURELY ANCHOR IN ACCORDANCE WITH ICC & ASTM STANDARDS. ERECT STUDS ON 16" OR 24" □AS INDICATED□CENTERS AND SECURE TO TRACK. INSTALL HEAD TRACK IN ACCORDANCE WITH DETAILS. INSTALL BLOCKING, BRACING, AND ANCHOR STRIPS, LEAVE READY TO RECEIVE FINISH MATERIALS.
11. ERECT ALL COMPONENTS FOR CEILING AND SOFFIT FRAMING IN ACCURATE LOCATIONS AS INDICATED, TRUE TO LINE, LEVEL AND PLUMB, AND IN ACCORDANCE WITH APPLICABLE ASTM STANDARDS AS REFERENCED ABOVE, USING A LASER LEVEL. ADJUST SUPPORTS, SPANS OR OTHERWISE FOR INSTALLATION WITHIN SPECIFIED TOLERANCES.
12. PROVIDE KICK BRACING IN ACCORDANCE WITH INDUSTRY STANDARDS FOR WALL STUDS, CEILING MEMBERS, DRAFT OR SMOKE STOPS AND CURTAIN WALLS.
13. FLOOR BEARING WALLS MAY BE ATTACHED TO METAL DECK ROOFING SYSTEM FOR LATERAL BRACING ONLY. TOP SUSPENDED ELEMENTS SUCH AS SOFFIT WALLS, TOP HUNG WALLS, ETC., SHALL ONLY BE ATTACHED TO STRUCTURAL ELEMENTS OR TENANT INSTALLED STRUCTURAL ELEMENTS WITH NO ATTACHMENT TO THE METAL DECK.

DRYWALL PANELS

1. PROVIDE DRYWALL PANELS MANUFACTURED IN ACCORDANCE WITH RE□UIREMENTS OF ASTM C13□6.
2. PROVIDE DRYWALL PANELS 5/8" THICK WITH TAPERED.
3. PROVIDE 5/8" TYPE "X" FIRE RETARDANT DRYWALL PANELS TESTED AND □UALIFIED FOR 1-HOUR RATING AS INDICATED ON DRAWINGS.
4. PROVIDE METAL EDGE AND CORNER BEADS AT ENDS, EDGES AND CORNERS.
5. WATER RESISTANT DRYWALL PANELS SHALL BE 5/8" THICK, □UALIFIED FOR 1-HOUR RATING □WHERE RE□UIRED□ AND SHALL BE INSTALLED IN ALL WET AREAS AS INDICATED ON DRAWINGS.
6. PROVIDE FASTENERS IN ACCORDANCE WITH ASTM C840, UNLESS OTHERWISE NOTED OR INDICATED, PROVIDE TYPE □S□BUGLE HEAD SCREWS FOR ATTACHMENT OF DRYWALL PANELS TO METAL FRAMING, AND TYPE □S□PAN HEAD SCREWS FOR ATTACHMENT OF FRAMING TO DOOR FRAMES.
7. PROVIDE ALL INCIDENTAL AND ACCESSORY MATERIALS, TOOLS, E□UIPMENT AND METHODS RE□UIRED FOR SATISFACTORY COMPLETION OF DRYWALL PANEL CONSTRUCTION INCLUDING ACCESS DOORS AND PANELS.
8. APPLY CONTINUOUS BEAD OF ACOUSTICAL SEALANT AT ALL JOINTS OF DRYWALL PANELS ABUTTING ADJACENT CONSTRUCTION, INCLUDING AROUND FRAMED OPENINGS AND OTHER PROTRUSIONS THROUGH DRYWALL PANEL WHERE SEALANT IS EXPOSED. PROVIDE POLY-SULFIDE SEALANT WHERE UNEXPOSED.
□ APPLY PRE-FILL COMPOUND TO JOINTS IN ACCORDANCE WITH INDUSTRY STANDARDS. APPLY EMBEDDING COMPOUND REINFORCING TAPE CENTERED OVER JOINT, APPLY SKIM COAT. AFTER TAPING AND EMBEDDING COMPOUND IS DRY, APPLY SECOND COAT FILLING AND TAPER FLUSH WITH SURFACE, FIRE TAPE PENETRATIONS AT DEMISING WALLS, CORRIDOR ENVELOPE AND OTHER RATED ASSEMBLIES WHERE RE□UIRED ON PLANS.
10. PROVIDE FINAL FINISH THAT IS SMOOTH, WITHOUT DIVOTS, BUMPS, BOWS OR ANY OTHER SURFACE BLEMISH, READY TO RECEIVE PAINT.
11. CUSTOM SKIP TROWEL FINISH WHERE SPECIFIED ON PLANS.
12. INSTALL GYPSUM BOARD AS ACCORDING TO THE NATIONAL GYPSUM CONSTRUCTION GUIDELINES. ON LONG RUNS INSTALL CONTROL JOINTS EVERY 30 FEET OR AS INDICATED ON DRAWINGS.

PAINTING

1. PROVIDE PAINT FINISHES FOR BUILDING AND OTHER SURFACES AS SCHEDULED ON DRAWINGS OR AS SPECIFIED HEREINAFTER INCLUDING SEALING OF CONCRETE FLOOR. NO PAINT FINISH IS RE□UIRED ON ITEMS HAVING COMPLETE FACTORY FINISH, EXCEPT AS MAY BE SPECIFIED HEREINAFTER, PUTTY AND/OR SEALANT AT ALUMINUM WINDOWS, NON-FERROUS METAL UNLESS SPECIFICALLY MENTIONED IN THE PAINTING SCHEDULE, STAINLESS STEEL, INTERIOR OR EXTERIOR OF EXISTING BUILDING, EXCEPT WHERE ALTERATIONS OCCUR OR WHERE SCHEDULED. PAINT GRILLES AND DIFFUSERS. NO PAINTING IS RE□UIRED FOR INSULATING PIPING, EXCEPT WHERE EXPOSED IN FINISH, NON-MECHANICAL ROOM SPACES.
2. PROTECT WORK OF OTHER TRADES FROM DAMAGE AND DEFACEMENT CAUSED BY THIS WORK. REPAIR ANY DAMAGE CAUSED BY THE WORK OF THIS SECTION. REMOVE ELECTRICAL OUTLET AND SWITCH PLATES, MECHANICAL DIFFUSERS, GRILLES, ESCUTCHEONS, REGISTERS, SURFACE HARDWARE, FITTINGS, AND FASTENINGS PRIOR TO COMMENCING THE WORK. STORE, CLEAN, AND REPLACE UPON COMPLETION.
3. PAINT CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR IF ANY SURFACE TO BE PAINTED OR STAINED IS FOUND TO BE UNSUITABLE TO PRODUCE PROPER FINISH. APPLY NO FINISH MATERIAL UNTIL THE UNSUITABLE SURFACES HAVE BEEN MADE SATISFACTORY.
4. FINISH WORK SHALL BE UNIFORM, OF APPROVED COLOR, SMOOTH AND FREE FROM RUNS. MAKE ENDS OF PAINT ADJOINING OTHER MATERIALS OR COLORS SHARP AND CLEAN. WHERE HIGH GLOSS ENAMEL IS USED, LIGHTLY SAND UNDERCOAT TO OBTAIN A SMOOTH FINISH COAT.
5. PROVIDE ALL NEWLY PAINTED SURFACES WITH ONE □1□COAT TINTED PRIMER AND TWO □2□COATS FINAL COLOR COAT, UNLESS OTHERWISE RECOMMENDED BY MANUFACTURER□S SPECIFICATIONS.
6. DELIVER ALL PAINT TO JOB SITE IN UNOPENED CONTAINERS BEARING THE MANUFACTURER□S LABEL, AND SHOWING PAINT TYPE, SHEEN AND COLOR.
7. PAINT TYPES USED SHALL BE THOSE SPECIFICALLY RECOMMENDED BY THE MANUFACTURER FOR THE MATERIAL TO WHICH THEY WILL BE APPLIED. PAINTING CONTRACTOR SHALL FOLLOW MANUFACTURER□S INSTRUCTIONS FOR PROPER APPLICATION OF THE PAINT.
8. ALL SURFACES TO BE PAINTED SHALL BE THOROUGHLY CLEANED AND PREPARED FOR PAINTING PRIOR TO APPLICATION OF PAINT. PROVIDE VENTILATORS AS RE□UIRED TO PREVENT BUILD-UP OF FUMES.
□ SANDPAPER ALL NEW WOOD TO SMOOTH AND EVEN SURFACE AND DUST OFF. AFTER PRIMING COAT HAS BEEN APPLIED, THOROUGHLY FILL ALL NAIL HOLES AND OTHER SURFACE IMPERFECTIONS WITH PUTTY TINTED WITH PRIMER OR STAIN TO MATCH WOOD COLOR. SAND ALL WOODWORK BETWEEN COATS TO A SMOOTH SURFACE.
10. PRIME ALL SURFACES WHICH RECEIVE PAINT PRIOR TO APPLICATION OF FINAL FINISH IN ACCORDANCE WITH MANUFACTURER□S SPECIFICATIONS.
11. BACK PRIME ALL EXTERIOR AND INTERIOR WOOD AND TRIM PRIOR TO INSTALLATION, THOROUGHLY CLEAN SURFACES AND APPLY NO FINISH UNLESS SURFACES ARE DRY AND FOR APPLICATION. SANDPAPER SURFACES OF TRIM SMOOTH AND WIPE CLEAN. AFTER STAIN COAT HAS BEEN APPLIED, FILL CRACKS AND HOLES WITH PLASTIC WOOD OR PUTTY. IF STAIN HAS BEEN USED, TINT CRACK FILLER TO MATCH, PRIME BACKS OF TRIM. PRIME BARE WOOD SCHEDULED TO RECEIVE PAINT FINISH, FINISH NAIL HOLES, CRACKS AND OTHER IMPERFECTIONS WITH PUTTY AND SAND SMOOTH.
12. AT COMPLETION, TOUCH-UP AND RESTORE FINISH WHERE DAMAGED AND LEAVE ALL SURFACES IN GOOD AND CLEAN CONDITION. PROVIDE FOR MULTIPLE SITE VISITS AS RE□UIRED FOR TOUCH-UP AND REFINISHING.
13. OTHER PAINT MANUFACTURERS MAY NOT BE SUBSTITUTED WITHOUT PRIOR APPROVAL FROM ARCHITECT.
14. FINISH INTERIOR SURFACES, AS SCHEDULED ON DRAWINGS, EXCEPT AS MODIFIED AND SUPPLEMENTED HEREINAFTER AND UPON WRITTEN OWNER APPROVAL. IN GENERAL, USE EGGSHELL SHEEN FOR WALL BOARD SURFACES, SEMI-GLOSS FOR CEILINGS, HOLLOW METAL AND WOOD TRIM, AND FLAT FOR DUCTWORK.

RESILIENT BASE

1. INSTALL COVE BASE IN AREAS AS CALLED FOR IN PLANS AND/OR ELEVATIONS.
2. PROVIDE PREMOLDED INSIDE AND OUTSIDE CORNERS FOR ALL CONDITIONS AT WHICH CORNERS ARE TO BE USED. JOB MITERING SHALL BE PERMITTED ONLY UPON OWNER□S APPROVAL.
3. USE ADHESIVES ONLY AS RECOMMENDED BY THE MANUFACTURER OF THE MATERIAL TO WHICH IT IS APPLIED.
4. CAREFULLY INSPECT ALL SURFACES TO RECEIVE BASE PRIOR TO INSTALLATION. REPAIR DAMAGED SURFACES PRIOR TO INSTALLATION.
5. UPON COMPLETION, IMMEDIATELY REMOVE ALL SURPLUS ADHESIVE FROM ADJACENT SURFACE, IN ACCORDANCE WITH THE TIMING RECOMMENDED BY THE MANUFACTURER.

VINYL COMPOSITION TILE

1. EXAMINE SUBFLOORS PRIOR TO INSTALLATION TO DETERMINE THAT SURFACES ARE SMOOTH AND FREE FROM CRACKS, HOLES, RIDGES, AND OTHER DEFECTS THAT MIGHT PREVENT ADHESIVE BOND OR IMPAIR DURABILITY OR APPEARANCE OF THE FLOORING MATERIAL.
2. INSPECT SUBFLOORS PRIOR TO INSTALLATION TO DETERMINE THAT SURFACES ARE FREE FROM CURING, SEALING, PARTING AND HARDENING COMPOUNDS□RESIDUAL ADHESIVES□ADHESIVE REMOVERS□AND OTHER FOREIGN MATERIALS THAT MIGHT PREVENT ADHESIVE BOND. VISUALLY INSPECT FOR EVIDENCE OF MOISTURE, ALKALINE SALTS, CARBONATION, DUSTING, MOLD, OR MILDEW. FLOOR SLAB MOISTURE CONTENTS TO MEET MANUFACTURES RE□UIREMENTS.
3. REPORT CONDITIONS CONTRARY TO CONTRACT RE□UIREMENTS THAT WOULD PREVENT A PROPER INSTALLATION. DO NOT PROCEED WITH THE INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
4. FAILURE TO CALL ATTENTION TO DEFECTS OR IMPERFECTIONS WILL BE CONSTRUED AS ACCEPTANCE AND APPROVAL OF THE SUBFLOOR. INSTALLATION INDICATES ACCEPTANCE OF SUBSTRATES WITH REGARD TO CONDITIONS EXISTING AT THE TIME OF INSTALLATION.
5. INSTALL FLOORING IN STRICT ACCORDANCE WITH THE LATEST EDITION OF "ARMSTRONG GUARANTEED INSTALLATION SYSTEM", F-5061.
6. INSTALL FLOORING WALL TO WALL BEFORE THE INSTALLATION OF FLOOR-SET CABINETS, CASEWORK, FURNITURE, E□UIPMENT, MOVABLE PARTITIONS, ETC. EXTEND FLOORING INTO TOE SPACES, DOOR RECESSES, CLOSETS, AND SIMILAR OPENINGS AS SHOWN ON THE DRAWINGS.
7. IF RE□UIRED, INSTALL FLOORING ON PAN-TYPE FLOOR ACCESS COVERS. MAINTAIN CONTINUITY OF COLOR AND PATTERN WITHIN PIECES OF FLOORING INSTALLED ON THESE COVERS. ADHERE FLOORING TO THE SUBFLOOR AROUND COVERS AND TO COVERS.
8. SCRIBE, CUT, AND FIT TO PERMANENT FIXTURES, COLUMNS, WALLS, PARTITIONS, PIPES, OUTLETS, AND BUILT-IN FURNITURE AND CABINETS. FIT TIGHT TO DOOR FRAMES, INSTALL MATCHING SEALANT BETWEEN METAL DOOR FRAMES & VCT EDGES.
□ INSTALL FLOORING WITH ADHESIVES, TOOLS, AND PROCEDURES IN STRICT ACCORDANCE WITH THE MANUFACTURER□S WRITTEN INSTRUCTIONS. OBSERVE THE RECOMMENDED ADHESIVE TROWEL NOTCHING, OPEN TIMES, AND WORKING TIMES

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ARCHICON
Architecture & Interiors, L.C.
5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION
T.I. IMPROVEMENT
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

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Project Manager:	OT
Drawn By:	OT
Checked By:	JP

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Sheet Description
GENERAL SPECIFICATIONS

REGISTERED ARCHITECT
CERTIFICATION NO.
23519
JERE W.
PLANCK
DATE SIGNED 12/20/2017
ARIZONA U.S.A.
EXPIRES: 12/31/2018

Sheet No.
T1.1

Issue Date: 12.15.17

CERAMIC TILE

1. USE ADHESIVES AND APPLY ONLY AS RECOMMENDED BY MANUFACTURER AND IN ACCORDANCE WITH INDUSTRY STANDARDS.
2. INSTALLERS MUST BE SPECIALISTS WITH A MINIMUM OF TWO (2) YEARS EXPERIENCE.
3. ALL INSTALLATIONS SHALL CONFORM TO THE LATEST APPLICABLE TILE COUNCIL OF NORTH AMERICA AND ANSI STANDARDS.
4. DO NOT COMMENCE INSTALLATION UNTIL SUBSTRATE HAS BEEN MADE SUITABLE FOR TILE INSTALLATION.
5. REVIEW ALL AREAS TO RECEIVE TILE FLOORING (PRIOR TO SUBMITTING ESTIMATE) TO DETERMINE THE REQUIRED EXTENT OF SUBFLOOR PREPARATION.
6. SET AND GROUT TILE WHEN AMBIENT TEMPERATURE IS AT LEAST 50° AND RISING. ALIGN ALL JOINTS AND CORNERS.
7. CLEAN CONCRETE FLOORS, REMOVING ALL FOREIGN MATTER AND CONTAMINATES SUCH AS GREASE, OIL, DUST, WATER, SURFACE DIRT, OLD SEALANTS OR GLAZING COMPOUNDS, AND PROTECTIVE COATINGS. METAL SHALL BE CLEANED BY MECHANICAL OR SOLVENT PROCEDURES.
8. INSTALL TILE TO CONCRETE SUBSTRATE PER TCA STANDARD F113-89 WITH UNIFORMLY SPACED JOINTS, TO PATTERN INDICATED IN THE DRAWINGS. VERIFY LAYOUT AND CUTS WITH ARCHITECT PRIOR TO COMMENCEMENT OF WORK. CUT TILE AT WALL INTERSECTIONS FOR CONCEALMENT BY BASE WHERE APPLICABLE. VARY MORTAR THICKNESS, AS NECESSARY, TO ACCOMMODATE VARIATIONS IN THE TILE THICKNESS.
9. CLOSE AREAS IN WHICH TILE IS BEING PLACED TO TRAFFIC AND OTHER WORK. KEEP AREA CLOSED UNTIL TILE IS FIRMLY SET. PROTECT FLOORING FROM DAMAGE. REPLACE DAMAGED TILE AT NO ADDITIONAL COST TO THE OWNER.
10. INSTALL TILE TO WOOD SURFACES AND ALUMINUM GLAZING CHANNEL AND METAL BASE WITH DOW CORNING 795 SILICONE BUILDING SEALANT, BEADS AT 8" ON CENTER MAXIMUM.
11. GROUT FLUSH WITH TILE EDGES. WIPE TILES WITH CHEESE CLOTH INSTEAD OF SPONGE.
12. DAMP CURE PER MORTAR AND GROUT MANUFACTURER'S RECOMMENDATIONS.
13. SEAL TILE PER MANUFACTURER'S WRITTEN INSTRUCTIONS WITH SEALER RECOMMENDED FOR TILE INSTALLED. DOUBLE SEAL ALL JOINTS.

WALL COVERING

1. EXAMINE THE AREAS AND CONDITIONS UNDER WHICH WORK OF THIS SECTION WILL BE PERFORMED. CORRECT CONDITIONS DETRIMENTAL TO TIMELY AND PROPER COMPLETION OF THE WORK. DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.
2. MAKE MOISTURE CONTENT TEST OF SUBSTRATE BY USE OF AN ELECTRONIC MOISTURE METER AND VERIFY THAT THE MOISTURE CONTENT DOES NOT EXCEED 5% FOR PLASTER AND DRYWALL PANELS.
3. USE FABRIC IN CONSECUTIVE NUMERICAL SEQUENCE OF THEIR MANUFACTURE.
4. PLACE FABRIC PANELS SEQUENTIALLY IN THE EXACT ORDER THEY ARE CUT FROM THE ROLL, INCLUDING FOR FILLING ALL SPACES ABOVE DOORS AND ABOVE OR BELOW WINDOWS AND SIMILAR LOCATIONS.
5. FOLLOW THE MANUFACTURER'S PRINTED INSTRUCTIONS FOR MIXING ADHESIVE.
6. HORIZONTAL SEAMS ARE NOT ALLOWED.
7. USING A DAMP SPONGE, REMOVE EXCESS ADHESIVE FROM EACH SEAM AS IT IS MADE, WIPING CLEAN AND DRY WITH A CLOTH TOWEL.

DIVISION 10 - SPECIALTIES
ACCESSORIES

1. GENERAL CONTRACTOR SHALL PROVIDE ADEQUATE BACKING FOR SECURE INSTALLATION OF ACCESSORIES.
2. ALL ACCESSORIES SHALL BE INSTALLED IN ACCORDANCE WITH ALL GOVERNING NATIONAL, STATE AND LOCAL CODES PERTAINING TO ACCESSIBILITY GUIDELINES.
3. DELIVER INSERTS AND ROUGH-IN FRAMES TO JOBSITE AT APPROPRIATE TIME FOR BUILDING IN.
4. FURNISH TOILET ACCESSORIES COMPLETE WHETHER OR NOT SHOWN ON DRAWINGS WITH ALL REQUIRED MOUNTING DEVICES, FASTENERS AND ACCESSORIES AS REQUIRED FOR A FINISHED INSTALLATION, PROPERLY PACKAGED AND TAGGED FOR READY IDENTIFICATION. FASTEN ALL ITEMS WITH SCREWS OR BOLTS EXTENDING AT LEAST 1" INTO SOLID BACKING IF NO OTHER FASTENING IS SPECIFIED.
5. INSTALLATION OF TOILET ACCESSORIES SHALL BE IN ACCORDANCE WITH THE DRAWINGS, REVIEWED SHOP DRAWINGS, AND THE MANUFACTURER'S INSTALLATIONS AND RECOMMENDATIONS.
6. G.C. SHALL SUPPLY AND INSTALL ADEQUATE BACKING FOR SECURE INSTALLATION OF ALL ACCESSORIES. LOCATION AND HEIGHTS SHALL BE AS SHOWN ON DRAWINGS AND IN CONFORMANCE WITH ACCESSIBILITY GUIDELINES.

FIRE EXTINGUISHERS (PROVIDED BY G.C.)

1. EXTINGUISHERS SHALL BE A CAPACITY AS SHOWN ON PLAN, U.L. LABELS, ENAMEL, STEEL CONTAINER WITH PRESSURE INDICATING GAUGE FOR CLASS A, B, OR C FIRES.
2. INSTALL IN FIRE EXTINGUISHER CABINET WITH VISION WINDOW AS INDICATED OR DIRECTED BY THE FIRE MARSHAL, NEATLY FITTING TO FINISH SURFACES. PLACE FULLY CHARGED EXTINGUISHERS IN CABINETS FINISH SURFACES.
3. SEE FLOOR PLAN FOR ARCHITECT'S SUGGESTED LOCATIONS. CONFIRM EXACT LOCATION WITH FIRE MARSHAL IF NOT SHOWN ON THE DRAWINGS. PROVIDE A 2A-10BC UNLESS NOTED OTHERWISE.

DIVISION 11 - NOT USED

DIVISION 12 - FURNISHINGS

REFER TO ARCHITECTURAL DRAWINGS.

DIVISION 13 - NOT USED

DIVISION 14 - NOT USED

DIVISION 15 - MECHANICAL

REFER TO MECHANICAL DRAWINGS FOR SPECIFICATIONS.

DIVISION 15 - PLUMBING

REFER TO PLUMBING DRAWINGS FOR SPECIFICATIONS

DIVISION 16 - ELECTRICAL

REFER TO ELECTRICAL DRAWINGS FOR SPECIFICATIONS

GENERAL NOTES:

1. G.C. SHALL PROVIDE AS-BUILT DRAWINGS TO THE OWNER AT PROJECT CLOSEOUT.
2. G.C. SHALL PROVIDE ALL MAINTENANCE MANUALS AND WARRANTIES IN 3-RING BINDER TO TENANT.
3. SEE GENERAL REQUIREMENT DIV. 1, ITEM 18 FOR REQUIRED FINISHES TO BE LEFT FOR TENANT MAINTENANCE.

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ARCHICON
Architecture & Interiors, L.C.

5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

T.I. IMPROVEMENT
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

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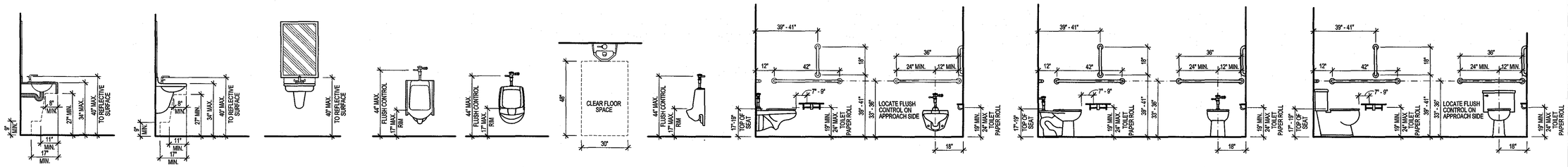
Sheet Description
GEMERAL SPECIFICATIONS

EXPIRES: 12/31/2018

Sheet No.

T1.2

Issue Date: 12.15.17



ACCESSIBLE VANITY BASIN SIDE ELEVATION

ACCESSIBLE LAVATORY WITH SHROUD SIDE ELEVATION

ACCESSIBLE LAVATORY WITH SHROUD FRONT ELEVATION

ACCESSIBLE URINAL ELEVATION-A

ACCESSIBLE URINAL ELEVATION-B

ACCESSIBLE URINAL PLAN VIEW

ACCESSIBLE URINAL SIDE VIEW (TYP.)

ACCESSIBLE TOILET SIDE ELEVATION
WALL MOUNT - FLUSH VALVE

ACCESSIBLE TOILET FRONT ELEVATION
WALL MOUNT - FLUSH VALVE

ACCESSIBLE TOILET SIDE ELEVATION
FLOOR MOUNT - FLUSH VALVE

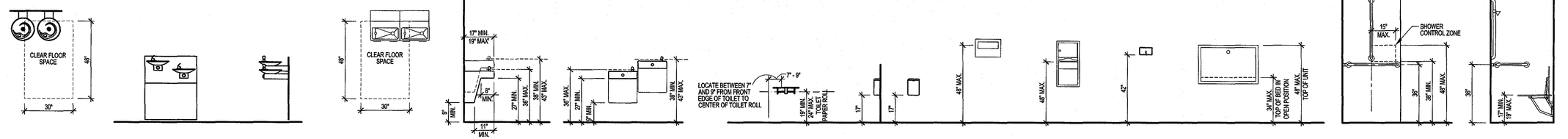
ACCESSIBLE TOILET FRONT ELEVATION
FLOOR MOUNT - FLUSH VALVE

ACCESSIBLE TOILET SIDE ELEVATION
FLOOR MOUNT - TANK FLUSH

ACCESSIBLE TOILET FRONT ELEVATION
FLOOR MOUNT - TANK FLUSH

SCALE 3/8" = 1'-0"

1 TYPICAL A.D.A. MOUNTING HEIGHTS



DRINKING FOUNTAIN TOP VIEW

ACCESSIBLE HIGH-LOW DRINKING FOUNTAIN FRONT ELEVATION

ACCESSIBLE HIGH-LOW DRINKING FOUNTAIN SIDE ELEVATION

DRINKING FOUNTAIN TOP VIEW

ACCESSIBLE HIGH-LOW DRINKING FOUNTAIN SIDE ELEVATION

ACCESSIBLE HIGH-LOW DRINKING FOUNTAIN FRONT ELEVATION

ACCESSIBLE PARAPHERNALIA SHELF

SANITARY NAPKIN DISPOSAL

SEAT COVER DISPENSER

PAPER TOWEL DISPENSER/ WASTE RECEPTACLE

SURFACE MOUNT SOAP DISPENSER

ACCESSIBLE BABY CHANGE STATION
KOALA KARE KB200 - HORIZONTAL

ACCESSIBLE TRANSFER SHOWER FRONT ELEVATION

ACCESSIBLE TRANSFER SHOWER SIDE ELEVATION
BOBRICK B-5181 FOLDING SHOWER SEAT (OR EQUAL APPROVED) MOUNT AT 17" MIN. TO 19" MAX. A.F.F.

SCALE 3/8" = 1'-0"

7 TYPICAL A.D.A. MOUNTING HEIGHTS

1 ENTRANCES

1. ALL ENTRANCES AND REQUIRED EXITS TO BUILDINGS AND FACILITIES SHALL BE MADE ACCESSIBLE TO THE PHYSICALLY DISABLED.
2. ALL ACCESSIBLE ENTRANCES SHALL BE IDENTIFIED WITH AT LEAST ONE STANDARD SIGN AND WITH ADDITIONAL DIRECTIONAL SIGNS, AS REQUIRED, VISIBLE FROM APPROACHING PEDESTRIAN WAYS.
3. EVERY REQUIRED ENTRANCE OR PASSAGE DOORWAY SHALL BE OF A SIZE AS TO PERMIT THE INSTALLATION OF A DOOR NOT LESS THAN 3 FEET IN WIDTH AND NOT LESS THAN 6 FEET, 8 INCHES IN HEIGHT. DOORS SHALL BE CAPABLE OF OPENING AT LEAST 90 DEGREES AND SHALL BE SO MOUNTED THAT THE CLEAR WIDTH OF THE DOORWAY OPENING IS NOT LESS THAN 32 INCHES WHEN THE DOOR IS OPENED AT A 90 DEGREE ANGLE.
4. WHERE A PAIR OF DOORS IS UTILIZED AT LEAST ONE OF THE DOORS SHALL PROVIDE A CLEAR UNOBSTRUCTED OPENING WIDTH OF 32 INCHES WITH THE LEAF POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION.
5. THE FLOOR OR LANDING AT A DOOR SHALL BE NOT MORE THAN 1/2 INCH LOWER THAN THE THRESHOLD OF THE DOORWAY. CHANGE IN LEVEL BETWEEN 1/4-INCH AND 1/2-INCH SHALL BE BEVELED WITH A SLOPE NO GREATER THAN 1:2.
6. THE SPACE BETWEEN TWO CONSECUTIVE DOOR OPENINGS IN A VESTIBULE, SERVING OTHER THAN A REQUIRED EXIT STAIRWAY SHALL PROVIDE A MINIMUM OF 48-INCHES OF CLEAR SPACE FROM ANY DOOR OPENING INTO SUCH VESTIBULE WHEN THE DOOR IS POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION. DOORS IN A SERIES SHALL SWING EITHER IN THE SAME DIRECTION OR AWAY FROM THE SPACE BETWEEN THE DOORS.
7. MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR INTERIOR DOORS, SUCH PULL OR PUSH EFFORT BEING APPLIED AT RIGHT ANGLES TO HINGED DOORS AND AT THE CENTER PLANE OF SLIDING OR FOLDING DOORS. COORDINATING DEVICES OR AUTOMATIC DOOR OPERATORS MAY BE UTILIZED TO MEET THE ABOVE STANDARDS. WHEN FIRE DOORS ARE REQUIRED, THE MAXIMUM EFFORT TO OPERATE THE DOOR MAY BE INCREASED BUT SHALL NOT EXCEED 15 LBS.
8. WHERE TURNSTILES ARE UTILIZED IN A FACILITY FOR THE PURPOSE OF PROVIDING FULLY CONTROLLED ACCESS, A DOOR OR GATE THAT IS ACCESSIBLE TO THE PHYSICALLY DISABLED, SHALL BE PROVIDED ADJACENT TO OR WITHIN A DISTANCE NOT TO EXCEED 10 FEET FROM EACH TURNSTILE EXIT OR ENTRANCE.

2 FLOORS AND LEVELS

1. IN BUILDINGS AND FACILITIES, FLOORS OF A GIVEN STORY SHALL BE A COMMON LEVEL THROUGHOUT, OR SHALL BE CONNECTED BY PEDESTRIAN RAMPS, PASSENGER ELEVATORS OR SPECIAL ACCESS LIFTS.
2. FLOOR SURFACES SHALL BE SLIP-RESISTANT.

3 SANITARY FACILITIES (GENERAL)

1. WHEN SANITARY FACILITIES ARE LOCATED ON ACCESSIBLE FLOORS OF A BUILDING, THEY SHALL BE MADE ACCESSIBLE TO THE PHYSICALLY DISABLED.
2. WHERE SEPARATE FACILITIES ARE PROVIDED FOR NON-DISABLED PERSONS OF EACH SEX, SEPARATE FACILITIES SHALL BE PROVIDED FOR DISABLED PERSONS OF EACH SEX ALSO. WHERE UNISEX FACILITIES ARE PROVIDED FOR NON-DISABLED PERSONS, SUCH UNISEX FACILITIES MAY BE PROVIDED FOR THE DISABLED.
3. ALL DOORWAYS LEADING TO SANITARY FACILITIES SHALL HAVE 32 INCHES CLEAR UNOBSTRUCTED OPENINGS.

4 TOILET ROOM FIXTURES AND ACCESSORIES

1. WHEELCHAIR CLEARANCE FOR WATER CLOSETS. A CLEAR SPACE OF 60 INCH MEASURED PERPEDICULAR TO THE SIDE WALL SHALL BE PROVIDED. A CLEAR SPACE 56 INCHES DEEP FOR WALL MOUNTED AND 59 INCHED DEEP FOR FLOOR MOUNTED TOILETS SHALL BE PROVIDED MEASURED PERPENDICULAR TO THE BACK WALL.
2. THE REQUIRED CLEARANCE AROUND THE WATER CLOSET SHALL BE PERMITTED TO OVERLAP THE WATER CLOSET, ASSOCIATED GRAB BARS, PAPER DISPENSERS, SANITARY NAPKIN RECEPTACLES, COAT HOOKS, SHELVES, ACCESSIBLE ROUTES, CLEAR FLOOR SPACE AT OTHER FIXTURES AND THE TURNING SPACE.
3. NO OTHER FIXTURES, OBSTRUCTIONS OR DOOR SWING SHALL BE WITHIN THE REQUIRED WATER CLOSET CLEARANCE.
4. ACCESSIBLE WATER CLOSET COMPARTMENT. THE WATER CLOSET SHALL BE LOCATED 18 INCHES FROM THE CENTERLINE OF THE WATER CLOSET TO THE ADJACENT SIDE WALL. THE COMPARTMENT SHALL BE A MINIMUM OF 60-INCHES WIDE.
5. THE COMPARTMENT PARTITIONS SHALL PROVIDE 9 INCHES MINIMUM TOE CLEARANCE.
6. COMPARTMENT DOORS. WATER CLOSET COMPARTMENT SHALL BE EQUIPPED WITH A DOOR THAT HAS AN AUTOMATIC-CLOSING DEVICE, AND SHALL HAVE A CLEAR, UNOBSTRUCTED OPENING WIDTH OF 32 INCHES WITH THE DOOR POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION. WHEN STANDARD COMPARTMENT DOORS ARE USED, A MINIMUM 9 INCH TOE CLEARANCE AND A SELF-CLOSING DEVICE SHALL BE PROVIDED.
7. THE INSIDE AND OUTSIDE OF THE COMPARTMENT DOOR SHALL BE EQUIPPED WITH A LOOP OR U-SHAPED HANDLE IMMEDIATELY BELOW THE LATCH. THE LATCH SHALL BE FLIP-OVER STYLE, SLIDING, OR OTHER HARDWARE NOT REQUIRING THE USER TO GRASP OR TWIST.

5 GRAB BARS

1. GRAB BARS SHALL BE LOCATED ON EACH SIDE, OR ONE SIDE AND THE BACK OF THE ACCESSIBLE WATER CLOSET AND SHALL BE SECURELY ATTACHED BETWEEN 33 INCHES MINIMUM & 36 INCHES MAXIMUM ABOVE AND PARALLEL TO THE FLOOR.
2. GRAB BARS AT THE SIDE SHALL BE AT LEAST 48 INCHES LONG WITH THE ONE END POSITIONED 12 INCHES MAXIMUM FROM THE REAR WALL. GRAB BARS AT THE BACK SHALL BE NOT LESS THAN 36 INCHES LONG WITH ONE END LOCATED 6 INCHES MAXIMUM FROM THE SIDE WALL.
3. THE DIAMETER OR WIDTH OF THE GRIPPING SURFACES OF A GRAB BAR SHALL BE FROM 1-1/4 INCHES TO 1-1/2 INCHES OR THE SHAPE SHALL PROVIDE AN EQUIVALENT GRIPPING SURFACE.
4. WHERE THE GRAB BARS ARE MOUNTED ADJACENT TO A WALL, THE SPACE BETWEEN THE WALL AND THE GRAB BARS SHALL BE 1-1/2 INCHES MINIMUM.
5. A GRAB BAR AND ANY WALL OR THEIR SURFACE ADJACENT TO IT SHALL BE FREE OF ANY SHARP OR ABRASIVE ELEMENTS.
6. GRAB BARS SHALL NOT ROTATE WITHIN THEIR FITTING.
7. EDGES SHALL HAVE A MINIMUM RADIUS OF 1/8-INCH.
8. GRAB BARS, TUB AND SHOWER SEATS, FASTENERS AND MOUNTING DEVICES SHALL BE DESIGNED FOR 250 LBS. PER LINEAR FOOT LOAD.

6 LOCKERS

1. WHERE LOCKERS ARE PROVIDED FOR PUBLIC, CLIENTS, EMPLOYEES, MEMBERS, OR PARTICIPANTS, AT LEAST ONE AND NOT LESS THAN ONE PERCENT OF ALL LOCKERS SHALL BE MADE ACCESSIBLE TO THE PHYSICALLY DISABLED. A PATH OF TRAVEL NOT LESS THAN 36 INCHES IN CLEAR WIDTH SHALL BE PROVIDED TO SUCH LOCKERS.

7 SIGNAGE

1. SIGNS SHALL COMPLY WITH SECTION 703 OF THE 2010 ADA STANDARDS. WHERE BOTH VISUAL AND TACTILE SIGNS ARE REQUIRED, EITHER ONE SIGN WITH BOTH VISUAL AND TACTILE CHARACTERS, OR TWO SEPARATE SIGNS, ONE WITH VISUAL AND ONE WITH TACTILE CHARACTERS, SHALL BE PROVIDED.
2. THE CHARACTERS AND BACKGROUND OF SIGNS SHALL BE EGGSHELL, MATTE, OR OTHER NON-GLARE FINISH. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND - EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.
1. WHERE PERMANENT IDENTIFICATION IS PROVIDED FOR ROOMS AND SPACES, SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE TO THE LATCH SIDE OF THE DOOR, INCLUDING AT DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL. MOUNTING HEIGHT SHALL BE 60 INCHES (1525 MM) ABOVE FINISH FLOOR TO THE CENTERLINE OF THE SIGN. MOUNTING LOCATION FOR SUCH SIGNAGE SHALL BE SO THAT A PERSON MAY APPROACH WITHIN 3 INCHES (76 MM) OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF A DOOR.

8 CLEAR FLOOR OR GROUND SPACE FOR WHEELCHAIRS

1. THE MINIMUM, CLEAR FLOOR OR GROUND SPACE REQUIRED TO ACCOMMODATE A SINGLE, STATIONARY WHEELCHAIR AND OCCUPANT IS 30 INCHES X 48 INCHES. THIS MINIMUM CLEAR FLOOR OR GROUND SPACE FOR WHEELCHAIRS MAY BE POSITIONED FOR FORWARD APPROACH OR SIDE (PARALLEL) APPROACH TO A FIXTURE. CLEAR FLOOR OR GROUND FORWARD APPROACH TO A FIXTURE MAY BE PART OF THE KNEE SPACE REQUIRED UNDER SOME FIXTURES.
2. ONE FULL UNOBSTRUCTED SIDE OF THE CLEAR FLOOR OR GROUND SPACE FOR A WHEELCHAIR SHALL ADJOIN OR OVERLAP AN ACCESSIBLE ROUTE OR ADJOIN ANOTHER WHEELCHAIR CLEAR FLOOR SPACE. IF A CLEAR FLOOR SPACE IS LOCATED IN AN ALCOVE OR OTHERWISE CONFINED ON ALL OR A PART OF THREE SIDES, ADDITIONAL MANEUVERING CLEARANCE SHALL BE PROVIDED.
3. PROVIDE AN ADDITIONAL 12-INCH WIDTH ON ONE SIDE FOR ALCOVES GREATER THAN 15 INCHES DEEP AND DESIGNED FOR SIDE APPROACH.
4. PROVIDE AN ADDITIONAL 6 INCHES WIDTH ON ONE SIDE FOR ALCOVES GREATER THAN 24 INCHES DEEP AND DESIGNED FOR FRONT APPROACH.
5. IF THE CLEAR FLOOR SPACE ONLY ALLOWS FORWARD APPROACH TO A FIXTURE, THE MAXIMUM HEIGHT FOR FORWARD REACH ALLOWED SHALL BE 48 INCHES. IF THE FORWARD REACH IS OVER AN OBSTRUCTION, THE HORIZONTAL DIMENSION OF THE OBSTRUCTION SHALL BE NOT GREATER THAN 25 INCHES.
6. IF THE CLEAR FLOOR SPACE ALLOWS PARALLEL APPROACH BY A PERSON IN A WHEELCHAIR, THE MAXIMUM HEIGHT FOR SIDE REACH ALLOWED SHALL BE 54 INCHES AND THE LOWEST SIDE REACH SHALL BE NO LESS THAN 9 INCHES ABOVE T HE FLOOR. SIDE REACH IS ALLOWED OVER AN OBSTRUCTION PROVIDED THE HORIZONTAL DIMENSION OF THE OBSTRUCTION DOES NOT EXCEED 24 INCHES.

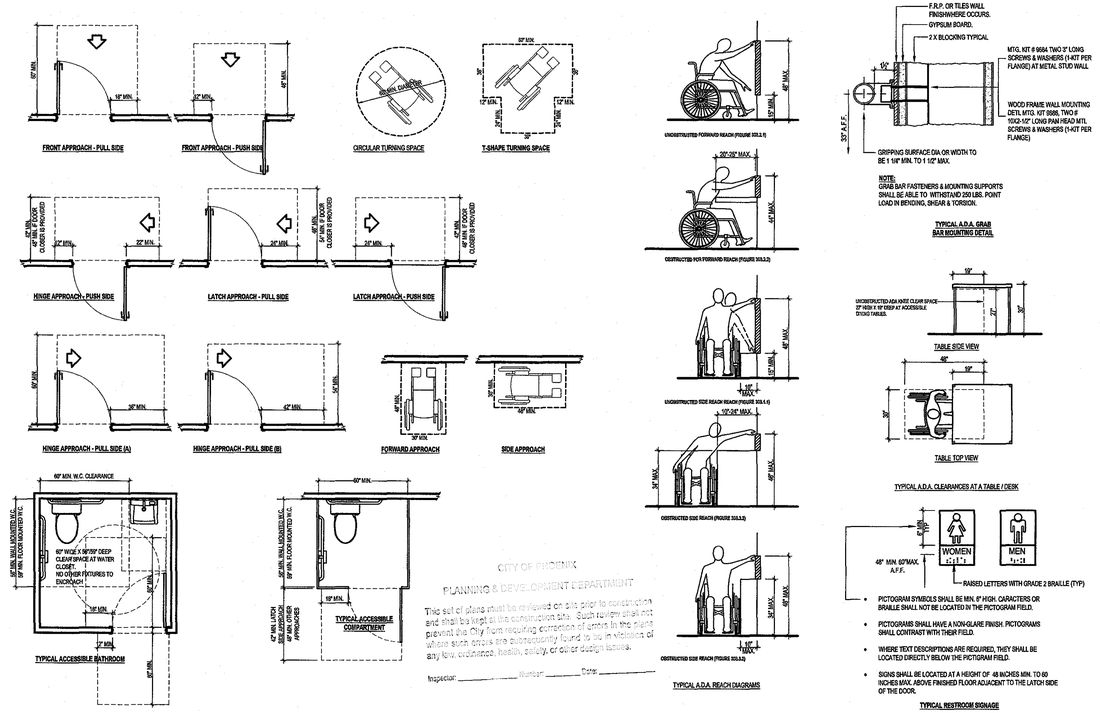
9 ADDITIONAL REQUIREMENTS

1. THE CENTER OF RECEPTACLE OUTLETS SHALL BE NOT LESS THAN 15 INCHES ABOVE THE FLOOR OR WORKING PLATFORM.
2. THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCES, OR COOLING, HEATING AND VENTILATING EQUIPMENT, SHALL BE NOT LESS THAN 9 FEET NOR MORE THAN 4 FEET ABOVE THE FLOOR OR WORKING PLATFORM.

10 EXISTING BUILDINGS

1. ANY ALTERATION TO A PLACE OF PUBLIC ACCOMODATION OR COMMERCIAL FACILITY SHALL BE MADE SO TO ENSURE THAT TO THE MAXIMUM EXTENT FEASIBLE THE ALTERED PORTIONS OF THE FACILITY ARE READILY ECCESSIBLE TO AND USEABLE BY INDIVIDUALS WITH DISABILITIES, INCLUDING INDIVIDUALS WHO USE WHEELCHAIRS.

19 (ADA) AMERICANS WITH DISABILITIES ACT NOTES



TYPICAL A.D.A. REACH DIAGRAMS

TYPICAL A.D.A. GRAB BAR MOUNTING DETAIL

TYPICAL A.D.A. CLEARANCES AT A TABLE / DESK

- PICTOGRAM SYMBOLS SHALL BE MIN. 6" HIGH. CHARACTERS OR BRAILLE SHALL NOT BE LOCATED IN THE PICTOGRAM FIELD.
- PICTOGRAMS SHALL HAVE A NON-GLARE FINISH. PICTOGRAMS SHALL CONTRAST WITH THEIR FIELD.
- WHERE TEXT DESCRIPTIONS ARE REQUIRED, THEY SHALL BE LOCATED DIRECTLY BELOW THE PICTOGRAM FIELD.
- SIGNS SHALL BE LOCATED AT A HEIGHT OF 48 INCHES MIN. TO 60 INCHES MAX. ABOVE FINISHED FLOOR ADJACENT TO THE LATCH SIDE OF THE DOOR.

TYPICAL RESTROOM SIGNAGE

22 TYPICAL ADA CLEARANCES

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5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

T.I. IMPROVEMENT
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
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-	-	-
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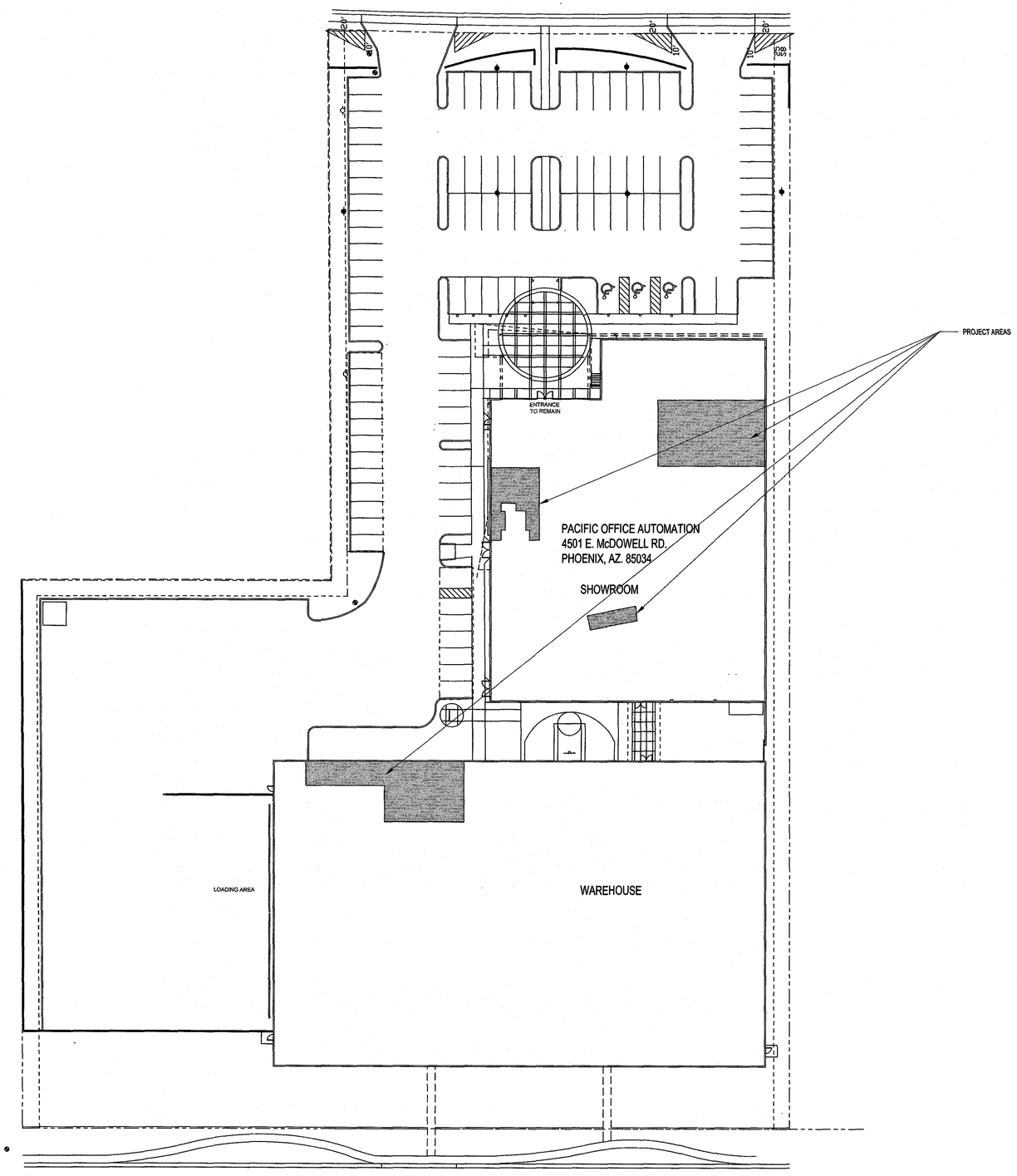
Sheet Description
TYPICAL ADA DETAILS & NOTES

REGISTERED ARCHITECT
235 W.
JERE W.
PLANCK
EXPIRES: 12/31/2018

Sheet No.
T1.3

Issue Date: 12.15.17

E. McDOWELL RD.



CITY OF PHOENIX

PLANNING & DEVELOPMENT DEPARTMENT

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Inspector: _____ Number: _____ Date: _____

NORTH

SCALE 1" □ 30±0"□"X

19 SITE PLAN (REFERENCE ONLY)

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5055 E. Washington Street
Suite 200
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P: 602.222.4266
www.archicon.com

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-	-	-
-	-	-

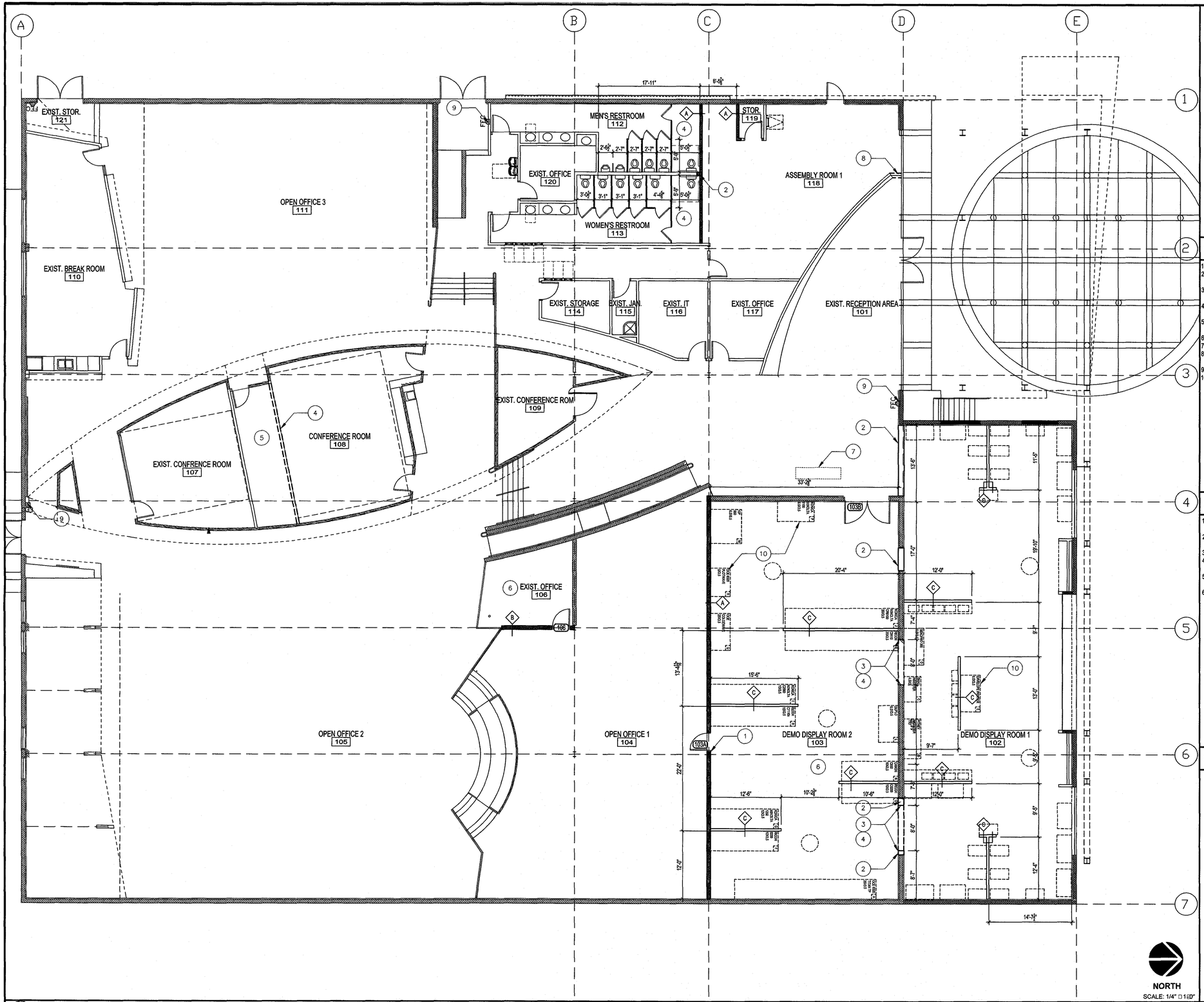
Sheet Description
SITE PLAN - FOR REFERENCE ONLY

EXPIRES: 12/31/2018

Sheet No.

A0.1

Issue Date: 12.15.17



19 FLOOR PLAN - SHOWROOM

EXISTING DOOR TO REMAIN U.N.O.

NEW DOOR

NEW INTERIOR PARTITION

EXISTING INTERIOR WALL TO REMAIN

EXISTING EXTERIOR WALL TO REMAIN

A — PARTITION WALL W/BATT INSULATION TO UNDERSIDE OF STRUCTURE - SEE 10/A300

B — FULL HEIGHT GLASS PARTITION UNDERSIDE OF EXISTING CEILING LID - SEE □/A300

C — LOW WALL PARTITION - SEE 8/A300

6 LEGEND

1. EXISTING STRUCTURAL COLUMN.
2. INFILL OPENING TO MATCH EXISTING ADJACENT WALL FINISH AND TEXTURE AS REQUIRED FOR NEW CONSTRUCTION.
3. CUT A NEW 8'-0"X 8'-0" OPENING AS REQUIRED. G.C. TO SHORE OPENING UNTIL LINTEL IS IN PLACE.
4. G.C. TO PATCH AND REPAIR FLOORING/ CEILING WHERE WALL HAS BEEN REMOVED AS REQUIRED.
5. PROVIDE NEW CEILING WITH (3) THREE CAN LIGHTS EQUALLY SPACED TO MATCH EXISTING ADJACENT CEILING AS REQUIRED FOR NEW CONSTRUCTION.
6. EXISTING OPEN CEILING TO REMAIN.
7. PLASTIC LAMINATE RECEPTION DESK AND LOCATION BY G.C.
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12 KEYNOTES

1. TENANT IS RESPONSIBLE FOR THE INSTALLATION OF ITS OWN VOICE/DATA EQUIPMENT BY TENANT'S CHOSEN CABLING COMPANY.
2. ALL CABLING SHALL BE PLENUM RATED IF PLENUM IS USED AS A SUPPLY, RETURN, EXHAUST OR VENTILATION AIR PLENUM PER MECHANICAL CODE.
3. ALL CABLING MUST BE HELD OFF CEILING GRID, DUCT WORK AND LIGHTING.
4. VERIFY ALL DIMENSIONS IN FIELD PRIOR TO CONSTRUCTION AND NOTIFY ARCHITECT OF ANY DISCREPANCIES.
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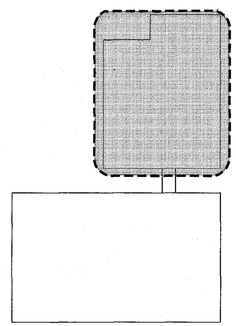
18 GENERAL NOTES



NORTH

SCALE N.T.S.

24 KEY PLAN

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T.I. IMPROVEMENT
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Drawn By:	OT
Checked By:	JP

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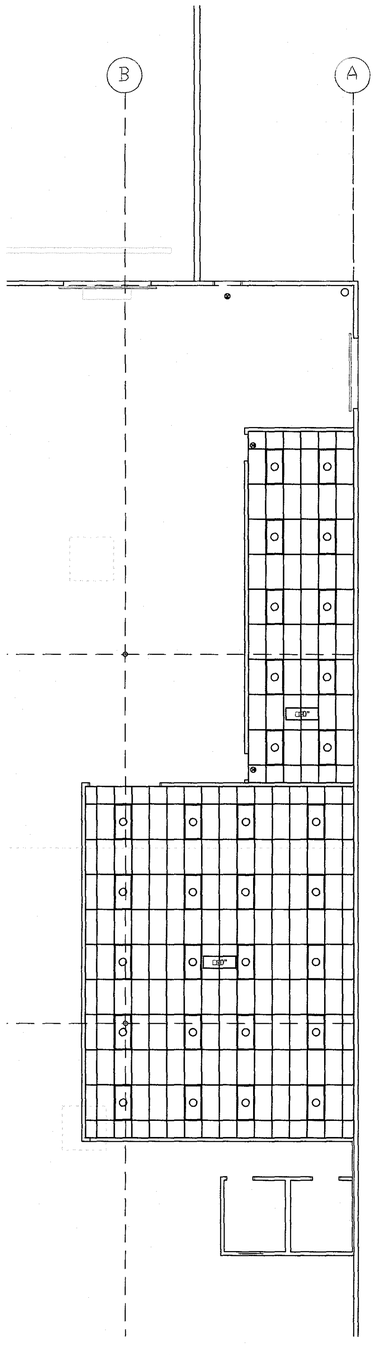
Sheet Description
FLOOR PLAN

REGISTERED ARCHITECT
23516
JERE W. PLANCK
STATE OF ARIZONA, U.S.A.

EXPIRES: 12/31/2018

Sheet No.
A1.0

Issue Date: 12.15.17



NORTH
SCALE 1/4" □1'0"

19 REFLECTED CEILING PLAN - WAREHOUSE

2 X 4 ACOUSTICAL CEILING TILE AND GRID SYSTEM

2 X 4 LED

RECESSED LIGHT FIXTURE. DIMMABLE BALLAST AS NOTE ON PLANS

EXIT LIGHT WITH BATTERY BACKUP

WALL MOUNTED LIGHT FIXTURE

RESTROOM EXHAUST FAN

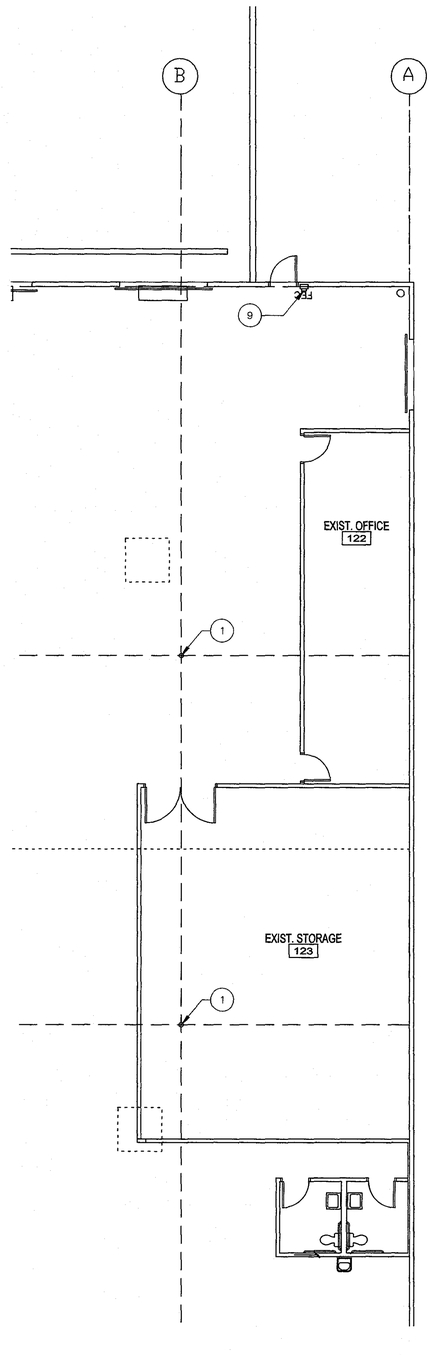
PENDANT LIGHT FIXTURE

NOTE: REFER TO ELECTRICAL PLANS FOR LIGHT FIXTURE SCHEDULE

3 LEGEND - RCP

1. FRAMED HARD-LID CEILING.
2. FRAMED SOFFIT WITH GYPBOARD.

9 KEYNOTES - CEILING



NORTH
SCALE: 1/4" □1'0"

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EXISTING DOOR TO REMAIN U.N.O.

NEW DOOR

NEW INTERIOR PARTITION

EXISTING INTERIOR WALL TO REMAIN

EXISTING EXTERIOR WALL TO REMAIN

A PARTITION WALL W/BATT INSULATION TO UNDERSIDE OF STRUCTURE - SEE □/A300

6 LEGEND

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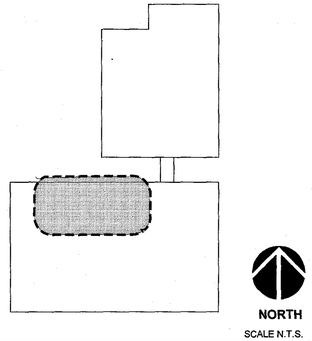

NORTH
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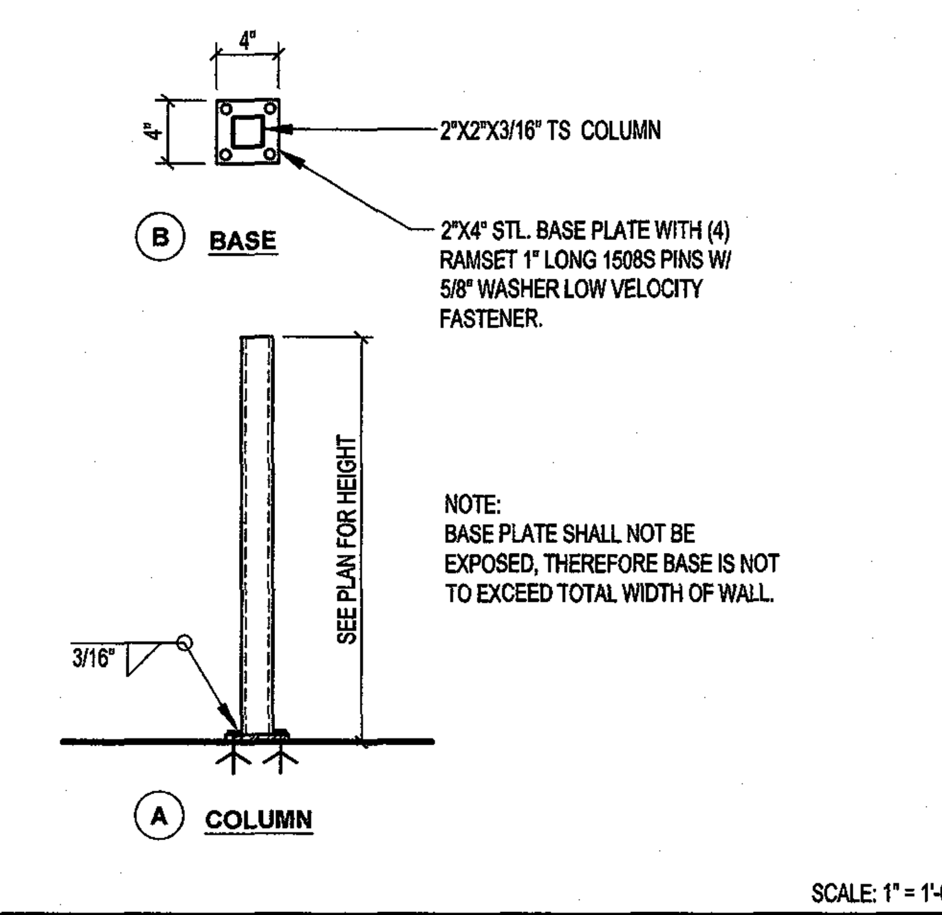
Sheet Description
FLOOR PLAN WAREHOUSE

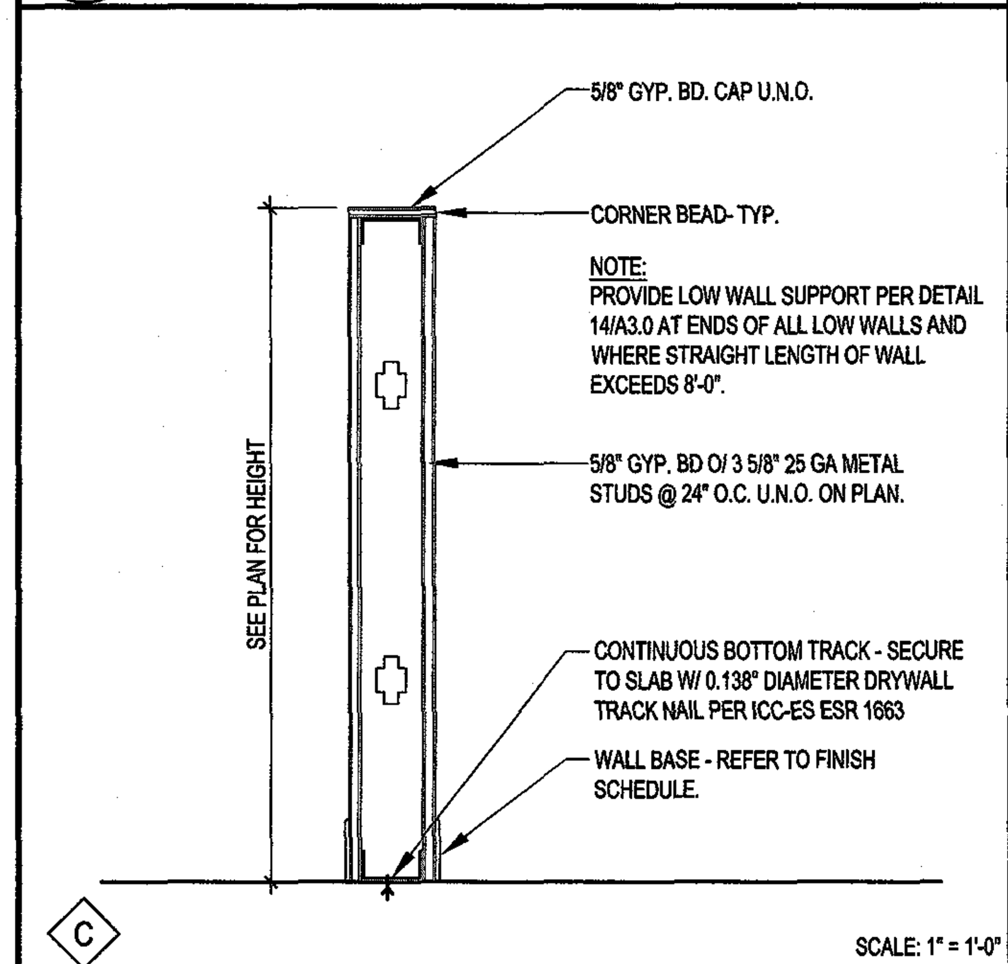
ARIZONA U.S.A. 23516 JERE W. PLANCK REGISTERED ARCHITECT
EXPIRES: 12/31/2018

Sheet No.
A1.1

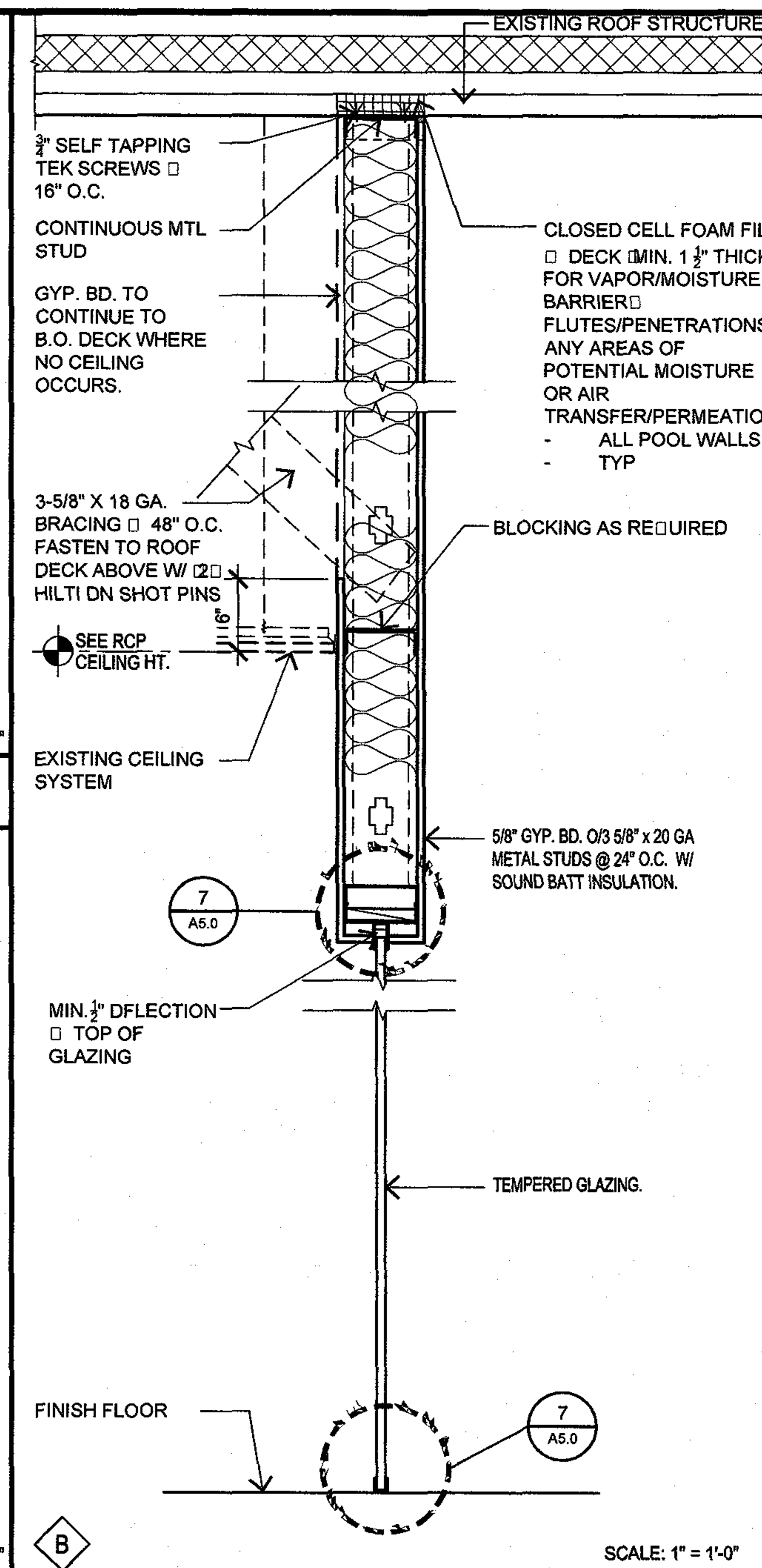
Issue Date: 12.15.17



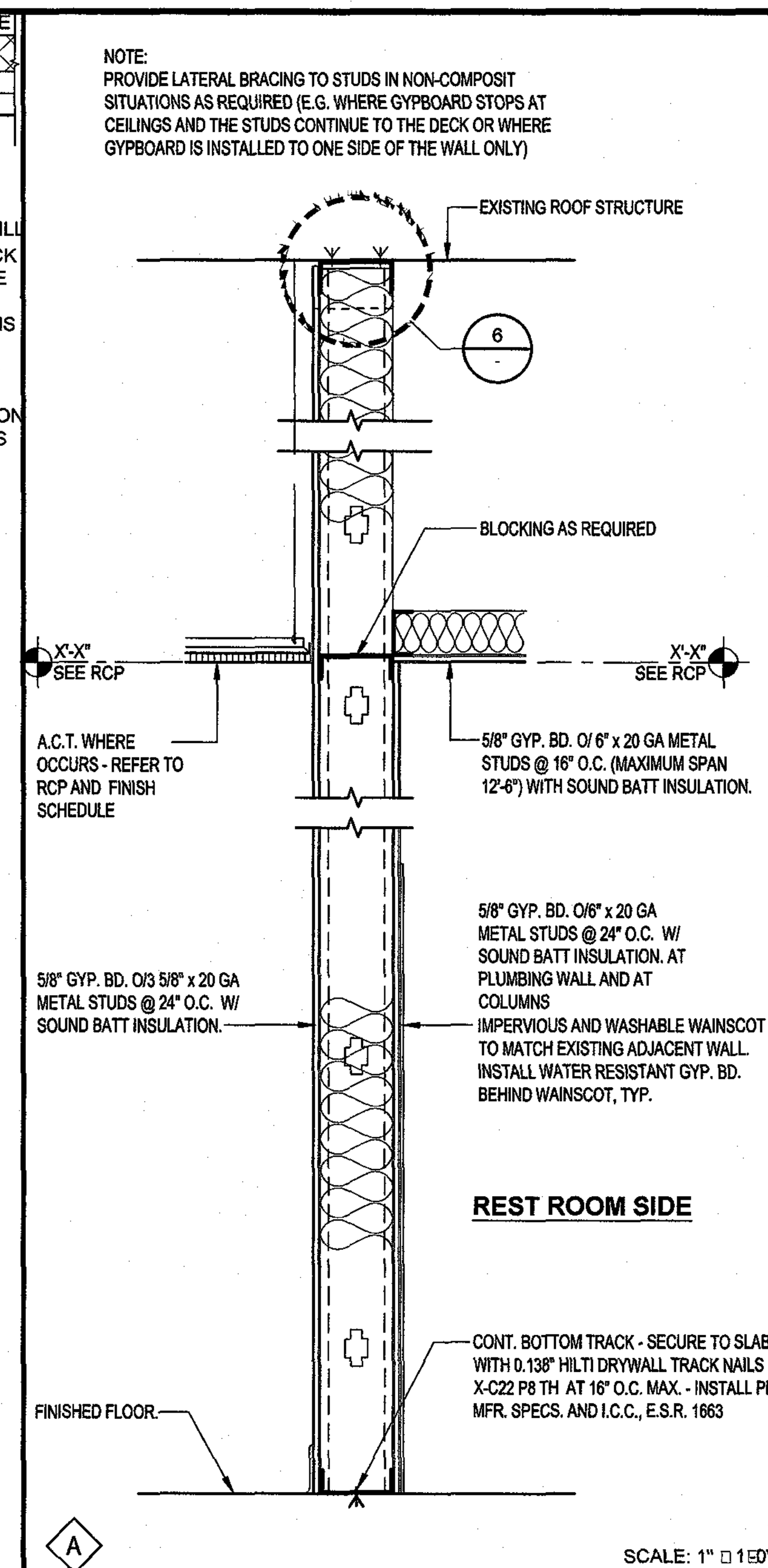
(2) PONY WALL SUPPORT



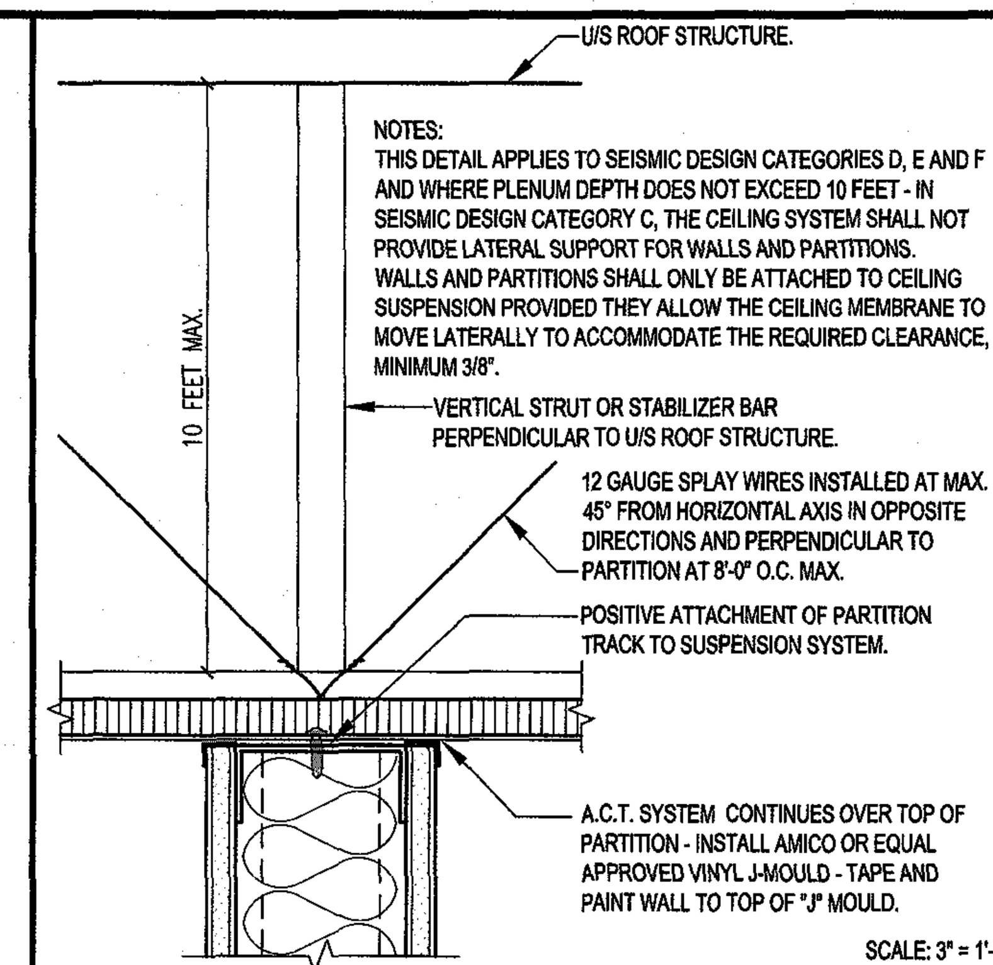
(8) LOW WALL DETAIL



(9) FULL HEIGHT PARTITION (GLZ.)



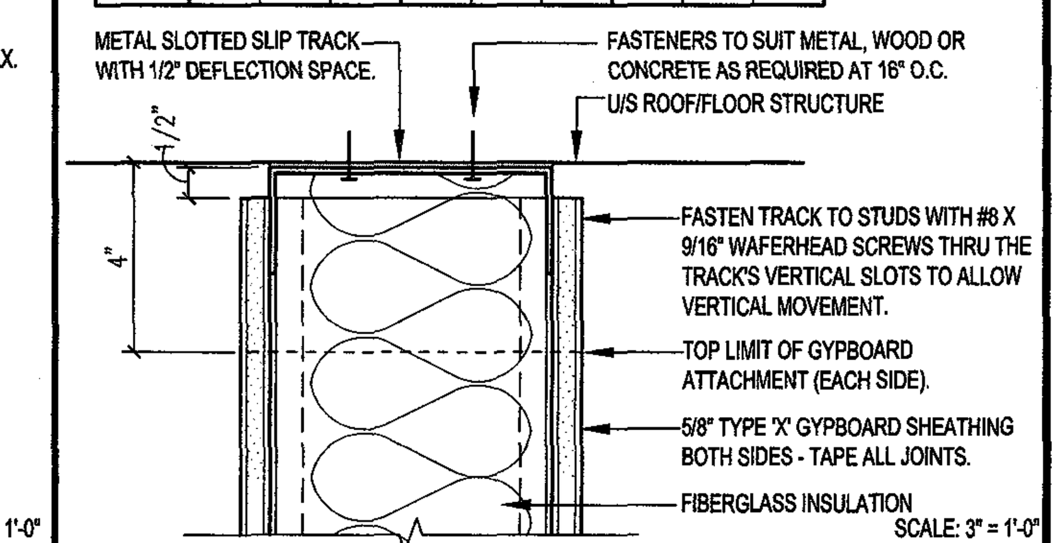
(10) FULL HEIGHT PARTITION



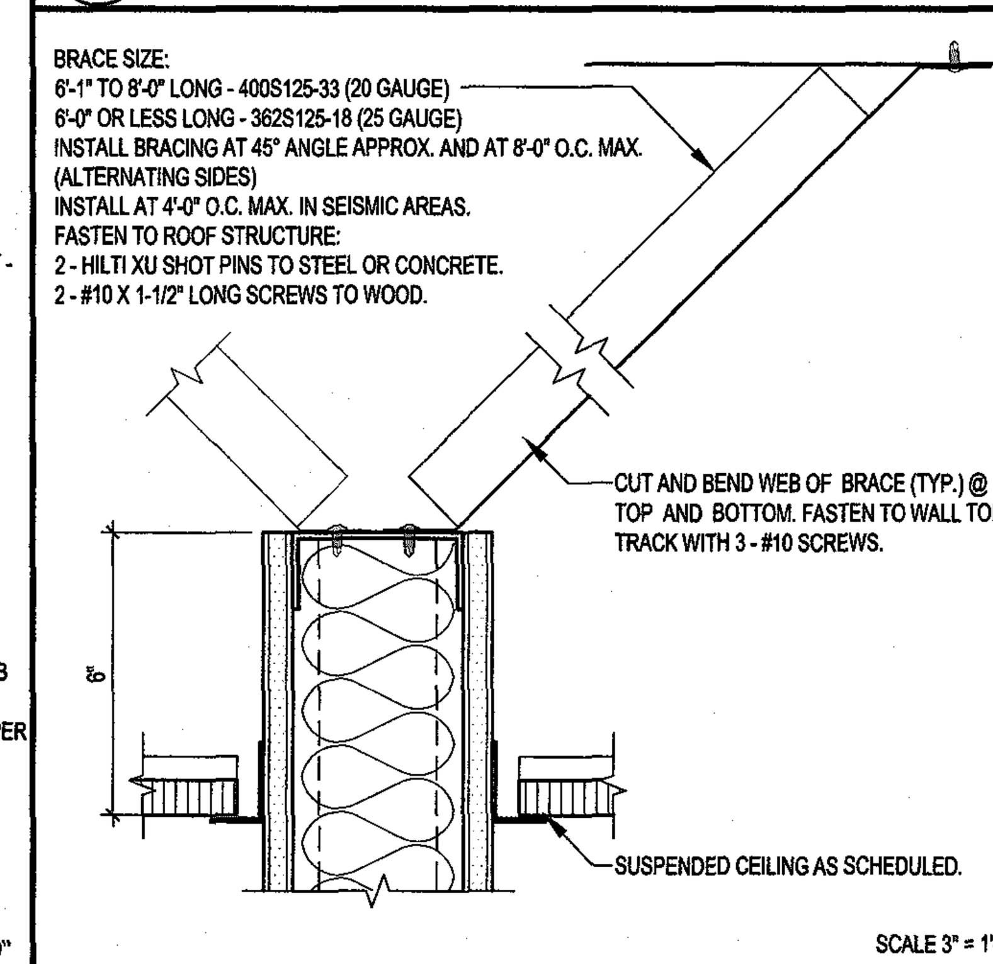
(5) PARTITION BRACING

SLP-TRK SLOTTED STEEL TRACK SYSTEM FOR INTERIOR PARTITIONS PER ICBO ESR-1042 AND ESR-5344

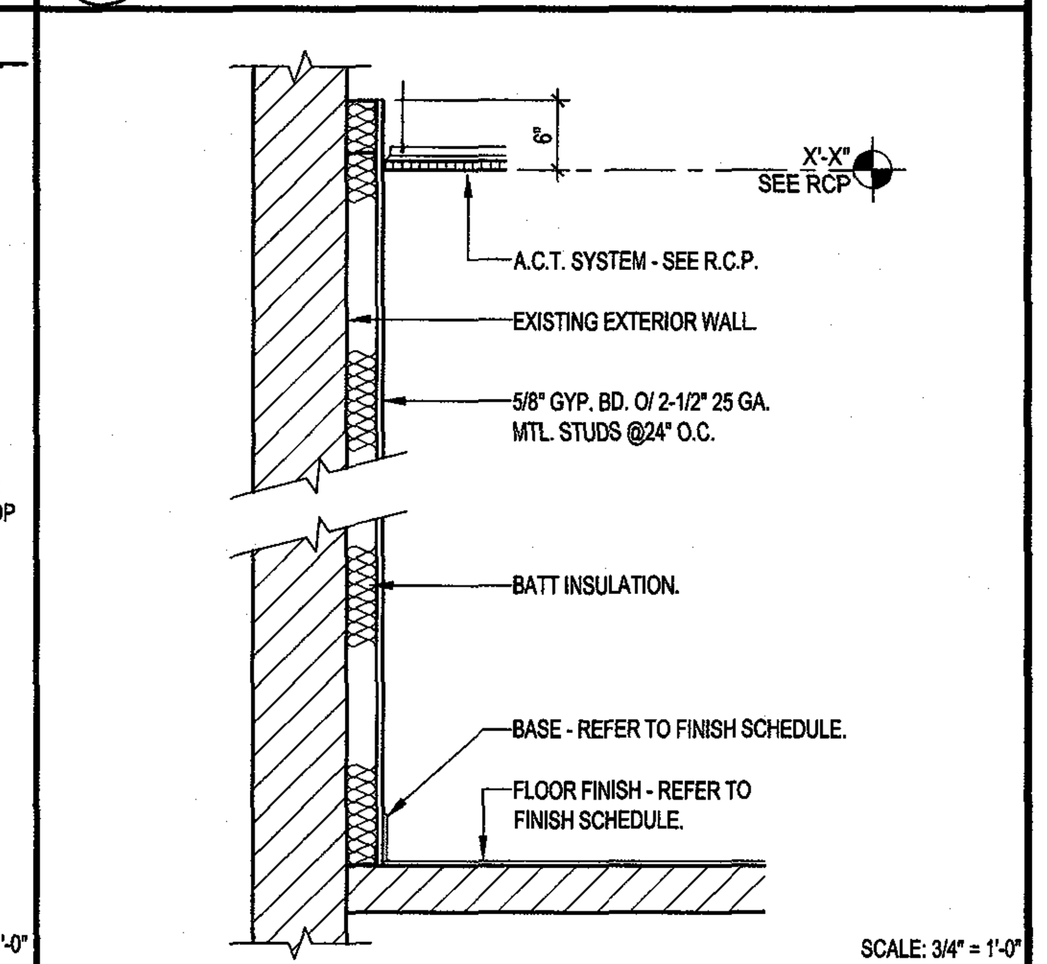
SLP-TRK TOP TRACK GAUGE	MAXIMUM HEIGHT OF WALL (FT)								
	STUD SPACING ON CENTER								
	12"	16"	24"	12"	16"	24"	12"	16"	24"
	UNIFORM LATERAL LOAD								
	5 PSF			10 PSF			20 PSF		
25 GA	13.2	9.9	--	--	--	--	--	--	--
20 GA	55.2	41.5	27.6	27.6	20.8	13.8	13.8	10.4	--
18 GA	65.2	49.0	32.6	32.6	24.5	16.3	16.3	12.3	8.2
16 GA	123.2	92.6	61.6	61.6	46.3	30.8	30.8	23.2	15.4
14 GA	136.8	102.9	68.4	68.4	51.4	34.2	34.2	25.7	17.1



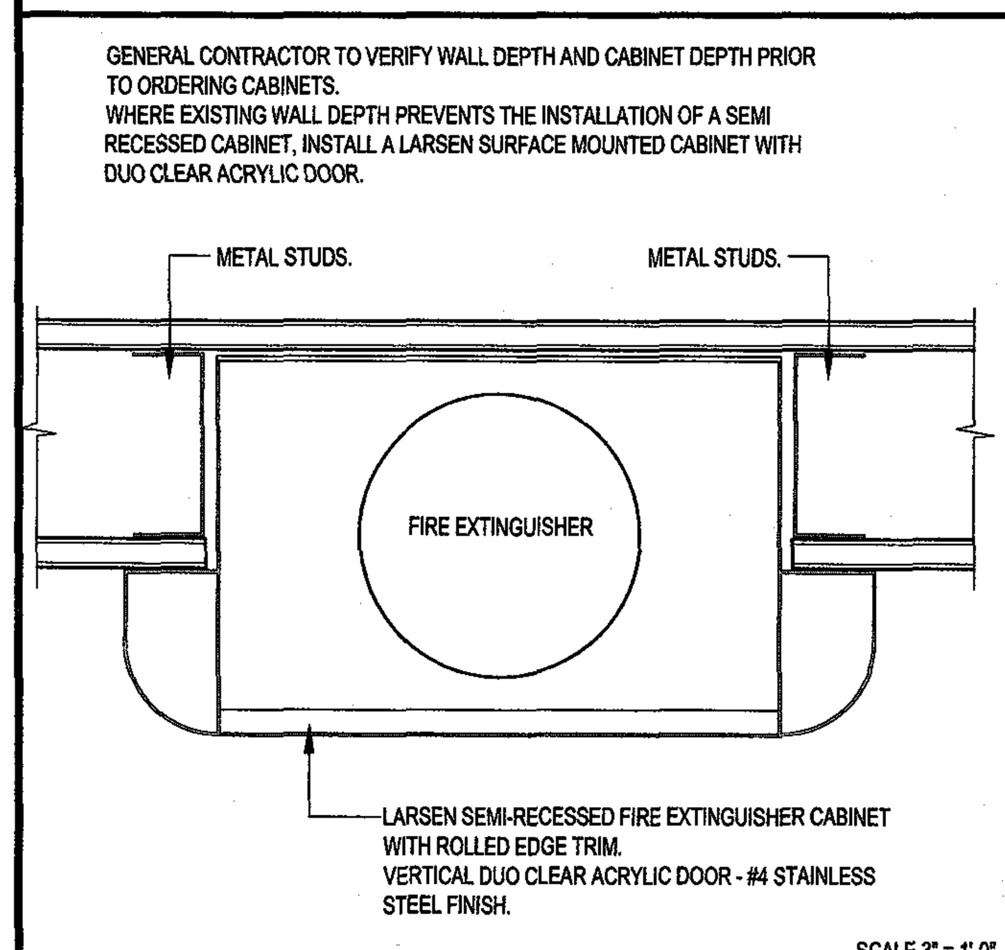
(6) PARTITION SLIP TRACK



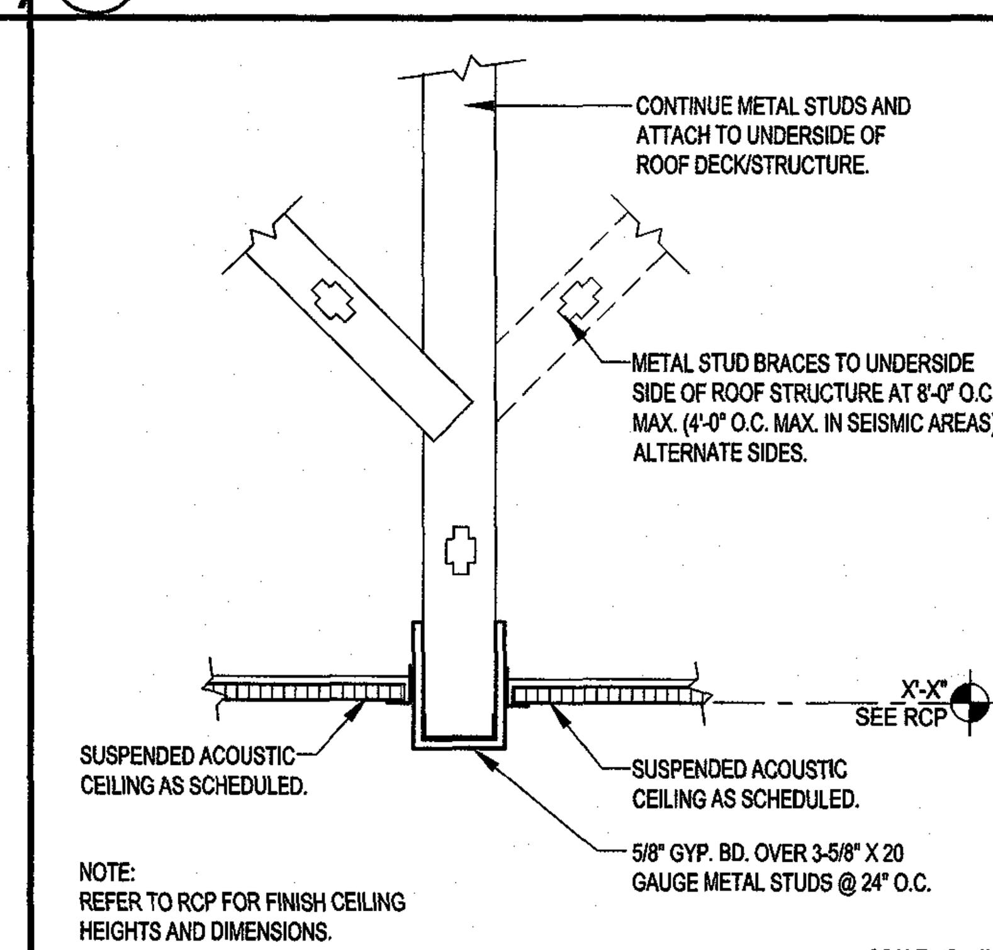
(11) PARTITION EXTENSION



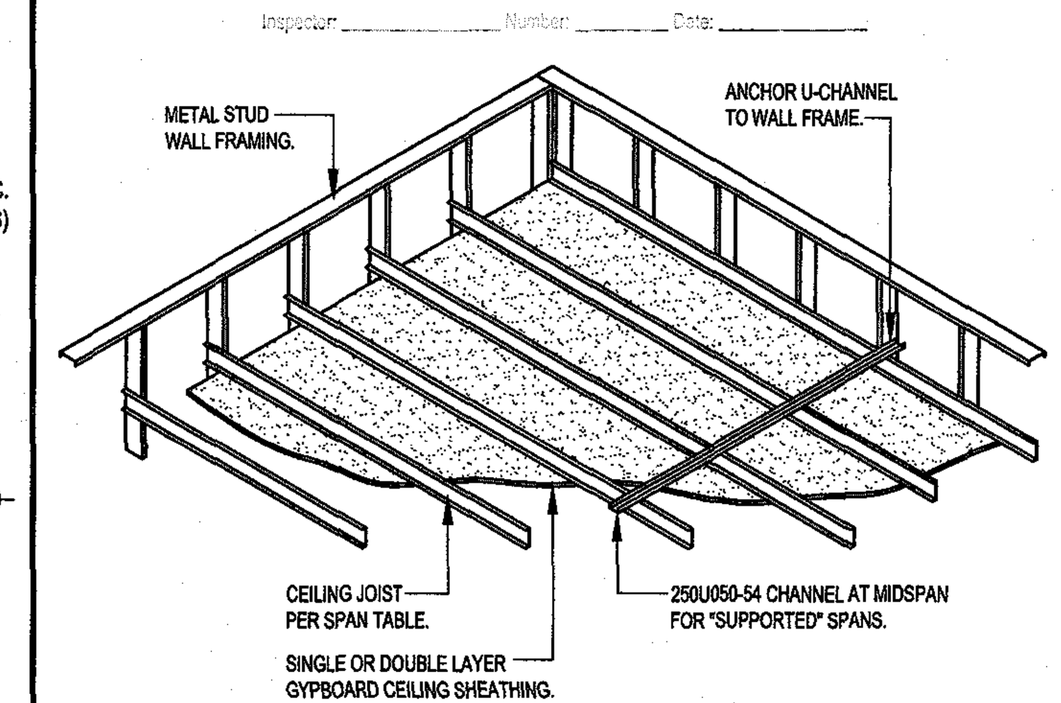
(12) FURRING DETAIL



(13) FIRE EXTINGUISHER



(16) HEADWALL DETAIL

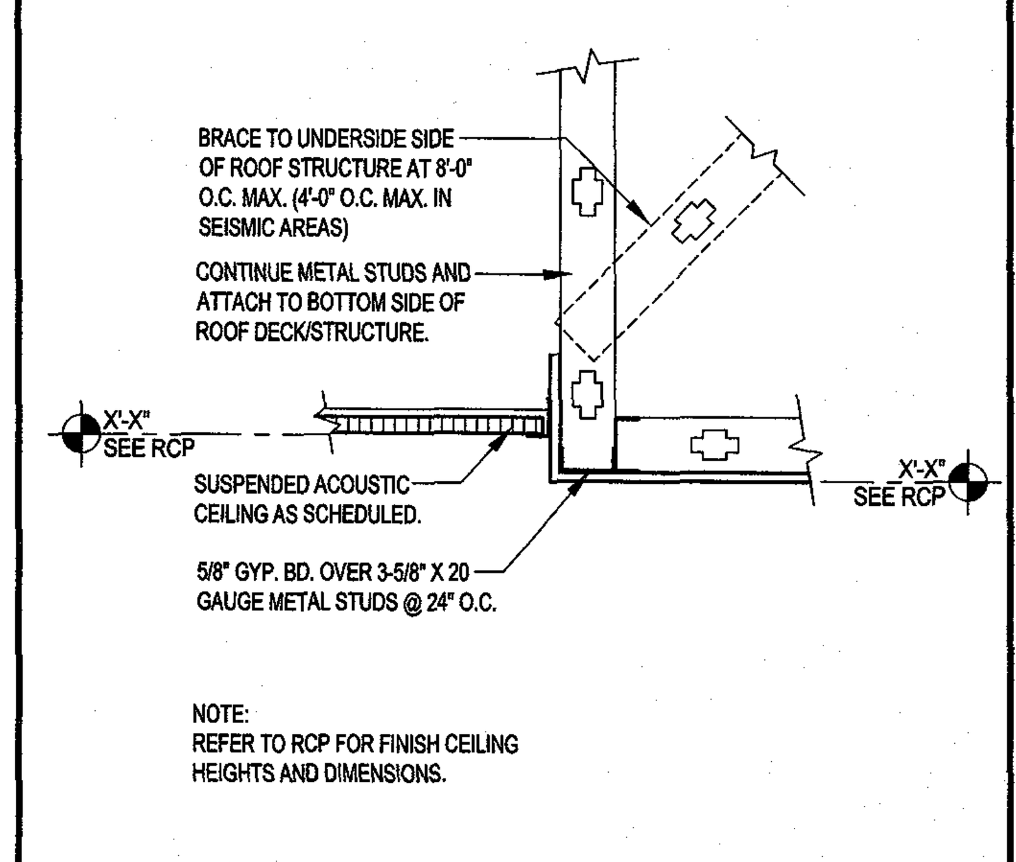


METAL STUD CEILING FRAMING TABLE - DEFLECTION LIMIT L/360 INSTALLATION IN ACCORDANCE WITH ASTM C-754								
	SINGLE LAYER GYPBOARD (4-5 PSF)				DOUBLE LAYER GYPBOARD (6-7 PSF)			
	UNSUPPORTED		SUPPORTED		UNSUPPORTED		SUPPORTED	
MEMBER	16"	24"	16"	24"	16"	24"	16"	24"
162S125-18	6'-7"	5'-10"	6'-9"	5'-11"	5'-10"	5'-1"	5'-11"	5'-1"
162S125-33	8'-2"	7'-2"	8'-2"	7'-2"	7'-2"	6'-3"	7'-2"	6'-3"
250S125-18	7'-9"	6'-11"	9'-3"	8'-1"	6'-11"	6'-2"	8'-1"	7'-0"
250S125-33	9'-8"	8'-7"	11'-4"	9'-11"	8'-7"	7'-8"	9'-11"	8'-8"
350S125-18	8'-6"	7'-6"	11'-5"	9'-11"	7'-6"	6'-8"	9'-11"	8'-5"
350S125-33	10'-5"	9'-4"	14'-8"	12'-10"	9'-4"	8'-4"	12'-10"	11'-3"
362S125-18	8'-7"	7'-7"	11'-7"	10'-0"	7'-7"	6'-9"	10'-0"	8'-6"
362S125-33	10'-7"	9'-5"	14'-10"	13'-2"	9'-5"	8'-5"	13'-2"	11'-6"
400S125-18	8'-9"	7'-10"	11'-11"	10'-5"	7'-10"	6'-11"	10'-5"	8'-11"
400S125-33	10'-10"	9'-8"	15'-3"	13'-8"	9'-8"	8'-8"	13'-8"	12'-2"
600S125-27	11'-6"	10'-4"	16'-6"	14'-9"	10'-4"	9'-4"	14'-9"	13'-2"
600S125-33	12'-3"	11'-0"	17'-7"	15'-10"	11'-0"	9'-10"	15'-10"	14'-2"
600S162-43	17'-0"	15'-3"	24'-4"	21'-11"	15'-3"	13'-8"	21'-11"	19'-8"

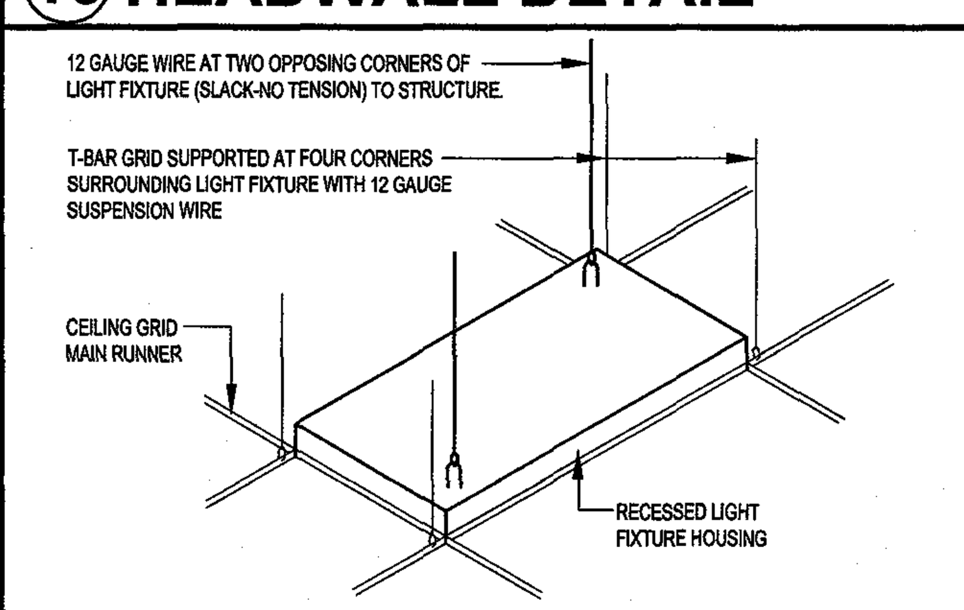
- "UNSUPPORTED" SPAN DESIGNATES A SIMPLE SINGLE SPAN.
- "SUPPORTED" SPAN REQUIRES INSTALLATION OF A METAL U-CHANNEL AT MIDSPAN OF CEILING JOISTS PER ADJACENT DETAIL AND FIXED TO THE COMPRESSION FLANGE OF THE CEILING JOIST.
- THIS SPAN TABLE INCLUDES THE MOST COMMON SIZE FRAMING MEMBERS - SEE ASTM C754 FOR ADDITIONAL SIZES.
- 18 MILS = 25 GAUGE   33 MILS = 20 GAUGE   43 MILS = 18 GAUGE

SCALE : N.T.S.

(17) FRAMED GYPBOARD CEILING SPECIFICATIONS



(21) SOFFIT DETAIL



LIGHT FIXTURES LESS THAN 10 LBS. SHALL BE SECURED WITH ONE (1) 12 GAUGE SAFETY WIRE FROM THE FIXTURE TO THE STRUCTURE ABOVE. (WIRE MAY BE SLACK)
LIGHT FIXTURES GREATER THAN 10 LBS. AND LESS THAN 56 LBS. SHALL BE SECURED WITH TWO (2) 12 GAUGE SAFETY WIRES AT OPPOSING CORNERS FROM THE FIXTURE TO THE STRUCTURE ABOVE. (WIRES MAY BE SLACK)
LIGHT FIXTURES IN EXCESS OF 56 LBS. SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE BY APPROVED HANGERS.
MECHANICAL SERVICES:
CEILING MOUNTED TERMINALS OR SERVICES WEIGHING MORE THAN 20 POUNDS BUT LESS THAN 56 POUNDS MUST HAVE TWO (2) 12-GAUGE HANGER WIRES CONNECTING FROM THE TERMINAL OR SERVICE TO THE STRUCTURE ABOVE THAT ACT AS SAFETY WIRES. (WIRES MAY BE SLACK)
TERMINALS OR SERVICES WEIGHING MORE THAN 56 POUNDS MUST BE INDEPENDENTLY SUPPORTED DIRECTLY FROM STRUCTURE ABOVE. (SUPPORT WIRES MUST BE TAUT)

SCALE: N.T.S.

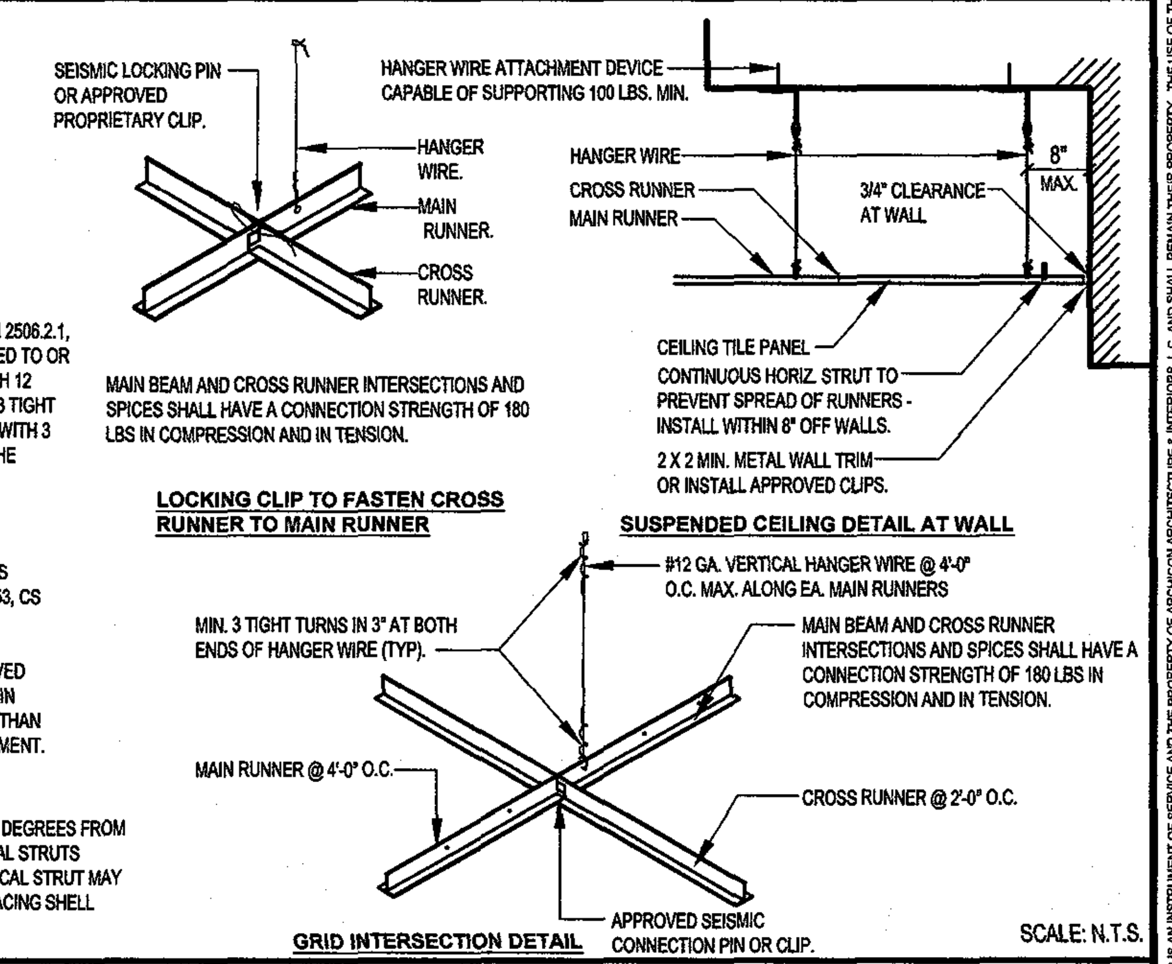
(22) LIGHT SUPPORT DETAIL

SUSPENDED CEILING NOTES:
- INSTALL THE T-BAR CEILING PER UBC STANDARD 25-2 &/OR ASTM STANDARDS C 635 & C 636.
- T-BAR GRID SHALL BE (INTERMEDIATE-DUTY) (HEAVY-DUTY) BEAM CLASSIFICATION. ARMSTRONG PRELUDE XL 15/16" EXPOSED TEE SYSTEM.
- LUMINARIES & HVAC REGISTERS SHALL BE SECURELY FASTENED TO THE FRAMING MEMBERS BY MEANS OF BOLTS, SCREWS, RIVETS OR LISTED CLIPS. '05 NEC 410.16(C).
- FIXTURES IN WEIGHING LESS THAN 56 LBS LOCATED IN T-BAR ASSEMBLIES SHALL ALSO HAVE TWO NO. 12 GAGE HANGERS CONNECTED TO THE FIXTURE SUPPORTED FROM THE STRUCTURE ABOVE.
- FIXTURES IN EXCESS OF 56 LBS LOCATED IN T-BAR ASSEMBLIES SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE.

HANGERS:
METAL SUSPENSION SYSTEMS FOR CEILINGS SHALL BE NOT LESS THAN THAT SET FORTH IN IBC SECTION 2506.2.1, ASTM C635 AND SECTION 13.5.6. OF ASCE 7 FOR INSTALLATION IN SEISMIC AREAS AND SHALL BE FASTENED TO OR EMBODIED IN THE STRUCTURAL FRAMES. HANGERS SHALL BE SADDLE-TIED AROUND MAIN RUNNERS WITH 12 GAUGE WIRE AT 4'-0" O.C. MAXIMUM OR 10 GAUGE WIRE AT 5'-0" O.C. MAXIMUM. SADDLES TIES SHALL BE 3 TIGHT TURNS IN 3 INCH MAXIMUM. TOP END OF HANGERS SHALL BE SADDLE TIED TO THE STRUCTURAL FRAME WITH 3 TIGHT TURNS IN 3 INCH MAXIMUM. WHERE CONNECTION DEVICES ARE USED TO FIX HANGER WIRES TO THE SUPPORTING STRUCTURE, THE DEVICE SHALL BE CAPABLE OF SUPPORTING NOT LESS THAN 100 LBS.

MAIN RUNNERS AND CROSS RUNNERS
ALL MAIN RUNNERS SHALL BE CLASSIFIED AS HEAVY-DUTY IN ACCORDANCE WITH ASTM C 635. THE CROSS RUNNERS ARE COLD-FORMED FROM 0.018 INCH THICK (NO,26 MSG) STEEL THAT CONFORMS TO ASTM A 653, CS TYPE B, AND HAVE A HOT-DIPPED GALVANIZED COATING FOR INTERIOR CEILINGS.
MAIN BEAM SPLICES & INTERSECTIONS WITH CROSS RUNNERS SHALL BE ATTACHED W/ MECHANICAL INTERLOCKING CONNECTORS SUCH AS RIVETS, SCREWS, PINS, PLATES W/ BENT TABS OR OTHER APPROVED CONNECTORS. CONNECTORS SHALL HAVE A CONNECTION STRENGTH OF 180 LBS IN COMPRESSION AND IN TENSION. CROSS RUNNERS SHALL BE SECURELY ATTACHED TO THE MAIN BEAMS BY TYING W/ NOT LESS THAN ONE STRAND OF #16 OR TWO STRANDS OF #18 U.S. GAUGE TIE WIRE OR APPROVED EQUIVALENT ATTACHMENT.

LATERAL BRACING
SPLAY WIRES ARE TO BE FOUR 12 GAUGE WIRES ATTACHED TO THE MAIN BEAM. WIRES ARE ARRAYED 90 DEGREES FROM EACH OTHER AND AT AN ANGLE NOT EXCEEDING 45 DEGREES FROM THE PLANE OF THE CEILING. VERTICAL STRUTS MUST BE POSITIVELY ATTACHED TO THE SUSPENSION SYSTEMS AND THE STRUCTURE ABOVE. THE VERTICAL STRUT MAY BE EMT CONDUIT, METAL STUDS OR A PROPRIETARY COMPRESSION POST. LATERAL FORCE BRACING SPACING SHELL NOT EXCEED 12 FEET O.C. IN BOTH DIRECTIONS WITH THE FIRST POINT WITHIN 6 FEET FROM EACH WALL.



(23) SUSPENDED CEILING SPECIFICATION

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Architecture & Interiors, L.C.

5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

T.I. IMPROVEMENT
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

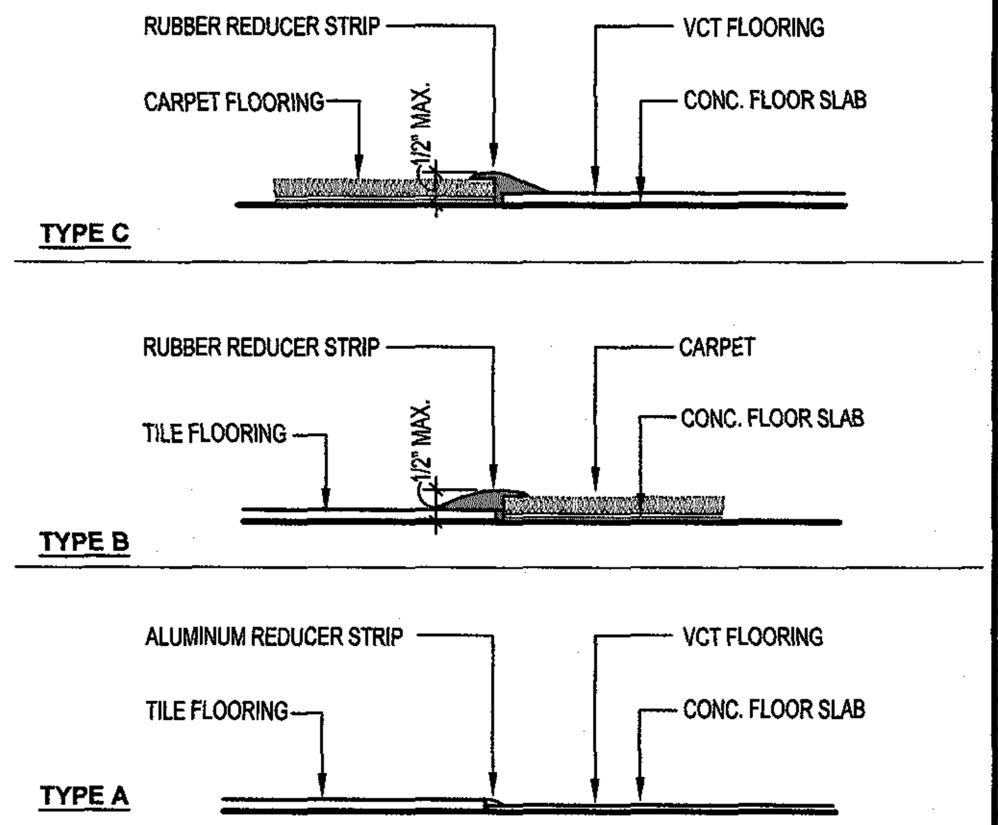
No.	Revision	Date

Sheet Description
TYPICAL DETAILS

23578
JERE W. PLANCK
ARIZONA U.S.A.
EXPIRES: 12/31/2018

Sheet No.
A3.0

Issue Date: 12.15.17



GENERAL NOTE: ALIGN W/ CENTER OF DOOR WHERE OCCURS

SCALE: 3" = 1'-0"

1 FLOOR TRANSITIONS

ROOM FINISH SCHEDULE

NUMBER	ROOM NAME	FLOORING		WALLS				CEILING		REMARKS
		MATERIAL	BASE	NORTH	EAST	SOUTH	WEST	MATERIAL	FINISH	
101	EXIST. RECEPTION AREA	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
102	DEMO DISPLAY ROOM 1	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
103	DEMO DISPLAY ROOM 2	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
104	OPEN OFFICE 1	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
105	OPEN OFFICE 2	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
106	EXIST. OFFICE	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
107	EXIST. CONFRENCE ROOM	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
108	CONFERENCE ROOM	NEW	NEW	--	--	--	--	GYP	PAINT	MATERIALS SELECTED BY OWNER
10□	EXIST. CONFERENCE ROM	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
110	EXIST. BREAK ROOM	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
111	OPEN OFFICE 3	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
112	MEN□S RESTROOM	NEW	NEW	--	--	--	--	GYP	PAINT	MATERIALS SELECTED BY OWNER
113	WOMEN□S RESTROOM	NEW	NEW	--	--	--	--	GYP	PAINT	MATERIALS SELECTED BY OWNER
114	EXIST. STORAGE	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
115	EXIST. JAN.	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
116	EXIST. IT	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
117	EXIST. OFFICE	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
118	ASSEMBLY ROOM 1	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
11□	STOR.	NEW	NEW	--	--	--	--	GYP	PAINT	MATERIALS SELECTED BY OWNER
120	EXIST. OFFICE	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
121	EXIST. STOR.	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
122	EXIST. OFFICE	EXIST	EXIST	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
123	EXIST. STORAGE	EXIST	EXIST	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER
124	DEMO DISPLAY ROOM 1	NEW	NEW	--	--	--	--	--	--	MATERIALS SELECTED BY OWNER

2 ROOM FINISH SCHEDULE

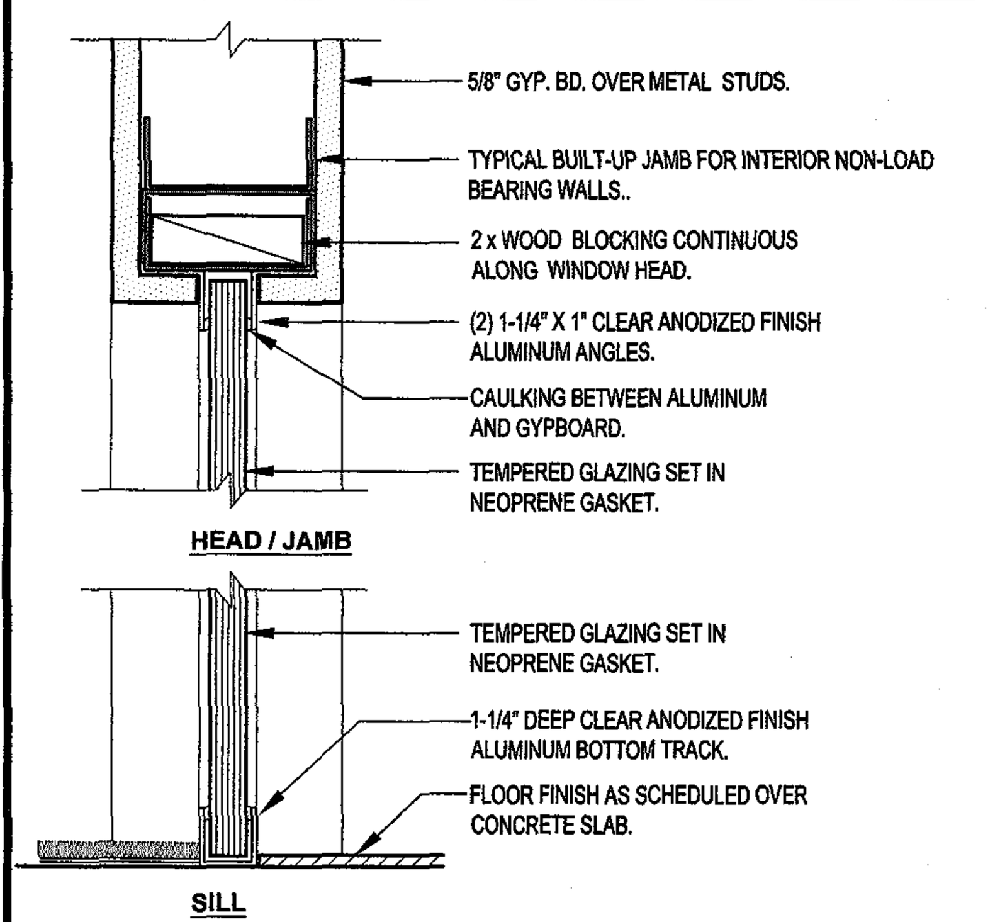
1. ALL MATERIAL AND FINISH SELECTIONS (INCLUDING BUT NOT LIMITED TO STAINS & PAINT) ARE TO BE APPROVED BY OWNER/ TENANT PRIOR TO INSTALLATION. ANY ALTERATIONS OF MATERIALS, FINISHES OR INSTALLATION IN THE FIELD BY OWNER/ TENANT SHALL BE THE RESPONSIBILITY OF THE OWNER/ TENANT.
2. PROVIDE LEVEL 4 FINISH ON ALL GYPSUM BOARD WALLS WITH (1) COAT PRIMER, (2) COATS OF PAINT. PROVIDE FLAT (LEVEL 5) FINISH AT ALL GYPSUM BOARD SOFFITS, CEILINGS AND WALLS TO RECEIVE WALL COVERINGS. REFER TO GENERAL BUILDING STANDARDS.
3. PAINT ALL SUPPLY, RETURNS, VENTS AND ACCESS PANELS TO MATCH ADJACENT SURFACE - TYPICAL THROUGHOUT.
4. ALL SWITCH, OUTLET, AND DATA LINE FACE PLATES TO MATCH EXISTING.
5. GENERAL CONTRACTOR TO PROVIDE 1/2" PLYWOOD OR BLOCKING IN WALLS FOR EQUIPMENT/ ACCESSORIES. (BLOCKING SHALL BE FIRE RETARDANT TREATED IN NON-COMBUSTIBLE CONSTRUCTION TYPES - SEE COVER SHEET T1.0)
6. PROVIDE TRANSITION STRIPS AS REQUIRED BETWEEN DIFFERENT FLOORING MATERIALS. VERIFY WITH ARCHITECT PRIOR TO ORDERING AND INSTALLING. REFER TO TRANSITION DETAILS IN "A" SHEETS.
7. ALL FLOORING TRANSITION LINES TO BE LOCATED AT CENTERLINE OF DOOR (WHEN CLOSED) OR OPENING.
8. GENERAL CONTRACTOR SHALL LEVEL EXISTING FLOORS AS REQUIRED FOR PROPER INSTALLATION OF NEW FLOORING TO PREVENT PEAKS OR DEPRESSIONS WHICH MAY CAUSE UNUSUAL WEAR TO NEW MATERIALS. GENERAL CONTRACTOR TO FLOAT CONCRETE SLAB AS REQUIRED FOR CODE COMPLIANT TRANSITION BETWEEN FLOORING MATERIALS.
9. GENERAL CONTRACTOR AND SUBCONTRACTORS TO INSTALL ANY/ ALL FINISHES, MATERIALS AND EQUIPMENT PER MANUFACTURES SPECIFICATIONS.
10. ANY/ ALL INTERIOR FLOOR, WALL AND CEILING FINISHES TO COMPLY WITH IBC SECTION 803 FOR FLAME SPREAD RATING AND SMOKE DEVELOPED INDICES - SEE COVER SHEET T1.0
11. GENERAL CONTRACTOR SHALL EXAMINE ALL FINISHED SURFACES AFTER COMPLETION OF WORK (INCLUDING BUT NOT LIMITED TO TELEPHONE/ DATA INSTALLATION, CARPET, AND MOVE INS) AND PROCEED WITH "TOUCH UPS" AS REQUIRED.
12. ELECTRICAL COVER PLATES, SURFACE HARDWARE ETC. SHALL BE INSTALLED AFTER PAINTING AND/ OR APPLICATION OF WALL COVERINGS. NO PAINT OR INTERIOR FINISHING SHALL BE DONE UNDER CONDITIONS WHICH JEOPARDIZE THE QUALITY OF APPEARANCE OF SUCH WORK. ALL WORKMANSHIP WHICH IS JUDGED TO BE LESS THAN FIRST QUALITY BY ARCHITECT WILL BE REJECTED.
13. ALL PAINT AND MASTICS INSTALLED TO BE LOW VOC.
14. GENERAL CONTRACTOR, UPON COMPLETION, SHALL REMOVE ALL PAINT FROM WHERE IT HAS SPILLED, SPLASHED OR SPLATTERED ON EXPOSED ADJACENT SURFACES.

5 INTERIOR FINISH NOTES

DOOR AND HARDWARE SCHEDULE

NO.	LOCATION	DOOR SIZE	DOOR			FRAME		DETAILS		HDW	REMARKS
			TYPE	MAT.	FIN	MAT.	FIN	HEAD	JAMB		
□Space not □ound□A	□SPACE NOT FOUND□	3□0" x 7□0" x 1 3/4"	--	--	--	--	--	--	--	--	RELOCATED EXISTING DOOR
103A	DEMO DISPLAY ROOM 2	3□0" x 7□0" x 1 3/4"	--	--	--	--	--	--	--	--	RELOCATED EXISTING DOOR
103B	DEMO DISPLAY ROOM 2	PR 4□0" x 7□0" x 1 3/4"	--	--	--	--	--	--	--	--	RELOCATED EXISTING DOOR
106	EXIST. OFFICE	3□0" x 7□0" x 1 3/4"	A	GL	T	--	--	--	--	MFR	--
112A	MEN□S RESTROOM	2□2" x 7□0" x 1 3/4"	B	MTL	ST	SCRANTON	MFR.	MFR.	MFR.	MFR.	-
112B	MEN□S RESTROOM	2□2" x 7□0" x 1 3/4"	B	MTL	ST	SCRANTON	MFR.	MFR.	MFR.	MFR.	-
112C	MEN□S RESTROOM	2□2" x 7□0" x 1 3/4"	B	MTL	ST	SCRANTON	MFR.	MFR.	MFR.	MFR.	-
112D	MEN□S RESTROOM	2□6" x 7□0" x 1 3/4"	B	MTL	ST	SCRANTON	MFR.	MFR.	MFR.	MFR.	-
113A	WOMEN□S RESTROOM	2□6" x 7□0" x 1 3/4"	B	MTL	ST	SCRANTON	MFR.	MFR.	MFR.	MFR.	-
113B	WOMEN□S RESTROOM	2□6" x 7□0" x 1 3/4"	B	MTL	ST	SCRANTON	MFR.	MFR.	MFR.	MFR.	-
113C	WOMEN□S RESTROOM	2□6" x 7□0" x 1 3/4"	B	MTL	ST	SCRANTON	MFR.	MFR.	MFR.	MFR.	-
113D	WOMEN□S RESTROOM	2□6" x 7□0" x 1 3/4"	B	MTL	ST	SCRANTON	MFR.	MFR.	MFR.	MFR.	-
113E	WOMEN□S RESTROOM	2□6" x 7□0" x 1 3/4"	B	MTL	ST	SCRANTON	MFR.	MFR.	MFR.	MFR.	-
113F	WOMEN□S RESTROOM	2□6" x 7□0" x 1 3/4"	B	MTL	ST	SCRANTON	MFR.	MFR.	MFR.	MFR.	-

5 DOOR AND HARDWARE SCHEDULE



SCALE: 3" = 1'-0"

7 FRAMELESS GLASS DTL.

1. ALL DOOR HARDWARE (U.N.O.) TO BE LEVER TYPE A.D.A. COMPLIANT.
2. GC SHALL REVIEW ALL HARDWARE WITH TENANT BEFORE ORDERING.
3. MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR FOR SIDE HINGED, SLIDING OR FOLDING DOORS. WHEN FIRE DOORS ARE REQUIRED THE MAXIMUM EFFORT MAY BE INCREASED, BUT SHALL NOT EXCEED 15 LBS.
4. LATCHING AND LOCKING DOORS THAT ARE HAND ACTIVATED SHALL BE OPERABLE W/ A SINGLE EFFORT BY LEVER TYPE HARDWARE, PANIC BARS, PUSH-PULL ACTIVATING BARS OR OTHER HARDWARE DESIGNED TO PROVIDE EASY OPERATION WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST.
5. HAND ACTIVATED DOOR OPENING HARDWARE SHALL BE CENTERED BETWEEN 34" AND 44" ABOVE THE FLOOR.
6. G.C. SHALL COORDINATE ALL KEYING WITH OWNER/TENANT PRIOR TO ORDERING DOOR HARDWARE.
7. ALL DOORS TO HAVE SOLID 2 X BLOCKING ALONG ENTIRE LENGTH OF HEAD AND JAMBS. BLOCKING SHALL BE FIRE RETARDANT TREATED IN NON-COMBUSTIBLE TYPE CONSTRUCTION.
8. FOR EXISTING DOORS TO REMAIN, VERIFY ALL HARDWARE IS IN PROPER WORKING ORDER. REPAIR OR REPLACE HARDWARE AS NEEDED.
9. ALL EXIT DOORS SHALL BE OPERABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE.

10 GENERAL HARDWARE NOTES

FINISH LIST

CODE	DESCRIPTION
N	OFF WHITE
EN	POLYESTER POWDER COATED
AL	ALUMINUM
626	SATIN CHROMIUM PLATED
630	SATIN STAINLESS STEEL
689	ALUMINUM PAINTED
US26D	CHROMIUM PLATED, DULL
US32D	STAINLESS STEEL, DULL

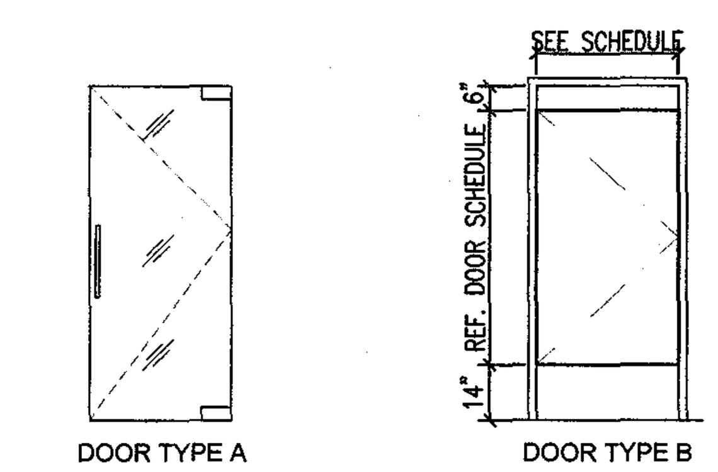
MFR ABBREVIATIONS

MK	MCKINNEY	RO	ROCKWOOD
PE	PEMKO	SA	SARGENT
MR	MARKAR	NO	NORTON
RF	RIXSON	SU	SECURITRON
AD	ADAMS RITE	SH	STANLEY HARDWARE

STANDARD SCHEDULE ABBREVIATIONS / **STANDARD SCHEDULE ABBREVIATIONS**

SCWD	SOLID CORE WOOD	P	PAINT
ST	STAIN	HM	HOLLOW METAL
TIMELY	TIMELY MAUNFACTURED FRAME	E	EXISTING
MFR	BY MANUFACTURER		
SF	STORE FRONT SYSTEM		
AL	ALUMINUM FINISH		
GL	GLASS		
T	TEMPERED GLASS		

11 LEGEND



12 DOOR TYPE ELEVATIONS

CITY OF PHOENIX
PLANNING & DEVELOPMENT DEPARTMENT
This set of plans must be reviewed on site prior to construction and shall be kept at the construction site. Such review shall not prevent the City from requiring correction of errors in the plans where such errors are subsequently found to be in violation of any law, ordinance, health, safety, or other design issues.
Inspector: ______ Number: ______ Date: ______

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Architecture & Interiors, L.C.
5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

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T.I. IMPROVEMENT
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number: 1784325-01
Project Manager: OT
Drawn By: OT
Checked By: JP

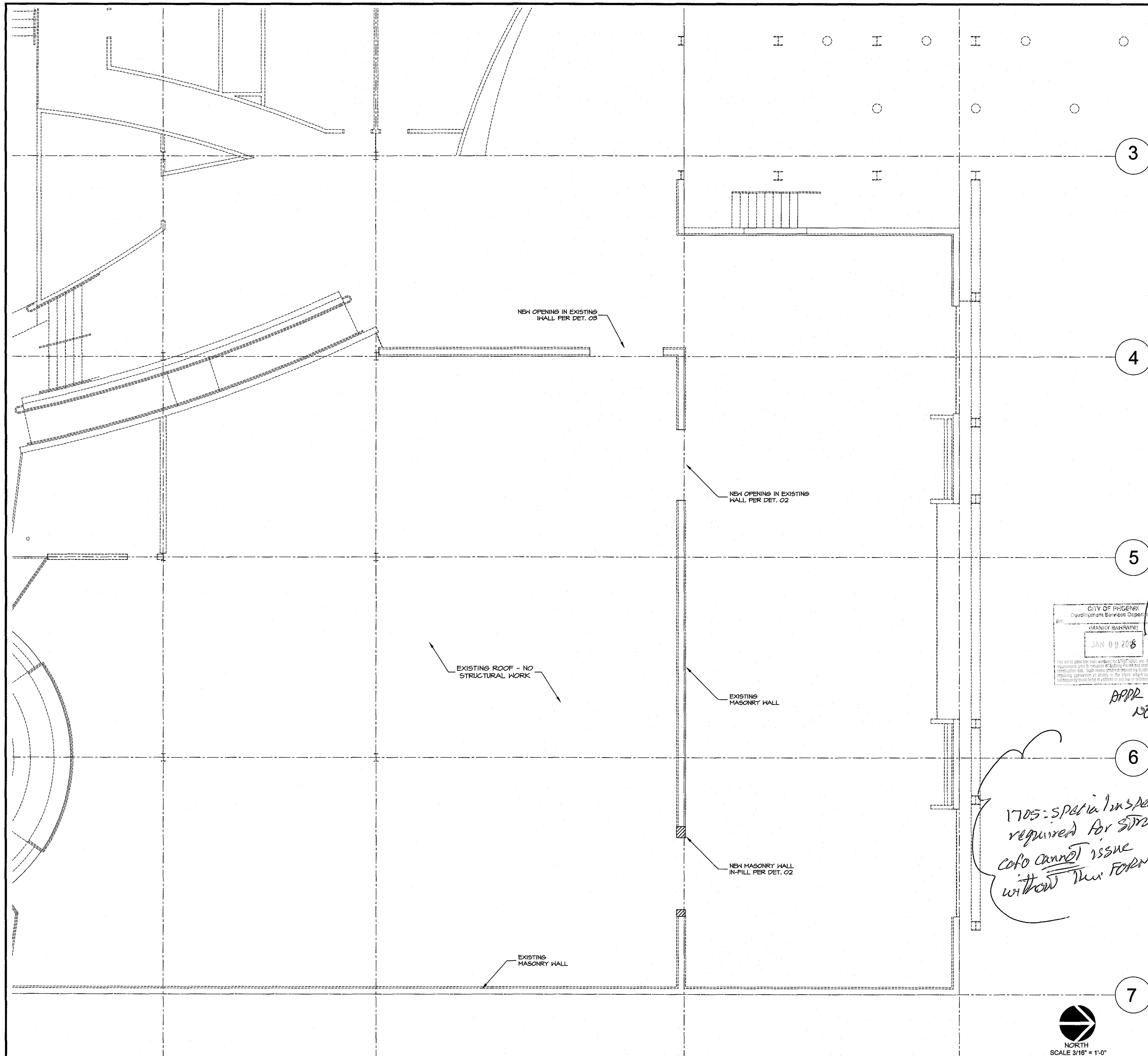
No.	Revision	Date
-	-	-
-	-	-
-	-	-
-	-	-

Sheet Description
DOOR AND ROOM SCHEDULES

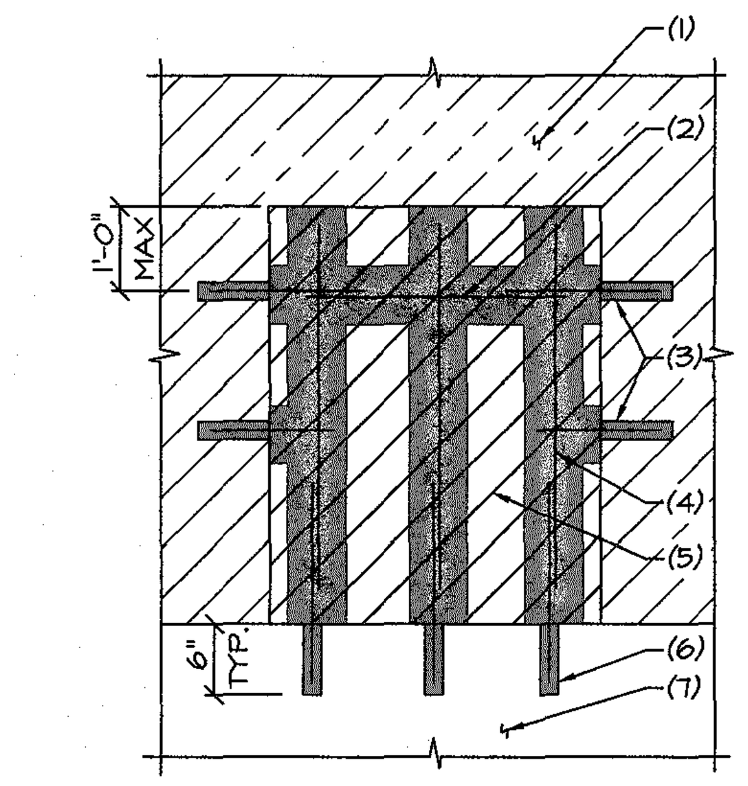
REGISTERED ARCHITECT CERTIFICATION NO. 23519 JERE W. PLANCK DATE SIGNED 12/22/2017 ARIZONA U.S.A.
EXPIRES: 12/31/2018

Sheet No.
A5.0

Issue Date: 12.15.17



1 ROOF FRAMING PLAN

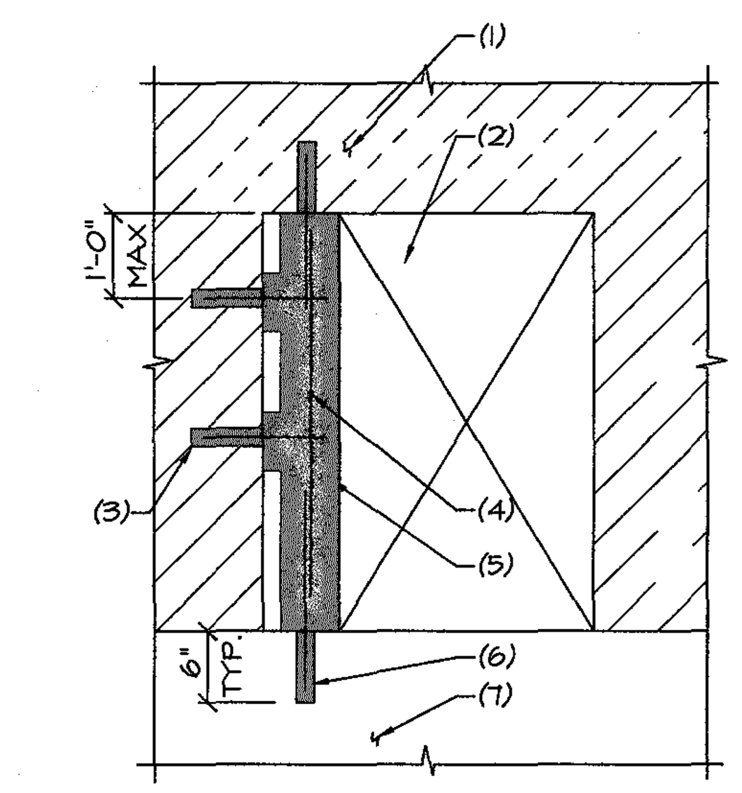


NOTES:

1. EXISTING MASONRY WALL.
2. 1#5 CONTINUOUS IN 8" DEEP GROUTED BOND BEAM.
3. #5 DOWEL X 36" LONG AT 48" O.C. MINIMUM 2 PER SIDE. EPOXY DOWELS INTO WALL WITH SIMPSON 'SET' EPOXY.
4. #5 VERTICALS AT 48" O.C. IN SOLID GROUTED CELLS MIN 2 PER WALL.
5. NEW MASONRY.
6. #5 DOWELS X 36" - TO LAP VERTICAL REINFORCING.
7. EXISTING CONCRETE OR MASONRY STEM WALL.

NOTE:
IF CELLS ARE UNGROUTED, BREAK OUT MASONRY AND GROUT IN HOOKED #5 DOWELS IN LIEU OF EPOXIED DOWELS. EPOXY INSTALLATION REQUIRES SPECIAL INSPECTION DURING PLACEMENT.

01 NEW MASONRY IN EXISTING MASONRY WALL OPENING
NO SCALE

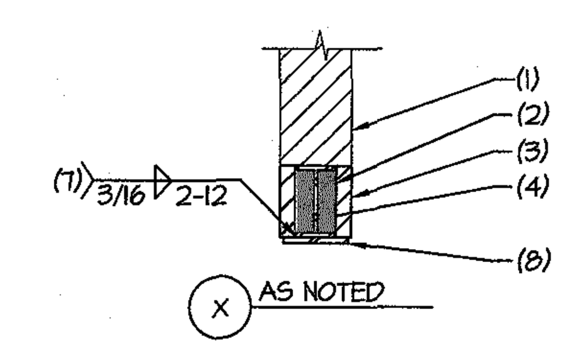


NOTES:

1. EXISTING MASONRY WALL.
2. NEW WALL OPENING.
3. #5 DOWEL AT 48" O.C. - MINIMUM 2 PER SIDE. EPOXY DOWELS INTO WALL WITH SIMPSON 'SET' EPOXY.
4. #5 VERTICAL IN SOLID GROUTED CELL.
5. NEW MASONRY.
6. #5 DOWELS X 36" - TO LAP VERTICAL REINFORCING.
7. EXISTING CONCRETE OR MASONRY STEM WALL.

NOTE:
IF CELLS ARE UNGROUTED, BREAK OUT MASONRY AND GROUT IN HOOKED #5 DOWELS IN LIEU OF EPOXIED DOWELS. EPOXY INSTALLATION REQUIRES SPECIAL INSPECTION DURING PLACEMENT.

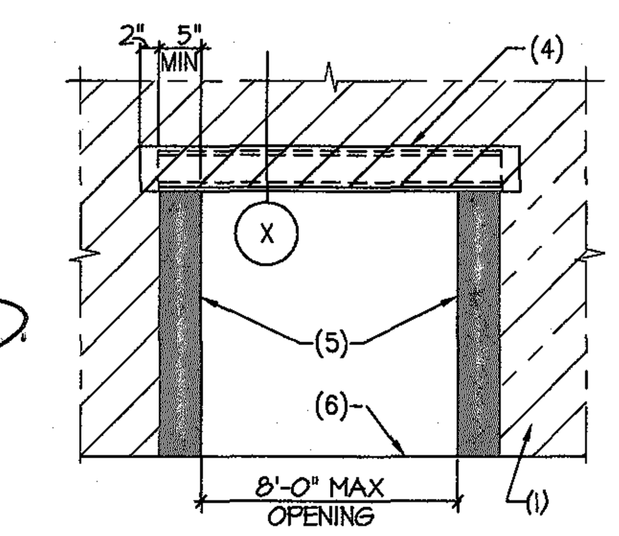
02 NEW MASONRY IN EXISTING MASONRY WALL OPENING
NO SCALE



X AS NOTED

NOTES:

1. EXISTING MASONRY WALL.
2. PACK VOID SOLID WITH MORTAR.
3. NEW MASONRY WAFERS.
4. W8X13 STEEL BEAM.
5. SOLID GROUT MASONRY AT JAMB.
6. FLOOR LINE.
7. CONTINUOUS WELD FIRST 5" EACH END.
8. 1/4" X 1 1/2" CONTINUOUS STEEL PLATE.



CONSTRUCTION PROCEDURES:

SHORE EXISTING MASONRY ABOVE OPENING FOR 1900 PLF. SAW CUT AND REMOVE MASONRY. INSTALL STEEL LINTEL AND REPLACE MASONRY AT LINTEL. MASONRY WAFERS TO MATCH EXISTING.

03 OPENING IN EXISTING MASONRY WALL
NO SCALE

CITY OF PHOENIX
Development Services Department
JAN 09 2018

APPR AS NOTED.

1705: special inspection required for structure cofo cannot issue without this form

STRUCTURAL NOTES:

1. BUILDING CODE: 2012 INTERNATIONAL BUILDING CODE.
ROOF LIVE LOAD = 20 PSF (REDUCIBLE).
ROOF DEAD LOAD = 20 PSF.

LATERAL LOAD = 5 PSF (FOR INTERIOR WALLS)

2. ALL STEEL CONSTRUCTION SHALL COMPLY WITH THE LATEST EDITION OF THE AISC HANDBOOK. ALL WIDE FLANGE STEEL SHALL BE ASTM A572 (F_y = 50 KSI) OR ASTM A992 (F_y = 50 KSI) UNLESS NOTED OTHERWISE. ALL MISCELLANEOUS STEEL UNLESS NOTED OTHERWISE SHALL BE ASTM A36 (F_y = 36 KSI).

3. HOLLOW CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90, MEDIUM WEIGHT, GRADE N, $F'm$ = 1,500 PSI, RUNNING BOND, MORTAR TYPE S, 1,800 PSI. GROUT 2,000 PSI. PROVIDE STANDARD WEIGHT (NO. 9 GAGE WIRE) DUR-O-WAL OR DUR-O-WIRE (OR EQUIVALENT) LADDER TYPE JOINT REINFORCEMENT AT 16" O.C.

4. ALL REINFORCING PER CRSI SPECIFICATIONS AND HANDBOOK. ASTM A615 (F_y = 60 KSI / GRADE 60) DEFORMED BARS FOR ALL BARS #5 AND LARGER.

5. SPECIAL STRUCTURAL INSPECTION IS REQUIRED FOR THE EPOXY DOWEL INSTALLATION.

6. CONTRACTOR TO FIELD VERIFY ACTUAL CONDITION OF THE EXISTING BUILDING STRUCTURE AGAINST THE EXISTING DRAWINGS. IF ANY DISCREPANCIES ARE NOTED, CONTACT THE STRUCTURAL ENGINEER. CONTRACTOR TO FIELD VERIFY THE ACTUAL WALL OPENINGS NEEDED FOR THE NEW CONSTRCUTION AND ADJUST THE ANGLE SUPPORT LOCATIONS ACCORDINGLY.

7. SCOPE OF STRUCTURAL WORK CONSISTS OF PROVIDING MASONRY WALL IN-FILL AND STEEL LINTELS FOR NEW WALL OPENINGS..
FOR ANY ADDITIONAL WORK THAT IS NOT SHOWN HERE, CONTACT THE STRUCTURAL ENGINEER.

8. THE STRUCTURAL CONSTRUCTION DOCUMENTS REPRESENT THE FINISHED STRUCTURE. EXCEPT WHERE NOTED, THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. THE STRUCTURAL ENGINEER OF RECORD SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S MEANS, METHODS, TECHNIQUES, SEQUENCES FOR PROCEDURE OF CONSTRUCTION, OR THE SAFETY PRECAUTIONS AND THE PROGRAMS INCIDENT THERETO.

DESERT FOX, LLC.
consulting structural engineers
969 E. SARATOGA ST.
GILBERT, ARIZONA 85296
T: (480) 205-2094
F: (480) 633-9328

PROJECT NUMBER	18-101	PROJECT MANAGER	RRD
PROJECT ENGINEER	RRD	PROJECT DRAFTER	CGD

ARCHICON
Architecture & Interiors, L.C.
5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

T.I. IMPROVEMENT
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
-	-	-
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-	-	-
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Sheet Description

ROOF FRAMING PLAN, DETAILS AND NOTES

Registered Professional Engineer (Structural)
CERTIFICATE NO. 40288
ROMMEL R. DECENA
ARIZONA, U.S.A.
EXPIRES 12.31.18

Sheet No.

S1.0

Issue Date: 01.04.18

04/01/2018 C:\USERS\KMACEDO\DOWNLOADS\(18-101) PACIFIC AUTOMATIONS BACKGROUNDS.DWG

HVAC PIPING LEGEND

SYMBOL	ABBR.	DESCRIPTION
CHWS	CHWS	CHILLED WATER SUPPLY PIPING
CHWR	CHWR	CHILLED WATER RETURN PIPING
CWS	CWS	CONDENSER WATER SUPPLY PIPING
CWR	CWR	CONDENSER WATER RETURN PIPING
HWS	HWS	HEATING WATER SUPPLY PIPING
HWR	HWR	HEATING WATER RETURN PIPING
	C.W.	COLD WATER PIPING
	H.W.	HOT WATER PIPING
	H.W.R.	HOT WATER RETURN PIPING
G	G.	NATURAL GAS PIPING
FW	FW.	FILTERED WATER PIPING
D	D./C.D.	INDIRECT OR CONDENSATE DRAIN
	-	ISOMETRIC CONTINUATION
	-	PIPE RISE
	-	PIPE DROP
	-	PIPE DROP UNDER A HORIZONTAL PIPE
	-	PIPE CAP
	-	PIPE BREAK
	G.V.	GATE VALVE
	G.B.V.	GLOBE VALVE
	B.V.	BALL VALVE
	C.V.	CHECK VALVE
	P.V.	PLUG VALVE
	S.V.	SOLENOID VALVE
-	S.O.V.	SHUTOFF VALVE
	CN.V.	CONTROL VALVE
	B.V.	BUTTERFLY VALVE
	-	UNION
	-	REDUCER
	C.P.	CENTRIFUGAL PUMP
	P.O.C.	POINT OF CONNECTION BETWEEN NEW AND EXISTING

NOTE: ALL SYMBOLS MAY NOT APPLY

REFERENCE SYMBOLS

- # / SHEET — GENERAL REFERENCE DESIGNATES SHEET NUMBER
- # / SHEET — DETAIL REFERENCE TOP DESIGNATES DETAIL NUMBER BOTTOM DESIGNATES SHEET NUMBER
- # / X0.0 — SECTION REFERENCE TOP DESIGNATES SECTION NUMBER BOTTOM DESIGNATES SHEET NUMBER
- EQUP / # — EQUIPMENT NAME AND NUMBER
- # — SHEET KEYNOTE NUMBER
- # — REVISION NUMBER
- ELEVATION SYMBOL
- NEW CONNECTION TO EXISTING

DUCTWORK SYMBOLS

SINGLE	DOUBLE	ABBR.	DESCRIPTION
		-	RECTANGULAR DUCT (NEW)
		-	ROUND DUCT (NEW)
		-	RECTANGULAR DUCT (EXISTING)
		-	ROUND DUCT (EXISTING)
		-	45 DEG. TAP: USE AT BRANCH DUCTS ONLY
		-	DUCT SPLIT WITH DAMPER: USE AT ELBOWS AND TEES: PROPORTION DUCT AREAS BY CFM'S
		-	CURVED ELBOW-MIN. RADIUS R: 1.5 WIDTH
		-	90 DEG. ELBOW WITH SINGLE RADIUS TURNING VANES
		-	FLEXIBLE DUCT CONNECTION
SD	SD	SD	SMOKE DETECTOR
		VD	VOLUME DAMPER
		-	SPIN-IN FLEX DUCT TAKEOFF WITH DAMPER
		SA	SUPPLY AIR
		EXH / EA	EXHAUST AIR
		RA	RETURN AIR
		REL	RELIEF AIR
		OSA / OA	OUTSIDE AIR
		POC	POINT OF CONNECTION
-	-	TA	TRANSFER AIR
-	-	FF	FINISHED FLOOR
-	-	AFF	ABOVE FINISHED FLOOR
-	-	BFF	BELOW FINISHED FLOOR
-	-	NTS	NOT TO SCALE
FSD	FSD	FSD	FIRE/SMOKE DAMPER
S	S	S	SENSOR
F	F	-	FIRE STAT SET AT 165°
O	O	-	OUTSIDE AIR STAT
T	T	T	THERMOSTAT MOUNTED AT A 48" MAX. OR PER ADA REQUIREMENTS
CO	CO	-	CO2 SENSOR
H	H	-	HUMIDISTAT
U.C.	U.C.	U.C.	UNDERCUT DOOR 1". COORDINATE WITH GENERAL CONTRACTOR

NOTE: ALL SYMBOLS MAY NOT APPLY

2012 IECC COMPLIANCE NOTES

1. ALL SUPPLY AND RETURN AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHEN LOCATED IN UNCONDITIONED SPACES AND A MINIMUM OF R-8 INSULATION WHEN LOCATED OUTSIDE THE BUILDING. WHEN LOCATED WITHIN A BUILDING ENVELOPE ASSEMBLY, THE DUCT OR PLENUM SHALL BE SEPARATED FROM THE BUILDING EXTERIOR OR UNCONDITIONED OR EXEMPT SPACES BY A MINIMUM OF R-8 INSULATION.
   EXCEPTIONS:
   1. WHEN LOCATED WITHIN EQUIPMENT.
   2. WHEN THE DESIGN TEMPERATURE DIFFERENCE BETWEEN THE INTERIOR AND THE EXTERIOR OF THE DUCT OR PLENUM DOES NOT EXCEED 15 DEG. F.
2. PROVIDE AUTOMATIC CHANGEOVER 7-DAY PROGRAMMABLE THERMOSTATS FOR EACH ZONE WITH A 2-HOUR OCCUPANT OVERRIDE, INTELLIGENT RECOVERY, AND 10-HOUR MINIMUM BATTERY BACKUP. PROGRAM SETBACK TEMPERATURES TO 85°F(COOL) AND 55°F(HEAT). THERMOSTATS USED TO CONTROL BOTH HEATING AND COOLING, SHALL PROVIDE A SETPOINT OVERLAP RESTRICTION SUCH AS A DEADBAND OF AT LEAST 5°F. ALL TEMPERATURE CONTROLS ARE TO BE TESTED, ADJUSTED, AND CALIBRATED FOR PROPER OPERATION. MOUNT ALL THERMOSTATS AND TEMPERATURE SENSORS AS INDICATED ON THE DRAWINGS. COORDINATE EXACT LOCATION WITH THE ARCHITECT. PROVIDE LOCKING COVER AS REQUIRED BY THE ARCHITECT OR THE OWNER. MOUNT AT 48" MAX OR PER ADA REQUIREMENTS.
3. WHERE MECHANICAL VENTILATION IS PROVIDED, THE SYSTEM SHALL PROVIDE THE CAPABILITY TO REDUCE THE OUTDOOR AIR SUPPLY TO THE MINIMUM REQUIRED BY CHAPTER 4 OF THE INTERNATIONAL ENERGY CONSERVATION CODE. OUTDOOR AIR SUPPLY AND EXHAUST DUCTS SHALL BE PROVIDED WITH AUTOMATIC MEANS TO REDUCE AND SHUT OFF AIRFLOW.
4. SEALING DUCTWORK: ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS AND CONNECTIONS IN DUCTWORK MUST BE SECURELY SEALED USING WELDMENTS; MECHANICAL FASTENERS WITH SEALS, GASKETS OR MASTICS; MESH AND MASTIC SEALING SYSTEMS; OR TAPES. TAPES AND MASTICS MUST BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR 181B.
5. OUTDOOR AIR SUPPLY AND EXHAUST DUCTS SHALL BE EQUIPPED WITH MOTORIZED DAMPERS THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEMS OR SPACES SERVED ARE NOT IN USE. EXCEPTION - GRAVITY DAMPERS SHALL BE PERMITTED IN BUILDINGS LESS THAN 3 STORIES IN HEIGHT.
6. PROVIDE OWNER WITH COMPLETE OPERATION AND MAINTENANCE MANUALS FOR ALL EQUIPMENT AND CONTROLS INSTALLED. DOCUMENTATION MUST INCLUDE EQUIPMENT CAPACITY (INPUT & OUTPUT), REQUIRED MAINTENANCE ACTIONS, CONTROLS AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, CONTROL SEQUENCE DESCRIPTIONS, DESIRED OR FIELD-DETERMINED SETPOINTS, AND A COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE.

CODE INFORMATION

A. 2012 IBC, 2012 IMC, 2012 IECC & CITY OF PHOENIX AMENDMENTS. ALL SYSTEMS SHALL BE IN COMPLIANCE WITH THE ABOVE CODES AS ADOPTED BY THE CITY OF PHOENIX.

B. OUTDOOR AIR VENTILATION PROVIDED AND BASED ON CHAPTER 4, SECTION 403.2 AND TABLE 403.3.

C. DUCT SMOKE DETECTORS REQUIRED BY SECTION 606 SHALL BE INSTALLED IN THE SUPPLY AIR SYSTEM. DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 606.3 AND NFPA 72. DUCT SMOKE DETECTORS REQUIRE A REMOTE TEST VISUAL/TEST STATION PER NFPA 72. DETECTORS SHALL BE CONTROLLED PER SECTION 606.4.

D. EQUIPMENT AND APPLIANCES SHALL BE INSTALLED AS REQUIRED BY THE TERMS OF THEIR APPROVAL, IN ACCORDANCE WITH THE CONDITIONS OF THE LISTING, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THIS CODE. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION PER SECTION 304.1.

E. MATERIALS EXPOSED WITHIN PLENUMS SHALL HAVE A FLAME SPREAD RATING INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE TO ASTM E84.

F. ALL MATERIAL INSTALLED WITHIN PLENUMS SHALL CONFORM TO SECTION 602 PLENUMS.

G. MECHANICAL DESIGN IS INTENDED THAT THE AIR CONDITIONING SYSTEM WILL OPERATE CONTINUOUSLY TO MAINTAIN CURRENT VENTILATION REQUIREMENTS, IMC 403.2 & 403.3.

H. CALL FOR INSPECTION OF ALL MECHANICAL SYSTEMS PRIOR TO BACKFILL AND CONCEALMENT, IMC 107.2

MECHANICAL SPECIFICATIONS

NOTE: NOT ALL SPECIFICATIONS MAY APPLY.

NOTICE TO OWNERS, ARCHITECTS AND CONTRACTORS REGARDING PRICING ESTIMATES
1. UNDER NO CIRCUMSTANCES SHALL THESE DRAWINGS BE "FINAL" OR "HARD BID" UNTIL THE PROJECT IS FULLY PERMITTED.
2. ALL PRELIMINARY PRICING EFFORTS SHALL BE CONSIDERED AS ESTIMATES ONLY AND SHALL INCLUDE SUCH CONTINGENCIES, ALLOWANCES, ALTERNATIVES, ETC. TO ACCOUNT FOR MODIFICATIONS AND ADDITIONS THAT WILL OCCUR TO THE DRAWINGS DURING FINALIZATION OF THE DESIGN AND PERMITTING PROCESS.

SCOPE OF WORK
1. THE WORK INCLUDED UNDER THIS SECTION CONSISTS OF FURNISHING ALL MATERIALS, EQUIPMENT AND LABOR, AND THE PERFORMING OF ALL FUNCTIONS, EXCEPT AS OTHERWISE SPECIFIED HEREIN OR SHOWN ON THE DRAWINGS TO BE PERFORMED BY OTHERS, AND FOR THE INSTALLATION OF ALL HEATING AND COOLING EQUIPMENT, PIPING AND ALL DUCTWORK, GRILLES,REGISTERS, ETC., INCLUDING ALL CONNECTIONS TO EACH SYSTEM AS SPECIFIED HEREIN AND SHOWN ON THE DRAWINGS. IT SHALL FURTHER INCLUDE FURNISHING AND INSTALLING ALL MISCELLANEOUS ITEMS REQUIRED FOR THE OPERATION OF THE SYSTEM, WHETHER SPECIFICALLY CALLED OUT OR NOT.
2. SPECIAL INSPECTIONS: WHERE THE PLANS INDICATE SPECIAL INSPECTIONS AND REPORT, OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ), THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, HIRE AN INDEPENDENT THIRD PARTY INSPECTOR OR TESTING AGENCY TO PERFORM THE REQUIRED INSPECTIONS FOR THE TYPES OF WORK REQUIRED OR IDENTIFIED ON THE SPECIAL INSPECTION FORM. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT TO THE REGISTERED DESIGN PROFESSIONAL ENGINEER, PROVIDING TEST RESULTS AND STATING WHETHER THE ITEMS REQUIRING SPECIAL INSPECTION WERE IN COMPLIANCE WITH THE INSPECTION REQUIREMENTS. PROVIDE ADDITIONAL COST FOR ENGINEER'S SEALED LETTER OF APPROVAL.

COORDINATION
1. CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW APPROXIMATE LOCATIONS. COORDINATE WORK WITH ALL TRADES TO AVOID INTERFERENCE. INSTALLED HVAC WORK WHICH INTERFERES WITH THE WORK OF OTHER TRADES DUE TO LACK OF COORDINATION SHALL BE RE-INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
2. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF EQUIPMENT, PARTITIONS, WALLS, AND GENERAL CONSTRUCTION.
3. ALL CONTRACTORS SHALL BE RESPONSIBLE FOR COORDINATING WORK WITH OTHER TRADES AFFECTED BY EACH OTHERS WORK.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL FIELD CONDITIONS WHICH MAY AFFECT HIS WORK BEFORE SUBMITTING BIDS.
5. PERFORMANCE OF ALL WORK SHALL BE SCHEDULED AS APPROVED BY THE OWNER. AVOID INTERFERENCE WITH FUNCTIONS IN OTHER PARTS OF THE FACILITY, AND COORDINATE WITH THE WORK OF OTHER TRADES. SERVICES SHALL NOT BE INTERRUPTED WITHOUT WRITTEN PRIOR APPROVAL OF THE OWNER.
6. NO STRUCTURAL MEMBER SHALL BE CUT WITHOUT PERMISSION FROM THE ARCHITECT AND THE STRUCTURAL ENGINEER.
7. PROTECT EXISTING BUILDING STRUCTURE AND GROUNDS FROM DAMAGE WHICH MAY OCCUR DURING DEMOLITION WORK. ANY DAMAGE TO THE EXISTING FACILITIES SHALL BE REPAIRED, REPLACED, OR RESTORED TO THE ORIGINAL CONDITION AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE OWNER.
8. SPACE ABOVE CEILINGS IS CRITICAL - THE CONTRACTOR SHALL VERIFY SPACE ABOVE CEILING & COORDINATE WITH PLUMBING, ELECTRICAL, STRUCTURAL, FIRE PROTECTION, ARCHITECTURAL, AND ALL OTHER TRADES INVOLVED BEFORE COMMENCEMENT OF WORK.

CODES AND PERMITS
1. ALL MATERIALS, EQUIPMENT AND INSTALLATION MUST COMPLY WITH ALL APPLICABLE LAWS, CODES, RULES AND REGULATIONS, REQUIRED BY CITY, COUNTY AND STATE, AS WELL AS FEDERAL REQUIREMENTS.
2. COMBUSTIBLE MATERIALS SHALL NOT BE USED IN A NON-COMBUSTIBLE BUILDING AS DEFINED BY THE BUILDING CODE. COMBUSTIBLE MATERIALS MAY BE PROTECTED AS SPECIFIED BY THE ENGINEER AND ARCHITECT OF RECORD.
3. PERMITS: OBTAIN AND PAY FOR ALL REQUIRED PERMITS, LICENSES AND FEES.
4. INSPECTIONS: FURNISH OWNER WITH CERTIFICATE OF INSPECTION AND APPROVAL BY LOCAL AUTHORITIES PRIOR TO FINAL ACCEPTANCE OF THE PROJECT BY THE OWNER. ALL WORK MUST BE INSPECTED.

EXISTING CONDITIONS
1. PRIOR TO COMMENCING WORK, MECHANICAL CONTRACTOR SHALL CLEAN, TEST AND INSPECT ALL EXISTING MECHANICAL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS TO INSURE THAT ALL EQUIPMENT IS IN SATISFACTORY WORKING CONDITION. CONTRACTOR SHALL INCLUDE IN HIS BID THE REPLACEMENT OF FILTERS, CLEANING OF CONDENSATE DRAIN PANS AND DRAIN LINES, EVAPORATOR AND CONDENSER COILS AND THE REPLACEMENT OF FAN BELTS. CHARGE REFRIGERANT GAS AS REQUIRED. REPORT ANY DEFECTS/DEFICIENCIES TO OWNER/ARCHITECT IMMEDIATELY. SUBMIT ADDENDUM BID TO ACCOMMODATE ANY REPAIR/REPLACEMENTS AS REQUIRED.
2. VERIFY EXACT SIZE, LOCATION, ROUTING, ETC., OF ALL EXISTING MECHANICAL EQUIPMENT, DUCTWORK, AIR DEVICES, THERMOSTATS, SENSORS, PIPING, ETC., WHICH ARE TO BE REMOVED, REPLACED, ABANDONED, REWORKED, ETC., AS REQUIRED AND SHOWN ON DRAWINGS.
3. MECHANICAL WORK SHOWN AS EXISTING IS FOR REFERENCE ONLY. FIELD VERIFY ALL EXISTING CONDITIONS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY SHOULD THE FIELD CONDITIONS DIFFER FROM THE DRAWINGS IN SUCH A WAY AS TO COMPROMISE THE DESIGN.
4. CONTRACTOR SHALL ENSURE ALL SURFACES (FLOORS, WALLS, CEILINGS AND ROOF) ARE BROUGHT BACK TO ORIGINAL CONDITION IN ACCORDANCE WITH ARCHITECTS REQUIREMENTS AFTER MODIFICATIONS HAVE BEEN MADE. COORDINATE WITH GENERAL CONTRACTOR.

SEISMIC REQUIREMENTS (IF APPLICABLE FOR PROJECT LOCATION)
1. COORDINATE WITH ARCHITECT AND STRUCTURAL ENGINEER FOR INFORMATION REGARDING THE REQUIRED SEISMIC ZONE FOR THE PROJECT.
2. ROOF TOP UNITS SHALL BE SECURED TO THE ROOF CURBS PER MANUFACTURER'S REQUIREMENTS ACCORDING TO THE SEISMIC ZONE.
3. ROOF CURBS SHALL BE SECURED TO THE ROOF IN AN APPROVED MANOR ACCORDING TO THE SEISMIC ZONE.
4. PROVIDE DUCT AND PIPING SUPPORTS, PROPERLY BRACED ACCORDING TO SMACNA GUIDELINES FOR THE SEISMIC ZONE INDICATED.

PRODUCTS
1. ALL PRODUCTS SHALL BE NEW AND UNUSED OF ESTABLISHED AND REPUTABLE AMERICAN MANUFACTURERS. ITEMS OF EQUIPMENT USED FOR THE SAME PURPOSE SHALL BE OF THE SAME MANUFACTURER.
2. SYSTEMS SHALL BE COMPLETE AND OPERABLE. ANY ACCESSORIES REQUIRED FOR THE OPERATION OF THE SYSTEM SHALL BE INCLUDED AS THOUGH SPECIFICALLY INDICATED TO BE PROVIDED. SUCH ACCESSORIES WOULD INCLUDE FILTERS, CONDENSATE DRAINS, RELIEF VALVES, SERVICE VALVES, THERMOSTATS, VIBRATION ISOLATORS, ETC. MOTOR STARTERS FOR PREWIRED EQUIPMENT (AND OTHER PROTECTION AND CONTROL DEVICES) ARE ALSO INCLUDED IN THIS SPECIFICATION.
3. SPECIFIC REFERENCE TO A MANUFACTURER'S PRODUCT IS ONLY TO ESTABLISH TYPE, QUALITY, AND PERFORMANCE REQUIRED. THESE QUALIFICATIONS ARE IN ADDITION TO THE REQUIREMENTS SHOWN ON THE DRAWINGS AND WITHIN THESE SPECIFICATIONS. LISTING OF ALTERNATE EQUIPMENT MANUFACTURERS SHALL NOT BE CONSTRUED AS AN UNCONDITIONAL APPROVAL OF THE PRODUCTS OF THOSE MANUFACTURERS.
4. ACCEPTABLE HVAC EQUIPMENT MANUFACTURERS: CARRIER, TRANE, YORK, LENNOX, APPROVED EQUAL OR AS SPECIFIED ELSEWHERE IN THESE DOCUMENTS.
5. PROVIDE CLEARANCES AS PER MANUFACTURERS RECOMMENDATIONS.

SUBSTITUTIONS
1. SUBSTITUTIONS OF MATERIALS OR PRODUCTS SHOWN HEREIN SHALL BE BY OWNER'S, ARCHITECTS, OR ENGINEER'S WRITTEN APPROVAL. ANY DEVIATION FROM THESE DRAWINGS WILL NOT BE ALLOWED.
2. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ANY SUBSTITUTIONS AND COSTS OF CHANGES INCURRED BY OTHER TRADES DUE TO THE SUBSTITUTIONS. OTHER TRADES INCLUDE: ELECTRICAL, PLUMBING, STRUCTURAL, ROOFING, OR ANY TRADE EFFECTED BY THE SUBSTITUTION.

SHOP DRAWING SUBMITTALS
1. PRIOR TO PROCUREMENT, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW FOR ALL EQUIPMENT, INCLUDING THE FOLLOWING:
   A. DIFFUSERS, REGISTERS, LOUVERS AND FLEXIBLE DUCTWORK.
   B. PACKAGED ROOFTOP UNITS, SPLIT-SYSTEM AIR HANDLING UNITS, CONDENSING UNITS, EVAPORATIVE COOLING UNITS AND EXHAUST FANS.
   C. THERMAL INSULATION, ACOUSTIC LINER AND FIRE DAMPERS.
   D. PIPING, SUPPORTS AND VALVES.
   E. AUTOMATIC TEMPERATURE CONTROLS.

THERMOSTATS, CONTROLS AND CONTROL WIRING
1. ALL CONTROL EQUIPMENT, INTEGRAL STARTERS, INTERLOCKING STARTERS, SMOKE DETECTORS, RELAYS, TRANSFORMERS, PANELS AND OTHER DEVICES SHOWN, SPECIFIED OR NEEDED FOR A COMPLETE CONTROL SYSTEM ARE TO BE PROVIDED AND INSTALLED UNDER THIS MECHANICAL DIVISION. COMPONENTS AND WIRING NOT SHOWN, BUT REQUIRED FOR THE PROPER OPERATION OF EQUIPMENT OR CONTROL SYSTEMS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE PROJECT.
2. POWER WIRING, LOW VOLTAGE WIRING AND RACEWAYS RELATED TO CONTROLS SYSTEMS ARE TO BE PROVIDED AND INSTALLED UNDER THE MECHANICAL DIVISION.
3. INSTALLATION OF ALL EQUIPMENT, DEVICES AND WIRING SHALL CONFORM TO THE NATIONAL ELECTRIC CODE. ALL CONTROLS SHALL BE FURNISHED AND PROPERLY IDENTIFIED WITH INSTRUCTIONS FOR PROPER CONNECTIONS. RESPONSIBILITY FOR PROPER CONNECTIONS AND OPERATION IS INCLUDED UNDER THE MECHANICAL CONTRACTORS RESPONSIBILITY. VERIFY ALL VOLTAGES, PHASES AND ELECTRICAL CONNECTIONS WITH THE ELECTRICAL CONTRACTOR BEFORE ORDERING ANY EQUIPMENT, AND IF DISCREPANCIES OCCUR, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH ANY WORK.
4. ALL TEMPERATURE CONTROLS ARE TO BE TESTED, ADJUSTED, AND CALIBRATED FOR PROPER OPERATION.
5. COORDINATE EXACT THERMOSTAT MOUNTING HEIGHT ABOVE FINISHED FLOOR AND FINAL LOCATION WITH THE ARCHITECT.
6. THERMOSTATS LOCATED ON EXTERIOR WALLS SHALL HAVE AN INSULATED SUB-BASE.

DUCT SMOKE DETECTORS
1. FIELD VERIFY FOR PRESENCE OF EXISTING DUCT SMOKE DETECTORS. TEST AS REQUIRED BY INSPECTOR.
2. WHERE NOT EXISTING, MECHANICAL CONTRACTOR TO PROVIDE AND INSTALL ALL DUCT SMOKE DETECTORS WHERE INDICATED ON THE DRAWINGS AND AS REQUIRED BY LOCAL ADOPTED CODES, LOCAL AMENDMENTS, THE BUILDING OFFICIAL, AND FOR ANY AIR HANDLING SYSTEM WITH A CAPACITY GREATER THAN 2000 CFM.
3. SMOKE DETECTORS SHALL BE POWERED BY 24 VOLT POWER. POWER MAY BE TAKEN FROM UNIT CONTROL TRANSFORMER IF APPROVED BY MANUFACTURER WITHOUT VOIDING WARRANTY. IF MANUFACTURER WILL NOT ALLOW ADDITIONAL CONTROL CIRCUIT LOAD, PROVIDE AND INSTALL A SECONDARY 24 VOLT TRANSFORMER POWERED FROM EQUIPMENT POWER SUPPLY TO CONTROL SMOKE DETECTOR. ALTERNATIVE 120 VOLT POWER PROVISIONS ARE ACCEPTABLE. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL COSTS RELATED TO PROVIDING POWER TO SMOKE DETECTORS.
4. UPON ACTIVATION, SMOKE DETECTOR SHALL SHUT DOWN 24 VOLT CONTROL POWER CIRCUIT AND ALL OPERATIONAL CAPABILITIES OF THE AIR DISTRIBUTION SYSTEMS FOR THE CONNECTED UNIT.
5. INTERFACE DETECTORS TO SUPERVISORY CIRCUIT OF FIRE ALARM SYSTEM/FIRE SPRINKLER MONITORING PANEL. IN OCCUPANCIES NOT REQUIRED TO BE EQUIPPED WITH A FIRE ALARM SYSTEM, PROVIDE DUCT DETECTOR WITH A REMOTE LED INDICATOR LIGHT MOUNTED BELOW UNIT IN CEILING PER NFPA 72-5-10.6.08 OR AN APPROVED LOCATION. COORDINATE WITH ELECTRICAL/FIRE ALARM CONTRACTOR PRIOR TO ROUGH-IN.

DUCTWORK
1. ALL DUCTWORK AND PLENUMS SHALL BE GALVANIZED SHEET METAL. FABRICATE AND INSTALL ALL DUCTWORK IN STRICT CONFORMANCE WITH THE LATEST SMACNA MANUAL, AND APPLICABLE MECHANICAL CODES FOR LOW VELOCITY DUCT CONSTRUCTION STANDARDS.
2. EACH DUCT SYSTEM SHALL BE COMPLETE WITH ALL REQUIRED DUCTWORK FITTINGS, TURNING VANES, SPLITTER DAMPERS AND SUPPORTS, AND EXTRACTORS AT ALL RIGHT ANGLE TAKEOFFS AND TEES.
3. DUCTWORK SHALL BE GALVANIZED, PRIME-GRADE, LOCK-FORMING QUALITY STEEL (LFQ) HAVING A GALVANIZED COATING OF 1-3/4 OUNCES TOTAL FOR BOTH SIDES OF ONE SQUARE FOOT OF A SHEET.
4. CROSSBREAK ALL SIDES OF ALL DUCTS IN ACCORDANCE WITH SMACNA GUIDELINES. DUCTWORK INSTALLATIONS SHALL MAKE NO OBJECTIONABLE NOISE, AND CONTRACTOR SHALL PROVIDE ANY ADDITIONAL STIFFENERS REQUIRED.
5. ALL LONGITUDINAL SEAMS SHALL BE PITTSBURGH LOCK SEAM, HAMMERED FLAT, WITH ALL TRANSVERSE JOINTS TAPED WITH 8 OZ. CANVAS AND SEALED WITH ARABOL, AIR TIGHT. DUCT TAPE IS NOT ALLOWED.
6. PROVIDE DOUBLE THICKNESS, FACTORY FABRICATED GALVANIZED SHEET STEEL TURNING VANES WITH AIRFOIL CONTOUR IN ALL RIGHT ANGLE ELBOWS, TEES, AND ELBOWS WITH RADIUS LESS THAN 1-1/2 TIMES THE WIDTH OF THE DUCT.
7. ALL ROUND DUCT BRANCH TAKEOFFS SHALL BE PROVIDED WITH SPIN-IN COLLAR AND BALANCING DAMPER.
8. DUCT SIZES SHOWN ON THE DRAWINGS ARE TO THE INSIDE OF ACOUSTICAL LININGS. INCREASE SIZES OF DUCTS AS REQUIRED TO ACCOMMODATE ACOUSTICAL INSULATION.
9. DUCTWORK SHALL CONFORM TO DIMENSIONS ON THE DRAWINGS, UNLESS LOCATION OF STRUCTURAL MEMBERS IS PROHIBITIVE. IN CASE OF CHANGE IN DIMENSIONS, CROSS SECTIONAL AREAS SHALL BE MAINTAINED.
10. ALL DUCTS SHALL BE SUBSTANTIALLY SUPPORTED WITH HANGERS TO THE STRUCTURE OR OTHERWISE DEPENDING ON LOCATION CONDITIONS, PLACING SUPPORTS NOT OVER 8 FEET APART ALONG THE LENGTH OF THE DUCT. HANGERS SHALL CONFORM TO ALL APPLICABLE MECHANICAL CODES AND SMACNA REQUIREMENTS.
11. FLEXIBLE ROUND DUCTS TO OUTLETS SHALL BE THERMALFLEX TYPE MKE, A MAXIMUM LENGTH OF 8'-0" LONG (AND ALLOWED ONLY WHERE INDICATED ON THE DRAWINGS).
12. ALL FACTORY-MADE DUCTS MUST BE CLASS 0 OR 1 AS APPROVED BY THE LOCAL APPLICABLE MECHANICAL CODE.
13. 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.

ACOUSTICAL LINER
1. SUPPLY, RETURN AND PLENUM DUCTS SHALL BE ACOUSTICALLY LINED FOR THE FIRST 15'-0" MINIMUM FROM UNIT CONNECTION POINTS.
2. ALL SHEET METAL SUPPLY, RETURN AND PLENUM DUCTWORK REQUIRING ACOUSTICAL LINER SHALL BE LINED WITH 1" THICK LINER.

THERMAL DUCT AND PLENUM INSULATION
1. ALL SUPPLY AND RETURN DUCTS SHALL BE INSULATED IN ACCORDANCE WITH THE PREVAILING ENERGY CODE (IECC OR TITLE 24). PROVIDE WATERPROOF ALUMINUM JACKETING FOR OUTDOOR INSULATED DUCTS. EXPOSED UN-INSULATED SUPPLY AIR DUCTS IN CONDITIONED SPACES WILL NOT BE ALLOWED WITHOUT PRIOR WRITTEN REQUEST AND APPROVAL BY THE OWNER AND MECHANICAL ENGINEER.
2. ALL RESIDENTIAL SUPPLY AND RETURN DUCTS SHALL BE INSULATED WITH R-8 INSULATION.
3. EXHAUST DUCTS SHALL NOT BE INSULATED.
4. ALL INSULATION AND LINERS, MATERIAL, COVERINGS, ADHESIVE, VAPOR-BARRIERS AND TAPES SHALL CONFORM TO NFPA 90A, FLAME SPREAD CLASSIFICATION NOT TO EXCEED 25 AND SMOKE DEVELOPMENT, NOT TO EXCEED 50.
5. EXTERNALLY INSULATED DUCTS
   A. ALL EXTERNALLY INSULATED DUCTS SHALL BE INSULATED WITH MINIMUM 2" THICK .75 LB. DENSITY FIBERGLASS BLANKET WITH FRK (FOIL REINFORCED KRAFT) VAPOR BARRIER FACING. INSULATION SHALL HAVE A CONDUCTIVITY NOT TO EXCEED 0.27 BTU PER INCH PER SQUARE FOOT PER DEGREE FAHRENHEIT PER HOUR AT 75 DEGREE FAHRENHEIT MEAN TEMPERATURE.
   B. INSULATION SHALL BE WRAPPED TIGHTLY ON THE DUCTWORK WITH ALL CIRCUMFERENTIAL JOINTS BUTTED AND LONGITUDINAL JOINTS OVERLAPPED A MINIMUM OF 2". ADHERE INSULATION TO METAL ON THE BOTTOM OF RECTANGULAR DUCTWORK OVER 24" WIDE WITH 4" STRIP OF INSULATION BONDING ADHESIVE, BENJAMIN FOSTER 85-15, OR EQUAL, AND ADDITIONALLY SECURE INSULATION WITH MECHANICAL FASTENERS AT NOT MORE THAN 18" O/C. ON ALL JOINTS, THE 2" FLANGE OF THE FACING OR THE 2" OVERLAP SHALL BE SECURED USING 9/16" FLARE-DOOR STAPLES APPLIED 6" O/C AND TAPED WITH MINIMUM 3" WIDE FOIL REINFORCED KRAFT TAPE. ALL PIN PENETRATIONS OR PUNCTURES IN FACING SHALL ALSO BE TAPED. VERTICAL DUCTS SHALL HAVE INSULATION ADEQUATELY SECURED TO PREVENT SLIPPING.
6. INTERNALLY INSULATED DUCTS
   A. MATERIAL: MINIMUM 1-1/2 LB. NEOPRENE OR HEAVY DENSITY COATED FIBERGLASS DUCT LINER SUITABLE FOR VELOCITIES UP TO 4,000 FPM COMPLYING WITH NFPA 90A.
   B. APPLICATION: COATED DUCT LINER SHALL BE CUT TO ASSURE OVERLAPPED AND COMPRESSED LONGITUDINAL CORNER JOINTS. APPLY LINER WITH COATED SURFACE FACING THE AIR STREAM AND ADHERED WITH 100% COVERAGE FIRE RETARDANT ADHESIVE. COAT ALL EXPOSED LEADING EDGES AND ALL TRANSVERSE JOINTS WITH FIRE RETARDANT ADHESIVE. THE LINER SHALL BE ADDITIONALLY SECURED WITH MECHANICAL FASTENERS WHICH SHALL COMPRESS THE DUCT LINER SUFFICIENTLY TO HOLD IT FIRMLY IN PLACE AS FOLLOWS:
   C. INSTALLATION FOR VELOCITIES TO 2,000 FPM: FASTENERS SHALL START WITHIN 3" OF THE UPSTREAM TRANSVERSE EDGES OF THE LINER AND 3" FROM THE LONGITUDINAL JOINTS AND SHALL BE SPACED AT A MAXIMUM OF 12" O.C. AROUND THE PERIMETER OF THE DUCT, EXCEPT THAT THEY MAY BE A MAXIMUM OF 12" FROM A CORNER BREAK. ELSEWHERE, THEY SHALL BE MAXIMUM OF 18" O.C. EXCEPT THAT THEY SHALL BE PLACED NOT MORE THAN 6' FROM A LONGITUDINAL JOINT OF THE LINER NOR 12" FROM A CORNER BREAK. COAT ALL EXPOSED JOINTS AND EDGES OF TRANSVERSE JOINTS WITH A FIRE RETARDANT ADHESIVE.
   D. OUTDOOR DUCTWORK SHALL BE INSULATED INTERNALLY WITH 2" DUCT LINER. INSTALL PER MANUFACTURERS INSTRUCTIONS. ALL OUTDOOR DUCTWORK JOINTS SHALL BE SEALED WITH SILICONE SEALANT AND MADE COMPLETELY WATERTIGHT AND LEAK PROOF.

GRILLES, REGISTERS AND DIFFUSERS
1. FURNISH AND INSTALL ALL GRILLES, REGISTERS, CEILING DIFFUSERS AND DOOR GRILLES WHERE INDICATED. THEY SHALL BE OF SIZE AND MODEL CALLED FOR ON THE DRAWINGS.
2. ALL GRILLES, REGISTERS, AND CEILING DIFFUSERS MUST BE SET FLUSH AND TRUE TO WALL OR CEILING TO PREVENT AIR LEAKAGE AROUND EDGES. ALL UNITS SHALL BE PROVIDED WITH NEOPRENE GASKETING AROUND THE INSIDE OF THE FRAME.
3. ALL UNITS SHALL BE FACTORY FINISHED, OF COLOR SELECTED BY THE ARCHITECT, OR AS OTHERWISE INDICATED.
4. PAINT ALL DUCTWORK, TURNING VANES, INSULATION, ETC. THAT IS VISIBLE THROUGH GRILLES, REGISTERS, OR CEILING DIFFUSERS FLAT BLACK.

RELIEF VENTS
1. ALL RELIEF VENT EXTERIOR PENETRATIONS SHALL BE PROVIDED WITH COUNTERBALANCED BAROMETRIC BACKDRAFT DAMPERS.

EQUIPMENT
1. ALL MECHANICAL EQUIPMENT SHALL BE PROPERLY LISTED AND LABELED BY AN APPROVED AGENCY.
2. ALL EQUIPMENT SHALL BE LABELED WITH STEEL TAGS EMBOSSED WITH 1/4" HIGH LETTERS, PERMANENTLY ATTACHED. TAG SHALL CLEARLY INDICATE THE AREA SERVED BY THE EQUIPMENT.
3. MAINTAIN MANUFACTURER'S RECOMMENDATIONS FOR ALL REQUIRED SERVICE CLEARANCES AND INSTALLATION OF EQUIPMENT.
4. REFER TO ARCHITECTURAL DRAWINGS FOR ACCESS TO ROOF INSTALLED MECHANICAL EQUIPMENT. ROOF ACCESS TO COMPLY WITH THE MECHANICAL CODE ADOPTED BY THE LOCAL JURISDICTION.

AIR CONDITIONING AND REFRIGERATION PIPING
1. COPPER TUBE WITH BRAZE JOINTS
2. TYPE ACR HARD OR ANNEALED TEMPER SEAMLESS COPPER TUBING ASTM B280
3. BRAZED JOINT PRESSURE FITTINGS ASME B16.50 WROUGHT COPPER ALLOY
4. JOINTS: FLARED OR BRAZED: ASTM A5.8 BCUP-SERIES COPPER-PHOSPHORUS ALLOYS

CONDENSATE DRAIN
1. FOR EACH HVAC UNIT, PROVIDE FULL SIZED 4" DEEP (MINIMUM) TRAPPED CONDENSATE DRAIN OF COPPER TYPE "M" HARD DRAWN. SCHEDULE 40 PVC ALLOWED FOR INDOOR PORTION OF DRAIN WITH DUCTED RETURN AIR HVAC SYSTEMS.
2. PVC DRAIN PIPING NOT ALLOWED IN PLENUM RETURNS. PROVIDE NON-TRAPPED DRAIN FOR EVAPORATIVE COOLING UNITS. FIELD VERIFY ROUTING IS NOT OVER CRITICAL SPACES CONTAINING WATER SENSITIVE EQUIPMENT.
3. ROUTE PIPING TO 6" ABOVE NEAREST FLOOR SINK, MOP SINK OR DRAIN OR AS INDICATED ON THE DRAWINGS. (LAVATORY TAILPIECE IS AN ACCEPTABLE RECEPTACLE IF ALLOWED BY OWNER AND AUTHORITY HAVING JURISDICTION.)
4. SLOPE ALL CONDENSATE PIPING AT A MINIMUM OF 1/8" PER FOOT.
5. INSTALL CLEAN OUTS AT EVERY 90 DEGREE TURN ON ALL CONDENSATE DRAIN LINES.
6. PROVIDE AN APPROVED SECONDARY DRAIN SYSTEM OR APPROVED WATER LEVEL DETECTION DEVICE CONFORMING TO UL508 WHERE DAMAGE TO ANY BUILDING COMPONENTS WILL OCCUR AS A RESULT OF OVERFLOW OR STOPPAGE OF THE PRIMARY CONDENSATE DRAIN SYSTEM.
7. INSULATE THE FIRST 8 FEET OF CONDENSATE DRAIN PIPING AND ANY ADDITIONAL CONDENSATE DRAIN PIPING WHERE ENVIRONMENTAL CONDITIONS MAY CAUSE CONDENSATION TO DRIP FROM PIPING.
8. PROVIDE MEANS OF PREVENTING DISSIMILAR METAL CONTACT BETWEEN ALL PIPING MATERIALS FROM ANY OTHER METAL OR STRUCTURAL MEMBER TO PREVENT GALVANIC ACTION BETWEEN THE TWO METALS.

PIPE INSULATION
1. INSULATE THE FIRST 8 FEET OF CONDENSATE DRAIN PIPING AND ANY ADDITIONAL CONDENSATE DRAIN PIPING WHERE ENVIRONMENTAL CONDITIONS MAY CAUSE CONDENSATION TO DRIP FROM PIPING.
2. EXTERIOR INSULATION SHALL BE RATED FOR EXTERIOR USE OR PROVIDED WITH UV RATED PROTECTIVE COATING.
3. ALL HEATING WATER AND CHILLED WATER PIPING SHALL HAVE FIBERGLASS INSULATION WITH ASJ JACKET, ACHIEVING A THERMAL CONDUCTIVELY (K-FACTOR) OF 0.24 AT 75 DEGREES MEAN TEMPERATURE. INSULATION THICKNESS SHALL MEET THE REQUIREMENTS OF THE CURRENT IECC CODE.
4. THE MAXIMUM FIRE HAZARD CLASSIFICATION OF THE INSULATION SYSTEM SHALL NOT HAVE MORE THAN A FLAME SPREAD OF 25, A FUEL CONTRIBUTED RATING OF 50, AND A SMOKE DEVELOPED RATING OF 50 WHEN TESTED IN ACCORDANCE WITH U.L. REQUIREMENTS. PIPE COVERING SHALL BEAR THE U.L. LABEL.
5. INSULATE ALL FITTINGS, VALVE BODIES ETC. WITH SINGLE OR MULTIPLE LAYERS OF INSULATION WITH PREFABRICATED FITTINGS WITH P.V.C. JACKETS.
6. PROVIDE MANUFACTURER SUBMITTAL FOR ALL INSULATION MATERIALS.

FINAL TESTS
1. AN INDEPENDENT AABC, NEBB OR TABB LIFE SAFETY LEVEL 2 CERTIFIED CONTRACTOR SHALL BALANCE AIR DISTRIBUTION TO VALUES LISTED ON DRAWINGS. A FINAL COPY OF THE TEST AND BALANCE REPORT SHALL BE PROVIDED TO THE ENGINEER UPON COMPLETION OF THE REPORT. A PROJECT SHALL NOT BE CONSIDERED IN COMPLIANCE WITH THE PLANS AND SPECIFICATIONS UNTIL SUCH A REPORT HAS BEEN PROVIDED TO THE ENGINEER.
2. BEFORE ACCEPTANCE AND FINAL PAYMENT, IT SHALL BE DEMONSTRATED THAT ALL APPARATUS IS FUNCTIONING PROPERLY AND EFFICIENTLY. THE CONTRACTOR SHALL MAKE A THOROUGH TEST OF EACH SUPPLY, RETURN, AND EXHAUST SYSTEMS TO ASSURE THAT EACH DIFFUSER AND REGISTER HAS THE PROPER QUANTITY OF AIR IN ACCORDANCE WITH AABC OR NEBB. PROVIDE ADDITIONAL COMFORT BALANCE ADJUSTMENTS PER OWNER/TENANT REQUIREMENTS TO ADDRESS ANY NEEDED VARIATIONS IN DESIGN AIR FLOWS.
3. THE TEST AND BALANCE CONTRACTOR HAS THE RIGHT TO COMMUNICATE ANY INFORMATION TO THE MECHANICAL ENGINEER.

GUARANTEE
1. THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FROM DEFECT OF WORKMANSHIP, AND SHALL REPLACE OR REPAIR WITHOUT ADDITIONAL COST TO THE OWNER ALL DEFECTIVE MATERIAL AND WORKMANSHIP, FOR A PERIOD OF (1) YEAR AFTER COMPLETION AND ACCEPTANCE.

CLOSEOUT
1. PROVIDE OWNER WITH COMPLETE OPERATION AND MAINTENANCE MANUALS FOR ALL EQUIPMENT AND CONTROLS INSTALLED. DOCUMENTATION MUST INCLUDE EQUIPMENT CAPACITY (INPUT & OUTPUT), REQUIRED MAINTENANCE ACTIONS, CONTROLS AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, CONTROL SEQUENCE DESCRIPTIONS, DESIRED OR FIELD-DETERMINED SETPOINTS, AND A COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE.
2. PROVIDE A COMPLETE SET OF FULL SIZE AS-BUILT DRAWINGS OF THE COMPLETE INSTALLATION INCLUDING ALL CHANGES MADE DURING CONSTRUCTION.

ORDER OF PRECEDENCE OF DOCUMENTS
1. SHOULD A CONFLICT ARISE BETWEEN CONSTRUCTION DOCUMENTS, THE ORDER OF PRECEDENCE SHALL BE:
   A. SPECIAL PROVISIONS
   B. GENERAL PROVISIONS
   C. SPECIFICATIONS
   D. DETAILS ON DRAWINGS
   E. PLAN DRAWINGS
2. THE ENGINEER OF RECORD SHALL BE NOTIFIED BEFORE A DECISION IS MADE.

CITY OF PHOENIX
PLANNING & DEVELOPMENT DEPARTMENT
This set of plans must be reviewed on site prior to construction and shall be kept at the construction site. Such review shall not prevent the City from requiring correction of errors in the plans where such errors are subsequently found to be in violation of any law, ordinance, health, safety, or other design issues.
Inspector: ______ Number: ______ Date: ______

MECHANICAL SHEET INDEX

ASEIENGINEERING
2410 w. royal palm rd. suite A, phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440
DFT: HMM
DSN: HMM
CHK: DEM

ARCHICON
Architecture & Interiors, L.C.

5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

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-	-	-
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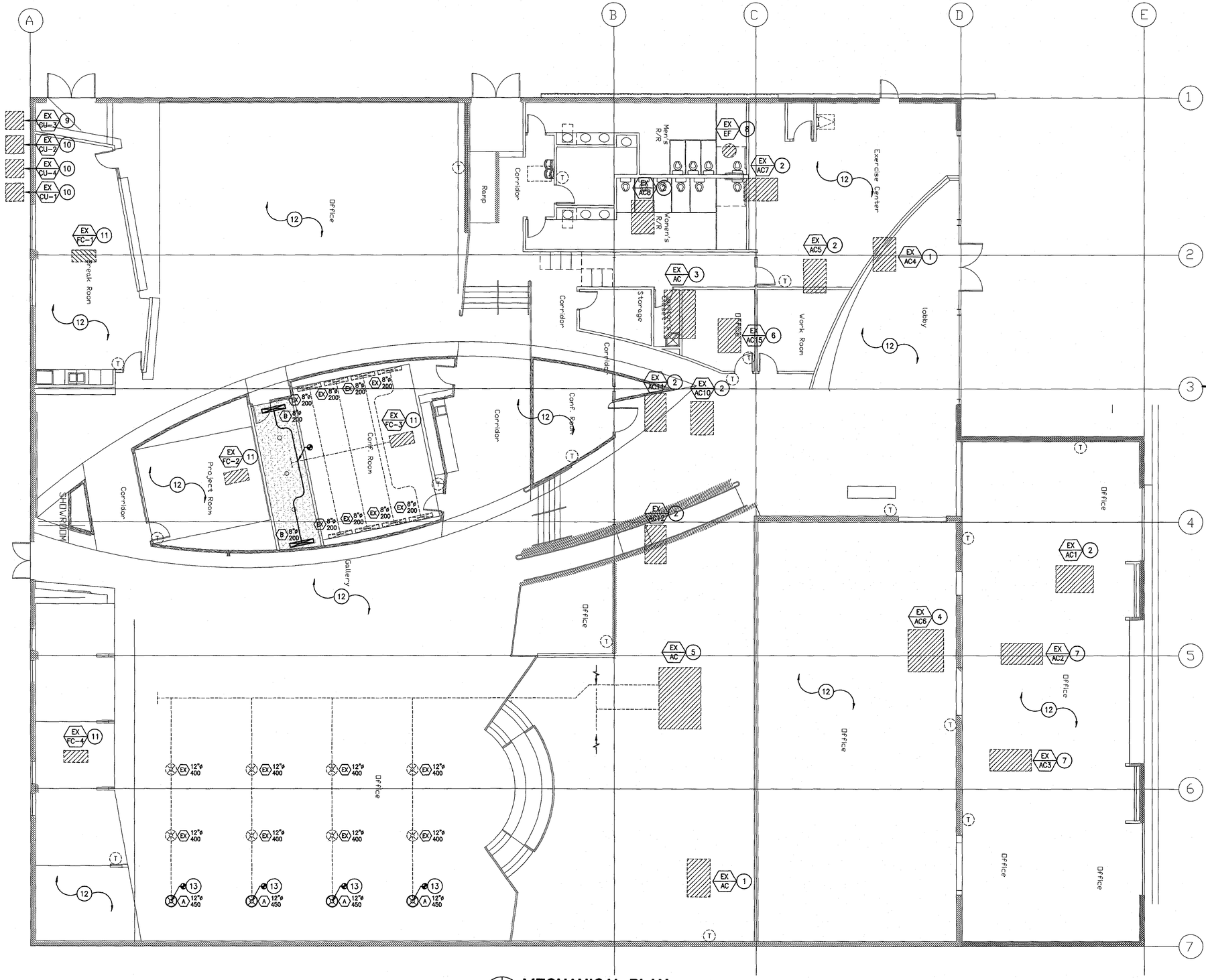
-	-	-

Sheet Description
MECHANICAL SPECS, SYMBOLS, AND SHEET INDEX

Registered Professional Engineer (Mechanical) Certificate No. 28205
DAVID E. McCARTHY
01/04/18
Date Signed
ARIZONA, U.S.A.
Expires 09/30/2018

Sheet No.
M0.1

Issue Date: 12.15.17



GENERAL NOTES

A. MECHANICAL CONTRACTOR MUST EXAMINE THE CONTRACT DRAWINGS AND ALL AVAILABLE INFORMATION CONCERNING EXISTING INSTALLATION, STRUCTURE AND LOCAL CONDITIONS. VISIT THE SITE TO UNDERSTAND THE NATURE AND SCOPE OF ALL WORK TO BE PERFORMED AND VERIFY EXISTING CONDITIONS. CONTRACTOR SHALL NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS. COMMENCEMENT OF WORK WILL BE TAKEN AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND THAT ALL EXISTING CONDITIONS HAVE BEEN CONSIDERED, AND NO ADDITIONAL SERVICE FEES SHALL BE GRANTED FOR THE FAILURE TO PERFORM THIS WORK.

B. REFER TO ARCHITECTURAL DRAWINGS FOR ACCESS LOCATIONS TO ROOF.

C. PROVIDE DUCT TRANSITIONS WITH FLEXIBLE CONNECTIONS AT THE SUPPLY AND RETURN OPENINGS OF THE EQUIPMENT TO THE DUCT SIZES SHOWN ON DRAWINGS.

D. PROVIDE LOCKING DAMPER AS NEEDED IN OUTSIDE AIR AND/OR RETURN DUCTS FOR THE PURPOSE OF BALANCING OUTSIDE AIR TO DESIGN REQUIREMENTS.

E. CONTRACTOR SHALL MAINTAIN ALL WARRANTIES ASSOCIATED WITH THE ROOF FOR ALL ROOF PENETRATIONS. PROVIDE NEW ROOF CURBS AND PIPE PORTALS AS NECESSARY. COORDINATE WITH GENERAL CONTRACTOR AND ARCHITECTURAL DRAWINGS.

F. MAINTAIN A MINIMUM OF 10'-0" CLEARANCE BETWEEN ALL EXHAUST/VENT OUTLETS AND ALL FRESH AIR INTAKES.

G. MECHANICAL CONTRACTOR TO FIELD VERIFY AND PATCH/SEAL ALL EXISTING DUCTWORK AS REQUIRED.

H. ALL EXISTING AIR DEVICES SHOULD BE STOCKPILED DURING DEMO PHASE. INSPECT CONDITION, REFURBISH DIFFUSERS IF POSSIBLE AND REUSE DIFFUSERS IN GOOD CONDITION. COORDINATE WITH GC FOR LINE ITEM BID TO CLEAN/PAINT REUSED DIFFUSERS.

I. CONTRACTOR TO VERIFY INSTALLATION OF EXISTING CONDENSATE DRAIN LINES AT EXISTING ROOFTOP UNITS. VERIFY EACH UNIT IS PROVIDED WITH A TRAPPED AND VENTED DRAIN SIZED MINIMUM OF UNIT OUTLET. REPAIR/REPLACE EXISTING DRAIN LINES AS NECESSARY.

J. AT EXPOSED CEILING AREAS, PAINT ALL DUCTWORK AND AIR DEVICES PER ARCHITECT'S DIRECTIONS.

K. DIFFUSER MOUNTING HEIGHT AT EXPOSED CEILING AREAS SHALL BE AT THE INSTALLED HEIGHT OF THE LIGHTING OR AS DIRECTED BY THE ARCHITECT/OWNER.

L. COORDINATE WITH OWNER FOR ALL FINAL T-STAT LOCATIONS PRIOR TO INSTALLATION.

M. ALL SUPPLY DUCTWORK IN THE MULTI-PURPOSE AREA SHALL BE SPIRAL ROUND PAINTED PER ARCHITECT'S DIRECTIONS. ALL SPIRAL DUCTWORK SHALL BE INTERNALLY LINED PER SPECIFICATIONS.

N. REMOVE ALL EXISTING MECHANICAL EQUIPMENT, DUCTWORK, WIRING AND ASSOCIATED COMPONENTS NOT SHOWN AS EXISTING TO REMAIN OR TO BE REUSED. REUSE AND/OR MODIFY EXISTING OPENINGS FOR NEW EQUIPMENT AS NECESSARY. OTHERWISE PATCH ROOF WATER TIGHT TO MATCHING EXISTING ROOFING.

O. CONTRACTOR MAY REUSE ANY DEMOLISHED DUCTWORK/COMPONENTS PROVIDED IT'S IN LIKE-NEW CONDITION AND MATCHES SIZES INDICATED ON THE DRAWINGS. OBTAIN APPROVAL BY THE TENANT PRIOR TO REUSE.

KEYED NOTES (#)

1. EXISTING 5 TON RHEEM MODEL#(RJNL-A060CL, 208/3PH, 26 MCA, 40 MOCP) LOCATED ON THE ROOF TO REMAIN AND BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND WORKING CONDITION BEFORE START OF WORK.
2. EXISTING 5 TON RHEEM MODEL#(RJKA-A060CL, 208/3PH, 34 MCA, 50 MOCP) LOCATED ON THE ROOF TO REMAIN AND BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND WORKING CONDITION BEFORE START OF WORK.
3. EXISTING 10 TON TRANE MODEL#(WSC120E3R0A0F, 208/3PH, 52 MCA, 60 MCB) LOCATED ON THE ROOF TO REMAIN AND BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND WORKING CONDITION BEFORE START OF WORK.
4. EXISTING 10 TON TRANE MODEL#(WCD120B300EA, 208/3PH, 56 MCA, 70 MCB) LOCATED ON THE ROOF TO REMAIN AND BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND WORKING CONDITION BEFORE START OF WORK.
5. EXISTING 12.5 TON AMERICAN STANDARD MODEL#(WSH150E3R0A01, 208/3PH, 67 MCA, 80 MOCP) LOCATED ON THE ROOF TO REMAIN AND BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND WORKING CONDITION BEFORE START OF WORK.
6. EXISTING 3 TON RHEEM MODEL#(RJKA-A036CK, 208/3PH, 24 MCA, 35 MOCP) LOCATED ON THE ROOF TO REMAIN AND BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND WORKING CONDITION BEFORE START OF WORK.
7. EXISTING 4 TON (208/3PH, 33 MCA, 50 MOCP) LOCATED ON THE ROOF TO REMAIN AND BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND WORKING CONDITION BEFORE START OF WORK.
8. EXISTING GREENHECK ROOF MOUNTED EXHAUST FAN (GB-160-5X-OD, 1/2 HP) TO REMAIN AND BE REUSED.
9. EXISTING 5 TON CARRIER CONDENSER MODEL#(25HCD360A500, 208/3PH, 21.1 MCA, 30 MOCP) LOCATED ON CONCRETE PAD TO REMAIN AND BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND WORKING CONDITION BEFORE START OF WORK.
10. EXISTING 5 TON RHEEM CONDENSER MODEL#(RPKA-060CAZ, 208/3PH, 25 MCA, 40 MOCP) LOCATED ON CONCRETE PAD TO REMAIN AND BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND WORKING CONDITION BEFORE START OF WORK.
11. EXISTING 5 TON AIR HANDLER LOCATED IN CEILING SPACE TO REMAIN AND BE REUSED. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION AND WORKING CONDITION BEFORE START OF WORK.
12. NO WORK IN THIS AREA, EXISTING CONDITIONS TO REMAIN.
13. CONNECT NEW DUCTWORK TO EXISTING DUCTWORK AT THIS LOCATION. REMOVE ALL DOWNSTREAM DUCTWORK.

CITY OF PHOENIX

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Inspector _____ Number _____ Date _____

MECHANICAL PLAN

1/8"=1'-0"

ASEIENGINEERING
2410 w. royal palm rd. suite A, phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440

DFT: HMM
DSN: HMM
CHK: DEM

ARCHICON
Architecture & Interiors, L.C.

5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

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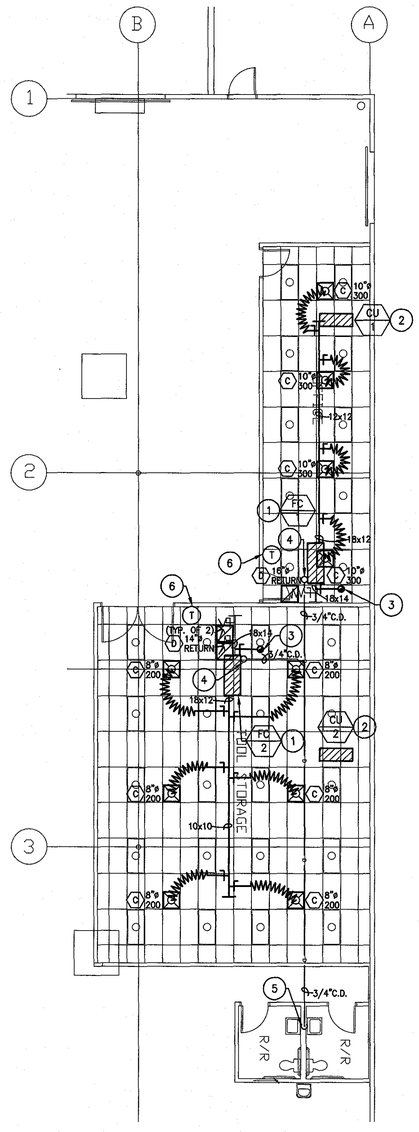
MECHANICAL PLAN

Expires 09/30/2018

Sheet No.

M1.1

Issue Date: 12.15.17



MECHANICAL PLAN- WAREHOUSE

1/8"=1'-0"

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C. PROVIDE DUCT TRANSITIONS WITH FLEXIBLE CONNECTIONS AT THE SUPPLY AND RETURN OPENINGS OF THE EQUIPMENT TO THE DUCT SIZES SHOWN ON DRAWINGS.

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G. MECHANICAL CONTRACTOR TO FIELD VERIFY AND PATCH/SEAL ALL EXISTING DUCTWORK AS REQUIRED.

H. ALL EXISTING AIR DEVICES SHOULD BE STOCKPILED DURING DEMO PHASE. INSPECT CONDITION, REFURBISH DIFFUSERS IF POSSIBLE AND REUSE DIFFUSERS IN GOOD CONDITION. COORDINATE WITH GC FOR LINE ITEM BID TO CLEAN/PAINT REUSED DIFFUSERS.

I. CONTRACTOR TO VERIFY INSTALLATION OF EXISTING CONDENSATE DRAIN LINES AT EXISTING ROOFTOP UNITS. VERIFY EACH UNIT IS PROVIDED WITH A TRAPPED AND VENTED DRAIN SIZED MINIMUM OF UNIT OUTLET. REPAIR/REPLACE EXISTING DRAIN LINES AS NECESSARY.

J. AT EXPOSED CEILING AREAS, PAINT ALL DUCTWORK AND AIR DEVICES PER ARCHITECT'S DIRECTIONS.

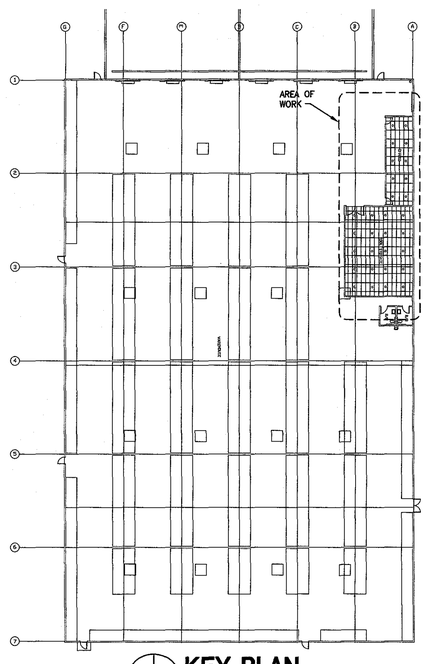
K. DIFFUSER MOUNTING HEIGHT AT EXPOSED CEILING AREAS SHALL BE AT THE INSTALLED HEIGHT OF THE LIGHTING OR AS DIRECTED BY THE ARCHITECT/OWNER.

L. COORDINATE WITH OWNER FOR ALL FINAL T-STAT LOCATIONS PRIOR TO INSTALLATION.

M. ALL SUPPLY DUCTWORK IN THE MULTI-PURPOSE AREA SHALL BE SPIRAL ROUND PAINTED PER ARCHITECT'S DIRECTIONS. ALL SPIRAL DUCTWORK SHALL BE INTERNALLY LINED PER SPECIFICATIONS.

KEYED NOTES (#)

1. 3 TON FAN COIL UNIT LOCATED ABOVE CEILING ON PLYWOOD PLATFORM.
2. CONDENSING UNIT LOCATED ABOVE CEILING ON PLYWOOD PLATFORM. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
3. ROUTE 8"ø INTAKE DUCT UP THROUGH ROOF, FINISH WITH APPROVED GOOSE NECK ON ROOF. MAINTAIN 10'-0" CLEARANCE MINIMUM TO EXHAUST AIR.
4. ROUTE 3/4" CONDENSATE DRAIN LINE WITH TRAP AND VENT FROM FAN COIL UNIT IN CEILING. SLOPE CONDENSATE DRAIN LINES AT 1/8" PER FOOT SLOPE MINIMUM.
5. ROUTE 3/4" CONDENSATE DRAIN LINE DOWN IN WALL AND TERMINATE IN EXISTING LAV TAILPIECE.
6. LOCATE PROGRAMMABLE T-STATS ON WALL. T-STATS SHALL BE WIRED TO REMOTE TEMPERATURE SENSOR LOCATED AT EACH APPROPRIATE FAN COIL UNIT'S RETURN DUCT. COORDINATE EXACT LOCATION OF T-STATS WITH ARCHITECT/TENANT PRIOR TO INSTALLATION.



KEY PLAN

1/32"=1'-0"

CONDENSATE DRAIN

EQUIPMENT CAPACITY IN TONS OF REFRIGERATION	MINIMUM CONDENSATE PIPE DIAMETER
UP TO 20 TONS	3/4"

SLOPE DRAIN LINES AT 1/8" PER FOOT

JOB NO: 173440
DFT: HMM
DSN: HMM
CHK: DEM

ARCHICON
Architecture & Interiors, L.C.
5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
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Sheet Description
MECHANICAL PLAN- WAREHOUSE

Expires 09/30/2018

Sheet No.

M1.2

Issue Date: 12.15.17

SPLIT SYSTEM HEAT PUMP SCHEDULE

FC – CU –

MARK	NOMINAL TONS	MANUFACTURER MODEL #		INDOOR UNIT						OUTDOOR UNIT				SEER/ EER	HSPF/ COP	CYCLE	HEATING/COOLING CAPACITIES						REMARKS
		INDOOR	OUTDOOR	TOTAL CFM	O.A. CFM	ESP IWG	HP	MOCP	VOLT/Ø	WT. LBS.	MAX FLA	MOCP	VOLT/Ø	WT. LBS.				ENT AIR DB	ENT AIR WB	AMBIENT DB	AMBIENT WB	MBH TOTAL	MBH SENS.	
1,2	3	CARRIER FX4CNF036	CARRIER 38QRR036A005	1200	SEE OSA CALC	0.5	1/2	15	208/1PH	150	11	20	208/3PH	235	14.5 SEER	8.0 HSPF	COOL	80.0	67.0	115	76	34.4	33.8	SEE NOTES BELOW
																	HEAT	70	–	32	–	–	19.7	

NOTE:
1. MANUFACTURER SHALL SIZE REFRIGERANT LINES AND SHALL PROVIDE NECESSARY REFRIGERANT SPECIALTIES FOR LONG LINE APPLICATIONS, IF APPLICABLE.
2. MANUFACTURER TO GUARANTEE AND ASSURE PROPER OPERATION OF REFRIGERANT SYSTEM.
3. PROVIDE WITH 7 DAY PROGRAMMABLE T-STAT IN LOCKABLE COVER, AUTO-CHANGE OVER.
4. PROVIDE AN APPROVED FULL SIZE DRAIN PAN FOR DAMAGE TO BUILDING COMPONENTS WILL OCCUR AS A RESULT OF OVERFLOW OR STOPPAGE OF THE PRIMARY CONDENSATE DRAIN.
5. PROVIDE RECTORSEAL SS2 SAFETY SWITCH AT SECONDARY DRAIN WIRED FOR UNIT SHUTDOWN UPON ACTIVATION.

ECONOMIZER NOTE

ALL UNITS EXCEED MINIMUM EFFICIENCY REQUIREMENTS BY AT LEAST 10%. ECONOMIZER NOT REQUIRED AS PER IECC 2012 SECTION 403.3.1 EXCEPTION #6 AND TABLE 403.3.1(2).

GRILLE, REGISTER, & DIFFUSER SCHEDULE

UNIT TYPE — (#) NECK SIZE XXX CFM

MARK	MANUF./ MODEL #	DESCRIPTION	FRAME	FINISH	MATERIAL	DAMPER	MAX. NC	REMARKS
A	TITUS TMR	ROUND SUPPLY	FLANGED	PER ARCHITECT	STEEL	YES	28	–
B	TITUS FL-10	SUPPLY DIFFUSER	FLANGED	PER ARCHITECT	ALUMINUM	YES	28	–
C	TITUS TMS	SUPPLY DIFFUSER	LAY-IN	PER ARCHITECT	STEEL	–	28	–
D	TITUS 350RL	RETURN GRILLE	LAY-IN	PER ARCHITECT	STEEL	–	28	3/4" SPACING W/ 35° DEFLECTION

HVAC LOAD CALCULATIONS

(PER ADOPTED IECC)

CALCULATED COOLING		PROVIDED COOLING		CALCULATED HEAT	PROVIDED HEAT	IPLV	AFHU
TOTAL	SENS.	TOTAL	SENS.				
61.7 MBH	59.8 MBH	68.8 MBH	67.6 MBH	36.2 MBH	39.4 MBH		

NOTE: CALCULATIONS WERE PERFORMED BY THE CARRIER HOURLY ANALYSIS PROGRAM IN COMPLIANCE WITH ASHRAE FUNDAMENTALS. EQUIPMENT SIZING MEETS IECC REQUIREMENTS.

OUTSIDE AIR CALCULATION

BASED ON 2012 IMC 403

$Vbz = (Rp \times Pz) + (Ra \times Az)$

ZONE OR UNIT NO:FC-1 — Total CFM 55

OFFICE SPACE 480 SQ.FT.

OCC DENSITY= 5 PEOPLE / 1000 SQ.FT.

480 X 5 / 1000 = 3 PEOPLE

R_P	P_Z	R_A	A_Z	
5	3	0.06	480	SQ.FT.
	Vbz = (5 X 3) + (0.06 X 480) =		44	CFM
	AIR DISTRIB.EFF.(Ez) =		0.8	
Total OA Required =	Voz = Vbz / Ez =		55	CFM

FC 1 — 55 CFM OF OSA REQUIRED. SET FC-1 TO 120 CFM OF O.S.A.

ZONE OR UNIT NO:FC-2 — Total CFM 184

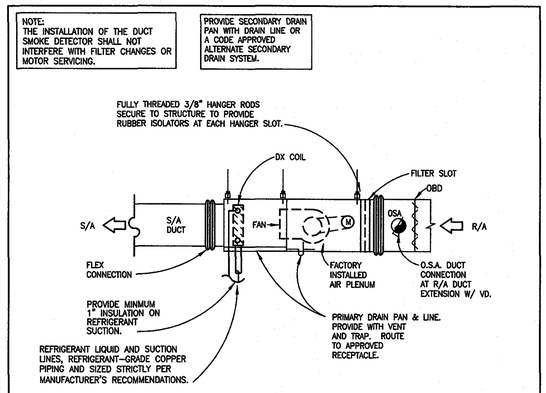
STORAGE ROOMS 1,225 SQ.FT.

OCC DENSITY= 0 PEOPLE / 1000 SQ.FT.

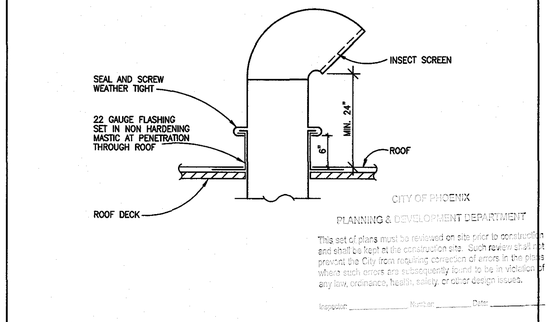
1225 X 0 / 1000 = 0 PEOPLE

R_P	P_Z	R_A	A_Z	
0	0	0.12	1,225	SQ.FT.
	Vbz = (0 X 0) + (0.12 X 1225) =		147	CFM
	AIR DISTRIB.EFF.(Ez) =		0.8	
Total OA Required =	Voz = Vbz / Ez =		184	CFM

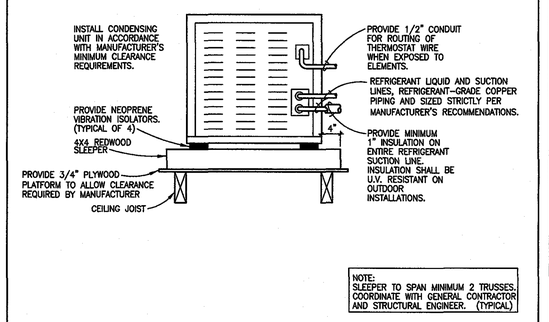
FC 2 — 184 CFM OF OSA REQUIRED. SET FC-2 TO 200 CFM OF O.S.A.



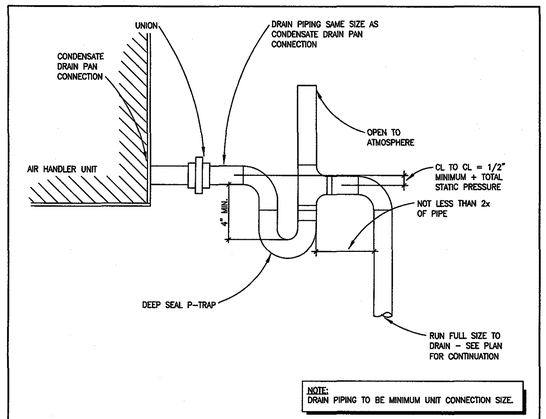
6 FAN COIL MOUNTING DETAIL (NTS)



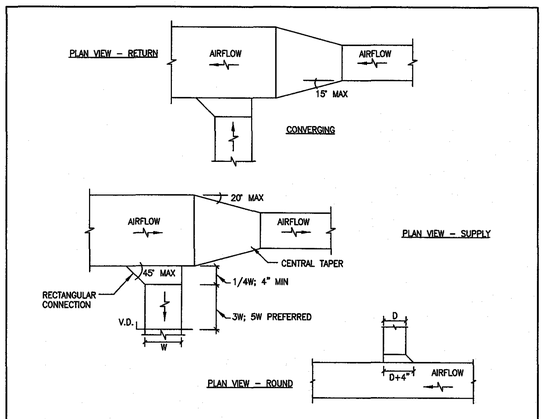
4 GOOSE NECK OSA INTAKE (NTS)



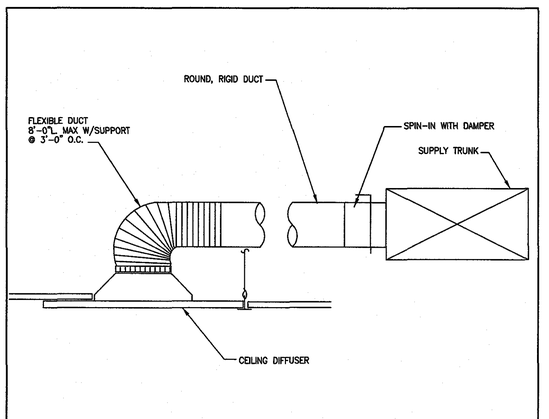
2 CONDENSING UNIT DETAIL (NTS)



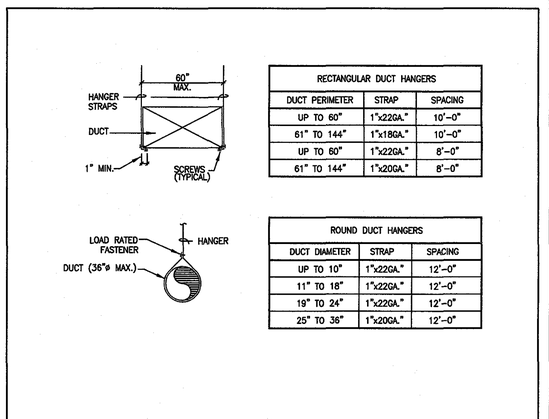
7 CONDENSATE DRAIN CONNECTION (NTS)



5 TYPICAL BRANCH TAKE-OFF FROM MAIN (NTS)



3 FLEX DUCT TAKE-OFF (NTS)



RECTANGULAR DUCT HANGERS		
DUCT PERIMETER	STRAP	SPACING
UP TO 60"	1"x22GA."	10'-0"
61" TO 144"	1"x18GA."	10'-0"
UP TO 60"	1"x22GA."	8'-0"
61" TO 144"	1"x20GA."	8'-0"

ROUND DUCT HANGERS		
DUCT DIAMETER	STRAP	SPACING
UP TO 10"	1"x22GA."	12'-0"
11" TO 18"	1"x22GA."	12'-0"
19" TO 24"	1"x22GA."	12'-0"
25" TO 36"	1"x20GA."	12'-0"

1 DUCT HANGER (NTS)

ASEIENGINEERING
2410 w. royal palm rd. suite A, phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440 | DFT: HMM | DSN: HMM | CHK: DEM

ARCHICON
Architecture & Interiors, L.C.
5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
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Drawn By:	OT
Checked By:	JP

No.	Revision	Date

Sheet Description
MECHANICAL SCHEDULES, CALCULATIONS AND DETAILS

28205 DAVID E. McCARTHY 01/04/18 Registered Professional Engineer ARIZONA, U.S.A.

Expires 09/30/2018

Sheet No.

M2.1

Issue Date: 12.15.17

REFERENCE SYMBOLS

Symbol	Description
# / SHEET	GENERAL REFERENCE DESIGNATES SHEET NUMBER
# / SHEET	DETAIL REFERENCE TOP DESIGNATES DETAIL NUMBER BOTTOM DESIGNATES SHEET NUMBER
# / X0.0	SECTION REFERENCE TOP DESIGNATES SECTION NUMBER BOTTOM DESIGNATES SHEET NUMBER
EQUP / #	EQUIPMENT NAME AND NUMBER
#	SHEET KEYNOTE NUMBER
#	REVISION NUMBER
	ELEVATION SYMBOL
	NEW CONNECTION TO EXISTING

PLUMBING LEGEND

SYMBOL	ABBR.	DESCRIPTION
	W	WASTE OR SEWER PIPING
	CWV	COMBINATION WASTE AND VENT
GW	GW	GREASE WASTE
	V	VENT PIPING
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
	HWR	HOT WATER RETURN PIPING
G	G	NATURAL GAS PIPING
FW	FW	FILTERED WATER PIPING
RD	RD	ROOF DRAIN LEADER
OD	OD	ROOF OVERFLOW DRAIN LEADER
D	D/CD	INDIRECT OR CONDENSATE DRAIN
	-	ISOMETRIC CONTINUATION
	-	PIPE RISE
	-	PIPE DROP
	-	PIPE DROP UNDER A HORIZONTAL PIPE
	-	PIPE CAP
	-	PIPE BREAK
	GV	GATE VALVE
	GBV	GLOBE VALVE
	BV	BALL VALVE
	CV	CHECK VALVE
	PV	PLUG VALVE
	SV	SOLENOID VALVE
BV	-	BALANCING VALVE
	PNV	PNEUMATIC VALVE
	BV	BUTTERFLY VALVE
	-	UNION
	-	REDUCER
	HB	HOSE BIBB
	GPR	GAS PRESSURE REGULATOR
	F	FIRE SPRINKLER PIPING
	FS	FLOOR SINK
	FD	FLOOR DRAIN
Ø	FCO/SCO	FLOOR OR SURFACE CLEANOUT
	WCO	WALL CLEANOUT
O	RD/OD	ROOF DRAIN/ OVERFLOW DRAIN
	VTR	VENT THRU ROOF
TP	TP	TRAP PRIMER
WHA	WHA	WATER HAMMER ARRESTOR
	PDP	POSITIVE DISPLACEMENT PUMP
	CP	CENTRIFUGAL PUMP
	POC	POINT OF CONNECTION BETWEEN NEW AND EXISTING

NOTE: ALL SYMBOLS MAY NOT APPLY

2012 IECC COMPLIANCE NOTES

1. WATER-HEATING EQUIPMENT NOT SUPPLIED WITH INTEGRAL HEAT TRAPS AND SERVING NON-CIRCULATING SYSTEMS SHALL BE PROVIDED WITH HEAT TRAPS ON SUPPLY AND DISCHARGE PIPING ASSOCIATED WITH EQUIPMENT.
2. PROVIDE MINIMUM 1" PIPE INSULATION HAVING A CONDUCTIVITY NOT GREATER THAN 0.27 BTU PER IN/HR FT^2 DEG °F ON AUTOMATIC-CIRCULATING HOT WATER SYSTEMS. PROVIDE MINIMUM 1/2" INSULATION HAVING A CONDUCTIVITY NOT GREATER THAN 0.27 BTU PER IN./HR FT^2 DEG °F FOR FIRST 8 FEET OF NON-CIRCULATING SYSTEMS WITHOUT INTEGRAL HEAT TRAPS.
3. SERVICE WATER-HEATING EQUIPMENT SHALL BE PROVIDED WITH CONTROLS TO ALLOW A SETPOINT OF 110°F FOR EQUIPMENT SERVING DWELLING UNITS AND 90°F FOR EQUIPMENT SERVING OTHER OCCUPANCIES. THE OUTLET TEMPERATURE OF LAVATORIES IN PUBLIC FACILITY RESTROOMS SHALL NOT EXCEED 110°F.
4. WATER-HEATING EQUIPMENT AND HOT WATER STORAGE TANKS SHALL MEET THE REQUIREMENTS OF THE CURRENT IECC CODE. THE EFFICIENCY SHALL BE VERIFIED THROUGH DATA FURNISHED BY THE MANUFACTURER OR THROUGH CERTIFICATION UNDER AN APPROVED CERTIFICATION PROGRAM.

PLUMBING SPECIFICATIONS

NOTE: ALL SPECIFICATIONS MAY NOT APPLY

NOTICE TO OWNERS, ARCHITECTS AND CONTRACTORS REGARDING PRICING ESTIMATES
1. UNDER NO CIRCUMSTANCES SHALL THESE DRAWINGS BE "FINAL" OR "HARD BID" UNTIL THE PROJECT IS FULLY PERMITTED.
2. ALL PRELIMINARY PRICING EFFORTS SHALL BE CONSIDERED AS ESTIMATES ONLY AND SHALL INCLUDE SUCH CONTINGENCIES, ALLOWANCES, ALTERNATIVES, ETC. TO ACCOUNT FOR MODIFICATIONS AND ADDITIONS THAT WILL OCCUR TO THE DRAWINGS DURING FINALIZATION OF THE DESIGN AND PERMITTING PROCESS.

SCOPE OF WORK
1. ALL WORK REQUIRED CONSISTS OF PERFORMING ALL LABOR AND FURNISHING ALL MATERIALS, FIXTURES AND EQUIPMENT REQUIRED TO PROVIDE COMPLETE PLUMBING INSTALLATION AS INDICATED ON THE DRAWINGS. IT SHALL FURTHER INCLUDE FURNISHING AND INSTALLING ALL MISCELLANEOUS ITEMS REQUIRED FOR THE OPERATION OF THE SYSTEMS, WHETHER SPECIFICALLY CALLED FOR OR NOT. CONNECT ALL EQUIPMENT FURNISHED UNDER OTHER TRADES AS REQUIRED. DETERMINE IN ADVANCE THE SHUT-DOWN OF EXISTING UTILITIES.
2. EXACT LOCATION OF PLUMBING FIXTURES SHALL BE DETERMINED FROM ARCHITECTURAL DRAWINGS.
3. SPECIAL INSPECTIONS: WHERE THE PLANS INDICATE SPECIAL INSPECTIONS AND REPORT, OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ), THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, HIRE AN INDEPENDENT THIRD PARTY INSPECTOR OR TESTING AGENCY TO PERFORM THE REQUIRED INSPECTIONS FOR THE TYPES OF WORK REQUIRED OR IDENTIFIED ON THE SPECIAL INSPECTION FORM. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT TO THE REGISTERED DESIGN PROFESSIONAL ENGINEER, PROVIDING TEST RESULTS AND STATING WHETHER THE ITEMS REQUIRING SPECIAL INSPECTION WERE IN COMPLIANCE WITH THE INSPECTION REQUIREMENTS. PROVIDE ADDITIONAL COST FOR ENGINEER'S SEALED LETTER OF APPROVAL.

CODES
1. ALL MATERIALS, EQUIPMENT AND INSTALLATION MUST COMPLY WITH ALL APPLICABLE LAWS, CODES, RULES, AND REGULATIONS, REQUIRED BY CITY, COUNTY, STATE, AND FEDERAL AGENCIES.

PERMITS
1. THIS CONTRACTOR SHALL PAY FOR ALL PERMITS, LICENSES AND FEES REQUIRED BY STATE AND LOCAL AUTHORITIES.
2. COMBUSTIBLE MATERIALS SHALL NOT BE USED IN A NON-COMBUSTIBLE CONSTRUCTION TYPE BUILDING AS DEFINED BY THE BUILDING CODE. COMBUSTIBLE MATERIALS SHALL BE PROTECTED AS SPECIFIED BY THE ENGINEER AND ARCHITECT OF RECORD.

INSPECTION
1. FURNISH OWNER WITH CERTIFICATE OF INSPECTION AND APPROVAL BY LOCAL AUTHORITIES PRIOR TO FINAL ACCEPTANCE OF THE PROJECT BY THE OWNER. ALL WORK MUST BE INSPECTED.

EXISTING CONDITIONS
1. THE CONTRACTOR SHALL VERIFY EXACT LOCATIONS OF ALL UTILITIES PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL VISIT THE SITE AND INSPECT THE WORK TO BE PERFORMED, IN ADDITION TO WHAT IS SHOWN HEREIN, AND INCLUDE IN BID AN AMOUNT TO DO SUCH WORK.
2. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS OF SEWERS TO WHICH NEW WASTE LINES ARE TO BE CONNECTED BEFORE MAKING UP OR INSTALLATION OF NEW SYSTEM.
3. PRIOR TO COMMENCING WORK, PLUMBING CONTRACTOR SHALL CLEAN, TEST AND INSPECT ALL EXISTING ABOVE AND BELOW GROUND SEWER LINES TO INSURE THAT EXISTING SEWER PIPING IS IN SATISFACTORY WORKING CONDITION. CONTRACTOR SHALL REPORT ANY DEFECTS/DEFICIENCIES TO OWNER/ARCHITECT IMMEDIATELY. SUBMIT ADDENDUM BID TO ACCOMMODATE ANY REPAIR/REPLACEMENTS AS REQUIRED.
4. CONTRACTOR SHALL NOT CUT HOLES IN STRUCTURAL MEMBERS WITHOUT FIRST SECURING WRITTEN APPROVAL FROM THE ARCHITECT.

SHOP DRAWING SUBMITTALS
1. PRIOR TO PROCUREMENT, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW FOR ALL EQUIPMENT, INCLUDING THE FOLLOWING:
   A. DOMESTIC WATER, GAS, SANITARY AND STORM PIPING AND FITTINGS.
   B. BALL, BUTTERFLY VALVES, PRESSURE REDUCING VALVES AND SOLENOID VALVES.
   C. THERMAL INSULATION.
   D. WATER HEATERS AND PUMPS.
   E. OIL AND GREASE INTERCEPTORS.

MATERIALS

WATER PIPING:
1. ALL PIPING SHALL CONFORM TO THE REQUIREMENTS OF THE ANSI SAFETY CODE AND BE FREE FROM ALL DEFECTS AND BE PROPERLY IDENTIFIED.
2. ABOVE GROUND SHALL BE:
   2.1. TYPE "L" OR TYPE "M" HARD DRAWN COPPER TUBING CONFORMING TO ASTM B 88.
   2.2. CPVC PLASTIC PIPE CONFORMING TO ASTM D 2846; ASTM F 441-442; CSA B137.6.
   2.3. CROSS-LINKED POLYETHYLENE (PEX) PLASTIC TUBING, IF ALLOWED BY THE AUTHORITY HAVING JURISDICTION, CONFORMING TO ASTM F 876; ASTM F 877; CSA B137.5.
3. BELOW GROUND: (INSTALLED IN CONCRETE OR UNDER CONCRETE) TYPE "K" SOFT DRAWN COPPER TUBING, CONFORMING TO ASTM B 88-72, SPIRALLY WRAP PIPING BELOW GRADE OR FLOORS WITH 3 LAYERS OF 20 MIL POLYETHYLENE TAPE WITH 1/2 OVERLAP. INSTALL NO PIPING JOINTS BELOW FLOOR.
4. ALL COPPER TUBING SHALL UTILIZE SWEAT FITTINGS SOLDERED WITH ASTM B 32, ALLOY SN95, SN94, OR E, LEAD FREE SOLDER.

SOIL, WASTE, VENT AND STORM PIPING:
1. ALL SOIL AND WASTE PIPING SHALL SLOPE MINIMUM OF 1/4" PER FOOT. PIPING 4" AND LARGER MAY SLOPE 1/8" PER FOOT SLOPE IF SITE CONDITIONS WON'T ALLOW 1/4" PER FOOT SLOPE.
2. CHANGES IN DIRECTION, WHERE SPACE PERMITS, SHALL BE MADE WITH LONG SWEEP BENDS, Y-FITTINGS AND 1/8 OR 1/16 BENDS OR COMBINATION AND 1/8 BENDS.
3. SANITARY TEE BRANCHES AND 1/4 BENDS MAY BE USED FOR CONNECTION OF BRANCH LINES TO FIXTURES AND FROM STACKS TO HORIZONTAL DRAINAGE.
4. MATERIALS:
   4.1. CAST IRON: NO-HUB CAST IRON, CISPI DESIGNATION 301-12 FOR ALL SOIL, WASTE AND VENT PIPING WITH STANDARD WEIGHT FITTINGS. USE STAINLESS STEEL NO-HUB CAST IRON COUPLINGS THROUGHOUT THE PROJECT. INSTALL PIPE AND FITTINGS PER CISPI DESIGNATION 301-12. RESTRAIN PIPE AND FITTINGS USING ENGINEERED (HOLDRITE OR EQUAL) ASSEMBLIES INSTALLED PER MANUFACTURERS INSTRUCTIONS.
   4.2. GALVANIZED IRON: SCHEDULE 40 STANDARD WEIGHT CONFORMING TO ASTM A72-68. USE WROUGHT IRON SCREWED FITTINGS TO MATCH PIPE. MAKE ALL SCREWED JOINTS WITH TEFLON TAPE. (NO GALVANIZED IRON OR STEEL PIPE SHALL BE USED UNDERGROUND.)
   4.3. ABS: ABS PIPING CONFORMING TO ASTM D2661-78 FOR ALL SOIL, WASTE AND VENT PIPING WITH MATCHING FITTINGS. ABS ABOVE AND BELOW GRADE FOR COMBUSTIBLE CONSTRUCTION OR ALLOWED BY LOCAL JURISDICTION. ABS FOR NON-COMBUSTIBLE CONSTRUCTION BELOW GRADE ONLY.
   4.4. PVC: SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE AND FITTINGS SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D 1785 AND ASTM D 2665. ALL PIPE AND FITTINGS TO BE PRODUCED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND LOCAL CODE REQUIREMENTS. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564. PRIMER SHALL CONFORM TO ASTM F 656. THE SYSTEM IS INTENDED FOR NON-PRESSURE DRAINAGE APPLICATIONS WHERE THE TEMPERATURE WILL NOT EXCEED 140° F.

STORM DRAIN PIPING:
1. ROOF DRAINS: ANSI A112.21.2, LACQUERED CAST IRON BODY WITH SUMP, REMOVABLE CAST IRON DOME STRAINER, MEMBRANE FLANGE AND CLAMP WITH INTEGRAL GRAVEL STOP, ADJUSTABLE UNDER DECK CLAMP, ROOF SUMP RECEIVER, LEVELING FRAME, ADJUSTABLE EXTENSION SLEEVE, PERFORATED STAINLESS STEEL BALLAST GUARD EXTENSION AND NO-HUB BOTTOM OUTLET. ACCEPTABLE MANUFACTURERS: ZURN, WADE, JOSAM AND SMITH.
   FULLY INSULATE PRIMARY ROOF DRAIN AND ABOVE GROUND HORIZONTAL PIPING WITH A 1/2" MINERAL FIBER TYPE INSULATION WITH VAPOR RETARDER & A PVC JACKET.

VALVES:
1. SIZE OF SHUT-OFF VALVES, CONTROL VALVES, BALANCING COCKS, UNIONS ETC., SHALL BE FULL LINE SIZE.
2. PROVIDE SHUT-OFF VALVES IN CEILING SPACE FOR COLD AND HOT WATER PIPING CONNECTIONS TO ALL PLUMBING FIXTURES, HOSE BIBBS AND TRAP PRIMERS. PROVIDE STAINLESS STEEL CEILING/WALL ACCESS PANELS AS NECESSARY, IN ACCORDANCE WITH ARCHITECT'S REQUIREMENTS.

GAS PIPING:
1. THE PLUMBING CONTRACTOR SHALL SEE THAT THE PROPER GAS METER AND REGULATOR ARE INSTALLED BY THE UTILITY CO., AND PAY FOR ANY FEES CHARGED FOR THE INSTALLATION OF THE METER AND SERVICE LINES. GAS LINES SHALL EXTEND FROM THE METER TO ALL EQUIPMENT REQUIRING GAS.
2. MATERIALS:
   2.1. GAS PIPING ABOVE GROUND:
      A. SCREWED STANDARD WEIGHT SCHEDULE 40 BLACK STEEL CONFORMING TO ASTM A53 SPECIFICATIONS FOR GAS PIPING.
      B. 4" DIAMETER AND LARGER INTERIOR GAS PIPING SHALL BE WELDED.
   2.2 GAS PIPING INSTALLED BELOW GROUND:
      A. SCHEDULE 40 BLACK STEEL SHALL BE PROVIDED WITH FACTORY WRAPPED PROTECTIVE COATING WITH FITTINGS TRIPLE SPIRALLY WRAPPED WITH 20 MIL POLYETHYLENE TAPE WITH 1/2 OVERLAP. PROVIDE CATHODIC PROTECTION CONSISTING OF ONE 17 POUND MAGNESIUM ANODE PER 100 SQUARE FEET OF GROUND EXPOSED PIPE SURFACE.
      B. POLYETHYLENE PLASTIC PIPE, TUBING AND FITTINGS USED TO SUPPLY FUEL GAS SHALL CONFORM TO ASTM D 2513. SUCH PIPE SHALL BE MARKED "GAS" AND "ASTM D 2513."
3. GAS PIPE SHALL BE PROVIDED WITH SUITABLE DRIP LEGS ON ALL MAINS AND RISERS AT EQUIPMENT CONNECTIONS. ALL EQUIPMENT CONNECTIONS SHALL BE PROVIDED WITH AN AGA APPROVED SHUTOFF VALVE.
4. PROVIDE SLEEVES AT ALL PIPING PENETRATING MASONRY WALLS AND PACKED WATERTIGHT WITH APPROVED PACKING.
5. GAS PRESSURE REGULATORS. A LINE PRESSURE REGULATOR SHALL BE INSTALLED WHERE THE APPLIANCE IS DESIGNED TO OPERATE AT A LOWER PRESSURE THAN THE SUPPLY PRESSURE. LINE GAS PRESSURE REGULATORS SHALL BE LISTED AS COMPLYING WITH ANSI Z21.80. ACCESS SHALL BE PROVIDED TO PRESSURE REGULATORS. PRESSURE REGULATORS SHALL BE PROTECTED FROM PHYSICAL DAMAGE. REGULATORS INSTALLED ON THE EXTERIOR OF THE BUILDING SHALL BE APPROVED FOR OUTDOOR INSTALLATION.
6. MEDIUM PRESSURE (MP) REGULATORS SHALL COMPLY WITH ALL OF THE REQUIREMENTS OF THE LOCAL ADOPTED CODES.
7. VENTING OF REGULATORS. PRESSURE REGULATORS THAT REQUIRE A VENT SHALL BE VENTED DIRECTLY TO THE OUTDOORS. THE VENT SHALL BE DESIGNED TO PREVENT THE ENTRY OF INSECTS, WATER AND FOREIGN OBJECTS.
8. VENT PIPING. VENT PIPING FOR RELIEF VENTS AND BREATHER VENTS SHALL BE CONSTRUCTED OF MATERIALS ALLOWED FOR GAS PIPING AND INSTALLED IN ACCORDANCE WITH ALL LOCAL ADOPTED CODES. VENT PIPING SHALL BE NOT SMALLER THAN THE VENT CONNECTION ON THE PRESSURE REGULATING DEVICE.

COMPRESSED AIR PIPING
1. MATERIALS: COMPRESSED-AIR PIPING BETWEEN COMPRESSORS AND RECEIVERS, AND FOR DISTRIBUTION SHALL BE SCHEDULE 40 BLACK STEEL PIPE, COPPER TUBE, OR GALVANIZED STEEL PIPE. PVC OR CPVC IS NOT PERMITTED.
2. IDENTIFICATION: COMPRESSED-AIR PIPING SHALL BE PROVIDED WITH MARKINGS INCLUDING PIPING CONTENT'S NAME AND DIRECTION OF FLOW ARROW. MARKING SHALL BE PROVIDED AT EACH VALVE, AT WALL, FLOOR, OR CEILING PENETRATIONS, AT EACH CHANGE IN DIRECTION, AND AT A MINIMUM OF EVERY 20 FEET OR FRACTION THEREOF DURING THE PIPING RUN.
3. INSTALLATION:
   A. INSTALL AIR AND DRAIN PIPING WITH ONE PERCENT SLOPE DOWNWARD IN DIRECTION OF AIRFLOW.
   B. INSTALL ECCENTRIC REDUCERS WHERE PIPE IS REDUCED IN SIZE IN DIRECTION OF AIRFLOW, WITH BOTTOMS OF BOTH PIPES AND REDUCER FLUSH.
   C. CONNECT BRANCH AIR PIPING TO MAINS FROM TOP OF MAIN. PROVIDE DRAIN LEG AND DRAIN TRAP AT END OF EACH MAIN, BRANCH, AND LOW POINT IN PIPING.
4. SUPPORT: PIPING SHALL BE SUPPORTED IN SUCH A MANNER AS TO MAINTAIN ITS ALIGNMENT, AND PREVENT SAGGING. HANGERS AND ANCHORS SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT THE WEIGHT OF THE PIPE AND ITS CONTENTS. PIPING SHALL BE ISOLATED FROM INCOMPATIBLE MATERIALS. HANGER ROD SIZES FOR PIPE SIZES 1/2" THROUGH 4" SHALL BE NO SMALLER THAN 3/8". DO NOT EXCEED THE FOLLOWING SPACING BETWEEN PIPE HANGERS:
   STEEL PIPE- 12'-0" HORIZONTAL, 15'-0" VERTICAL
   COPPER TUBE- 1-1/4" AND SMALLER- 72" HORIZONTAL, 10'-0" VERTICAL
   1-1/2" AND LARGER- 10'-0" HORIZONTAL, 10'-0" VERTICAL
5. PIPING SYSTEM TESTS: TEST NEW AND MODIFIED PARTS OF EXISTING PIPING. CAP AND FILL COMPRESSED-AIR PIPING WITH OIL-FREE, DRY AIR, OR GASEOUS NITROGEN TO PRESSURE OF 50 PSIG ABOVE SYSTEM OPERATING PRESSURE, BUT NOT LESS THAN 150 PSIG. ISOLATE TEST SOURCE AND LET STAND FOR 4 HOURS TO EQUALIZE TEMPERATURE. REFILL SYSTEM, IF REQUIRED, TO TEST PRESSURE AND HOLD PRESSURE FOR 2 HOURS WITH NO DROP IN PRESSURE. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST SYSTEM UNTIL SATISFACTORY RESULTS ARE OBTAINED.

PIPE HANGERS:
1. PIPE HANGERS SHALL BE MICHIGAN #400 FOR STEEL PIPING, #402 FOR GAS AND COPPER PIPING. SUPPORT PIPING 1-1/4" AND SMALLER 6'-0" O/C, AND PIPING 1-1/2" AND LARGER 10'-0" O/C. WASTE PIPING SHALL BE SUPPORTED AT 4'-0" O/C. PROVIDE 3/8" DIA. THREADED ROD PROPERLY BRACED FOR SEISMIC RESTRAINT ZONE 2.

PIPE INSULATION:
1. ALL DOMESTIC COLD WATER PIPING SHALL HAVE 1/2 INCH THICK FIBERGLASS INSULATION WHERE DAMAGE TO ANY BUILDING COMPONENTS WILL OCCUR AS A RESULT OF CONDENSATION FORMING ON COLD WATER PIPING.
2. ALL DOMESTIC HOT WATER AND HOT WATER RETURN PIPING SHALL HAVE 1 INCH THICK FIBERGLASS INSULATION.
3. PIPE INSULATION SHALL HAVE AN ASJ JACKET AND A THERMAL CONDUCTIVITY (K-FACTOR) NOT EXCEEDING 0.27 AT 75 DEGREES MEAN TEMPERATURE.
4. THE MAXIMUM FIRE HAZARD CLASSIFICATION OF THE INSULATION SYSTEM SHALL NOT HAVE MORE THAN A FLAME SPREAD OF 25, A FUEL CONTRIBUTED RATING OF 50, AND A SMOKE DEVELOPED RATING OF 50 WHEN TESTED IN ACCORDANCE WITH U.L. REQUIREMENTS. PIPE COVERING SHALL BEAR THE U.L. LABEL.
5. INSULATE ALL FITTINGS, VALVE BODIES ETC. WITH SINGLE OR MULTIPLE LAYERS OF INSULATION WITH PREFABRICATED FITTINGS WITH P.V.C. JACKETS.
6. SUBMIT SHOP DRAWINGS FOR ALL INSULATION MATERIALS.

CLEAN OUTS: (ZURN, JOSAM, SMITH)
1. CLEAN OUTS SHALL BE THE SAME SIZE AS THE LARGEST DOWNSTREAM PIPE IT IS SERVING. NO PLASTIC CLEAN OUTS SERVING METALLIC PIPING WILL BE ACCEPTED. PLUGS SHALL BE BRONZE.

PIPE EXPANSION:
1. ALL PIPE CONNECTIONS SHALL BE INSTALLED TO ALLOW FOR FREEDOM OF MOVEMENT OF THE PIPING DURING EXPANSION AND CONTRACTION.
2. EXPANSION LOOPS AND EXPANSION JOINTS WITH PROPER ANCHORS AND GUIDES SHALL BE PROVIDED AS REQUIRED. ANCHORS AND JOINTS SHALL BE SUBJECT TO THE REVIEW OF THE ARCHITECT.
3. ALL SUPPORTS SHALL BE INSTALLED TO PERMIT THE MATERIALS TO CONTRACT AND EXPAND FREELY WITHOUT PUTTING A STRAIN OR STRESS ON ANY PART OF THE SYSTEM. PROVIDE ANCHORS AS REQUIRED.

UNIONS
1. PROVIDE A UNION BETWEEN CONNECTIONS TO EACH FIXTURE, DEVICE OR PIECE OF EQUIPMENT FOR DISCONNECTING OF PIPING.
2. CONTRACTOR SHALL INSTALL DIELECTRIC UNIONS AT CONNECTIONS OF DISSIMILAR METALS.

PIPE INSTALLATION
1. INSTALL PIPING TO BEST SUIT FIELD CONDITIONS, COORDINATE LAYOUT OF PIPING WITH DUCT WORK AND OFFSET PIPING AS REQUIRED TO CLEAR NEW WORK.
2. ALL VENTS THROUGH ROOF SHALL BE MINIMUM 10'-0" REMOVED FROM ALL AIR INTAKES, EVAPORATIVE COOLERS, ETC.
3. CONTRACTOR SHALL ROUGH-IN ALL WASTE AND SUPPLY PIPING TO SPECIAL EQUIPMENT ACCORDING TO MANUFACTURERS SHOP DRAWINGS AND MAKE FINAL CONNECTIONS. ALL SUPPLIES SHALL BE VALVED.
4. A WATER-HAMMER ARRESTOR SHALL BE INSTALLED WHERE QUICK-CLOSING VALVES ARE UTILIZED. INCLUDES TOILET FLUSH VALVE GROUPS AND CONNECTIONS TO ALL SOLENOID ACTIVATED VALVES. WATER-HAMMER ARRESTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND SHALL CONFORM TO ASSE 1010.
5. PROVIDE MEANS OF PREVENTING DISSIMILAR METAL CONTACT BETWEEN ALL PIPING MATERIALS FROM ANY OTHER METAL OR STRUCTURAL MEMBER TO PREVENT GALVANIC ACTION BETWEEN THE TWO METALS.
6. WHEN WATER PIPE AND SEWER ARE LAID PARALLEL TO EACH OTHER, ONE OF THE FOLLOWING PROCEDURES MUST BE FOLLOWED:
   A. THE HORIZONTAL DISTANCE BETWEEN THE WATER PIPE AND SEWER SHALL NOT BE LESS THAN SIX (6) FEET.
   B. EACH LINE SHALL BE LAID IN A SEPARATE TRENCH, OR IN BETWEEN FILLED WITH COMPACT FILL.
   C. THE WATER SERVICE PIPE MAY BE PLACED IN THE TRENCH WITH THE BUILDING DRAIN AND/OR BUILDING SEWER, PROVIDED THE BOTTOM OF THE WATER SERVICE PIPE, AT ALL POINTS SHALL BE AT LEAST TWELVE (12) INCHES ABOVE THE TOP OF THE SEWER LINE, AND SHALL BE PLACED ON A SOLID SHELF EXCAVATED AT ONE SIDE OF THE COMMON TRENCH.
   D. WATER SERVICE AND SEWER SHALL BE CONSTRUCTED OF MATERIALS APPROVED FOR USE WITHIN A BUILDING AND PRESSURE TESTED TO ASSURE WATER TIGHTNESS BEFORE BACKFILLING.

ACCESSIBILITY
1. THE INSTALLATION OF ALL VALVES, UNIONS, THERMOMETERS, GAUGES, OR OTHER INDICATING OR RECORDING DEVICES, OR SPECIALTIES REQUIRING FREQUENT READING, REPAIRS, ADJUSTMENT, INSPECTION, REMOVAL, OR REPLACEMENT SHALL BE CONVENIENTLY AND ACCESSIBLY LOCATED WITH REFERENCE TO THE FINISHED BUILDING.

TESTING
1. FILL DOMESTIC WATER SYSTEM WITH WATER AND PRESSURIZE TO 125 PSI AND MAINTAIN FOR (4) FOUR HOURS WITH NO PRESSURE DROP.
2. FILL WASTE, SOIL, VENT AND STORM DRAINAGE SYSTEMS WITH WATER TO HIGHEST POINT OF THE SYSTEM. HOLD PRESSURE FOR (4) HOURS WITH NO DROP IN WATER LEVEL.
3. IF THE SYSTEM IS TESTED IN SECTIONS, EACH SECTION SHALL BE FILLED WITH WATER BUT NO SECTION SHALL BE TESTED WITH LESS THAN A TEN FOOT HEAD OF WATER.
4. GAS TESTING:
   A. AIR PRESSURE TEST SYSTEM TO 75 PSI AND MAINTAIN FOR A PERIOD OF (8) HOURS WITH NO PRESSURE DROP.
   B. PURGE LINE WITH NITROGEN AT JUNCTION WITH MAIN LINE AT GAS METER TO REMOVE ALL AIR. CLEAR COMPLETE LINE BY ATTACHING A TEST PILOT FIXTURE AT CAPPED STUB-IN LINE AT THE BUILDING LOCATION, AND LET GAS FLOW UNTIL TEST PILOT IGNITES. CAUTION: FAILURE TO PURGE SYSTEM MAY RESULT IN EXPLOSION WITHIN LINE WHEN AIR-TO-GAS IS AT CORRECT MIXTURE.
5. TEST AND OBTAIN APPROVAL ON ALL UNDERGROUND PIPING BEFORE COVERING WORK. PROVIDE WRITTEN TESTING REPORT TO ARCHITECT.

CLEANING
1. AT THE COMPLETION OF THE WORK AND PRIOR TO FINAL ACCEPTANCE, ALL PARTS OF THE WORK INSTALLED UNDER THIS SPECIFICATION SHALL BE THOROUGHLY CLEANED. ALL EQUIPMENT, FIXTURES, PIPE, VALVES AND FITTINGS SHALL BE CLEANED OF GREASE, METAL CUTTINGS AND SLUDGE WHICH MAY HAVE ACCUMULATED BY OPERATION OF THE SYSTEM FOR TESTING HEREIN BEFORE SPECIFIED OR FROM OTHER CAUSES.

STERILIZATION
1. STERILIZE THE ENTIRE WATER DISTRIBUTION SYSTEM THOROUGHLY WITH A SOLUTION CONTAINING NOT LESS THAN 50 PARTS PER MILLION OF AVAILABLE CHLORINE. FOR CHLORINATING MATERIALS USE SODIUM HYPOCHLORITE SOLUTION CONFORMING TO FEDERAL SPEC. 0-8-441, GRADE D, AND INTRODUCE INTO THE SYSTEM BY USE OF A COCK AT A SLOW, EVEN, CONTINUOUS RATE. ALLOW THE STERILIZING SOLUTION TO REMAIN IN THE SYSTEM FOR A PERIOD OF 24 HOURS, DURING WHICH TIME ALL VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER STERILIZATION, FLUSH THE SOLUTION FROM THE SYSTEM WITH CLEAN WATER UNTIL THE RESIDUAL CHLORINE CONTENT IS NO GREATER THAN 0.2 PARTS PER MILLION. PLATE COUNT SHALL INDICATE COUNT LESS THAN 100 BACTERIA PER CC.

GUARANTEE
1. THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FROM DEFECT OF MATERIAL AND WORKMANSHIP, AND SHALL REPLACE OR REPAIR, WITHOUT ADDITIONAL COST TO THE OWNER, ALL DEFECTIVE MATERIAL AND WORKMANSHIP FOR A PERIOD (1) YEAR AFTER COMPLETION AND ACCEPTANCE.

COORDINATION
1. ALL CONTRACTORS SHALL BE RESPONSIBLE FOR COORDINATING WORK WITH OTHER TRADES AFFECTED BY EACH OTHERS WORK AND FOR CUTTING AND REFINISHING OF EXISTING WALLS, FLOORS, SOLID AND SUSPENDED CEILINGS ETC., WHERE REQUIRED BY WORK SHOWN AND NOTED HEREIN. INSTALL ALL WORK TO CLEAR NEW AND EXISTING ARCHITECTURAL AND STRUCTURAL MEMBERS. ITEMS SUCH AS PIPE, FITTINGS, ETC., SHALL NOT BE INSTALLED IN CONFLICT WITH EQUIPMENT. COORDINATE ALL CUTTING AND PATCHING WITH THE GENERAL CONTRACTOR. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING OF HIS WORK. OBTAIN WRITTEN PERMISSION OF ARCHITECT BEFORE PROCEEDING WITH ANY CUTTING OR PATCHING OF STRUCTURAL SYSTEMS.

SUBSTITUTIONS
1. SUBSTITUTIONS OF MATERIALS OR PRODUCTS SHOWN HEREIN SHALL BE AT THE OWNER'S, ARCHITECT'S OR ENGINEER'S WRITTEN APPROVAL ONLY, WITH COPIES OF APPROVAL SENT TO ARCHITECT FOR PROJECT FILE. DEVIATION FROM THESE DRAWINGS WILL NOT BE ALLOWED. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL SUBSTITUTIONS AND ALL COSTS OF CHANGES INCURRED BY THEMSELVES AND OTHERS DUE TO THE SUBSTITUTIONS.

RECORD DRAWINGS
1. PROVIDE TWO (2) SETS OF "RECORD" DRAWINGS (AS-BUILTS) AND TWO (2) BOUND SETS OF ALL OPERATIONS MANUALS, DIAGRAMS, SERVICE CONTRACTS, GUARANTEES, ETC., ONE FOR THE OWNER AND ONE FOR BUILDING OPERATIONS DEPARTMENT. OBTAIN A COMPLETE SET OF RECORD DRAWINGS OF EXISTING CONSTRUCTION FROM THE OWNERS FOR INFORMATION ON EXISTING CONDITIONS. INCORPORATE ANY EXISTING CONDITIONS ON NEW RECORD DRAWINGS REQUIRED TO SHOW THE "INSTALLED" INSTALLATION.

ORDER OF PRECEDENCE OF DOCUMENTS
1. SHOULD A CONFLICT ARISE BETWEEN CONSTRUCTION DOCUMENTS, THE ORDER OF PRECEDENCE SHALL BE:
   A. SPECIAL PROVISIONS
   B. GENERAL PROVISIONS
   C. SPECIFICATIONS
   D. DETAILS ON DRAWINGS
   E. PLAN DRAWINGS
2. THE ENGINEER OF RECORD SHALL BE NOTIFIED BEFORE A DECISION IS MADE.

CODE INFORMATION

1. 2012 IBC, 2012 IPC, 2012 IECC & CITY OF PHOENIX AMENDMENTS. ALL SYSTEMS SHALL BE IN COMPLIANCE WITH THE ABOVE CODES AS ADOPTED BY THE CITY OF PHOENIX.
2. EQUIPMENT AND APPLIANCES SHALL BE INSTALLED AS REQUIRED BY THE TERMS OF THEIR APPROVAL, IN ACCORDANCE WITH THE CONDITIONS OF THE LISTING, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THIS CODE. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT THE TIME OF INSPECTION PER THE PLUMBING CODE.
3. MATERIALS EXPOSED WITHIN PLENUMS SHALL HAVE A FLAME SPREAD RATING INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE TO ASTM E84 OR UL 723.
4. ALL MATERIALS INSTALLED WITHIN PLENUMS SHALL BE LISTED AND LABELED FOR INSTALLATIONS WITHIN A PLENUM.

CITY OF PHOENIX

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Inspector: ________ Number: ________ Date: ________

PLUMBING SHEET INDEX

ASEIENGINEERING
2410 w. royal palm rd. suite A, phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440
DFT: HMM
DSN: HMM
CHK: DEM

ARCHICON
Architecture & Interiors, L.C.

5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
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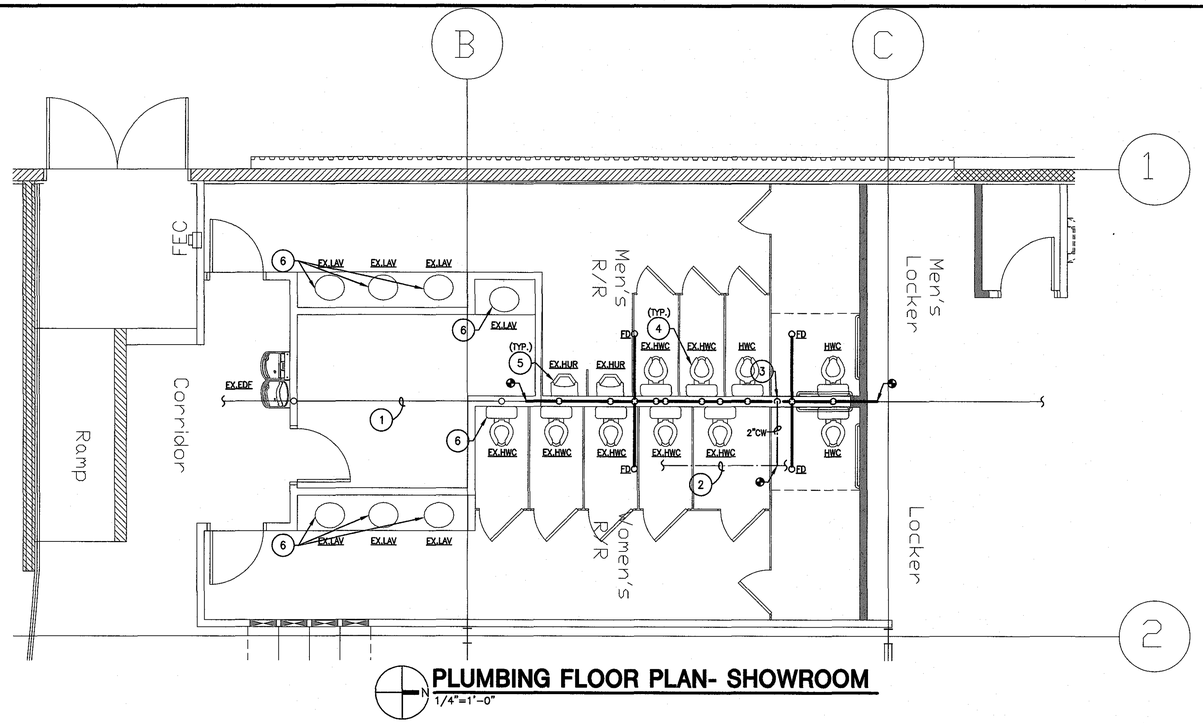
-	-	-

Sheet Description
PLUMBING SPECS, SYMBOLS, AND SHEET INDEX

Registered Professional Engineer (Mechanical)
CERTIFICATE NO. 28205
DAVID E. McCARTHY
01/04/18
Date Signed
ARIZONA, U.S.A.
Expires 09/30/2018

Sheet No.
P0.1

Issue Date: 12.15.17



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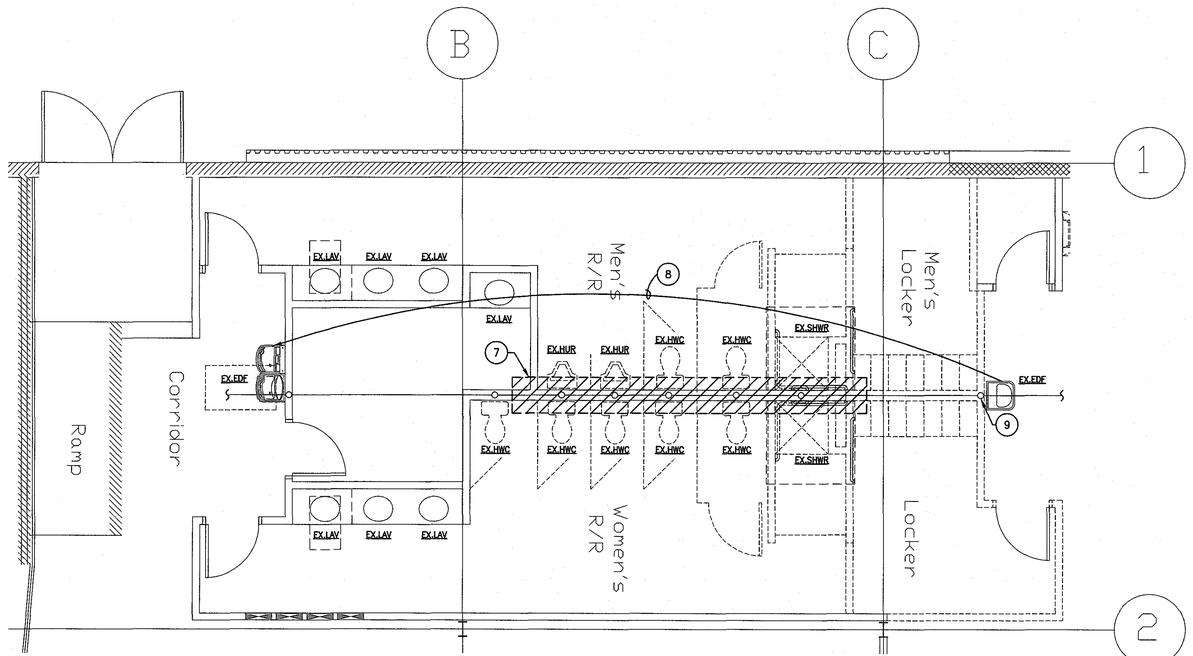
PLUMBING FLOOR PLAN- SHOWROOM

1/4"=1'-0"



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DEMO PLUMBING PLAN- SHOWROOM

1/4"=1'-0"

GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING WATER AND SEWER UTILITY CONNECTION SIZE AND LOCATION PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THE PLANS AND ACTUAL FIELD CONDITIONS.

B. PLUMBING CONTRACTOR TO COORDINATE EXACT STREET WATER PRESSURE AND NOTIFY ENGINEER OF ANY DISCREPANCIES. CONTRACTOR SHALL PROVIDE A PRESSURE REDUCING VALVE (PRV) IF STREET WATER PRESSURE EXCEEDS 80 PSI. PRV SHALL BE INSTALLED ON BUILDING SIDE OF WATER METER AND SET TO 80 PSI.

C. CONTRACTOR TO FIELD VERIFY EXISTING DOMESTIC WATER SYSTEM IS PROVIDED WITH A REDUCED PRESSURE BACKFLOW PREVENTER (RPBP). IF NOT EXISTING, PROVIDE AN APPROVED RPBP ASSEMBLY SIZED TO MATCH BUILDING WATER METER. INSTALL NEW RPBP BETWEEN THE WATER METER AND THE BUILDING PER LOCAL JURISDICTION'S REQUIREMENTS.

D. CONTRACTOR SHALL MAINTAIN ALL WARRANTIES ASSOCIATED WITH ROOF FOR ALL ROOF PENETRATIONS. PROVIDE NEW ROOF PIPE PORTALS AS NECESSARY. COORDINATE WITH ARCHITECTURAL DRAWINGS.

E. CONTRACTOR SHALL SAW CUT EXISTING CONCRETE FLOOR SLAB FOR INSTALLATION OF NEW WASTE AND WATER PIPING BELOW FLOOR. PATCH AND SEAL ALL FLOOR OPENINGS TO MATCH EXISTING FLOOR IN ACCORDANCE WITH ARCHITECT'S REQUIREMENTS.

F. ALL PIPE, PIPE FITTINGS, TRAPS, FIXTURES, MATERIAL AND DEVICES USED IN THIS PLUMBING SYSTEM SHALL BE LISTED OR LABELED BY A LISTING AGENCY. EACH LENGTH OF PIPE AND EACH PIPE FITTING, TRAPS, FIXTURE, MATERIAL AND DEVICES USED IN THIS PLUMBING SYSTEM SHALL HAVE CAST, STAMPED, OR INDELIBLY MARKED ON IT THE MAKERS MARK OR NAME, SUCH MARKING IS REQUIRED BY THE APPROVED STANDARD THAT APPLIES.

G. MAKE SHUTOFF VALVES ACCESSIBLE NEAR THE EQUIPMENT THEY SERVE.

H. ALL HAND SINKS/LAVATORIES SHALL BE PROVIDED WITH A THERMO-STATIC MIXING VALVE TO SUPPLY TEMPERED HW, MAX. 110 DEG. F.

I. ALL INDIRECT WASTES, CONDENSATE AND RELIEF VALVE DRAINS SHALL HAVE CODE APPROVED AIR GAPS.

J. EACH VENT SHALL TERMINATE NOT LESS THAN 10 FT FROM OR 3 FT ABOVE ANY WINDOW, DOOR OPENING, AIR INTAKE OF VENT SHAFT, NOR LESS THAN 3 FT IN EVERY DIRECTION FROM ANY LOT LINE (ALLEY & STREET ACCEPTED).

K. ALL FLOOR CLEAN OUTS, FLOOR SINKS AND FLOOR DRAINS TO SET FLUSH WITH FINISHED FLOOR.

KEYED NOTES (#)

1. EXISTING 4" WASTE LINE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION, SLOPE, INVERT AND DIRECTION OF FLOW BEFORE START OF WORK.
2. EXISTING 2"CW LINE IN CEILING SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION BEFORE START OF WORK.
3. 2"CW DOWN IN WALL TO HEADER. RUN 1-1/2"CW TO EACH HWC.
4. RELOCATE ALL EXISTING WATER PIPING TO NEW EX.HWC LOCATION.
5. RELOCATE ALL EXISTING WATER PIPING TO NEW EX.HUR LOCATION.
6. EXISTING FIXTURE TO REMAIN AND BE REUSED.
7. SAW CUT AND REMOVE ALL EXISTING UNDERGROUND PIPING IN THIS AREA. EXISTING WATER CLOSET AND EXISTING URINAL LOCATIONS TO BE MOVED AND EXISTING PIPING TO BE REPLACED WITH NEW AS SHOWN.
8. RELOCATED EXISTING EDF TO NEW LOCATION AS SHOWN.
9. CAP EXISTING PIPING FLUSH WITH FINISHED FLOOR

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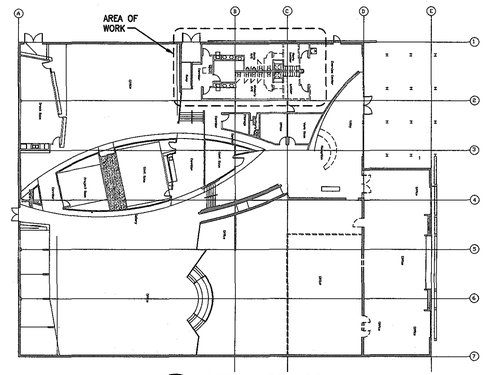

KEY PLAN

1/32"=1'-0"

ASEIENGINEERING
2410 w. royal palm rd. suite A. phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440

DFT: HMM
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Suite 200
Phoenix, Arizona 85034
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Sheet Description
PLUMBING FLOOR PLAN- SHOWROOM

28205
DAVID E. McCARTHY
01/04/18
Registered Professional Engineer
ARIZONA, U.S.A.

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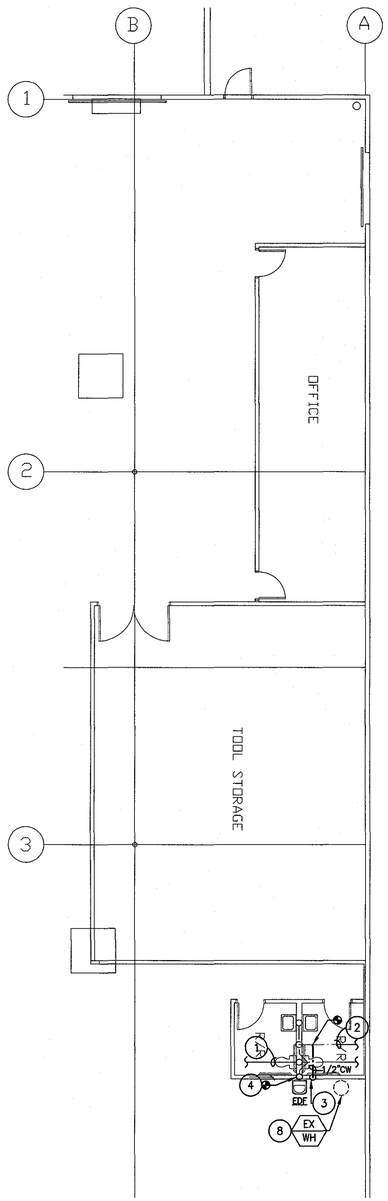
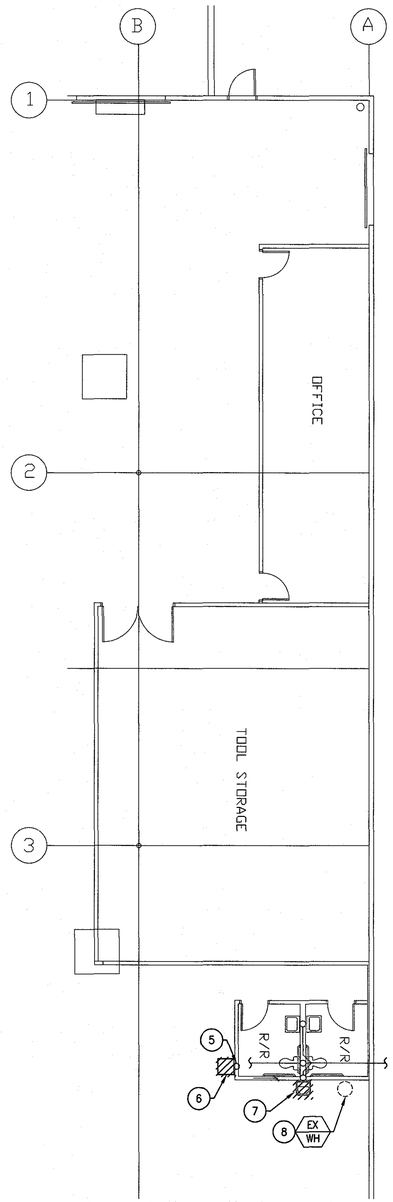


PLUMBING FLOOR PLAN- WAREHOUSE

1/8"=1'-0"



DEMO PLUMBING PLAN- WAREHOUSE

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I. ALL INDIRECT WASTES, CONDENSATE AND RELIEF VALVE DRAINS SHALL HAVE CODE APPROVED AIR GAPS.

J. EACH VENT SHALL TERMINATE NOT LESS THAN 10 FT FROM OR 3 FT ABOVE ANY WINDOW, DOOR OPENING, AIR INTAKE OF VENT SHAFT, NOR LESS THAN 3 FT IN EVERY DIRECTION FROM ANY LOT LINE (ALLEY & STREET ACCEPTED).

K. ALL FLOOR CLEAN OUTS, FLOOR SINKS AND FLOOR DRAINS TO SET FLUSH WITH FINISHED FLOOR.

KEYED NOTES (#)

1. EXISTING 4" WASTE LINE, CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION, INVERT AND DIRECTION OF FLOW BEFORE START OF WORK.
2. EXISTING 1"CW LINE IN CEILING SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION BEFORE START OF WORK.
3. 1/2"CW DOWN IN WALL TO EDF
4. INSTALL NEW EDF AS SHOWN. REUSE EXISTING WASHER RISER AND VENT.
5. CAP EXISTING WASTE LINE FLUSH WITH FINISHED FLOOR. EXISTING WATER TO BE CAPPED IN CEILING SPACE.
6. EXISTING COMP SINK TO BE REMOVED.
7. EXISTING WASHER TO BE REMOVED.
8. EXISTING A.O. SMITH TANK WATER HEATER MODEL#(ECS50210, 208/1, 4.5 KW) TO REMAIN AND BE REUSED.

CITY OF PHOENIX

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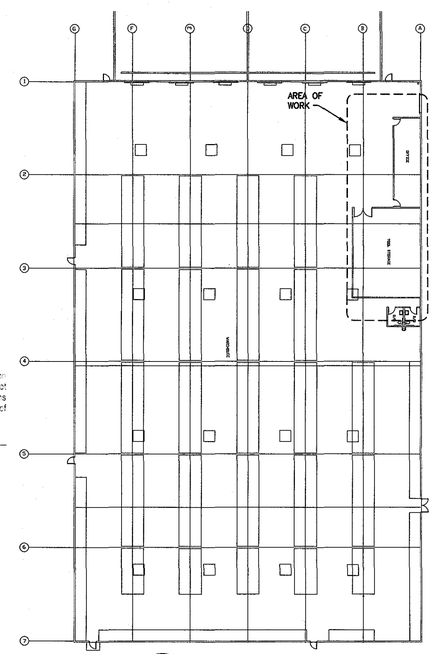
Inspector _____ Number _____ Date _____



KEY PLAN

1/32"=1'-0"

ASEIENGINEERING
2410 w. royal palm rd. suite A. phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440

DFT: HMM
DSN: HMM
CHK: DEM

ARCHICON
Architecture & Interiors, L.C.

5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
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Sheet Description
PLUMBING FLOOR PLAN- WAREHOUSE

28205
DAVID E. McCARTHY
01/04/18
REGISTERED PROFESSIONAL ENGINEER
ARIZONA, U.S.A.

Expires 09/30/2018

Sheet No.

P1.2

Issue Date: 12.15.17

PLUMBING FIXTURE SCHEDULE

* THE PIPE SIZES SHOWN IN THIS TABLE REPRESENT SERVICE PIPE SIZES AND NOT THE ACTUAL FIXTURE CONNECTION SIZE.

MARK	FIXTURE	DESCRIPTION	* PIPE SIZES			
			COLD	HOT	WASTE	VENT
HWC	ADA WATER CLOSET FLOOR-MOUNTED	AMERICAN STANDARD MADERA, 1.6 GPF, SLOAN ROYAL FLUSH VALVE, CHURCH ELONGATED WHITE, OPEN-FRONT, SOLID SEAT, MTD AT 17" AFF.	1-1/2"	–	4"	2"
WCO	WALL CLEANOUT	WATTS CO-590-RD WALL CLEANOUT W/ BRONZE THREAD PLUG & SS WALL ACCESS COVER SIZE PER PLANS.	–	–	–	–
WHA	WATER HAMMER ARRESTER	WATTS DRAINAGE LF15M2-DR SERIES, PRE-CHARGED, LEAD-FREE, COPPER SHOCK ARRESTOR W/ POLY. PISTON, EPDM O-RING. SIZE PER MANUFACTURER'S RECOMMENDATIONS.	–	–	–	–
EDF	ELECTRIC WATER COOLER (SINGLE, ADA)	OASIS #PEBAC, WALL-MOUNTED, A.D.A. COMPLIANT FILTERED ELECTRIC WATER COOLER W/ 8.0 GPH CAPACITY @ 90°F AMB., 80°F IN & 50°F OUT. 1/4 HP, 120V. COLOR BY ARCH.	1/2"	–	2"	2"
FD	FLOOR DRAIN	WATTS #FD-320-5-7 FLOOR DRAIN W/ 8" DUCTILE IRON HEEL PROOF GRATE, AND TRAP GUARD.	–	–	2"	2"

WATER CALCULATIONS

3 – HWC	10.0 FU =	30.0
2 – EDF	0.5 FU =	1.0
ADDED:		31.0 FU
EXISTING TOTAL:		128.5 FU
DEMO:		-17.5 FU
TOTAL:		142.0 FU = 79 GPM

EXISTING 2" METER @ 79 GPM = 4.0 PSI DROP

DISTANCE FROM MAIN TO FURTHEST FIXTURE = 400'

EQUIVALENT LENGTH = 400' X 1.15 = 460'

MAIN PRESSURE = 60 PSI

NOTE: PLUMBING CONTRACTOR TO COORDINATE EXACT MAIN WATER PRESSURE AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

FIXTURE MIN.	= 15.0	PSI
ELEV. 10' X .434	= 4.3	PSI
METER DROP	= 4.0	PSI
RPBP	= 10.0	PSI
SYSTEM DROP	= 33.3	PSI

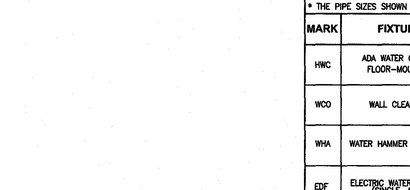
(MAIN PRESSURE OF 60 PSI)-(SYSTEM DROP 33.3 PSI) = 26.7 PSI

26.7 PSI / 460 FT X 100 = 5.8 PSI/100' FOR FRICTION LOSS

WATER PIPING CONSERVATIVELY SIZED AT 5.0 PSI/100'

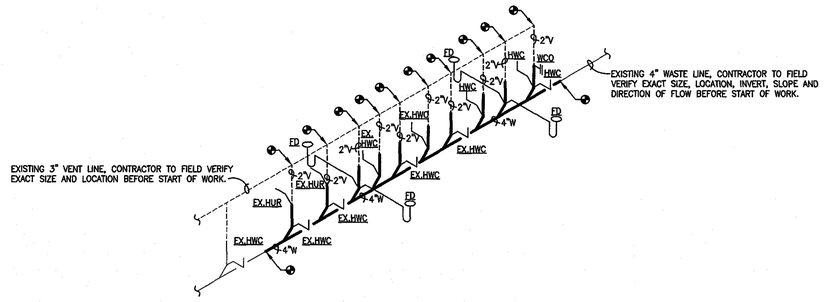
PIPE SIZING CHART		TANK	VALVE
1/2"	= 3 GPM =	2 FU	– FU
3/4"	= 6 GPM =	7 FU	– FU
1"	= 14 GPM =	19 FU	– FU
1-1/4"	= 24 GPM =	37 FU	6 FU
1-1/2"	= 37 GPM =	72 FU	22 FU
2"	= 74 GPM =	271 FU	145 FU

NOTE: PIPE SIZING CHART SIZED WITH 2012 IPC FIGURE E103.3(3) @ 5.0 PSI/100' FOR FRICTION LOSS AND TABLE E103.3(3).



WASTE AND VENT SCHEMATIC- WAREHOUSE

NTS



WASTE AND VENT SCHEMATIC- SHOWROOM

NTS

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2410 w. royal palm rd. suite A, phoenix, AZ 85021
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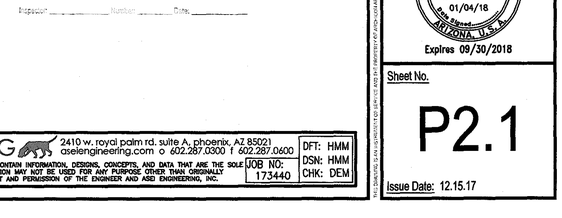
Sheet Description
PLUMBING SCHEDULES, CALCULATIONS AND SCHEMATICS



Expires 09/30/2018

Sheet No.

P2.1

Issue Date: 12.15.17

GENERAL NOTES

1. CONDUIT LAYOUTS SHOWN ON THE PLANS ARE DIAGRAMMATIC, NOT INDICATING THE EXACT ROUTING REQUIRED. THE CONTRACTOR SHALL ROUTE CONDUITS AS REQUIRED BY THE CONDITIONS OF INSTALLATION.
2. ALL EQUIPMENT PROVIDED BY THE ELECTRICAL CONTRACTOR SHALL BE NEW, LISTED AND LABELED BY A NATIONALLY-RECOGNIZED TESTING AGENCY, ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION, FOR THE CONDITIONS OF INSTALLATION. NO "RE-FURBISHED" EQUIPMENT IS ACCEPTABLE WITHOUT WRITTEN CONSENT BY ENGINEER OF RECORD.
3. DEVICE LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. EXACT DEVICE LOCATIONS SHALL BE AS INDICATED ON THE ARCHITECTURAL PLANS OR AS DIMENSIONED. IF NOT SHOWN ON THE ARCHITECTURAL PLANS OR DIMENSIONED ON THE ELECTRICAL PLANS, VERIFY EXACT LOCATION WITH THE ARCHITECT PRIOR TO ROUGH-IN.
4. ALL WIRE COUNTS ARE TYPICALLY NOT SHOWN BETWEEN LIGHT FIXTURES OR RECEPTACLES. PROVIDE ALL REQUIRED EVEN WHERE NOT SHOWN.
5. WHERE SIZE IS NOT SHOWN ON THE DRAWINGS, CIRCUITS SHALL CONSIST OF #12 PHASE AND GROUNDED (NEUTRAL CONDUCTORS) AND A #12 CU GROUND IN 3/4" CONDUIT. MC CABLE SHALL BE ACCEPTABLE IN WALLS. ALL BRANCH CIRCUIT HOME-RUNS SHALL BE IN CONDUIT. ALL WIRE SHALL BE COPPER.
6. UNLESS SPECIFICALLY NOTED OTHERWISE, THE ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL UTILIZATION EQUIPMENT SHOWN ON THE DRAWINGS. VERIFY THE TYPE OF FINAL CONNECTION AND PROVIDE APPROPRIATE WIRING METHOD.
7. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL, PLUMBING AND GENERAL CONTRACTORS, PRIOR TO ORDERING OR INSTALLATION OF ANY EQUIPMENT, MECHANICAL AND PLUMBING EQUIPMENT REQUIREMENTS ARE PROVIDED IN THE ELECTRICAL DESIGN. THE CONTRACTOR WILL NOT BE COMPENSATED FOR COSTS ASSOCIATED WITH CHANGING THE ELECTRICAL SYSTEMS TO MATCH UTILIZATION EQUIPMENT, EVEN IF THE ELECTRICAL WORK IS INSTALLED PER THE ELECTRICAL DRAWINGS.
8. INSULATION & WIRE TYPES SHALL BE AS FOLLOWS : (UNLESS NOTED OTHERWISE)
   COMMERCIAL PORTION:
   A. SERVICE ENTRANCE – XHHW, CU/AL, IN RACEWAY
   B. FEEDERS –
      1. ABOVE GRADE – THW/THWN, CU/AL, IN RACEWAY
      2. BELOW GRADE – XHHW, CU/AL, IN RACEWAY
   C. BRANCH CIRCUITS – THHN/THWN, CU/AL, IN RACEWAY
      A. FEEDERS –
         1. ABOVE GRADE – METAL-CLAD ALUM. CABLE, TYPE MC, W/EQUIPMENT GROUND
         2. BELOW GRADE – TYPE USE ALUM. CABLE, W/EQUIPMENT GROUND
      B. BRANCH CIRCUITS – ARMORED CABLE, TYPE AC; METAL-CLAD CABLE. TYPE MC; NON-METALIC SHEATHED CABLE TYPE NM ("ROMEX"). ALL CABLES TO HAVE CODE-SIZED EQUIPMENT GROUND.
      NOTE: NFPA 70 RESTRICTS THE USE OF TYPE NM CABLE IN SOME TYPES OF CONSTRUCTION. SEE NFPA 70, ARTICLE 334 FOR COMPLETE LISTING OF RESTRICTIONS.
9. SOME CONDUCTOR SIZES ARE BASED ON THE USE OF 75 DEGREE C CONDUCTOR RATINGS. THE CONTRACTOR SHALL VERIFY, PRIOR TO INSTALLATION OF CONDUCTORS OR CONDUIT FEEDING ANY EQUIPMENT, THAT ALL ELECTRICAL EQUIPMENT IS RATED FOR USE WITH 75 DEGREE C WIRING. IF ANY EQUIPMENT IS RATED FOR USE WITH LESS THAN 75 DEGREE C CONDUCTORS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY FOR EVALUATION/CORRECTION.
10. UNLESS SPECIFICALLY NOTED OTHERWISE, SYSTEMS PROVIDED OR INSTALLED BY THE ELECTRICAL CONTRACTOR FOR THE PROPER OPERATION OF THE EQUIPMENT OR SYSTEM, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE PROJECT.
11. THE CONTRACTOR SHALL PERFORM ALL ACCEPTANCE TESTS REQUIRED OR RECOMMENDED BY EQUIPMENT MANUFACTURERS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER SEVEN (7) DAYS PRIOR TO TESTING AND SHALL ALLOW OBSERVATION OF THE TESTING BY THE ENGINEER.
12. ALL RECEPTACLES INSTALLED WITHIN 6 FEET OF A SINK SHALL BE GFI PROTECTED.
13. UNLESS OTHERWISE NOTED, ALL EQUIPMENT DISCONNECTS SHALL BE NEMA TYPE 3R, FUSIBLE, 30A, 3 POLE. FUSE PER EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
14. DEVICE BOXES SHOWN BACK-TO-BACK SHALL BE OFFSET A MINIMUM OF TWELVE (12) INCHES TO REDUCE SOUND TRANSMISSION BETWEEN ROOMS.
15. ALL PENETRATIONS IN WALLS SHALL BE SEALED WITH FLEXIBLE ACOUSTIC CAULKING. CAULKING SHALL BE APPLIED AROUND OUTLET BOXES TO PROVIDE A COMPLETE SEAL BETWEEN THE BOX AND THE WALL.
16. PRIOR TO CORE DRILLING IN ANY FLOOR, ELECTRICAL CONTRACTOR SHALL COORDINATE WITH STRUCTURAL ENGINEER. PROVIDE ANY AND ALL TESTING REQUIRED PER STRUCTURAL ENGINEER.
17. PRIOR TO TRENCHING IN ANY AREA, THE CONTRACTOR SHALL CONTACT ELECTRICAL, COMMUNICATIONS/DATA, CABLE TV, GAS, AND WATER UTILITY PROVIDERS (BLUE STAKE) AND HAVE ALL UTILITIES IN THE AREA IDENTIFIED. IN ADDITION, THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A SUBCONTRACTOR SPECIALIZING IN THE LOCATION OF UNDERGROUND STRUCTURES TO IDENTIFY ANY OBSTACLES IN THE PATH OF TRENCHING (PRIOR TO COMMENCING WORK). DAMAGE TO ANY UNDERGROUND STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT.
18. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH LOCAL AND STATE CODES INCLUDING THE NEC (OR CEC IN CALIFORNIA)
19. ALL CABLE EXPOSED IN MECHANICAL AIR HANDLING PLENUM AREAS SHALL BE PLENUM RATED.
20. ALL CABLE EXPOSED IN MECHANICAL AIR HANDLING PLENUM AREAS SHALL BE IN CONDUIT. (CLARK COUNTY)
21. OVER CURRENT DEVICES SHALL BE LOCATED WHERE THEY WILL NOT BE EXPOSED TO PHYSICAL DAMAGE.
22. CONTRACTOR SHALL INSTALL CITY APPROVED HANDLE TIES FOR ALL SHARED NEUTRAL CIRCUITS.
23. CONTRACTOR SHALL CONTACT ENGINEER IN WRITING (RFI) PRIOR TO PROCEEDING WITH ANY WORK NOT CLEARLY SHOWN ON THESE CONTRACT DOCUMENTS. ENGINEER WILL NOT ACCEPT ANY RESPONSIBILITY FOR WORK HE HAS NOT EXPLICITLY AUTHORIZED.
24. PROVIDE IDENTIFICATION AT THE DISTRIBUTION PANEL FOR BRANCH CIRCUITS THAT FEED EMERGENCY LIGHTING UNIT EQUIPMENT.
25. ELECTRICAL EQUIPMENT THAT IS LIKELY TO REQUIRE MAINTENANCE WHILE ENERGIZED SHALL BE PROPERLY MARKED TO WARN PERSONNEL OF ARC FLASH HAZARD.
26. IN EVENT OF A DISCREPANCY BETWEEN THE SPECIFICATIONS AND A NOTE ON THE DRAWINGS, THE DRAWING NOTES SHALL SUPERSEDE THE SPECIFICATIONS.
27. COORDINATION OF OVERCURRENT PROTECTIVE DEVICES SHALL BE BY ELECTRICAL CONTRACTOR INCLUDING SETTINGS OF CIRCUIT BREAKERS.
28. WHERE A MANUAL MOTOR STARTER IS SHOWN ON THE PLANS, THE CONTRACTOR SHALL VERIFY THE DEVICE PROVIDED IS LABELED "SUITABLE AS MOTOR DISCONNECT".
29. WHERE A COMBINATION CONTROLLER IS SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL VERIFY THE DEVICE PROVIDED IS LABELED "SUITABLE AS MOTOR DISCONNECT" AND IS LISTED AS A BRANCH CIRCUIT OVERLOAD AND SHORT-CIRCUIT PROTECTIVE DEVICE.
30. PROVIDE A #18 OR LARGER COPPER TRACER WIRE SECURELY ATTACHED TO THE NON-METALLIC CABLE, PIPE OR CONDUIT AT 8'-0" ON CENTER. IT SHALL HAVE A 12" OF TRACER WIRE ACCESSIBLE ABOVE GRADE AT ANY ABOVE GRADE TERMINATION PER ARIZONA STATE STATUTE.
31. PER MARICOPA COUNTY AMENDMENT TO NEC ARTICLE 334.10 & 334.12 DOES NOT PERMIT TYPES NM, NMC, AND NMS (ROMEX) CABLES IN COMMERCIAL APPLICATIONS. (MARIPCOPA CTY).
32. LIGHT FIXTURES IN SUSPENDED CEILINGS SHALL BE INSTALLED IN COMPLIANCE WITH BUILDING CODE. REQUIREMENTS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
    a. LIGHT FIXTURES SHALL BE POSITIVELY ATTACHED TO THE SUSPENDED CEILING SYSTEM.
    b. INSTALL (OR VERIFY THE EXISTENCE OF) A #12 GAGE HANGER WIRE WITHIN 3" OF EACHCORNER OF THE LIGHT FIXTURE.
    c. PENDANT-HUNG FIXTURES SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE WITH (2) #9 GAGE WIRES OR OTHER APPROVED SUPPORT METHOD WHICH DOES NOT DEPEND ON THE CEILING SUPPORT SYSTEM.
33. LIGHT FIXTURES MOUNTED IN CEILINGS WHICH FORM AN AIR-HANDLING SPACE (PLENUM) SHALL BE SPECIFICALLY LISTED FOR SUCH INSTALLATION.
34. LIGHT FIXTURES MOUNTED IN FIRE-RATED CEILINGS SHALL BE SPECIFICALLY LISTED TO MAINTAIN THE FIRE RATING.
35. WHERE THE PLANS INDICATE A LIGHT FIXTURE IS TO BE PROVIDED WITH SPECIAL FEATURES/SWITCHING (DIMMING, EMERGENCY, THREE-LEVEL, ETC) THE CONTRACTOR SHALL PROVIDE THESE FIXTURES WITH THE APPROPRIATE BALLASTING TO ACCOMMODATE THE SPECIAL FEATURE. THE CONTRACTOR SHALL PROVIDE THE FIXTURES AS INDICATED IN THE LIGHTING FIXTURE SCHEDULE, WITH MODIFICATIONS AS REQUIRED BY PLAN NOTES.
36. THE ELECTRICAL CONTRACTOR SHALL REVIEW THE MECHANICAL PLANS, PRIOR TO BID, AND DETERMINE THE LOCATION OF SMOKE OR FIRE/SMOKE DAMPERS, IF ANY. UNLESS OTHERWISE NOTED ON THE ELECTRICAL PLANS, EACH SMOKE OR FIRE/SMOKE DAMPER SHALL BE CONNECTED TO THE NEAREST RECEPTACLE CIRCUIT, NOT TO EXCEED THREE (3) DAMPERS ADDED TO ANY CIRCUIT. INCLUDE IN THE BASE BID BID ONE (1) DUCT SMOKE DETECTOR PER SMOKE OR FIRE/SMOKE DAMPER SHOWN ON THE MECHANICAL PLANS.
37. UNLESS NOTED OTHERWISE, EACH DAMPER DUCT SMOKE DETECTOR SHALL BE RATED 24VAC AND SHALL BE CONNECTED TO THE FIRE ALARM PANEL (IF ANY) ON A SEPARATE ZONE.
38. SMOKE OR FIRE/SMOKE DAMPERS SHALL BE CONNECTED TO THE FIRE ALARM SYSTEM (IF ANY) AND SHALL BE CONTROLLED BY THE FIRE ALARM CONTROL PANEL (IF ANY).
39. THE ELECTRICAL CONTRACTOR SHALL REVIEW THE MECHANICAL PLANS, PRIOR TO BID, TO DETERMINE THE NUMBER AND LOCATION OF HVAC SYSTEMS RATED 2000 CFM OR HIGHER. THE ELECTRICAL CONTRACTOR SHALL INCLUDE, IN THE BASE BID, A DUCT SMOKE DETECTOR ON EACH UNIT FOR ALL SYSTEMS RATED 2000 CFM OR HIGHER. THE DETECTORS SHALL BE RATED 120VAC. PROVIDE THE DETECTORS TO THE MECHANICAL CONTRACTOR OR INSTALLATION IN THE DUCT. MECHANICAL CONTRACTOR SHALL CONNECT EACH DETECTOR TO SHUT DOWN IT'S ASSOCIATED UNIT. ELECTRICAL CONTRACTOR SHALL MAKE CONNECTION TO THE FIRE ALARM CONTROL PANEL (IF ANY) ON A SEPARATE ZONE. NOTE THAT CERTAIN MUNICIPALITIES REQUIRE SMOKE DETECTORS ON BOTH THE SUPPLY AND RETURN DUCTS. SEE THE DRAWINGS TO DETERMINE IF THIS PROJECT REQUIRES THE EXTRA DETECTOR.
40. DEMOLITION NOTES:
    a. FOR EQUIPMENT BEING REMOVED AND REPLACED, THE CONTRACTOR SHALL DE-ENERGIZE THE EQUIPMENT AND MAKE IT SAFE PRIOR TO REMOVAL. COMPLY WITH OSHA REQUIREMENTS FOR LOCKING-OUT AND TAGGING EQUIPMENT TO PREVENT INADVERTENT RE-ENERGIZING.
    b. WHERE EQUIPMENT IS BEING REMOVED, BUT NOT REPLACED, REMOVE THE CONDUCTORS FEEDING THE EQUIPMENT BACK TO THE POINT WHERE THEY RECEIVE POWER (CIRCUIT BREAKER OR BRANCH CIRCUIT TAP). REMOVE ACCESSIBLE CONDUITS. ABANDON IN-PLACE INACCESSIBLE CONDUITS. AFTER REMOVAL OF EQUIPMENT, REPAIR ANY OPENING LEFT TO MATCH SURROUNDING WALLS, CEILINGS, OR FLOORS TO THE OWNER'S SATISFACTION.
    c. COORDINATE WITH THE OTHER TRADES, PRIOR TO BID, AND INCLUDE IN THE BASE BID THE ELECTRICAL DISCONNECTION OF ANY EQUIPMENT BEING DEMOLISHED, EVEN IF NOT EXPLICITLY IDENTIFIED IN THE ELECTRICAL PLANS.
    d. UNLESS NOTED OTHERWISE, REMOVE ALL DEMOLISHED EQUIPMENT FROM THE PROPERTY AND DISPOSE OF IT PROPERLY (IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL ENVIRONMENTAL REGULATIONS). FEES ASSOCIATED WITH DISPOSAL SHALL BE INCLUDED IN THE CONTRACTOR'S BASE BID.
41. ACCEPTANCE TESTING:
    a. GROUND FAULT TESTING
    1. WHERE THE PLANS INDICATE TESTING OF NEW OR EXISTING GROUND FAULT PROTECTION SYSTEMS IS REQUIRED, THE CONTRACTOR SHALL HIRE A FIRM, ACCEPTABLE TO THE ENGINEER AND THE AHJ, SPECIALIZING IN TESTING OF ELECTRICAL SYSTEMS.
    2. THE TESTING FIRM SHALL BE A DISINTERESTED THIRD PARTY NOT AFFILIATED WITH THE ELECTRICAL CONTRACTOR, THE GENERAL CONTRACTOR, OR THE PROJECT.
    3. THE TESTING FIRM SHALL PERFORM THE FOLLOWING TESTS/INSPECTIONS:
       VERIFY PHASE, NEUTRAL, AND GROUND CONDUCTORS ARE PROPERLY TORQUED
       VERIFY THE PROPER INSTALLATION OF THE MAIN BONDING JUMPER. (USING A TORQUE WRENCH).
       VERIFY PICKUP AND TIMING CHARACTERISTICS OF THE RELAY AT TWO SETTINGS BY INJECTING CURRENT INTO THE SENSING UNIT.
       RE-TEST WHILE SIMULATING ONE PHASE AT 0 VOLTS (USE LINE-TO-NEUTRAL CONTROL VOLTAGE).
       VERIFY OTHER FEATURES OF THE GROUND FAULT SYSTEM FUNCTION PROPERLY.
    4. THE TESTING FIRM SHALL PROVIDE A REPORT DETAILING THE TESTING AND INSPECTIONS PERFORMED AND THE METHODS USED. THE REPORT SHALL INCLUDE, AT A MINIMUM:
       A STATEMENT INDICATING THE MAIN BONDING JUMPER WAS EXAMINED AND FOUND TO BE THE PROPER SIZE AND CORRECTLY INSTALLED.
       A STATEMENT INDICATING THE PHASE, NEUTRAL, AND GROUND CONDUCTORS ARE TERMINATED AND PROPERLY TORQUED. INDICATE WHAT CRITERIA THE RELAY MUST MEET TO INDICATE A SUCCESSFUL RESPONSE TO THE TEST CONDITION.
       A STATEMENT INDICATING THE RELAY FUNCTIONED PROPERLY AT TWO SETTINGS (INDICATE THE SETTINGS USED IN THE REPORT).
       A STATEMENT INDICATING THE RELAY FUNCTIONED PROPERLY USING A REDUCED CONTROL VOLTAGE.
       A STATEMENT IDENTIFYING OTHER FEATURES OF THE RELAY, THE TEST METHOD USED, AND THE RESULTS OF THE TEST.
       A STATEMENT IDENTIFYING OTHER FEATURES OF THE RELAY, THE TEST METHOD USED, AND THE RESULTS OF THE TEST.
       LIST ANY CORRECTIVE ACTIONS NECESSARY TO ALLOW THE TESTED EQUIPMENT TO COMPLY WITH THE TEST CRITERIA.
       STATE IN THE REPORT THAT THE TESTING COMPANY IS NOT AFFILIATED WITH THE ELECTRICAL CONTRACTOR, THE GENERAL CONTRACTOR, OR THE PROJECT IN ANY WAY.
       LEGIBLY IDENTIFY THE NAME AND TITLE OF THE PERSON PERFORMING THE TEST.
       LEGIBLY IDENTIFY THE NAME OF THE PERSON REVIEWING THE TEST REPORT (A REGISTERED ELECTRICAL ENGINEER).
       SIGNATURE AND SEAL OF THE PERSON REVIEWING THE TEST REPORT.
42. PRIOR TO ORDERING ANY MATERIALS THE CONTRACTOR SHALL BE REQUIRED TO COMPARE THE ONE-LINE DIAGRAM WITH THE PANEL SCHEDULES TO ENSURE EVERYTHING IS COORDINATED. REPORT ANY DISCREPENCIES TO THE ENGINEER OF RECORD. IF THESE ARE FOUND AND NOT REPORTED THEN THE CONTRACTOR PROCEEDS AT HIS OWN COST/RISK.
43. E.C. SHALL COORDINATE THE EXACT EXIT SIGN LOCATION/PLACEMENT WITH THE FIELD BUILDING INSPECTOR PRIOR TO ROUGH INSPECTION APPROVAL.
44. SPECIAL INSPECTIONS: WHERE THE PLANS INDICATE SPECIAL ELECTRICAL INSPECTIONS AND REPORT, OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ), THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, HIRE AN INDEPENDENT THIRD PARTY INSPECTOR OR TESTING AGENCY TO PERFORM THE REQUIRED INSPECTIONS FOR THE TYPES OF WORK SPECIFIED AND IDENTIFIED ON THE SPECIAL INSPECTION FORM. THE SPECIAL ELECTRICAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT TO THE REGISTERED DESIGN PROFESSIONAL ENGINEER, PROVIDING TEST RESULTS AND STATING WEATHER THE ITEMS REQUIRING SPECIAL INSPECTION WERE IN COMPLIANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. PROVIDE ADDITIONAL COST FOR ENGINEER'S SEALED LETTER OF APPROVAL.
45. PROVIDE CONCRETE/STEEL BOLLARD PROTECTION FOR ALL ELECTRICAL EQUIPMENT SUBJECT TO DAMAGE IN TRAFFIC AREAS. COORDINATE WITH ARCHITECT FOR DETAIL AND LOCATION.
46. COORDINATION OF OVERCURRENT PROTECTIVE DEVICES SHALL BE BY ELECTRICAL CONTRACTOR INCLUDING SETTINGS OF CIRCUIT BREAKERS, FUSES AND GROUND FAULT DEVICES. CONTRACTOR SHALL PROVIDE COORDINATION STUDY AND SET ALL CIRCUIT PROTECTIVE DEVICE SETTINGS AS RECOMMENDED AT THE COMPLETION OF THE PROJECT.
47. EMERGENCY SYSTEMS OVERCURRENT DEVICES SHALL BE SELECTIVELY COORDINATED WITH ALL SUPPLY SIDE OVERCURRENT PROTECTIVE DEVICES, IN ACCORDANCE WITH NEC 700, 701 AND 620 REQUIREMENTS.
48. ANY ELECTRICAL ROOM THAT CONTAINS ANY ONE (OR MORE) PIECE(S) OF ELECTRICAL EQUIPMENT CONTAINING OVERCURRENT DEVICES, SWITCHING DEVICES, OR CONTROL DEVICES RATED 1200 AMPS OR MORE SHALL BE EQUIPPED WITH PANIC BARS, PRESSURE PLATES, OR OTHER DEVICES THAT ARE NORMALLY LATCHED BUT OPEN UNDER SIMPLE PRESSURE, IN ACCORDANCE WITH NEC 110.26(C) REQUIREMENTS.
49. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR SUPPLYING AND INSTALLING ALL LOW VOLTAGE WIRING BETWEEN LIGHT FIXTURES AND DIMMING/SWITCHING MODULES AND/OR LIGHTING CONTROL PANELS FOR A FULLY FUNCTIONING SYSTEM. REFER TO MANUFACTURERS INSTALLATION DETAILS FOR REQUIREMENTS.

ELECTRICAL SYMBOLS

(NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT).

LIGHTING

- 2' X 4' LUMINAIRE. UPPER CASE LETTER INDICATES TYPE AS INDICATED ON THE LUMINAIRE SCHEDULE, NUMBER INDICATES THE CIRCUIT FEEDING THE FIXTURE, LOWER CASE LETTER INDICATES THE SWITCH CONTROLLING THE FIXTURE (NOTATION IS TYPICAL FOR ALL LIGHT FIXTURES).
- LINEAR STRIP LUMINAIRE, LENGTH PER PLAN.
- NOMINAL 1' X 4' RECESSED CEILING-MOUNTED LUMINAIRE.
- SURFACE WALL-MOUNTED LIGHT FIXTURE.
- RECESSED WALL-MOUNTED LIGHT FIXTURE.
- RECESSED CEILING-MOUNTED FIXTURE
- SURFACE CEILING MOUNTED FIXTURE
- SOLID 'JBOX' ON ANY FIXTURE INDICATES A FIXTURE WITH AN INTEGRAL EMERGENCY POWER SUPPLY, PER THE SPECIFICATIONS.
- RECESSED WALL WASH CEILING-MOUNTED FIXTURE
- LIGHTING TRACK WITH FIXTURES.
- TRACK HEAD OR FLOODLIGHT. SEE LIGHT FIXTURE SCHEDULE FOR SPECIFICATIONS.
- DUAL HEAD EMERGENCY LIGHT FIXTURE WITH BATTERY PACK. SEE LIGHT FIXTURE SCHEDULE FOR SPECIFICATION.
- CEILING MOUNTED LED EMERGENCY EXIT SIGN. ARROWS INDICATE PATH OF EGRESS (TYPICAL FOR ALL EXIT SIGNS).
- WALL MOUNTED LED EMERGENCY EXIT SIGN.
- BOLLARD – TYPE LIGHT FIXTURE.
- POLE-MOUNTED LIGHT FIXTURE.

SWITCHES

Symbol	Description
$	SINGLE POLE TOGGLE SWITCH
$2	TWO-POLE TOGGLE SWITCH
$3	THREE-WAY TOGGLE SWITCH
$4	FOUR-WAY TOGGLE SWITCH
$P	SINGLE POLE TOGGLE SWITCH WITH PILOT LIGHT
$K	SINGLE POLE KEY OPERATED TOGGLE SWITCH
$D	DIMMER SWITCH
$T	MECHANICAL TIMESWITCH
$OS	OCCUPANCY SENSOR
	PROGRAMMABLE TIMESWITCH
PC	PHOTOCELL, ON ROOF FACING NORTH UNLESS NOTED OTHERWISE.

DEVICES

- DUPLEX CONVENIENCE RECEPTACLE, +18" U.N.O.
- "CROSS SLASH" ON ANY RECEPTACLE INDICATES INTEGRAL GROUND FAULT PROTECTION. (GFCI)
- DOUBLE DUPLEX (FOURPLEX) CONVENIENCE RECEPTACLE, +18" U.N.O.
- SINGLE CONVENIENCE RECEPTACLE, +18" U.N.O.
- DUPLEX CONVENIENCE RECEPTACLE MOUNTED ABOVE COUNTER AT +44" OR AS SPECIFIED ON ARCHITECT'S ELEVATIONS.
- INTEGRAL GROUND FAULT PROTECTION DUPLEX CONVENIENCE RECEPTACLE MOUNTED ABOVE COUNTER AT +44" OR AS SPECIFIED ON ARCHITECT'S ELEVATIONS.
- DOUBLE DUPLEX (FOURPLEX) CONVENIENCE RECEPTACLE MOUNTED ABOVE COUNTER AT +44" OR AS SPECIFIED BY ARCHITECTS ELEVATIONS.
- SPLIT WIRED DUPLEX CONVENIENCE RECEPTACLE, +18" U.N.O.
- DUPLEX CONVENIENCE RECEPTACLE WITH AN ISOLATED GROUND CONNECTION.
- SPECIAL PURPOSE RECEPTACLE AS NOTED ON DRAWINGS (250 VOLT). NEMA CONFIGURATION AS INDICATED ON THE PLANS OR AS REQUIRED BY THE EQUIPMENT.
- SPECIAL PURPOSE RECEPTACLE AS NOTED ON DRAWINGS (600 VOLT). NEMA CONFIGURATION AS INDICATED ON THE PLANS OR AS REQUIRED BY THE EQUIPMENT.
- JUNCTION BOX. 'C' INDICATES CEILING MOUNTED. 'F' INDICATES FLOOR MOUNTED (SUBSCRIPTS ARE TYPICAL FOR ALL DEVICES)
- POWER / VOICE-DATA DIVIDED RACEWAY.
- POWER / VOICE-DATA SERVICE POLE.

SPECIAL SYSTEMS

- VOICE OUTLET
- DATA OUTLET
- COMBINATION TELEPHONE AND DATA OUTLET IN THE SAME BOX
- TELEVISION OUTLET
- CLOCK OUTLET.
- CEILING MOUNTED SPEAKER.
- WALL MOUNTED SPEAKER.
- MICROPHONE OUTLET.
- BELL/BUZZER. SEE DRAWINGS FOR SPECIFICATION.
- CHIME, SEE DRAWINGS FOR SPECIFICATION.
- PUSHBUTTON. SEE DRAWINGS FOR SPECIFICATION.
- CR — CARD READER WITH BACK BOX FOR CONDUIT/WIRE ACCESS ROUTING
- SEC — CAMERA WITH BACK BOX FOR CONDUIT/WIRE ACCESS ROUTING

POWER

Symbol	Description
$M	HORSEPOWER RATED MANUAL MOTOR SWITCH
$MOL	HORSEPOWER RATED MANUAL MOTOR STARTER WITH THERMAL OVERLOAD(S).
	LIGHTING CONTACTOR IN SURFACE-MOUNTED ENCLOSURE
	LIGHTING CONTACTOR IN FLUSH-MOUNTED ENCLOSURE
	COMBINATION MOTOR CONTROLLER PROVIDED BY EQUIPMENT VENDOR, INSTALLED BY ELECTRICAL CONTRACTOR.
	COMBINATION MOTOR CONTROLLER PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
	FUSIBLE DISCONNECT SWITCH FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE. SIZE AND FUSES AS PER RECOMMENDATIONS OF EQUIPMENT'S MANUFACTURER OR AS NOTED. 30A, 3P, 250V, NEMA 3R UNLESS NOTED OTHERWISE. (N. INDICATES NON-FUSED).
	ELECTRICAL MOTOR. SEE DRAWINGS FOR SIZE.
	DISTRIBUTION PANELBOARD, MOTOR CONTROL CENTER OR SERVICE ENTRANCE SECTION. SEE DRAWINGS FOR EXACT TYPE.
T	DISTRIBUTION TRANSFORMER
	SURFACE MOUNTED PANEL BOARD.
	FLUSH MOUNTED PANEL BOARD.
	CABINET.
TMB	TELEPHONE MOUNTING BOARD.

WIRE/CONDUIT

- TEMPERATURE SEAL IN ACCORDANCE WITH ARTICLE 300-7 OF THE NEC.
- FLEXIBLE CONDUIT
- CONDUIT CONCEALED IN WALLS OR ABOVE CEILING W/ 2 #12, #12 GND, 3/4" C., UNLESS NOTED OTHERWISE.
- CONDUIT ROUTED UNDER FLOOR OR BELOW GRADE W/ 2 #12, #12 GRD., 3/4" C., UNLESS NOTED OTHERWISE.
- CONDUIT TURNING UP.
- CONDUIT TURNING DOWN.
- INDICATES A 'HOME-RUN' TO THE PANELBOARD
- INDICATES A PHASE CONDUCTOR
- INDICATES A GROUNDED (NEUTRAL) CONDUCTOR
- INDICATES AN EQUIPMENT GROUNDING CONDUCTOR
- INDICATES AN ISOLATED GROUND CONDUCTOR (SAME SIZE AS EQUIPMENT GROUNDING CONDUCTOR
- POWER BREAK — TRANSITION POINT FROM ONE SOURCE OF POWER TO ANOTHER WITHIN A CONTINUOUS RACEWAY OR LIGHTING TRACK FED FROM MULTIPLE SOURCES.
- INDICATES THE CIRCUIT FEEDING THE RACEWAY OR TRACK IN THE DIRECTION OF THE ARROW.

SINGLE-LINE DIAGRAM

- CIRCUIT BREAKER, FIXED MOUNTED.
- CIRCUIT BREAKER, DRAWOUT MOUNTING.
- FUSIBLE SWITCH. SIZE AS INDICATED ON DRAWINGS.
- TRANSFORMER. SEE ONE-LINE FOR TYPE AND SPECIFICATION.
- CURRENT TRANSFORMER
- (M) METERING DEVICE
- PANELBOARD, MAIN LUG ONLY, CU BUSS
- PANELBOARD, MAIN CIRCUIT BREAKER, CU BUSS
- TRANSFER SWITCH – MANUAL OR AUTOMATIC
- COMBINATION MOTOR CONTROLLER, FUSIBLE SWITCH TYPE
- COMBINATION MOTOR CONTROLLER, CIRCUIT BREAKER TYPE
- F/T — INDICATES A FEED-THROUGH LUG CONNECTION

ELECTRICAL SHEET INDEX

ABBREVIATIONS

A	AMPS/AMPERES
AFC	AVAILABLE FAULT CURRENT
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR.
AFG	ABOVE FINAL GRADE.
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CU	COPPER MATERIAL
DED	DEDICATED
EF	EXHAUST FAN
EM	EMERGENCY / 90 MINUTE BATTERY FOR EGRESS
EMT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NON-METALLIC TUBING
ER	EXISTING TO BE RELOCATED AS INDICATED.
EX	EXISTING TO REMAIN.
FMC	FLEXIBLE METAL CONDUIT
GEC	GROUNDING ELECTRODE CONDUCTOR AT THE SES
GFCI	GROUND FAULT CURRENT INTERRUPTER.
GND	GROUND
IMC	INTERMEDIATE METAL CONDUIT
IG	ISOLATED GROUND
KCMIL	1000 CIRCULAR MILS (MCM)
LFMC	LIQUID-TIGHT FLEXIBLE METAL CONDUIT
LFNC	LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT
N	NEW
N1	NEMA 1
N3R	NEMA 3R
NL	NIGHT LIGHT. BYPASS LOCAL SWITCHING.
RNC	RIGID NONMETALLIC CONDUIT
UNO	UNLESS NOTED OTHERWISE.
WP	WEATHERPROOF
XP	EXPLOSION PROOF.
XR	EXISTING TO BE REMOVED.

CITY OF PHOENIX
PLANNING & DEVELOPMENT DEPARTMENT
This set of plans must be reviewed on site prior to construction and shall be kept at the construction site. Such review shall not prevent the City from requiring correction of errors in the plans where such errors are subsequently found to be in violation of any law, ordinance, health, safety, or other design issues.
Inspector: __________ Number: ______ Date: __________

ASEIENGINEERING
2410 w. royal palm rd. suite A, phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440
DFT: JN
DSN: JN
CHK: CS

ARCHICON
Architecture & Interiors, L.C.
5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
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Sheet Description
GENERAL NOTES / LEGENDS / SHEET INDEX

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 27677
CHRIS L. SARMIENTO
01/04/18
Date Signed
ARIZONA, U.S.A.
EXPIRES 03/31/2018

Sheet No.
E0.1

Issue Date: 12.15.17

SECTION 16050 – BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 – GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all other sections of the Electrical Specifications apply to this section. This is typical for all sections of the Electrical Specifications.
1.2 SUBMITTALS
A. Not required for this section.
1.3 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use. This requirement applies to all sections of the Electrical Specifications.
B. Comply with NFPA 70. This requirement applies to all sections of the Electrical Specifications.
1.4 COORDINATION
A. Coordinate chases, slots, inserts, sleeves, and openings with general construction work and arrange in building structure during progress of construction.
B. Coordinate electrical service connections to components furnished by utility companies.
PART 2 – PRODUCTS
2.1 SUPPORTING DEVICES
A. Material: Cold-formed steel, with corrosion-resistant coating acceptable to authorities having jurisdiction.
B. Metal Items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel.
C. Slotted-Steel Channel Supports: Flange edges turned toward web.
D. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps.
2.2 ELECTRICAL IDENTIFICATION
A. Identification Devices: A single type of identification product for each application category.
B. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape, not less than 1 inch wide by 3 mils thick (25 mm wide by 0.08 mm thick).
C. Underground Warning Tape: Permanent, bright-colored, continuous-printed, detectable premarked vinyl tape.
D. Tape Markers for Wire: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.
E. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.
F. Engraved-Plastic Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched or drilled for mechanical fasteners 1/16-inch minimum thickness for signs up to 20 sq. in. and 1/8-inch minimum thickness for larger sizes.
PART 3 – EXECUTION
3.1 ELECTRICAL EQUIPMENT INSTALLATION
A. Headroom Maintenance: If mounting heights or other location criteria are not indicated, Minimum 6'-6" is required.
arrange and install components and equipment to provide the maximum possible headroom.
B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.
C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components.
D. Right of Way: Give to raceways and piping systems installed at a required slope.
3.2 ELECTRICAL SUPPORTING DEVICE APPLICATION
A. Damp Locations and Outdoors: Hot-dip galvanized materials.
B. Dry Locations: Steel materials.
C. Support Clamps for PVC Raceways: Click-type clamp system.
D. Selection of Supports: Comply with manufacturer's written instructions.
E. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four; minimum of 200-lb design load.
3.3 SUPPORT INSTALLATION
A. Install support devices to securely and permanently fasten and support electrical components.
B. Install individual and multiple raceway hangers and riser clamps to support raceways.
C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.
D. Size supports for multiple raceway installations so capacity can be increased by 25 percent.
E. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.
F. Install 1/4-inch- diameter or larger threaded steel hanger rods, unless otherwise indicated.
G. Separately support cast boxes that are threaded to raceways and used for fixture support. Support sheet-metal boxes directly from the building structure or by bar hangers.
H. Install metal channel racks for mounting cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices unless components are mounted directly to structural elements of adequate strength.
I. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies.
J. Securely fasten electrical items and their supports to the building structure, unless otherwise indicated. Fasten equipment with components suitable for the mounting surface. indicated:
3.4 IDENTIFICATION MATERIALS AND DEVICES
A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.
B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents.
C. Identify raceways and cables with color banding as follows:
1. Bands: Pretensioned, snap-around, colored plastic sleeves or colored adhesive marking tape. Make each color band 2 inches wide, completely encircling conduit.
2. Band Locations: At changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals.
3. Colors: As follows:
a. Fire Alarm System: Red.
b. Security System: Blue and yellow.
c. Telecommunication System: Green and yellow.
D. Tag and label circuits designated to be extended in the future. Identify source and circuit numbers in each cabinet, pull and junction box, and outlet box.
E. Install continuous underground plastic markers during trench backfilling, for exterior underground power, control, signal, and communication lines located directly above power and communication lines. Locate 6 to 8 inches (150 to 200 mm) below finished grade. If width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches (400 mm), overall, use a single line marker.
F. Color-code secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:

	208/120 V	480/277V
Phase A:	Black	Brown
Phase B:	Red	Orange
Phase C:	Blue	Yellow

G. Install warning, caution, and instruction signs where required to comply with 29 CFR, Chapter XVII, Part 1910.145.
H. Install engraved-laminated emergency-operating signs with white letters on red background with minimum 3/8-inch- high lettering for emergency instructions.
3.5 FIRESTOPPING
A. Apply firestopping to cable and raceway penetrations of fire-rated floor and wall assemblies to achieve fire-resistance rating of the assembly.
3.6 REFINISHING AND TOUCHUP PAINTING
A. Refinish and touch up paint.
1. Clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location.
2. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
3.7 CLEANING AND PROTECTION
A. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
END OF SECTION

SECTION 16060 – GROUNDING AND BONDING

PART 1 – GENERAL
1.1 SUBMITTALS
A. Not required for this section
1.2 QUALITY ASSURANCE
A. Comply with NFPA 70 and UL 467.
PART 2 – PRODUCTS
2.1 MANUFACTURERS
A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Grounding Conductors, Cables, Connectors, and Rods:
a. Chance/Hubbell.
b. Copperweld Corp.
c. Erico Inc.; Electrical Products Group.
2.2 GROUNDING CONDUCTORS
A. For insulated conductors, comply with Division 16 Section "Conductors and Cables."
B. Material: Copper.
C. Equipment Grounding Conductors: Insulated with green-colored insulation.
D. Isolated Ground Conductors: Insulated with green-colored insulation with yellow stripe. On feeders with isolated ground, use colored tape, alternating bands of green and yellow tape to provide a minimum of three bands of green and two bands of yellow.
E. Grounding Electrode Conductors: Stranded cable.
F. Underground Conductors: Bare, tinned, stranded, unless otherwise indicated.
G. Bare Copper Conductors: Comply with the following:
1. Solid Conductors: ASTM B 3.
2. Assembly of Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.
2.3 CONNECTOR PRODUCTS
A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.
B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.
C. Welded Connectors: Exothermic-welded type, in kit form, and selected per manufacturer's written instructions.
PART 3 – EXECUTION
3.1 APPLICATION
A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.
B. In raceways, use insulated equipment grounding conductors.
C. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections, except those at test wells.
D. Equipment Grounding Conductor Terminations: Use bolted pressure clamps.
3.2 EQUIPMENT GROUNDING CONDUCTORS
A. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.
B. Install equipment grounding conductors in all feeder and branch circuit conduits.
C. Air-Duct Equipment Circuits: Install an equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners and heaters. Bond conductor to each unit and to air duct.
D. Water Heater: Install a separate equipment grounding conductor to each electric water heater. Bond conductor to heater units, piping, connected equipment, and components.
E. Signal and Communication Systems: For telephone, alarm, voice and data, and other communication systems, provide No. 6 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
1. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch grounding bus.
3.3 INSTALLATION
A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage. Any exterior mounted grounding conductors shall be enclosed in schedule 40 PVC
3.4 CONNECTIONS
A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
B. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
END OF SECTION

SECTION 16120 – CONDUCTORS AND CABLES

PART 1 – GENERAL
1.1 QUALITY ASSURANCE
A. Listing and Labeling: Provide wires and cables specified in this Section that are listed and labeled.
1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.
B. Comply with NFPA 70.
PART 2 – PRODUCTS
2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:
1. Wires and Cables:
a. American Insulated Wire Corp.; Leviton Manufacturing Co.
b. Carol Cable Co., Inc.
c. Southwire Company.
2. Connectors for Wires and Cables:
a. AMP Incorporated.
b. General Signal; O-Z/Gedney Unit.
c. 3M Company; Electrical Products Division.
2.2 BUILDING WIRES AND CABLES
A. UL-listed building wires and cables with conductor material, insulation type, cable construction, and rating as specified in Part 3 "Wire and Insulation Applications" Article.
B. Cross-Linked Polyethylene Insulation Material: Comply with NEMA WC 7.
C. Conductor Material: Copper.
D. Stranding: Solid conductor for No. 10 AWG and smaller; stranded conductor for larger than No. 10 AWG.
2.3 CONNECTORS AND SPLICES
A. UL-listed, factory-fabricated wiring connectors of size, ampacity rating, material, type, and class for application and service indicated.
PART 3 – EXECUTION
3.1 EXAMINATION
A. Examine raceways and building finishes to receive wires and cables for compliance with requirements for installation tolerances and other conditions affecting performance of wires and cables.
3.2 WIRE AND INSULATION APPLICATIONS
A. Service Entrance: Type XHHW in raceway.
B. Feeders: Above grade: Type THW/THWN, in raceway; Below grade: Type XHHW in raceway.
C. Branch Circuits: Type THHN/THWN, in raceway.
D. Fire Alarm Circuits: Type THHN/THWN, in raceway.
3.3 INSTALLATION
A. Remove existing wires from raceway before pulling in new wires and cables U.O.N..
B. Pull Conductors: Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
D. Seal around cables penetrating fire-rated elements according to Division 7 Section "Firestopping."
E. Identify wires and cables according to Division 16 Section "Basic Electrical Materials and Methods."
3.4 CONNECTIONS
A. Conductor Splices: Keep to minimum.
B. Install splices and tapes that possess equivalent or better mechanical strength and insulation ratings than conductors being spliced.
C. Use splice and tap connectors compatible with conductor material.
D. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.
E. Connect outlets and components to wiring and to ground as indicated and instructed by manufacturer.
3.5 FIELD QUALITY CONTROL
A. Testing: After installation of wires and cables, and before electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
1. Procedures: Perform each visual and mechanical inspection and electrical test stated in NETA ATS, Section 7.3.1. Certify compliance with test parameters.
END OF SECTION

SECTION 16130 – RACEWAYS AND BOXES

PART 1 – GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
1.2 SUMMARY
A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
B. Related Sections include the following:
1. Division 16 Section "Basic Electrical Materials and Methods" for supports, anchors, and identification products.
2. Division 16 Section "Wiring Devices" for devices installed in boxes and for floor-box service fittings.
1.3 DEFINITIONS
A. EMT: Electrical metallic tubing.
B. IMC: Intermediate metal conduit.
C. LFMC: Liquidtight flexible metal conduit.
D. RMC: Rigid Metal Conduit
E. RNC: Rigid Nonmetallic Conduit
F. FMC/MC: Flexible metal conduit.
1.4 SUBMITTALS
A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
1.5 COORDINATION
A. Coordinate layout and installation of raceways, boxes, enclosures, cabinets, and suspension system with other construction.
PART 2 – PRODUCTS
2.1 MANUFACTURERS
A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.
2.2 METAL CONDUIT AND TUBING
A. Acceptable Manufacturers:
1. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Anamet Electrical, Inc.; Anaconda Metal Hose.
B. Rigid Steel Conduit: ANSI C80.1.
C. EMT and Fittings: ANSI C80.3.
1. Fittings: Set-screw or compression type.
D. LFMC: Flexible steel conduit with PVC jacket.
2.3 METAL WIREWAYS
A. Acceptable Manufacturers:
1. Hoffman.
2. Square D.
3. Wiremold
B. Material and Construction: Sheet metal sized and shaped as indicated.
C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
D. Wireway Covers: Screw-cover type.
E. Finish: Manufacturer's standard enamel finish.
2.4 SURFACE RACEWAYS
A. Surface Metal Raceways: Galvanized steel with snap-on covers. Finish with manufacturer's standard prime coating.
1. Acceptable Manufacturers:
a. Thomas & Betts Corporation.
b. Walker Systems, Inc.; Wiremold Company (The).
c. Wiremold Company (The); Electrical Sales Division.
2.5 BOXES, ENCLOSURES, AND CABINETS
A. Acceptable Manufacturers:
1. Spring City Electrical Manufacturing Co.
2. Thomas & Betts Corporation.
3. Walker Systems, Inc.; Wiremold Company (The).
B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
C. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic, finished inside with radio-frequency-resistant paint.
D. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
E. Floor Boxes: Sheet metal, fully adjustable, rectangular, sectionalized.
F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
PART 3 – EXECUTION
3.1 RACEWAY APPLICATION
A. Outdoors:
1. Exposed: Rigid steel or IMC
2. Concealed: Rigid steel or IMC
3. Underground, Single Run: RNC.
4. Connection to Vibrating Equipment (including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
5. Boxes and Enclosures: NEMA 250, Type.
B. Indoors:
1. Exposed (>10' AFF): EMT
2. Exposed (Where subject to damage or < 10'AFF): IMC
3. Concealed: EMT, RNC, MC.
4. Connection to Vibrating Equipment (including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
5. Damp or Wet Locations: Rigid steel conduit.
6. Boxes and Enclosures: NEMA 250, Type 1, except as follows:
a. Damp or Wet Locations: NEMA 250, Type 3R, metallic.
7. Concealed in walls or above ceiling: FMC
C. Minimum Raceway Size: 3/4-inch trade size (DN 21).
3.2 INSTALLATION
A. Keep raceways at least 18 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
B. Complete raceway installation before starting conductor installation.
C. Support raceways as specified in Division 16 Section "Basic Electrical Materials and Methods."
D. Install temporary closures to prevent foreign matter from entering raceways.
E. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portions of bends are not visible above the finished slab.
F. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and keep straight legs of offsets parallel, unless otherwise indicated.
G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
H. Raceways Embedded in Slabs: Install in middle 1/3 of slab thickness where practical and leave at least 2 inches (50 mm) of concrete cover.
1. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
2. Space raceways laterally to prevent voids in concrete.
3. Run conduit larger than 1-inch trade size (DN 27) parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
4. Change from nonmetallic tubing to Schedule 80 nonmetallic conduit, rigid steel conduit, or IMC before rising above the floor.
I. Install exposed raceways parallel or at right angles to nearby surfaces or structural members and follow surface contours as much as possible.
J. Join raceways with fittings designed and approved for that purpose and make joints tight.
1. Use insulating bushings to protect conductors.
L. Terminations:
1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder.
M. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 400-lb tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.
N. Telephone and Signal System Raceways, 2-Inch Trade Size (DN 53) and Smaller: In addition to above requirements, install raceways in maximum lengths of 150 feet (45 m) and with a maximum of two 90-degree bends or equivalent. Separate lengths with pull or junction boxes where necessary to comply with these requirements.
O. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.
P. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used beginning 6 inches (150 mm) above the floor. Install screwdriver-operated, threaded plugs flush with floor for future equipment connections.
Q. Flexible Connections: Use maximum of 72 inches (1830 mm) of flexible conduit for recessed and semirecessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use LFMC in damp or wet locations. Install separate ground conductor across flexible connections.
3.3 PROTECTION
A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
END OF SECTION

SECTION 16140 – WIRING DEVICES

PART 1 – GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.
1.2 SUMMARY
A. This Section includes receptacles, connectors, switches (manual and automatic), and finish plates.
1.3 DEFINITIONS
A. GFCI: Ground-fault circuit interrupter.
B. SPD: Surge Protection Device.
C. AFCI: Arc Fault Circuit Interruptor
1.4 SUBMITTALS
A. Product Data: For each product specified.
1.5 QUALITY ASSURANCE
A. Comply with NEMA WD 1.
B. Comply with NFPA 70.
1.6 COORDINATION
A. Receptacles for Owner-Furnished Equipment: Match plug configurations.
1. Cord and Plug Sets: Match equipment requirements.
PART 2 – PRODUCTS
2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:
1. Wiring Devices:
a. GE Company; GE Wiring Devices.
b. Leviton Manufacturing Co., Inc.
c. Pass & Seymour/Legrand; Wiring Devices Div.
2. Poke-through, Floor Service Outlets and Telephone/Power Poles:
a. American Electric.
b. Pass & Seymour/Legrand; Wiring Devices Div.
c. Wiremold.
3. Automatic Timeswitches
a. Paragon
b. Tork
4. Lighting Contactor
a. Siemens
b. General Electric
c. Eaton/Cutler Hammer
d. Square-D
2.2 RECEPTACLES
A. Straight-Blade and Locking Receptacles: Heavy-Duty grade.
B. GFCI Receptacles: Feed-through type, with integral NEMA WD 6, Configuration 5-20R duplex receptacle arranged to protect connected downstream receptacles on same circuit. Design units for installation in a 2-3/4-inch- deep outlet box without an adapter.
C. Isolated-Ground Receptacles: Equipment grounding contacts connected only to the green grounding screw terminal of the device with inherent electrical isolation from mounting strap.
D. SPD Receptacles: Duplex type, NEMA WD 6, Configuration 5-20R, with integral SPD in line to ground, line to neutral, and neutral to ground.
1. SPD Components: Multiple metal-oxide varistors; rated a nominal clamp level of 500 transient-suppression voltage and minimum single transient pulse energy dissipation of 140 J line to neutral, and 70 J line to ground and neutral to ground.
2. Active SPD Indication: Light visible in face of device to indicate device as "active" or "no longer active."
3. Identification: Distinctive marking on face of device denotes SPD-type unit.
2.4 MANUAL SWITCHES
A. Snap Switches: Heavy-duty, quiet type.
B. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on/off switches and audible and electromagnetic noise filters.
2.5 AUTOMATIC TIMESWITCHES (2-CIRCUIT MIN)
A. Features: 2-Channel, AM/PM Format, 1-minute resolution, LCD Display, 99 set point capability, Daylight Saving/Standard time, Leap Year correction, 30 day integral backup, manual over-ride for each channel, astronomic control of both channels with 1-99 minute offset. Provide minimum 10hr battery back-up for time-switch and programming
B. Enclosure: Nema 1 indoor or Nema 3R outdoor.
2.6 LIGHTING CONTACTORS
A. Features: Electrically-held, 20A Contacts, 480V/277V rated or as noted on drawings, suitable for the type of loads being switched, number of poles as indicated on the plan.
2.7 LIGHTING CONTROLLER (UP TO 8 CIRCUITS):
A. Features: (8) 20A 277V Relay outputs, 8 switch inputs min., master override, LCD display, internal Astronomic timeclock, Daylight Savings/Standard Times, Self-prompting keypad programming, 512 programs for 7 day programming, 32 holidays, Warn Off feature.
B. Enclosure: Nema 1 indoor, Nema 3R outdoor.
2.8 WALL PLATES
A. Single and combination types match corresponding wiring devices.
1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Unfinished Spaces: Smooth plastic. (U.O.N.)
2.9 FLOOR SERVICE FITTINGS
A. Type: Modular, dual-service units suitable for wiring method used.
B. Compartmentation: Barrier separates power and signal compartments.
C. Housing Material: Steel or brass.
2.10 POKE-THROUGH ASSEMBLIES
A. Description: Factory-fabricated and -wired assembly of below-floor junction box unit with multichanneled, through-floor raceway/firestop unit and detachable matching floor service-outlet assembly.
2.11 MULTIOUTLET ASSEMBLIES
A. Components of Assemblies: Products from a single manufacturer designed for use as a complete, matching assembly of raceways and receptacles.
B. Raceway Material: Metal, with manufacturer's standard finish or nonmetal as noted on drawings.
C. Wire: No. 12 AWG.
2.12 VOICE-DATA/POWER SERVICE POLES
A. Description: Factory-assembled and -wired units to extend power, telephone, and data service from distribution wiring concealed in ceiling to devices or outlets in pole near floor.
1. Poles: Nominal 2.5-inch- square cross section with height adequate to extend from floor to at least 6 inches above ceiling, and separate channels for power and signal wiring.
2. Mounting: Ceiling trim flange with concealed bracing arranged for positive connection to ceiling supports, and pole foot with carpet pad attachment.
3. Finishes: Manufacturers standard finish and trim combinations, including painted and satin anodized-aluminum finishes.
2.13 FINISHES
A. Color: White, unless otherwise indicated or required by Code.
PART 3 – EXECUTION
3.1 INSTALLATION
A. Install devices and assemblies plumb and secure.
B. Install wall plates when painting is complete.
C. Install wall dimmers to achieve indicated rating after derating for ganging as instructed by manufacturer.
D. Do not share neutral conductor on load side of dimmers.
E. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical, and grounding terminal of receptacles on bottom. Group adjacent switches under single, multigang wall plates.
F. Protect devices and assemblies during painting.
G. Adjust locations at which floor service outlets and telephone/power service poles are installed to suit arrangement of partitions and furnishings.
H. Mounting Heights: Heights above finished floor of devices shall be as indicated below, measured to the center of the device faceplate. If heights noted on the drawings differ from these, the drawings shall take precedence.
1. Outlets (power/communications/data): 18 inches.
2. Switches: 42 inches.
3. Wall phone: 42 inches.
3.2 IDENTIFICATION
A. Comply with Division 16 Section "Basic Electrical Materials and Methods."
1. Switches: Where three or more switches are ganged, and elsewhere as indicated, identify each switch with approved legend engraved on wall plate.
2. Receptacles: Identify panelboard and circuit number from which served. Use machine-printed, pressure-sensitive, abrasion-resistant label tape on face of plate and durable wire markers or tags within outlet boxes.
3.3 CONNECTIONS
A. Connect wiring device grounding terminal to outlet box with bonding jumper.
B. Connect wiring device grounding terminal to branch-circuit equipment grounding conductor.
C. Isolated-Ground Receptacles: Connect to isolated-ground conductor routed to designated isolated equipment ground terminal of electrical system.
D. Tighten electrical connectors and terminals according to manufacturers published torque-tightening values. If manufacturers torque values are not indicated, use those specified in UL 486A and UL 486B.
3.4 FIELD QUALITY CONTROL
A. Test wiring devices for proper polarity and ground continuity. Operate each device at least six times.
END OF SECTION 16140

SECTION 16410 – ENCLOSED SWITCHES & CIRCUIT BREAKERS

PART 1 – GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.
1.2 SUMMARY
A. This Section includes individually mounted enclosed switches and circuit breakers for motors and equipment disconnecting means.
B. Related Sections include the following:
1. Division 16 Section 16416 "Fuses" for fuses in fusible switches.
1.3 SUBMITTALS
A. Product Data: For each type of switch, circuit breaker, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
1.4 QUALITY ASSURANCE
A. Source Limitations: Obtain enclosed switches and circuit breakers of a single type through one source from a single manufacturer.
B. Comply with NEMA AB 1 and NEMA KS 1.
C. Comply with NFPA 70.
1.5 COORDINATION
A. Coordinate layout and installation of switches, circuit breakers, and components with other construction, including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
1.6 EXTRA MATERIALS
A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Spare Fuses: Furnish one spare for every five installed, but not less than one set of three of each type and rating.
PART 2 – PRODUCTS
2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Fusible Switches:
a. Eaton – Cutler Hammer
b. General Electric
c. Siemens
b. Square D
2. Molded-Case Circuit Breakers:
a. Eaton – Cutler Hammer
b. General Electric
c. Siemens
b. Square D
2.2 ENCLOSED SWITCHES
A. Enclosed, Nonfusible Switch: NEMA KS 1, Type HD, with lockable handle.
B. Enclosed, Fusible Switch: NEMA KS 1, Type HD, with clips to accommodate specified fuses, lockable handle with two padlocks, and interlocked with cover in closed position.
2.3 ENCLOSED CIRCUIT BREAKERS
A. Molded-Case Circuit Breaker: NEMA AB 1, with interrupting capacity to meet available fault currents.
1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. Provide shunt-trip mechanism for each elevator circuit breaker disconnect. Requires approval of the elevator manufacturer prior to ordering.
2.4 ENCLOSURES
A. Description: Flush- or surface-mounted cabinets as indicated. NEMA 250, Type 1, unless otherwise indicated to comply with environmental conditions at installed location.
1. Outdoor Locations: NEMA 250, Type 3R.
2. Kitchen Areas: NEMA 250, Type 4X, stainless steel.
3. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
2.5 FACTORY FINISHES
A. Manufacturer's standard prime-coat finish ready for field painting.
B. Finish: Manufacturer's standard paint applied to factory-assembled and -tested enclosures before shipping.
PART 3 – EXECUTION
3.1 EXAMINATION
A. Examine surfaces to receive enclosed controllers for compliance with requirements, installation tolerances, and other conditions affecting performance.
B. Proceed with installation only after unsatisfactory conditions have been corrected.
3.2 INSTALLATION
A. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
3.3 IDENTIFICATION
A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section "Basic Electrical Materials and Methods."
B. Enclosure Nameplates: Label each enclosure with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.
3.4 CONNECTIONS
A. Install equipment grounding connections for switches and circuit breakers with ground continuity to main electrical ground bus.
B. Install power wiring. Install wiring between switches and circuit breakers, and control and indication devices.
C. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
3.5 FIELD QUALITY CONTROL
A. Prepare for acceptance tests as follows:
1. Test insulation resistance for each enlosed switch, circuit breaker, component, and control circuit.
2. Test continuity of each line-and load-side circuit.
B. Testing: After installing enclosed switches and circuit breakers and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
1. Procedures: Perform each visual and mechanical inspection and electrical test indicated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest. Certify compliance with test parameters.
3.6 ADJUSTING
A. Set field-adjustable circuit-breaker trip ranges.
3.7 CLEANING
A. Clean enclosed switches and circuit breakers internally, on completion of installation, in accordance with manufacturer's written instructions. Vacuum dirt and debris; do not use compressed air to assist in cleaning.
END OF SECTION

SECTION 16442 – PANELBOARDS

PART 1 – GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.
1.2 SUMMARY
A. This Section includes panelboards, overcurrent protective devices, and associated auxiliary equipment rated 600 V and less for the following types:
1. Lighting and appliance branch-circuit panelboards.
2. Distribution panelboards.
3. Surge Protection Device panelboards.
1.3 DEFINITIONS
A. EMI: Electromagnetic interference.
B. GFCI: Ground-fault circuit interrupter.
C. RFI: Radio-frequency interference.
D. RMS: Root mean square.
E. SPDT: Single pole, double throw.
F. SPD: Surge Protection Device.
1.4 SUBMITTALS
A. Product Data: For each type of panelboard, overcurrent protective device, SPD device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
B. Shop Drawings: For each panelboard and related equipment.
1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings. Include the following:
a. Enclosure types and details for types other than NEMA 250, Type 1.
b. Bus configuration, current, and voltage ratings.
c. Short-circuit current rating of panelboards and overcurrent protective devices.
C. Panelboard Schedules: For installation in panelboards. Submit final versions after load balancing. Schedules shall be in the same format as the schedules on the construction documents.
1.5 QUALITY ASSURANCE
A. Comply with NEMA PB 1.
B. Comply with NFPA 70.
1.6 COORDINATION
A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, and encumbrances to workspace clearance requirements.
1.7 EXTRA MATERIALS
A. Keys: Two spares of each type of panelboard cabinet lock.
PART 2 – PRODUCTS
2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Panelboards, Overcurrent Protective Devices, Controllers, Contactors, and Accessories:
a. Eaton Corp.; Cutler-Hammer Products.
b. General Electric Co.; Electrical Distribution & Control Div.
c. Siemens Energy & Automation, Inc.
d. Square-D
2.2 FABRICATION AND FEATURES
A. Enclosures: Mounting as indicated on the plans. NEMA PB 1, Type 1, to meet environmental conditions at installed location.
1. Outdoor Locations: NEMA 250, Type 3R.
2. Wet or Damp Indoor Locations: NEMA 250, Type 4.
B. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover (door-in-door type).
C. Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.
D. Directory Card: With transparent protective cover, mounted inside metal frame, inside panelboard door. Must be filled in correctly and legibly.
E. Bus: Copper. Provide bussing the full height of the panel to allow installation of the maximum possible future devices, even if not explicitly called out as spaces.
F. Main and Neutral Lugs: Mechanical type suitable for use with conductor material.
G. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment ground conductors; bonded to box.
H. Future Devices: Mounting brackets, bus connections, and necessary appurtenances required for future installation of devices.
I. Isolated Equipment Ground Bus: Where noted on the drawings, provide an isolated ground bus adequate for branch-circuit equipment ground conductors; insulated from box. Where any device is shown to require an isolated ground, provide the panel(s) and switchboard(s) from the device to the upstream transformer or Service with isolated ground buses matching the size of the normal ground bus.
J. Feed-through Lugs: Mechanical type suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
2.3 PANELBOARD SHORT-CIRCUIT RATING
A. Where required by the drawings, provide a panel labeled to indicate series-connected rating with integral or remote upstream devices. Include size and type of upstream device allowable, branch devices allowable, and UL series-connected short-circuit rating.
B. For panelboards not specifically noted on the drawings to be Series-Rated, provide panelboards fully rated to interrupt symmetrical short-circuit current available at it's terminals
2.4 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS
A. Branch Overcurrent Protective Devices: Bolt-On circuit breakers, replaceable without disturbing adjacent units.
B. Doors: Front mounted with concealed hinges; secured with flush latch with tumbler lock; keyed alike (door-in-door type).
2.5 DISTRIBUTION PANELBOARDS
A. Doors: Front mounted, except omit in fused-switch panelboards; secured with vault-type latch with tumbler lock; keyed alike (door-in-door type).
B. Main Overcurrent Protective Devices: Circuit breaker.
C. Branch overcurrent protective devices shall be bolt-on type.
2.6 OVERCURRENT PROTECTIVE DEVICES
A. Molded-Case Circuit Breaker: NEMA AB 1, with interrupting capacity to meet available fault currents. Must be SWD rated when used for switching light circuits.
1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. GFCI Circuit Breakers: Single- and two-pole configurations with 5-mA trip sensitivity.
B. Molded-Case Circuit-Breaker Features and Accessories. Standard frame sizes, trip ratings, and number of poles.
1. Lugs: Mechanical style, suitable for number, size, trip ratings, and material of conductors.
2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.
3. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
C. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.
PART 3 – EXECUTION
3.1 INSTALLATION
A. Install panelboards and accessories according to NEMA PB 1.1.
B. Mounting Heights: Top of trim 74 inches (1880 mm) above finished floor, unless otherwise indicated.
C. Mounting: Plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish.
D. Circuit Directory: Create a directory to indicate installed circuit loads after balancing panelboard loads. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
E. Install filler plates in unused spaces.
F. Provision for Future Circuits at Flush Panelboards: Stub four 1-inch (27-GRC) empty conduits from panelboard into accessible ceiling space or space designated to be accessible ceiling space in the future. Stub four 1-inch (27-GRC) empty conduits into raised floor space or below slab not on grade.
G. Wiring in Panelboard Gutters: Arrange conductors into groups and bundle and wrap with wire ties after completing load balancing.
3.2 IDENTIFICATION
A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section "Basic Electrical Materials and Methods."
B. Panelboard Nameplates: Label each panelboard with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.
3.3 CONNECTIONS
A. Install equipment grounding connections for panelboards with ground continuity to main electrical ground bus.
B. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
3.4 FIELD QUALITY CONTROL
A. Prepare for acceptance tests as follows:
1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.
3.5 ADJUSTING
A. Set field-adjustable switches and circuit-breaker trip ranges.
3.6 CLEANING
A. On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.
END OF SECTION

SECTION 16491 – FUSES

PART 1 – GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
1.2 SUMMARY
A. This Section includes cartridge fuses, rated 600 V and less, for use in switches, panelboards, switchboard or controllers.
1.3 SUBMITTALS
A. Maintenance Data: Provide for tripping devices to include in maintenance manuals specified in Division 1.
1.4 QUALITY ASSURANCE
A. Source Limitations: Provide fuses from a single manufacturer.
B. Comply with NEMA FU 1.
C. Comply with NFPA 70.
1.5 PROJECT CONDITIONS
A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F (4.4 deg C) or more than 100 deg F (38 deg C), apply manufacturer's ambient temperature adjustment factors to fuse ratings.
1.6 COORDINATION
A. Coordinate fuse ratings with HVAC and other equipment nameplate limitations of maximum fuse size.
1.7 EXTRA MATERIALS
A. Furnish extra materials described below that match products installed and that are packaged in original cartons or containers and identified with labels describing contents.
1. Fuses: Quantity equal to 10 percent of each fuse type and size, but not fewer than three of each type and size.
PART 2 – PRODUCTS
2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or equal:
1. Cooper Industries, Inc.; Bussmann Div.
2. General Electric Co.; Wiring Devices Div.
3. Tracor, Inc.; Littelfuse, Inc. Subsidiary.
PART 3 – EXECUTION
3.1 EXAMINATION
A. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment per manufacturer's recommendations.
B. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.
C. Proceed with installation only after unsatisfactory conditions have been corrected.
3.2 FUSE APPLICATIONS
A. Motor Branch Circuits: Class RK1, time delay.
B. Service feeders: As shown on drawings
3.3 INSTALLATION
A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.
3.4 IDENTIFICATION
A. Install labels indicating fuse replacement information on inside door of each fused switch.
END OF SECTION

SECTION 16511 – INTERIOR LIGHTING

PART 1 – GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Related Specification Sections, apply to this Section.
1.2 SUMMARY
A. This Section includes interior lighting fixtures lamps, ballasts, emergency lighting units, and accessories.
1.3 SUBMITTALS
A. Product Data: For each type of lighting fixture indicated, arranged in order of fixture designation. Include manufacturers published information.
1.6 EXTRA MATERIALS
A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least five of each type.
2. Plastic Diffusers and Lenses: 1 for every 100 of each type and rating installed. Furnish at least two of each type.
PART 2 – PRODUCTS
2.1 MANUFACTURERS
A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products indicated in the Interior Lighting Fixture Schedule on the drawings.
2.2 FIXTURES AND FIXTURE COMPONENTS, GENERAL
A. Sheet Metal Components: Steel, unless otherwise indicated. Form and support to prevent warping and sagging.
B. Doors, Frames, and Other Internal Access: Smooth operating, free from light leakage under operating conditions, and arranged to permit relamping without use of tools.
C. Reflecting Surfaces: Minimum reflectance as follows, unless otherwise indicated:
1. White Surfaces: 85 percent.
2. Specular Surfaces: 83 percent.
3. Diffusing Specular Surfaces: 75 percent.
4. Laminated Silver Metallized Film: 90 percent.
D. Lenses, Diffusers, Covers, and Globes: 100 percent virgin acrylic plastic or annealed crystal glass, unless otherwise indicated.
2.3 FLUORESCENT LAMP BALLASTS
A. General Requirements: Unless otherwise indicated, features include the following:
1. Designed for type and quantity of lamps indicated at full light output.
2. Total Harmonic Distortion Rating: Less than 20 percent unless otherwise noted
3. Sound Rating: A.
B. Ballasts for Compact Lamps: Unless otherwise indicated, additional features include the following:
1. Type: Electronic
2. Power Factor: 90 percent, minimum.
3. Operating Frequency: 20 kHz or higher.
4. Flicker: Less than 5 percent.
5. Lamp Current Crest Factor: Less than 1.7.
6. Transient Protection: Comply with IEEE C62.41 for Category A1 locations.
C. Ballasts for Dimmer-Controlled Fixtures: Comply with general and fixture-related requirements above for electronic ballasts.
1. Compatibility: Certified by manufacturer for use with specific dimming system indicated for use with each dimming ballast.
2.4 HIGH INTENSITY DISCHARGE (HID) FIXTURE BALLASTS
A. Type:
1. 320W, 350W, and 400W Metal Halide Lamps: Electronic multivolt with an efficiency of at least 93% at full lamp output. Starting current shall be less than operating current. Where indicated on the drawings, ballasts shall be dimmable to 50% using standard 0 – 10 Volt DC controls.
2. High Pressure Sodium and Metal Halide Lamps (except as listed in #1 above): Constant wattage autotransformer or regulating high-power-factor type, unless indicated otherwise.
2.5 LED LUMINAIRES
A. General Requirements:
1. All fixtures shall be UL listed and manufactured in strict accordance with the appropriate and current requirements of the "Standards for Safety" to UL 8750 or others as they may be applicable.
2. Each luminaire shall consist of an assembly that utilizes LEDs as the light source. In addition, a complete luminaire shall consist of a housing, LED array, and electronic driver (power supply) and integral controls as specified.
3. Each luminaire shall be designed for a minimum operational life of 50,000 hours. Operating range shall be from 0 to +25 degree C.
4. The individual LEDs shall be connected such that a catastrophic loss or failure of one LED will not result in the loss of the entire luminaire.
5. LED boards shall be suitable for field maintenance or service with quick disconnect plugs from below the ceiling.
B. Technical Requirements:
1. Power Consumption: Maximum power consumption of +/- 5% when operating between 120V – 277V (or 346V).
2. Operational Voltage: The luminaire shall operate from a 50 or 60 HZ +/-3HZ AC line over a voltage range from 120VAC to 277VAC. The fluctuations of line voltage shall have no visible effect on the luminous output.
3. Power Factor: The luminaire shall have a power factor of 90% or greater at all standard operating voltages and full luminaire output.
4. THD: Total hormonic distortion (current and voltage) induced into an AC power line by a luminaire shall not exceed 20% at any standard input voltage.
5. Surge Suppression: The luminaire shall include surge suppression to withstand high repitition noise and other interference. Surge suppression shall comply with the requirements of ANSI/IEEE C62.41.
6. Driver: AccuDrive, 120-277 volt, UL listed and certified, sound rated A+. Driver shall be greater than 80% efficient at full load across all input voltages. Driver shall be suitable for full-range dimming. The luminaire shall be capable of continuous dimming without perceivable flicker.
C. Photometric Requirements:
1. Light Output: The minimum initial lumen output shall be as measured by IESNA Standard LM-79-08.
2. Correlated Color Temperature (CCT) shall be as scheduled.
3. The color rendition index (CRI) shall be 80 or greater.
D. Physical Requirements:
1. The luminaire shall be a single, self-contained device, not requiring onsite assembly for installation. The power supply and circuit board for the luminaire shall be integral to the unit.
2. The luminaire shall have an UL IC rating.
2.6 EXIT SIGNS
A. General Requirements: Comply with UL 924 and the following:
1. Sign Colors: Letters shall be as specified.
B. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.
1. Battery: Sealed, maintenance-free, nickel-cadmium type with special warranty.
2. Charger: Fully automatic, solid-state type with sealed transfer relay.
2.7 EMERGENCY LIGHTING UNITS
A. General Requirements: Self-contained units. Comply with UL 924. Units include the following features:
1. Battery: Sealed, maintenance-free, lead-acid type with minimum 10-year nominal life and special warranty.
2. Charger: Fully automatic, solid-state type with sealed transfer relay.
3. Operation: Relay automatically turns lamp on when supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps, and battery is automatically recharged and floated on charger.
2.8 EMERGENCY FLUORESCENT POWER SUPPLY UNIT
A. Internal Type: Self-contained, modular, battery-inverter unit factory mounted within fixture body, rated 1400 lumens (minimum) for 4' or 8' lamps, 800 lumen for lamps less than 4'. Comply with UL 924.
1. Test Switch and Light-Emitting Diode Indicator Light: Visible and accessible without opening fixture or entering ceiling space.
2. Battery: Sealed, maintenance-free, nickel-cadmium type with minimum 10-year nominal life.
3. Charger: Fully automatic, solid-state, constant-current type.
2.9 LAMPS
A. Fluorescent: 3500 Kelvin color temperature, fixture manufacturer's standard type, per drawings.
B. High Pressure Sodium: Fixture manufacturer's standard type, per drawings.
C. Metal Halide: Pulse start type with warranteed performance with the fixture ballast, per drawings.
D. LED: Provide as scheduled on the drawings.
2.10 FIXTURE SUPPORT COMPONENTS
A. Comply with Division 16 Section "Basic Electrical Materials and Methods," for channel- and angle-iron supports and nonmetallic channel and angle supports.
B. Provide manufacturer's standard mounting hardware, finish same as fixture.
PART 3 – EXECUTION
3.1 INSTALLATION
A. Fixtures: Set level, plumb, and square with ceiling and walls, and secure according to manufacturer's written instructions and approved submittal materials. Install lamps in each fixture.
END OF SECTION

SECTION 16420 – ENCLOSED CONTROLLERS

PART 1 – GENERAL
1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.
1.2 SUMMARY
A. This Section includes ac general-purpose controllers rated 600 V and less that are supplied as enclosed units.
B. Related Sections include the following:
1. Division 16 Section 16416 "Fuses" for fuses in fusible switches.
1.3 SUBMITTALS
A. Product Data: For each type of enclosed controller. Include dimensions and manufacturer's technical data on features, performance, electrical characteristics, ratings, and finishes.
1.4 QUALITY ASSURANCE
A. Source Limitations: Obtain enclosed controllers of a single type through one source from a single manufacturer.
B. Comply with NFPA 70.
1.5 COORDINATION
A. Coordinate features, accessories, and functions of each enclosed controller with ratings and characteristics of supply circuit, motor, required control sequence, and duty cycle of motor and load.
1.6 EXTRA MATERIALS
A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Spare Fuses: Furnish one spare for every five installed, but not less than one set of three of each type and rating.
PART 2 – PRODUCTS
2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Manual and Magnetic Enclosed Controllers:
a. Eaton Corp.; Cutler-Hammer Products.
b. General Electrical Distribution & Control.
c. Siemens/Furnas Controls.
b. Square D
c. ABB
2.2 MAGNETIC ENCLOSED CONTROLLERS
A. Description: NEMA ICS 2, Class A, full voltage, nonreversing, across the line, unless otherwise indicated.
B. Control Circuit: obtained from integral control power transformer with a control power transformer of sufficient capacity to operate connected pilot, indicating and control devices, plus 100 percent spare capacity if applied at other than 208/120V.
C. Combination Controller: Factory-assembled combination controller and disconnect switch.
1. Fusible Disconnecting Means: NEMA KS 1, heavy-duty, fusible switch with rejection-type fuse clips rated for fuses. Select and size fuses to provide Type 2 protection according to IEC 947-4-1, as certified by a nationally recognized testing laboratory.
2. Circuit-Breaker Disconnecting Means: NEMA AB 1, motor-circuit protector with field-adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
D. Overload Relay: Ambient-compensated type with inverse-time-current characteristic and NEMA ICS 2, Class 10 tripping characteristic. Provide with heaters or sensors in each phase matched to nameplate full-load current of specific motor to which they connect and with appropriate adjustment for duty cycle or provide solid state overload units..
2.3 ENCLOSURES
A. Description: Flush- or surface-mounted cabinets as indicated. NEMA 250, Type 1, unless otherwise indicated to comply with environmental conditions at installed location.
1. Outdoor Locations: NEMA 250, Type 3R.
2. Kitchen Areas: NEMA 250, Type 4X, stainless steel.
3. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
2.4 FACTORY FINISHES
A. Manufacturer's standard prime-coat finish ready for field painting.
B. Finish: Manufacturer's standard paint applied to factory-assembled and -tested enclosed controllers before shipping.
PART 3 – EXECUTION
3.1 EXAMINATION
A. Examine surfaces to receive enclosed controllers for compliance with requirements, installation tolerances, and other conditions affecting performance.
B. Proceed with installation only after unsatisfactory conditions have been corrected.
3.2 APPLICATIONS
A. Select features of each enclosed controller to coordinate with ratings and characteristics of supply circuit and motor; required control sequence; duty cycle of motor, drive, and load; and configuration of pilot device and control circuit affecting controller functions.
B. Select horsepower rating of controllers to suit motor controlled.
3.3 INSTALLATION
A. See Division 16 Section 16050 "Basic Electrical Materials and Methods" for general installation requirements.
B. For control equipment at walls, bolt units to wall or mount on lightweight structural-steel channels bolted to wall. For controllers not at walls, provide freestanding racks complying with Division 16 Section 16050 "Basic Electrical Materials and Methods."
3.4 IDENTIFICATION
A. Identify enclosed controller components and control wiring according to Division 16 Section 16050 "Basic Electrical Materials and Methods ".
3.5 CONTROL WIRING INSTALLATION
A. Install wiring between enclosed controllers according to Division 16 Section 16050 "Conductors and Cables."
B. Bundle, train, and support wiring in enclosures.
3.6 CONNECTIONS
A. Conduit installation requirements are specified in other Division 16 Sections. Drawings indicate general arrangement of conduit, fittings, and specialties.
B. Ground equipment.
C. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
3.7 FIELD QUALITY CONTROL
A. Testing: Perform the following field quality-control testing:
1. Perform each electrical test and visual and mechanical inspection indicated in NETA ATS, Sections 7.5, 7.6, and 7.16.
2. Certify compliance with test parameters.
3. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
4. Where feasible, test rotation of motor prior to connection.
3.8 ADJUSTING
A. Set field-adjustable switches and circuit-breaker trip ranges.
3.9 CLEANING
A. Clean enclosed controllers internally, on completion of installation, according to manufacturer's written instructions. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

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4501 E. MCDOWELL RD.
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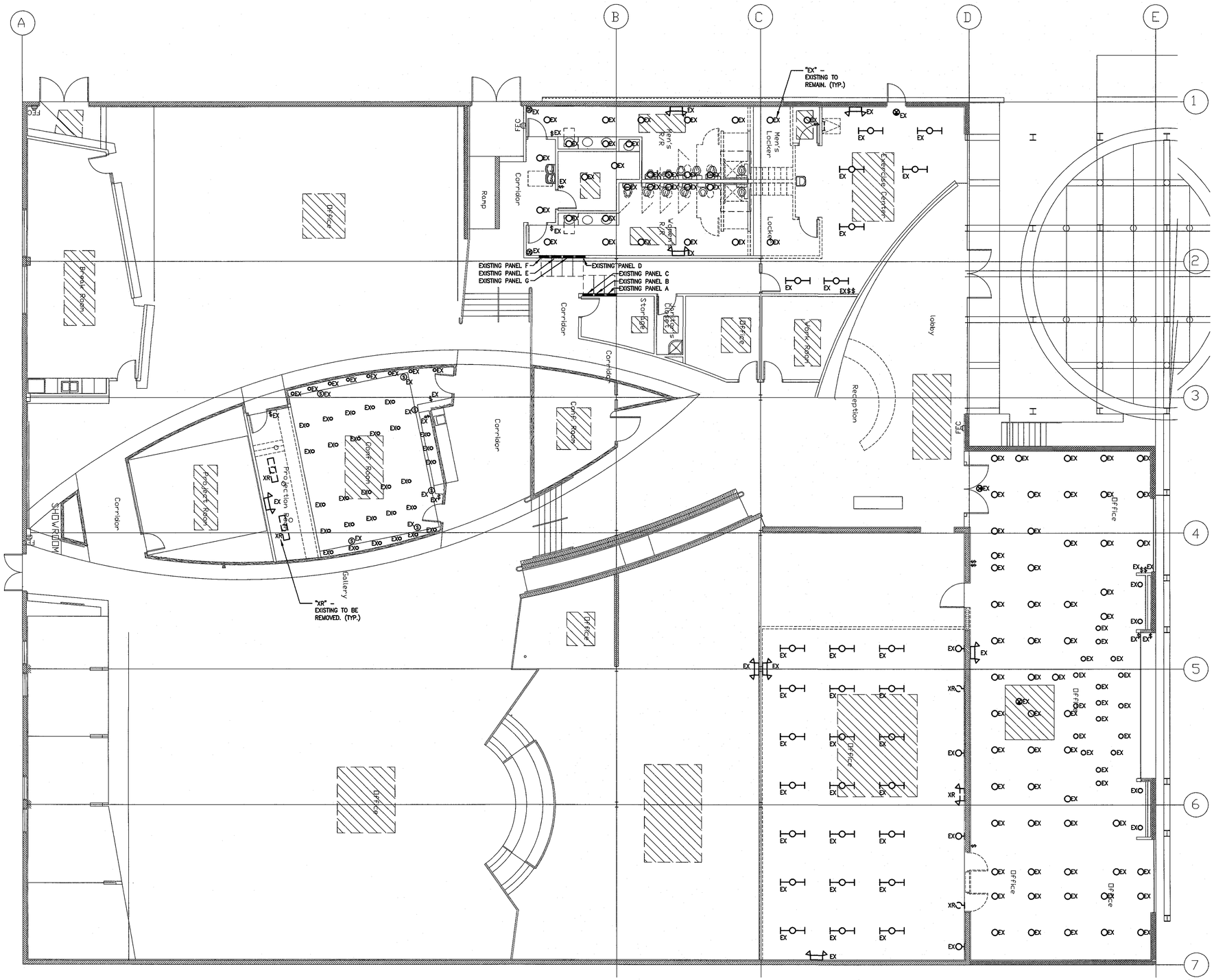
Sheet Description
SPECIFICATIONS

Registered Professional Engineer (Electrical)
Certificate No. 27677
CHRIS L. SARMIENTO
01/04/18
Date Signed
ARIZONA, U.S.A.
EXPIRES 03/31/2018

Sheet No.
E0.2

Issue Date: 12.15.17



DEMOLITION PLAN - SHOWROOM

1/8"=1'-0"

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PACIFIC OFFICE AUTOMATION

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Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
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Sheet Description
DEMOLITION LIGHTING PLAN - SHOWROOM

Registered Professional Engineer
27677
CHRIS L. SARMIENTO
01/04/18
ARIZONA U.S.A.
EXPIRES 03/31/2018

Sheet No.

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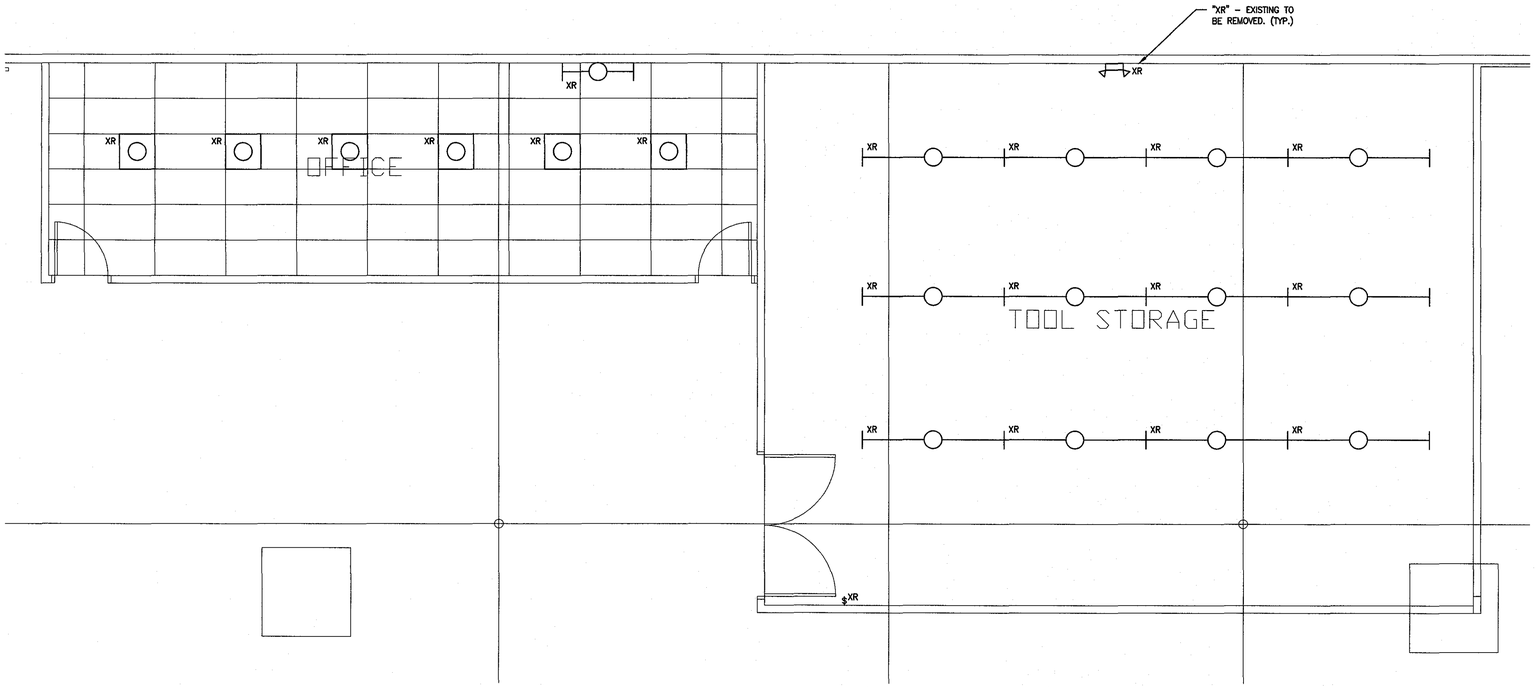

LIGHTING PLAN - WAREHOUSE

1/4"=1'-0"

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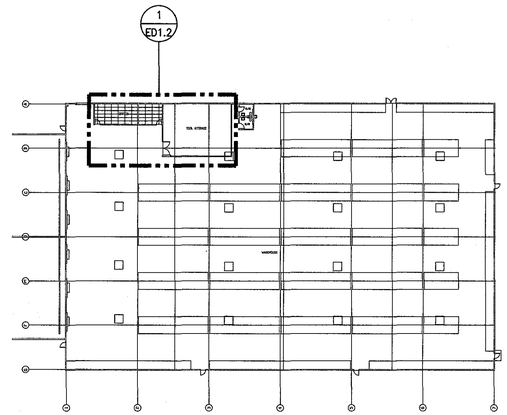

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Reviewer: _____ Number: _____ Date: _____

KEY PLAN

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2410 w. royal palm rd. suite A. phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

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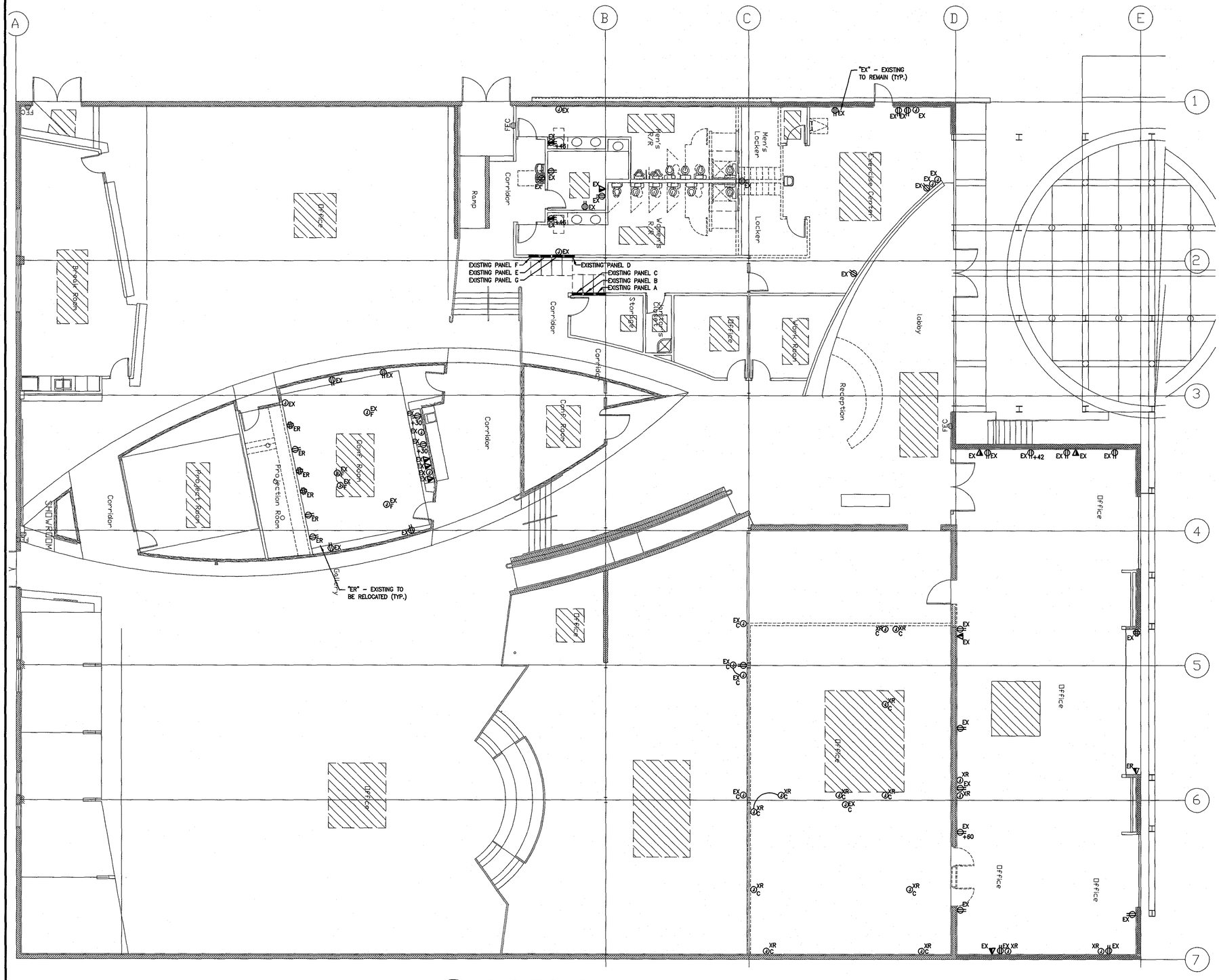
Sheet Description
DEMOLITION LIGHTING PLAN - WAREHOUSE

EXPIRES 03/31/2018

Sheet No.

ED1.2

Issue Date: 12.15.17



DEMOLITION POWER PLAN - SHOWROOM

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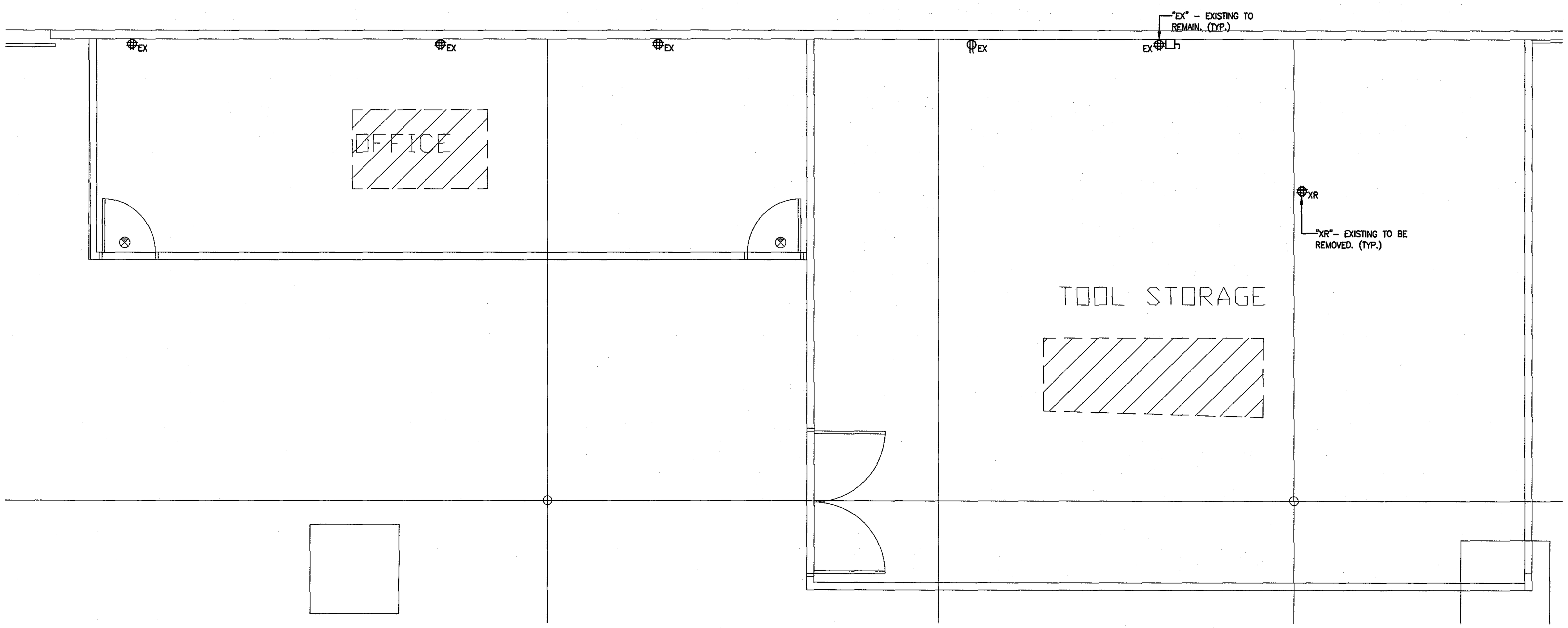
Sheet Description
DEMOLITION POWER PLAN - SHOWROOM

EXPIRES 03/31/2018

Sheet No.

ED2.1

Issue Date: 12.15.17



1 / ED2.2 DEMOLITION POWER PLAN - WAREHOUSE

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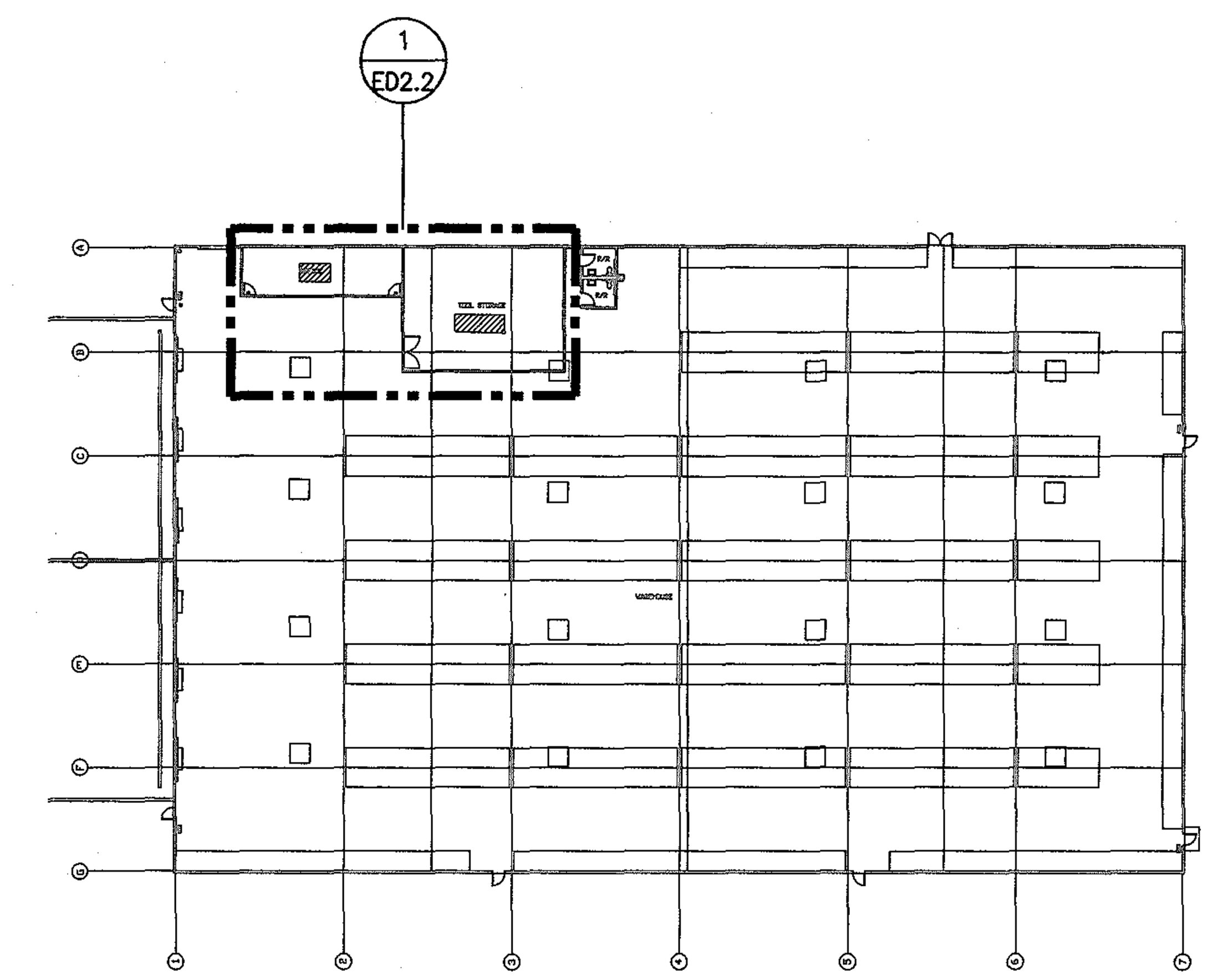
L. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL FLUORESCENT AND HID TYPE LAMPS AND OF LAMP DISPOSAL TO THE OWNER UPON REQUEST. PROPER DISPOSAL OF SAID LAMPS AND SHALL PROVIDE VERIFICATION



KEY PLAN

N.T.S.

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JOB NO: 173440 | DFT: JN | DSN: JN | CHK: CS

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Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

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4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
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Sheet Description
DEMOLITION POWER PLAN - WAREHOUSE

27677
CHRIS L. SARMIENTO
01/04/18
ARIZONA, U.S.A.
EXPIRES 03/31/2018

Sheet No.
ED2.2

Issue Date: 12.15.17

GENERAL NOTES

A. E.C. SHALL COORDINATE THE EXACT EXIT SIGN LOCATION/PLACEMENT WITH THE FIELD BUILDING INSPECTOR PRIOR TO ROUGH INSPECTION APPROVAL.

B. PER 2012 IECC OCCUPANCY SENSORS SHALL BE REQUIRED IN THE FOLLOWING SPACES AND AUTOMATICALLY TURN LIGHTING OFF WITHIN 30 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE: CLASSROOMS CONFERENCE/MEETING/TRAINING ROOMS, EMPLOYEE LUNCH AND BREAK ROOMS, PRIVATE OFFICES, STORAGE/JANNITORIAL ROOMS, RESTROOMS, AND OTHER SPACES <=300 SQUARE FEET. AUTOMATIC-ON SENSORS SET POWER ON <50 PERCENT POWER.

C. ALL TIME SWITCHES CONTROLLING EXTERIOR LIGHTING SHALL BE CAPABLE OF RETAINING PROGRAMMING AND THE TIME SETTING DURING LOSS OF POWER FOR A PERIOD OF AT LEAST 10 HOURS.

D. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR ALL FIXTURE LOCATIONS.

E. ALL SURFACE MOUNTED CONDUIT SHALL BE ROUTED PERPENDICULAR AND PARALLEL TO BEAMS AND COLUMNS. ALL CONDUIT ROUTING SHALL BE COORDINATED WITH THE PROJECT MANAGER OR ARCHITECT PRIOR TO ROUGH-IN. PAINT ALL EXPOSED CONDUIT, BOXES AND FITTINGS AS REQUIRED BY ARCHITECT.

F. ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR FOR PLACEMENT OF FIXTURES PRIOR TO ROUGH-IN TO AVOID CONFLICT.

G. LIGHTING CIRCUITS FED FROM THE INVERTER(S) SHALL BE IN ITS OWN DEDICATED CONDUIT RUN PER NEC 700.9. (NORMAL POWER CIRCUITS ARE NOT TO BE INCLUDED IN CONDUIT RUN WITH EMERGENCY CONDUCTORS.)

LIGHTING KEYED NOTES (#)

1. COORDINATE MOUNTING HEIGHT OF FIXTURES WITH ARCHITECTURAL PLAN PRIOR TO INSTALLATION ROUGH-IN. (TYPICAL).

CITY OF PHOENIX

PLANNING & DEVELOPMENT DEPARTMENT

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Inspector _____ Number: _____ Date: _____

LIGHTING PLAN - SHOW ROOM

2 1/8"=1'-0"

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aseiengineering.com o 602.287.0300 f 602.287.0600

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Sheet Description
LIGHTING PLAN - SHOWROOM

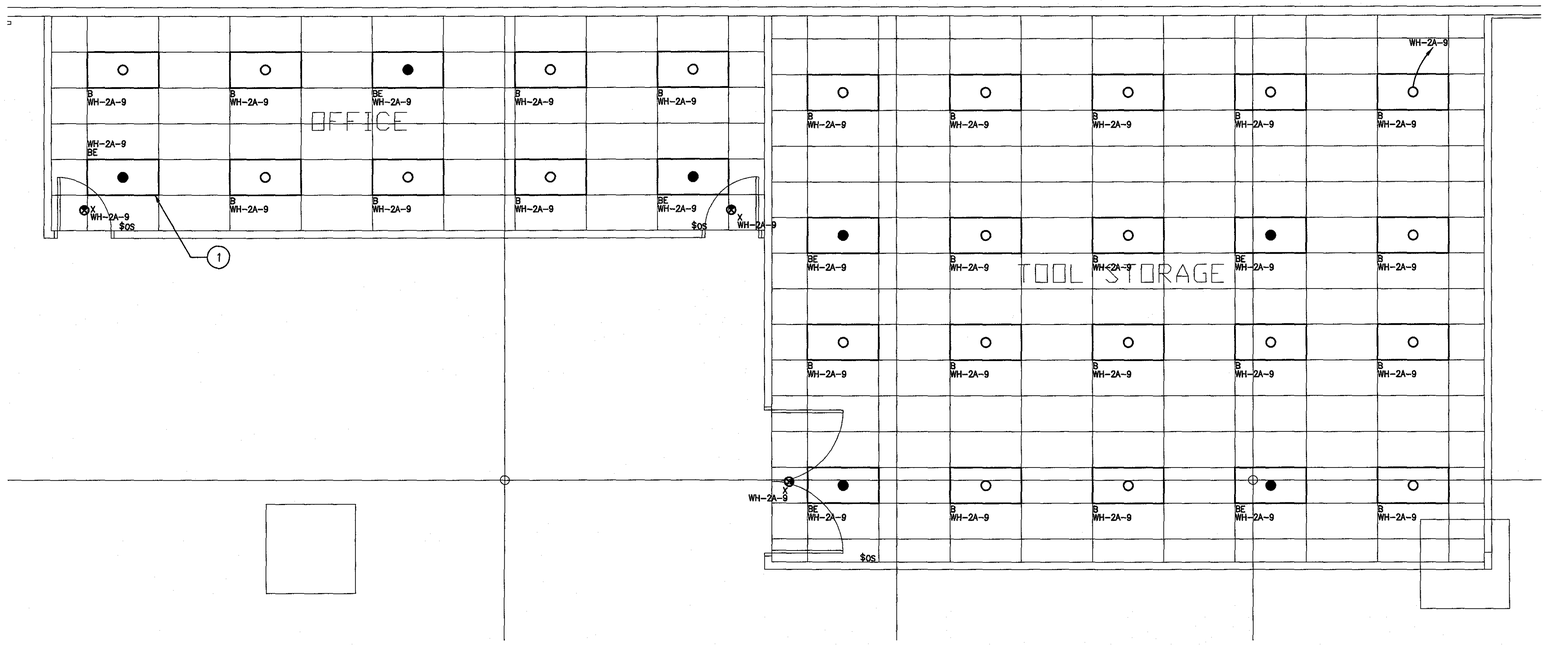
REGISTERED PROFESSIONAL ENGINEER
27677
CHRIS L. SARMIENTO
01/04/18
ARIZONA U.S.A.

EXPIRES 03/31/2018

Sheet No.

E1.1

Issue Date: 12.15.17



LIGHTING PLAN - WAREHOUSE

1/E1.2 — N — 1/4"=1'-0"

GENERAL NOTES

A. E.C. SHALL COORDINATE THE EXACT EXIT SIGN LOCATION/PLACEMENT WITH THE FIELD BUILDING INSPECTOR PRIOR TO ROUGH INSPECTION APPROVAL.

B. PER 2012 IECC OCCUPANCY SENSORS SHALL BE REQUIRED IN THE FOLLOWING SPACES AND AUTOMATICALLY TURN LIGHTING OFF WITHIN 30 MINUTES OF ALL OCCUPANTS LEAVING THE SPACE: CLASSROOMS CONFERENCE/MEETING/TRAINING ROOMS, EMPLOYEE LUNCH AND BREAK ROOMS, PRIVATE OFFICES, STORAGE/JANITORIAL ROOMS, RESTROOMS, AND OTHER SPACES <=300 SQUARE FEET. AUTOMATIC-ON SENSORS SET POWER ON <50 PERCENT POWER.

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E. ALL SURFACE MOUNTED CONDUIT SHALL BE ROUTED PERPENDICULAR AND PARALLEL TO BEAMS AND COLUMNS. ALL CONDUIT ROUTING SHALL BE COORDINATED WITH THE PROJECT MANAGER OR ARCHITECT PRIOR TO ROUGH-IN. PAINT ALL EXPOSED CONDUIT, BOXES AND FITTINGS AS REQUIRED BY ARCHITECT.

F. ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR FOR PLACEMENT OF FIXTURES PRIOR TO ROUGH-IN TO AVOID CONFLICT.

G. LIGHTING CIRCUITS FED FROM THE INVERTER(S) SHALL BE IN ITS OWN DEDICATED CONDUIT RUN PER NEC 700.9. (NORMAL POWER CIRCUITS ARE NOT TO BE INCLUDED IN CONDUIT RUN WITH EMERGENCY CONDUCTORS.)

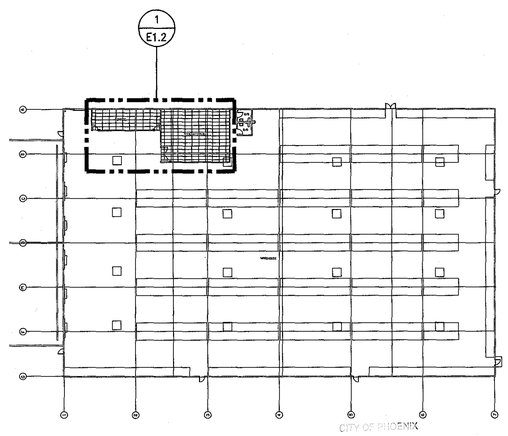
LIGHTING KEYED NOTES

1. EMERGENCY BATTERY BACK-UP LUMINAIRE. PROVIDE 1400 LUMEN 90 MINUTE BATTERY PACK. RUN ADDITIONAL HOT WIRE TO LUMINAIRE, SO LUMINAIRE CAN BE SWITCHED OFF WHILE MAINTAINING POWER TO BATTERY. EMERGENCY LAMP WILL LIGHT AUTOMATICALLY DURING POWER FAILURE EVEN IF WALL SWITCH IS OFF.

LUMINAIRE SCHEDULE

MARK	MANUFACTURER MODEL NUMBER	VOLTAGE/ INPUT WATTS	LAMP TYPE	MOUNTING AND HEIGHT	REMARKS
A	LITHONIA LIGHTING LDN4-35/30-L04-AR-LSS-MVOLT-EZ1	MVOLT/34.8W	LED	RECESSED	4" OPEN NEW CONSTRUCTION DOWNLIGHT
B	LITHONIA LIGHTING 2BLT4-40L-ADP-EZ1-LP835	MVOLT/34W	LED	LAY-IN	2X4 LED LAY-IN FIXTURE
BE	LITHONIA LIGHTING 2BLT4-40L-ADP-EZ1-LP835-EL14L	MVOLT/34W	LED	LAY-IN	2X4 LED LAY-IN FIXTURE WITH 90MIN BACK-UP BATTERY
X	LITHONIA LQM-S-W-R-120/277-ELN	120V/.05W	LED	SURFACE	LED SURFACE MOUNT EXIT SIGN

1. THE LUMINAIRE SCHEDULE INDICATES GENERAL DESCRIPTION OF LUMINAIRE AND MANUFACTURERS CATALOG NUMBERS IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE CORRECT CEILING CONFIGURATION AND PROVIDE THE LUMINARIES WITH ALL NECESSARY TRIMS AND MOUNTING HARDWARE SO THAT BOTH THE CEILING SYSTEM AND THE LUMINARIE CONSTRUCTION MATCHES.
2. IT SHALL BE CONTRACTORS RESPONSIBILITY TO VERIFY EXACT LOCATION OF ALL LUMINAIRES AND TYPE OF CEILINGS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ELEVATIONS PRIOR TO ANY WORK.
3. A JUNCTION BOX MUST BE PROVIDED WITH ALL EXIT SIGNS CONNECTED TO MORE THAN ONE SET OF CONDUCTORS UNLESS THE EXIT SIGN IS FURNISHED WITH AN APPROVED OUTLET BOX FOR THROUGH WIRING.
4. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE THE FINAL LOCATION OF LUMINAIRES IN MECHANICAL, ELECTRICAL AND OTHER EQUIPMENT ROOMS WHERE CONDUITS, DUCT WORK, PIPING, ETC., ARE PRESENT TO AVOID CONFLICT AND ENABLE PROPER ILLUMINATION DISTRIBUTION.
5. ALL FLUORESCENT LUMINAIRES SHALL BE EQUIPPED WITH ELECTRONIC BALLASTS.
6. NO SUBSTITUTIONS SHALL BE APPROVED WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT, ENGINEER OR THE CITY. SUBMITTALS SHALL INCLUDE LAMP/BALLAST COMBINATION AND LISTED INPUT WATTS TO BE EQUAL OR LESS THAN INDICATED ON SCHEDULE. IF FACTORY INPUT WATTS ARE NOT INCLUDED SUBMITTALS WILL BE REJECTED.
7. FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS EITHER INTERNAL OR EXTERNAL TO EACH LUMINARIE. THE LINE SIDE TERMINALS OF THE DISCONNECTING MEANS SHALL BE GUARDED, PER NEC ARTICLE 410.130(G).
8. FOR DIMMED EMERGENCY FIXTURES PROVIDE UL924 SHUNT RELAY DEVICE WHEN NOT PROVIDED INTEGRALLY WITH FIXTURE.
9. EMERGENCY BATTERY PACKS AND LIGHTING FIXTURE COMBINATIONS (FIXTURE AND BATTERY PACK) SHALL BE RECOGNIZED BY A U.S. NATIONALLY RECOGNIZED LISTING AGENCY PER NEC 110-3(B). (NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) SUCH AS UL, FM, ETL, CSA, ETC.)



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KEY PLAN

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2410 w. royal palm rd. suite A. phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

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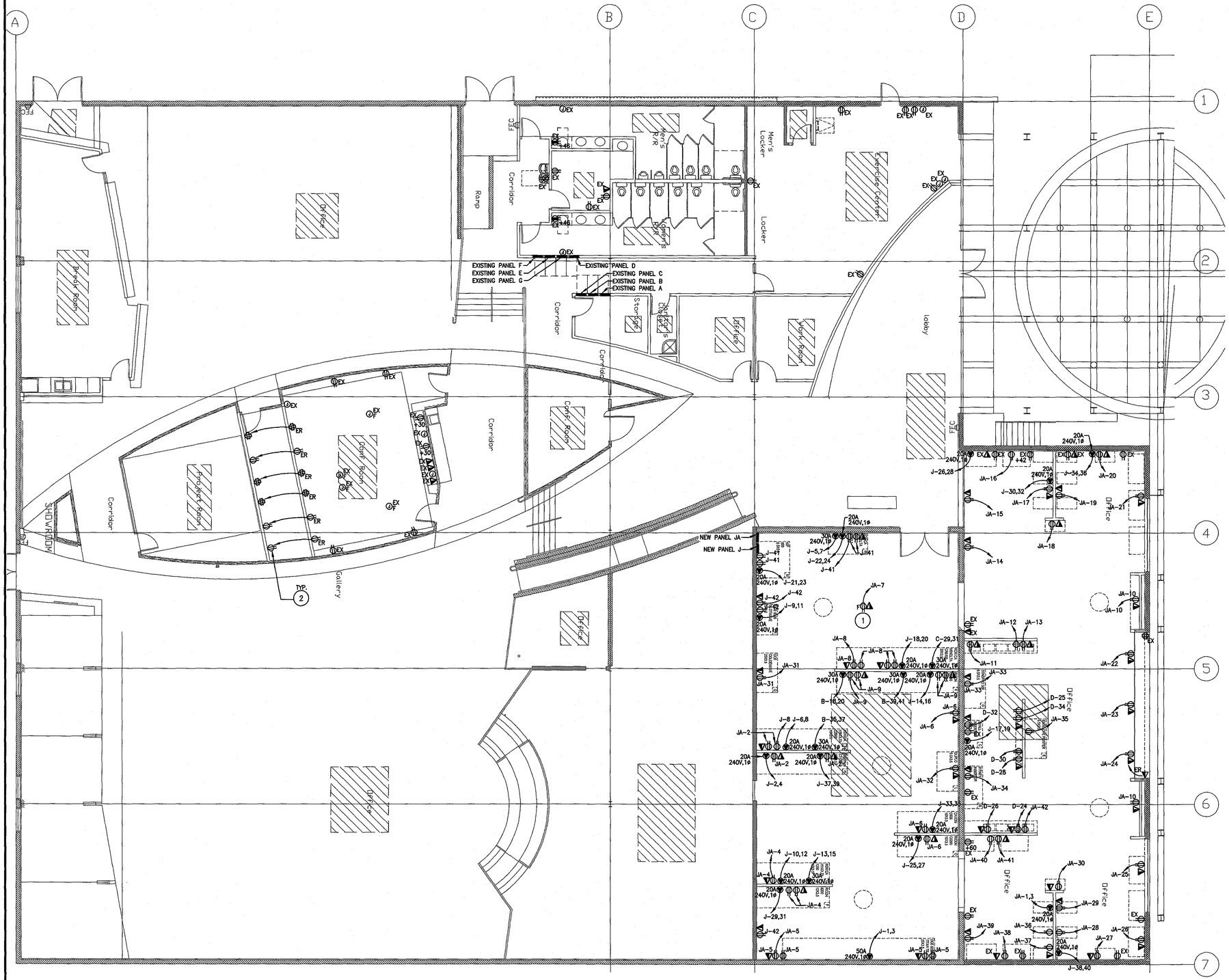
Sheet Description
LIGHTING PLAN - WAREHOUSE

REGISTERED PROFESSIONAL ENGINEER
27677
CHRIS L. SARMIENTO
01/04/18
ARIZONA, U.S.A.
EXPIRES 03/31/2018

Sheet No.
E1.2

Issue Date: 12.15.17



POWER PLAN - SHOWROOM

1/8"=1'-0"

GENERAL NOTES

A. COORDINATION OF OVERCURRENT PROTECTIVE DEVICES SHALL BE BY ELECTRICAL CONTRACTOR AT THEIR OWN EXPENSE, INCLUDING SETTINGS OF CIRCUIT BREAKERS, FUSES AND GROUND FAULT DEVICES. CONTRACTOR SHALL PROVIDE COORDINATION STUDY AND SET ALL CIRCUIT PROTECTIVE DEVICE SETTINGS AS RECOMMENDED AT THE COMPLETION OF THE PROJECT.

B. ELEVATOR ELECTRICAL BRANCH CIRCUITS/DISCONNECTS SHALL BE LABELED PER NEC 620.51D, 620.53 & 620.54.

C. ROUTE ALL FEEDERS AND BRANCH CIRCUITS FOR ROOF TOP EQUIPMENT BELOW ROOF DECK. IF INSTALLED UNDER METAL-CORRUGATED SHEET ROOF DECK, PROVIDE A MINIMUM OF 1.5" MEASURED FROM THE LOWEST SURFACE OF THE ROOF DECKING TO THE TOP OF THE CABLE, RACEWAY OR BOX, PER NEC 300.4(E)

D. IF GFCI RECEPTACLE IS NOT READILY ACCESSIBLE PER NEC 210.8, CONTRACTOR SHALL INSTALL GFCI BREAKER IN LIEU OF GFCI RECEPTACLE.

POWER KEYED NOTES

1. PROVIDE FLUSH ROUND SINGLE SERVICE, FLOOR MOUNTED SPECIAL RECEPTACLE AND VOICE/DATA WITH BRASS AND CAP. HUBBELL SYSTEM ONE OR ENGINEER APPROVED EQUAL WITH ALL APPURTENANCES AS REQUIRED. VERIFY COLOR PRIOR TO ORDERING. SAW-CUT AND PATCH FLOOR TO ROUTE CONDUIT IN SLAB UP TO NEAREST WALL AND TO PANEL.
2. RELOCATE OUTLET TO NEW LOCATION AS SHOWN. EXTEND CONDUIT AND WIRING AS REQUIRED.

NOTE:
POWER LAYOUT SHOWN IS DESIGNED TO CURRENT PRINTER LAYOUT PROVIDED TO ASEI AT DATE OF STAMP. ANY FUTURE PRINTER LAYOUT CHANGES WILL NEED TO BE COORDINATED BY THE CONTRACTOR WITH THE PROPER CIRCUIT AND RECEPTACLE TYPES.

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Inspector _____ Number _____ Date _____

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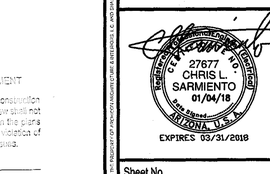
POWER PLAN - SHOWROOM



Sheet No.
E2.1

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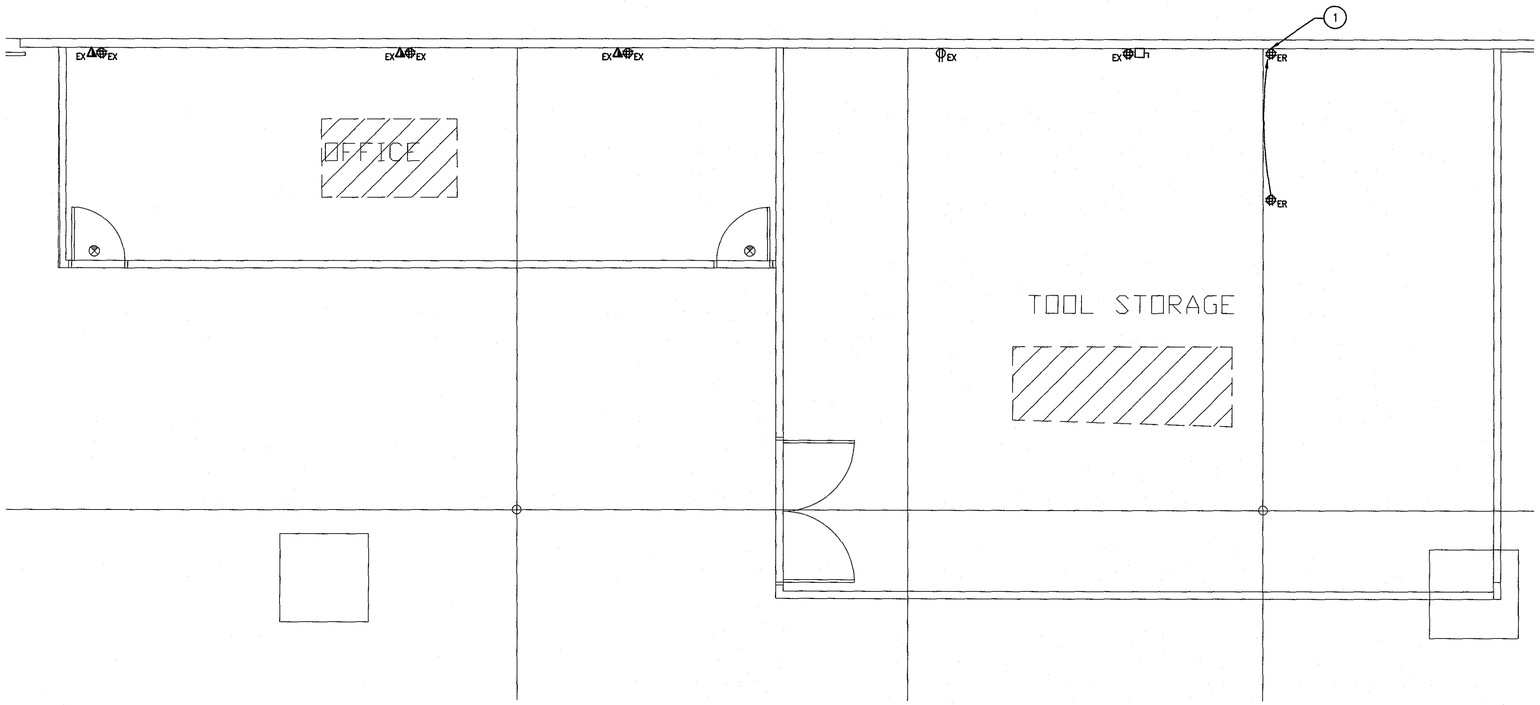


1 / E2.2 N

POWER PLAN - WAREHOUSE

1/4"=1'-0"

GENERAL NOTES

A. COORDINATION OF OVERCURRENT PROTECTIVE DEVICES SHALL BE BY ELECTRICAL CONTRACTOR AT THEIR OWN EXPENSE, INCLUDING SETTINGS OF CIRCUIT BREAKERS, FUSES AND GROUND FAULT DEVICES. CONTRACTOR SHALL PROVIDE COORDINATION STUDY AND SET ALL CIRCUIT PROTECTIVE DEVICE SETTINGS AS RECOMMENDED AT THE COMPLETION OF THE PROJECT.

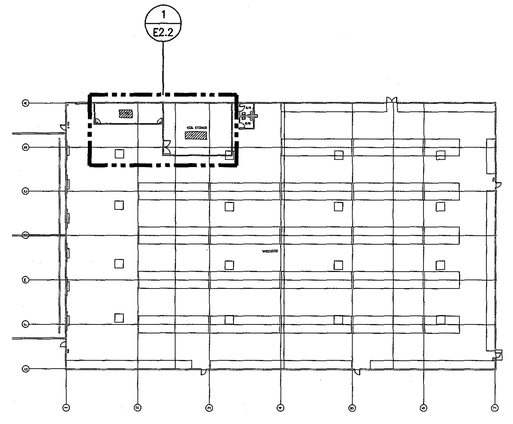
B. ELEVATOR ELECTRICAL BRANCH CIRCUITS/DISCONNECTS SHALL BE LABELED PER NEC 620.51D, 620.53 & 620.54.

C. ROUTE ALL FEEDERS AND BRANCH CIRCUITS FOR ROOF TOP EQUIPMENT BELOW ROOF DECK. IF INSTALLED UNDER METAL-CORRUGATED SHEET ROOF DECK, PROVIDE A MINIMUM OF 1.5" MEASURED FROM THE LOWEST SURFACE OF THE ROOF DECKING TO THE TOP OF THE CABLE, RACEWAY OR BOX, PER NEC 300.4(E)

D. IF GFCI RECEPTACLE IS NOT READILY ACCESSIBLE PER NEC 210.8, CONTRACTOR SHALL INSTALL GFCI BREAKER IN LIEU OF GFCI RECEPTACLE.

POWER KEYED NOTES (#)

1. RELOCATE OUTLET TO NEW LOCATION AS SHOWN. EXTENT CONDUIT AND WIRING AS REQUIRED.



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Sheet Description
POWER PLAN - WAREHOUSE

CHRIS L. SARMIENTO
27677
REGISTERED PROFESSIONAL ENGINEER
ARIZONA, U.S.A.
CHRIS L. SARMIENTO
01/04/18
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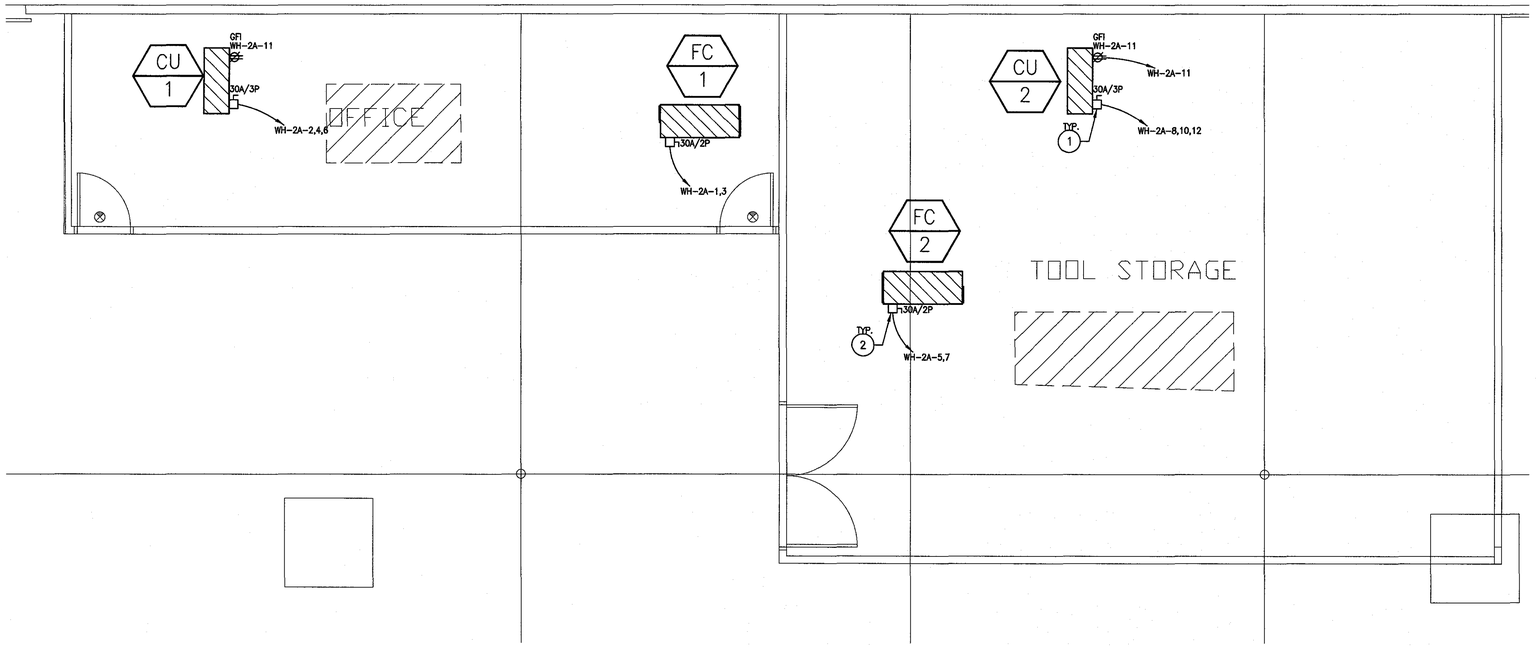


1 E2.3 N

HVAC POWER PLAN - WAREHOUSE

1/4"=1'-0"

SPLIT SYSTEM HEAT PUMP SCHEDULE (FC –) (CU –)

MARK	NOMINAL TONS	MANUFACTURER MODEL #		INDOOR UNIT							OUTDOOR UNIT				REMARKS
		INDOOR	OUTDOOR	TOTAL CFM	O.A. CFM	ESP IWG	HP	MOCP	VOLT/Ø	WT. LBS.	MAX FLA	MOCP	VOLT/Ø	WT. LBS.	
1,2	3	CARRIER FX4CNF036	CARRIER 38QRR036A005	1200	SEE OSA CALC	0.5	1/2	15	208/1PH	150	11	20	208/3PH	235	SEE NOTES BELOW

NOTE:
1. MANUFACTURER SHALL SIZE REFRIGERANT LINES AND SHALL PROVIDE NECESSARY REFRIGERANT SPECIALTIES FOR LONG LINE APPLICATIONS, IF APPLICABLE.
2. MANUFACTURER TO GUARANTEE AND ASSURE PROPER OPERATION OF REFRIGERANT SYSTEM.
3. PROVIDE WITH 7 DAY PROGRAMMABLE T-STAT IN LOCKABLE COVER, AUTO-CHANGE OVER.
4. PROVIDE AN APPROVED FULL SIZE DRAIN PAN FOR DAMAGE TO BUILDING COMPONENTS WILL OCCUR AS A RESULT OF OVERFLOW OR STOPPAGE OF THE PRIMARY CONDENSATE DRAIN.
5. PROVIDE RECTORSEAL SS2 SAFETY SWITCH AT SECONDARY DRAIN WIRED FOR UNIT SHUTDOWN UPON ACTIVATION.

GENERAL NOTES

A. COORDINATION OF OVERCURRENT PROTECTIVE DEVICES SHALL BE BY ELECTRICAL CONTRACTOR AT THEIR OWN EXPENSE, INCLUDING SETTINGS OF CIRCUIT BREAKERS, FUSES AND GROUND FAULT DEVICES. CONTRACTOR SHALL PROVIDE COORDINATION STUDY AND SET ALL CIRCUIT PROTECTIVE DEVICE SETTINGS AS RECOMMENDED AT THE COMPLETION OF THE PROJECT.

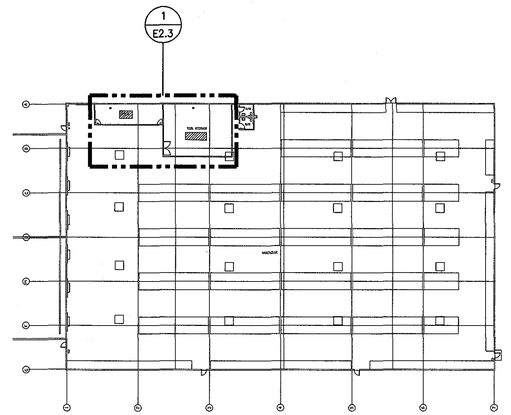
B. ELEVATOR ELECTRICAL BRANCH CIRCUITS/DISCONNECTS SHALL BE LABELED PER NEC 620.51D, 620.53 & 620.54.

C. ROUTE ALL FEEDERS AND BRANCH CIRCUITS FOR ROOF TOP EQUIPMENT BELOW ROOF DECK. IF INSTALLED UNDER METAL-CORRUGATED SHEET ROOF DECK, PROVIDE A MINIMUM OF 1.5" MEASURED FROM THE LOWEST SURFACE OF THE ROOF DECKING TO THE TOP OF THE CABLE, RACEWAY OR BOX, PER NEC 300.4(E)

D. IF GFCI RECEPTACLE IS NOT READILY ACCESSIBLE PER NEC 210.8, CONTRACTOR SHALL INSTALL GFCI BREAKER IN LIEU OF GFCI RECEPTACLE.

POWER KEYED NOTES (#)

1. ELECTRICAL CONTRACTOR SHALL PROVIDE 240V HD, 30A/3P DISC. SWITCH. INSTALL RK5 FUSES PER MANUFACTURER RECOMMENDATION. COORDINATE WITH MECHANICAL CONTRACTOR PRIOR TO ORDERING.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE 240V HD, 30A/2P DISC. SWITCH. INSTALL RK5 FUSES PER MANUFACTURER RECOMMENDATION. COORDINATE WITH MECHANICAL CONTRACTOR PRIOR TO ORDERING.
3. PROVIDE GFI RECEPTACLE OUTLET WITHIN 25 FEET OF MECHANICAL EQUIPMENT.



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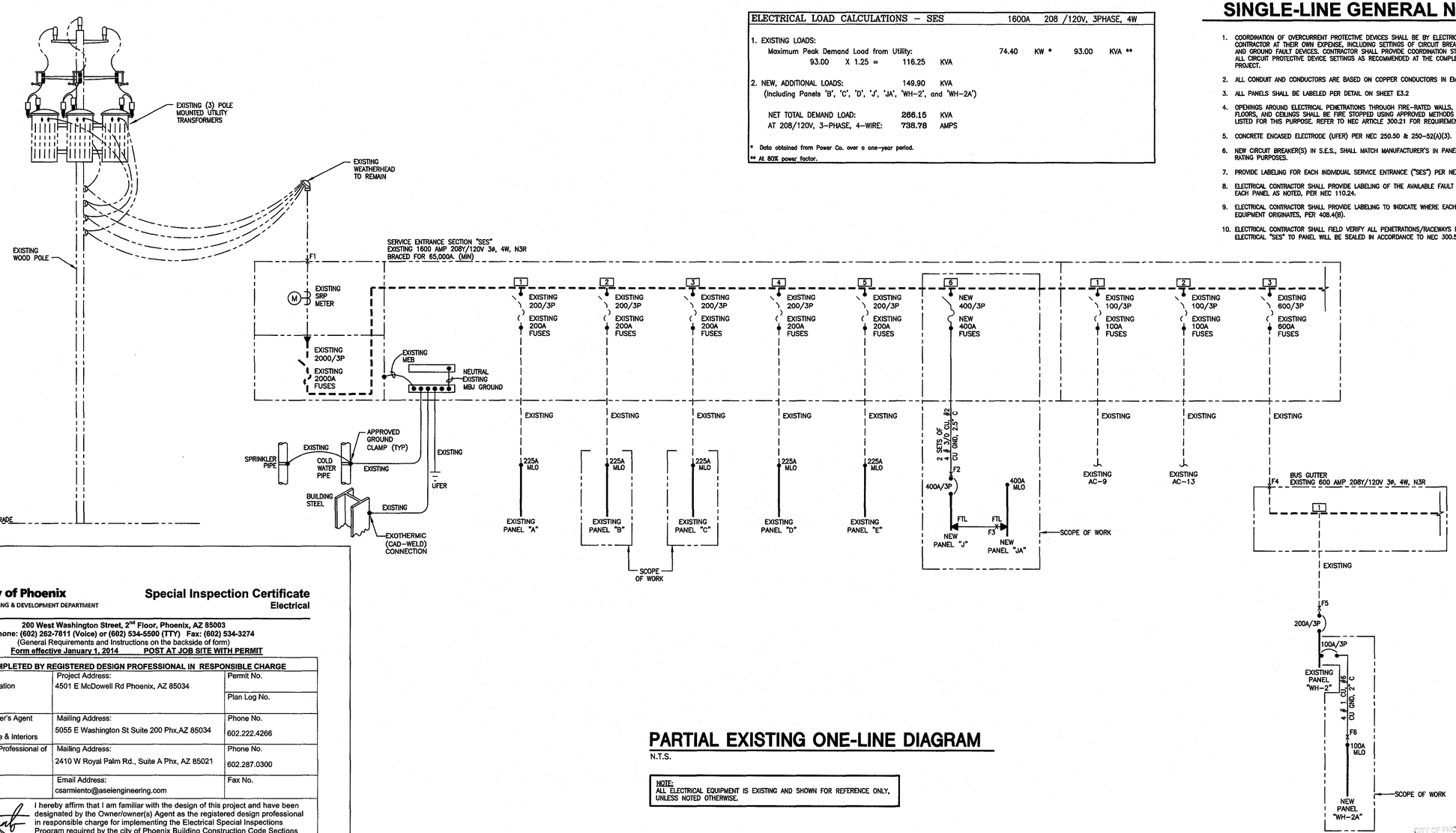
Sheet Description
HVAC POWER PLAN - WAREHOUSE

CERTIFICATE NO. 27677 CERTIFIED
27677
CHRIS L. SARMIENTO
01/04/18
Date Signed
REGISTERED PROFESSIONAL ENGINEER
ARIZONA, U.S.A.
EXPIRES 03/31/2018

Sheet No.

E2.3

Issue Date: 12.15.17



PARTIAL EXISTING ONE-LINE DIAGRAM

N.T.S.

NOTE:
ALL ELECTRICAL EQUIPMENT IS EXISTING AND SHOWN FOR REFERENCE ONLY, UNLESS NOTED OTHERWISE.

ELECTRICAL LOAD CALCULATIONS – SES	1600A	208 /120V, 3PHASE, 4W
1. EXISTING LOADS:		
Maximum Peak Demand Load from Utility:	74.40 KW *	93.00 KVA **
93.00 X 1.25 = 116.25 KVA		
2. NEW, ADDITIONAL LOADS: 149.90 KVA		
(Including Panels 'B', 'C', 'D', 'J', 'JA', 'WH-2', and 'WH-2A')		
NET TOTAL DEMAND LOAD: 266.15 KVA		
AT 208/120V, 3-PHASE, 4-WIRE: 738.78 AMPS		

* Data obtained from Power Co. over a one-year period.
** At 80% power factor.

SINGLE-LINE GENERAL NOTES

1. COORDINATION OF OVERCURRENT PROTECTIVE DEVICES SHALL BE BY ELECTRICAL CONTRACTOR AT THEIR OWN EXPENSE, INCLUDING SETTINGS OF CIRCUIT BREAKERS, FUSES AND GROUND FAULT DEVICES. CONTRACTOR SHALL PROVIDE COORDINATION STUDY AND SET ALL CIRCUIT PROTECTIVE DEVICE SETTINGS AS RECOMMENDED AT THE COMPLETION OF THE PROJECT.
2. ALL CONDUIT AND CONDUCTORS ARE BASED ON COPPER CONDUCTORS IN EMT.
3. ALL PANELS SHALL BE LABELED PER DETAIL ON SHEET E3.2
4. OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE-RATED WALLS, PARTITIONS, FLOORS, AND CEILINGS SHALL BE FIRE STOPPED USING APPROVED METHODS AND MATERIALS LISTED FOR THIS PURPOSE. REFER TO NEC ARTICLE 300.21 FOR REQUIREMENTS.
5. CONCRETE ENCASED ELECTRODE (UFER) PER NEC 250.50 & 250-52(A)(3).
6. NEW CIRCUIT BREAKER(S) IN S.E.S., SHALL MATCH MANUFACTURER'S IN PANELS FOR SERIES RATING PURPOSES.
7. PROVIDE LABELING FOR EACH INDIVIDUAL SERVICE ENTRANCE ("SES") PER NEC 230.2(E).
8. ELECTRICAL CONTRACTOR SHALL PROVIDE LABELING OF THE AVAILABLE FAULT CURRENT FOR EACH PANEL AS NOTED, PER NEC 110.24.
9. ELECTRICAL CONTRACTOR SHALL PROVIDE LABELING TO INDICATE WHERE EACH PIECE OF EQUIPMENT ORIGINATES, PER 408.4(B).
10. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY ALL PENETRATIONS/RACEWAYS FROM ELECTRICAL "SES" TO PANEL WILL BE SEALED IN ACCORDANCE TO NEC 300.5(G) & 225.27.

3-PHASE SHORT CIRCUIT CALCULATIONS BASED ON THE "POINT-BY-POINT" METHOD

I sca = Isc x M M = 1/(1 + f) Cable: f = 1.73 x L x I / C xXfmr: f = Ip sc x Vp x 1.73(%Z)/100000 x KVA / Is (sca) = Vp/Vs x M x Is

where:
I sc = the available short-circuit current, in amperes, at the beginning of the circuit.
L = the length of circuit to the fault, in feet.
C = the constant from Table C for the type of conductors and circuit arrangement. For parallel runs, multiply "C" value by the number of conductors per phase.
E = line-to-line voltage
Ip = primary current, in amperes.
Vp = primary line-to-line voltage of transformer, in volts.
Vs = secondary line-to-line voltage of transformer, in volts.
%Z = impedance of transformer.
* Use row 'co' for feeder cables; and row 'xf' for transformers.

Fault Point	*	Description	Source Isc (amps)	Wire / Cable Size	No. of cond. per phase	Type of conduit	"C" value	E (volts)	L (length) in feet	XFMR. KVA	XFMR. %Z	Vp (volts)	Vs (volts)	f	M	Motor Contr. (A)	I sca (amps)
F1	co	EXISTING SES	83132.00											0.00	1.00		83132.00
	xf	PER SRP CHART												0.00	1.00		0.00
F2	co	NEW PANEL J	83132.00	# 3/0 CU.	2	MAG	12844	208	135					3.63	0.22		17940.56
	xf													0.00	1.00		0.00
F3	co	NEW PANEL JA	17940.56	# 3/0 CU.	2	MAG	12844	208	5					0.03	0.97		17434.20
	xf													0.00	1.00		0.00
F4	co	EXISTING 600AMP GUTTER	83132.00	# 350 KCMIL CU.	2	NON-MAG	19704	208	163					2.86	0.28		21537.22
	xf													0.00	1.00		0.00
F5	co	EXISTING PANEL WH-2	21537.22	# 3/0 CU.	1	MAG	12844	208	5					0.07	0.93		20133.26
	xf													0.00	1.00		0.00
F6	co	NEW PANEL WH-2A	20133.26	# 1 CU.	1	MAG	7293	208	5					0.11	0.90		18059.89
	xf													0.00	1.00		0.00

Note: The above calculations neglected motor short-circuit contributions. If significant, motor short-circuit contribution may be added to the transformer secondary short-circuit current value. A practical estimate of motor contribution is to multiply the total motor load in amperes by 6. Lengths are for calculations only. DO NOT USE for estimating or take-off purposes.

SPECIAL INSPECTION REQUIRED

A SPECIAL INSPECTION IS REQUIRED BY THE CITY OF PHOENIX CONSTRUCTION CODE FOR THE FOLLOWING EQUIPMENT ITEMS:
1. EQUIPMENT RATED 1000 AMPS OR MORE.

PRIOR TO ENERGIZING EQUIPMENT THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, HIRE AN INDEPENDENT THIRD PARTY INSPECTOR OR TESTING AGENCY TO PERFORM THE REQUIRED INSPECTIONS (HIPOT TEST)FOR THE TYPES OF WORK SPECIFIED AND IDENTIFIED ON THE SPECIAL INSPECTION FORM. THE SPECIAL ELECTRICAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT TO THE REGISTERED DESIGN PROFESSIONAL ENGINEER, PROVIDING TEST RESULTS AND STATING WEATHER THE ITEMS REQUIRING SPECIAL INSPECTION WERE IN COMPLIANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. PROVIDE ADDITIONAL COST FOR ENGINEER'S SEALED LETTER OF APPROVAL.

PROVIDE APPROVED ARC-FLASH HAZARD WARNING ON ALL REQUIRED ELECTIRCAL EQUIPMENT PER NEC 110.16

WARNING
Electric Arc Flash Hazard
Will cause severe injury or death
Wear proper protective equipment before opening or performing diagnostic measurements while energized. (See NFPA 70E)

City of Phoenix
PLANNING & DEVELOPMENT DEPARTMENT

Special Inspection Certificate
Electrical

200 West Washington Street, 2nd Floor, Phoenix, AZ 85003
Phone: (602) 262-7811 (Voice) or (602) 534-5500 (TTY) Fax: (602) 534-3274
(General Requirements and Instructions on the backside of form)
Form effective January 1, 2014 POST AT JOB SITE WITH PERMIT

TO BE COMPLETED BY REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE

Project Name: Pacific Office Automation	Project Address: 4501 E McDowell Rd Phoenix, AZ 85034	Permit No. / Plan Log No.
Project Owner/Owner's Agent Name: Archicon Architecture & Interiors	Mailing Address: 5055 E Washington St Suite 200 Phx,AZ 85034	Phone No. 602.222.4266
Registered Design Professional of Record Name: Chris L. Sarmiento	Mailing Address: 2410 W Royal Palm Rd., Suite A Phx, AZ 85021	Phone No. 602.287.0300
Firm Name: ASEI Engineering	Email Address: csarmiento@aseiengineering.com	Fax No.

I hereby affirm that I am familiar with the design of this project and have been designated by the Owner/owner(s) Agent as the registered design professional in responsible charge for implementing the Electrical Special Inspections Program required by the city of Phoenix Building Construction Code Sections 110.3.9 and 1704.1. I have determined that the types of work checked below require Electrical Special Inspection and that the individual(s) or firm(s) named below are qualified to perform the special inspections. I understand and agree to inform the project owner, the contractor(s), and the special inspector(s) about all of the Electrical Special Inspection Program requirements and limitations, including that the Special Inspector(s) must be independent third-party individual(s) or firm(s) and shall not be the installing contractor(s).

27677 CHRIS L. SARMIENTO 01/04/18 REGISTERED PROFESSIONAL ENGINEER ARIZONA U.S.A. EXPIRES 03/31/2018

(Seal, Sign, and Date)

Y E S	N O	TYPES OF WORK REQUIRING SPECIAL ELECTRICAL INSPECTION (Attach Supplement if Necessary)	QUALIFIED SPECIAL INSPECTOR INDIVIDUAL(S) OR FIRM(S) (Attach Supplement if Necessary)
		Ground-Fault Protection Systems	
X		Switchboards, Panel Boards and Motor Control Centers (1000 Amp and Above)	Priority One, Genelco, SJ & H
		Transformers	
		Conductors	
		Emergency & Standby Power System(s)	

All special inspection reports were reviewed and found to be in conformance with the approved construction documents.

REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE _____ _____
(SIGNATURE) (DATE)

Page 1 of 2

For more information or for a copy of this publication in an alternate format, contact Planning & Development at (602) 262-7811 voice / (602) 534-5500 TTY.

S:\Special Inspections Certificate, Electrical W03Dcal_st_cpf_00274 TRT/DOC/00274 125-320 Rev. 12/13

CITY OF PHOENIX
PLANNING & DEVELOPMENT DEPARTMENT
This set of plans must be reviewed on site prior to construction and shall be kept at the construction site. Such review shall not prevent this City from requiring correction of errors in the plans should such errors be subsequently found to be in violation of any law, ordinance, hazard, safety, or other design issues.
Inspector _____ Number _____ Date _____

ARCHICON
Architecture & Interiors, L.C.
5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Sheet Description
SCHEMATIC DIAGRAMS / ENGINEERING CALCULATIONS

27677 CHRIS L. SARMIENTO 01/04/18 REGISTERED PROFESSIONAL ENGINEER ARIZONA U.S.A. EXPIRES 03/31/2018

Sheet No.
E3.1

Issue Date: 12.15.17

ASEIENGINEERING 2410 w. royal palm rd. suite A. phoenix, AZ 85021 aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440
DFT: JN
DSN: JN
CHK: CS

EXISTING — ELECTRICAL PANELBOARD SCHEDULE

PANEL:C — 10KAIC FULLY RATED

LOCATION: PER PLAN | BREAKER : BOLT-ON | Voltage : 208Y/120V, 3Ø , 4W
MOUNTING: SURFACE | NEMA RATING : 1 | MAINS: 225 Amp MLO
BUS: 225 Amp CU

LOAD DESCRIPTION	EMT COND	CU GRND	PHASE NEUT	CKT BRKR	CIR NO.	LOAD AMPS PHASE A	PHASE B	PHASE C	CIR NO.	CKT BRKR	PHASE NEUT	CU GRND	COND	LOAD DESCRIPTION
LIGHTING				20	1	7.5				20				LIGHTING
AREA LIGHTS 105				**		7.5			2	**				TRACK LTS WEST BOAT
LIGHTING				20	3		7.5			20				LIGHTING
AREA LIGHTS 105				**			7.5		4	**				COLUMN 2 TRACK LTS
LIGHTING				20	5			7.5		20				LIGHTING
AREA LIGHTS 105				**				7.5	6	**				LTS UNDER REP DESK
LIGHTING				20	7	7.5				20				LIGHTING
AREA LIGHTS 105				**		7.5			8	**				LTS COLUMN 1-2 OPS
LIGHTING				20	9		7.5			20				LIGHTING
TRACK LTS AREA 100				**			7.5		10	**				LTS COLUMN 1-2 OPS
LIGHTING				20	11			7.5		20				LIGHTING
TRACK LIGHTS AREA 100				**				7.5	12	**				LTS COLUMN 1-2 OPS
LIGHTING				20	13	7.5								BUSSED SPACE
TRACK LIGHTS AREA 100				**		0.0			14					
LIGHTING				20	15		7.5			20				MISC
TRK LTS LTS RECPT DESK				**			16.0		16	**				EXISTING
LIGHTING				20	17			7.5		20				MISC
TRK LTS LTS RECPT DESK				**				16.0	18	**				EXISTING
LIGHTING				20	19	7.5				20				MISC
POD LTS AREA 108 RING LTS				**		16.0			20	**				EXISTING
LIGHTING				20	21		7.5			20				MISC
POD LTS AREA 108 RING LTS				**			16.0		22	**				EXISTING
LIGHTING				20	23			7.5		20				LIGHTING
POD LTS AREA 108 RING LTS				**				7.5	24	**				TRACK LTS AREA 100
LIGHTING				20	25	7.5				20				LIGHTING & EMERGENCY LIGHTING
LTS RM 129 EXERCISE RM				**		7.5			26	**				TRACK LTS AREA 100
LIGHTING				20	27		7.5			20				LIGHTING
LTS RM 108 GREEN RM				**			7.5		28	**				TRACK LTS AREA 100
MISC	3/4"	10	10	30	29			27.7		20				LIGHTING
KONICA MINOLTA C6100-20X3.5								7.5	30	**				LTS IN 138 BAR
MISC			10	2	31	27.7				20				LIGHTING
CONT.				*		7.5			32	**				LTS COLUMN 5 X DESIGN
LIGHTING				20	33		7.5			20				LIGHTING
TRACK LTS OUTSIDE 116				**			7.5		34	**				LTS COLUMN 5 X DESIGN
LIGHTING				20	35			7.5		20				LIGHTING
CAN LIGHTS RM 116				**				7.5	36	**				LTS COLUMN 6 X DESIGN
LIGHTING				20	37	7.5				20				LIGHTING
TRACK AROUND BOAT				**		7.5			38	**				LTS COLUMN 6 X DESIGN
MISC				20	39		7.5			20				LIGHTING
EAST SIDE				**			7.5		40	**				LTS COLUMN 7
MISC				20	41			7.5		20				LIGHTING
EAST SIDE				**				7.5	42	**				LTS COLUMN 7 X DESIGN
AMPS PER PHASE (CONNECTED LOAD)						126.2	122.0	133.7						CONTRACTOR TO INSTALL APPROVED HANDLE TIE ON ALL SHARED NEUTRAL CIRCUITS.
3 PHASE DEMAND (VA)														

	0.0
LIGHTING	29700.0
25% OF LIGHTING	7425.0
	0.0
	0.0
	0.0
MISCELLANEOUS	16128.0
	0.0
	0.0
	0.0
	0.0
	0.0
TOTAL VA	53281.0

53.3 KVA @ 208V, 3Ø
147.9 Amps @ 208V, 3Ø (CODE LOAD)

SYMBOL LIST
(MLO) MAIN LUGS ONLY / (FTL) FEED THRU LUGS
(**) EXIST CIRCUIT BREAKER / EXISTING LOAD
(*) NEW CIRCUIT BREAKER / NEW LOAD

EXISTING — ELECTRICAL PANELBOARD SCHEDULE

PANEL:B — 10KAIC FULLY RATED

LOCATION: PER PLAN | BREAKER : BOLT-ON | Voltage : 208Y/120V, 3Ø , 4W
MOUNTING: FLUSH | NEMA RATING : 1 | MAINS: 225 Amp MLO
BUS: 225 Amp CU

LOAD DESCRIPTION	EMT COND	CU GRND	PHASE NEUT	CKT BRKR	CIR NO.	LOAD AMPS PHASE A	PHASE B	PHASE C	CIR NO.	CKT BRKR	PHASE NEUT	CU GRND	COND	LOAD DESCRIPTION
MECH				30	1	24.0				20				
MH-1						16.0			2	**				MISC
MECH				2	3		24.0			20				DISPLAY
CONT.				**			3.0		4	**				RECEPTACLES
MECH				20	5			16.0		20				ROOF RECEPT
MH-2								16.0	6	**				MISC
MECH				2	7	16.0				20				DISPLAY
CONT.				**		16.0			8	**				MISC
MISC				20	9		16.0			20				BATHROOM
EXISTING				**			7.5		10	**				LIGHTING
BUSSED SPACE				11				0.0		20				DISPLAY LIGHTS
								7.5	12	**				DISPLAY LIGHTS
MISC				20	13	4.2				20				LIGHTING
PHL C CONTROL CONTACTOR				**		7.5			14	**				DISPLAY LIGHTS
LIGHTING				20	15		8.3			20				LIGHTING
EXTERIOR LGTS-T/C				**			7.5		16	**				DISPLAY LIGHTS
RECEPTACLES				20	17			10.5		30	10	10	3/4"	MISC
RECEPT RM 130				**				21.6	18	**				RICOH C9110-20X3.5
LIGHTING	3/4"	12	12	20	19	0.9				2	10			MISC
CHFRNC RM EXTENSION				*		21.6			20	*				CONT.
MISC				20	21		16.0			20				MISC
BAS BUSS				**			4.2		22	**				RTHME SW/CONTACTOR
LIGHTING				20	23			7.5		20				LIGHTING
NIGHT LIGHTS				**				7.5	24	**				EXTERIOR LIGHTS
MISC				20	25	4.2				20				LIGHTING
TIME CLOCK				**		7.5			26	**				EXTERIOR LIGHTS
LIGHTING				20	27		7.5			20				LIGHTING
EXECUTIVE LIGHTS				**			7.5		28	**				EXTERIOR LIGHTS
LIGHTING				20	29			7.5		20				LIGHTING
EXECUTIVE LIGHTS				**				7.5	30	**				EXTERIOR LIGHTS
MISC				30	31	24.0				20				LIGHTING
EXISTING				**		7.5			32	**				EXTERIOR LIGHTS - N. PARKING LOT
MISC				30	33		24.0			20				LIGHTING
EXISTING				**			7.5		34	**				EXTERIOR LIGHTS
MISC	3/4"	10	10	30	35			22.6		20				LIGHTING
KONICA MINOLTA C2060-15X3.5								7.5	36	**				EXTERIOR LIGHTS
MISC			10	2	37	22.6				20				LIGHTING
CONT.				*		7.5			38	**				EXTERIOR LIGHTS
MISC	3/4"	10	10	30	39		21.6			20				LIGHTING
RICOH C9110-20X3.5							7.5		40	**				EXTERIOR LIGHTS
MISC			10	2	41			21.6		20				MISC
CONT.				*				16.0	42	**				EXISTING
AMPS PER PHASE (CONNECTED LOAD)						179.4	182.1	169.4						CONTRACTOR TO INSTALL APPROVED HANDLE TIE ON ALL SHARED NEUTRAL CIRCUITS.
3 PHASE DEMAND (VA)														

	0.0
LIGHTING	15504.0
25% OF LIGHTING	3876.0
RECEPTACLES	1620.0
	0.0
MECHANICAL	9800.0
MISCELLANEOUS	34588.0
	0.0
	0.0
	0.0
	0.0
	0.0
TOTAL VA	65188.0

65.2 KVA @ 208V, 3Ø
181.1 Amps @ 208V, 3Ø (CODE LOAD)

SYMBOL LIST
(MLO) MAIN LUGS ONLY / (FTL) FEED THRU LUGS
(**) EXIST CIRCUIT BREAKER / EXISTING LOAD
(*) NEW CIRCUIT BREAKER / NEW LOAD

EXISTING — ELECTRICAL PANELBOARD SCHEDULE

PANEL:D — 10KAIC FULLY RATED

LOCATION: PER PLAN | BREAKER : BOLT-ON | Voltage : 208Y/120V, 3Ø , 4W
MOUNTING: FLUSH | NEMA RATING : 1 | MAINS: 225 Amp MLO
BUS: 225 Amp CU

LOAD DESCRIPTION	EMT COND	CU GRND	PHASE NEUT	CKT BRKR	CIR NO.	LOAD AMPS PHASE A	PHASE B	PHASE C	CIR NO.	CKT BRKR	PHASE NEUT	CU GRND	COND	LOAD DESCRIPTION
LIGHTING				20	1	7.5				20				LIGHTING
LTS IN BOAT				**		7.5			2	**				WOMEN B. RM LIGHT
LIGHTING				20	3		7.5			20				LIGHTING
LTS IN BOAT				**			7.5		4	**				MEN B. RM LIGHT
LIGHTING				20	5			7.5		20				MISC
LTS IN BOAT				**				16.0	6	**				EMPLOYEE ENTRANCE
LIGHTING				20	7	7.5				20				LIGHTING
LTS IN BOAT				**		7.5			8	**				ED OFFICE EXT TRAINING
LIGHTING				20	9		7.5			20				LIGHTING
LTS IN BOAT				**			7.5		10	**				LTS ROOM 102
MISC				20	11			16.0		20				LIGHTING
PWR SPKR SYSTEM IN BOAT				**				7.5	12	**				EGRESS LTS 105
MISC				20	13	16.0								BUSSED SPACE
PWR SPKR SYSTEM IN BOAT				**		0.0			14					
RECEPTACLES				20	15		7.5							BUSSED SPACE
RECEPT RM 131				**			0.0		16					
MISC				20	17			16.0		20				LIGHTING
FIRE ALARM PANEL				**				7.5	18	**				LTS IN BOAT
RECEPTACLES				20	19	7.5				20				LIGHTING
RECEPTS RM 131				**		7.5			20	**				LTS IN BOAT
LIGHTING				20	21		7.5			20				LIGHTING & EMERGENCY LIGHTING
LTS ROOM 130,131,132,133				**			7.5		22	**				EMERG LTS THAT AREA/CONF RM LTS
LIGHTING				20	23			7.5		20	12	12	3/4"	MISC
LTS ROOM 130,131,132,133				**				10.0	24	*	12	12	3/4"	PRINTER 38
MISC	3/4"	12	12	20	25	10.0				20	12	12	3/4"	MISC
PRINTER 44						10.0			26	*				PRINTER 39
BUSSED SPACE					27		0.0			20	12	12	3/4"	MISC
							10.0		28	*				PRINTER 40
BUSSED SPACE					29			0.0		20	12	12	3/4"	MISC
								10.0	30	*				PRINTER 41
BUSSED SPACE					31	0.0				20	12	12	3/4"	MISC
						10.0			32	*				PRINTER 42
BUSSED SPACE					33		0.0			20	12	12	3/4"	MISC
							10.0		34	*				PRINTER 43
BUSSED SPACE					35			0.0		20				LIGHTING
								7.5	36	**				LTS AT S SIDE BREAK RM
BUSSED SPACE					37	0.0				20				LIGHTING
						7.5			38	**				LTS AT S SIDE
BUSSED SPACE					39		0.0			20				LIGHTING
							7.5		40	**				LTS AT S SIDE LIBRARY
BUSSED SPACE					41			0.0						BUSSED SPACE
								0.0	42					
AMPS PER PHASE (CONNECTED LOAD)						98.5	80.0	105.5						CONTRACTOR TO INSTALL APPROVED HANDLE TIE ON ALL SHARED NEUTRAL CIRCUITS.
3 PHASE DEMAND (VA)														

	0.0
LIGHTING	16200.0
25% OF LIGHTING	4050.0
RECEPTACLES	1800.0
	0.0
	0.0
MISCELLANEOUS	16080.0
	0.0
	0.0
	0.0
	0.0
	0.0
TOTAL VA	38130.0

38.1 KVA @ 208V, 3Ø
105.9 Amps @ 208V, 3Ø (CODE LOAD)

SYMBOL LIST
(MLO) MAIN LUGS ONLY / (FTL) FEED THRU LUGS
(**) EXIST CIRCUIT BREAKER / EXISTING LOAD
(*) NEW CIRCUIT BREAKER / NEW LOAD

NEW — ELECTRICAL PANELBOARD SCHEDULE

PANEL:J — 22KAIC FULLY RATED

LOCATION: PER PLAN | BREAKER : BOLT-ON | Voltage : 208Y/120V, 3Ø , 4W
MOUNTING: SURFACE | NEMA RATING : 1 | MAINS: 400 Amp MCB
BUS: 400 Amp CU PROVIDE FEED THROUGH LUGS

LOAD DESCRIPTION	EMT COND	CU GRND	PHASE NEUT	CKT BRKR	CIR NO.	LOAD AMPS PHASE A	PHASE B	PHASE C	CIR NO.	CKT BRKR	PHASE NEUT	CU GRND	COND	LOAD DESCRIPTION
MISC	1-1/4"	10	8	50	1	23.6				20	12	12	3/4"	MISC
OCE 6320 TITAN TP 25X3.5						12.0			2					RICOH C7110X 15X3.5
MISC			6	2	3		23.6			2	12			MISC
CONT.							12.0		4					CONT.
MISC	3/4"	10	10	30	5			17.3		20	12	12	3/4"	MISC
KONICA MINOLTA 1100 6.5X3.5								10.0	6					PRINTER 1
MISC			10	2	7	17.3				2	12			MISC
CONT.						10.0			8					CONT.
MISC	3/4"	12	12	20	9		10.0			20	12	12	3/4"	MISC
OCE PLOTWAVE 5X3.5							10.0		10					PRINTER 2
MISC			12	2	11			10.0		2	12			MISC
CONT.								10.0	12					CONT.
MISC	3/4"	10	10	30	13	24.0				20	12	12	3/4"	MISC
KONICA MINOLTA 1250 12X3.5						10.0			14					PRINTER 3
MISC			10	2	15		24.0			2	12			MISC
CONT.							10.0		16					CONT.
MISC	3/4"	12	12	20	17			10.0		20	12	12	3/4"	MISC
SMALL INSERTER 4.5X3								10.0	18					PRINTER 4
MISC			12	2	19	10.0				2	12			MISC
CONT.						10.0			20					CONT.
MISC	3/4"	12	12	20	21		9.1			20	12	12	3/4"	MISC
KIP 860 6.5X3.5							10.0		22					PRINTER 5
MISC			12	2	23			9.1		2	12			MISC
CONT.								10.0	24					CONT.
MISC	3/4"	12	12	20	25	11.5				20	12	12	3/4"	MISC
RICOH C5200-10X3.5						10.0			26					PRINTER 6
MISC			12	2	27		11.5			2	12			MISC
CONT.							10.0		28					CONT.
MISC	3/4"	12	12	20	29			14.9		20	12	12	3/4"	MISC
RICOH 8200 12X3.5								10.0	30					PRINTER 7
MISC			12	2	31	14.9				2	12			MISC
CONT.						10.0			32					CONT.
MISC	3/4"	12	12	20	33		13.0			20	12	12	3/4"	MISC
CANON C850 10X3.5							10.0		34					PRINTER 8
MISC			12	2	35			13.0		2	12			MISC
CONT.								10.0	36					CONT.
MISC	3/4"	12	12	20	37	12.0				20	12	12	3/4"	MISC
RICOH C7110X 15X3.5						10.0			38					PRINTER 9
MISC			12	2	39		12.0			2	12			MISC
CONT.							10.0		40					CONT.
RECEPTACLES	3/4"	12	12	20	41			6.0		20	12	12	3/4"	RECEPTACLES
S. DISPLAY GENERAL W.								4.5	42					S. DISPLAY GENERAL S.
AMPS PER PHASE (CONNECTED LOAD)						185.3	175.2	144.8						CONTRACTOR TO INSTALL APPROVED HANDLE TIE ON ALL SHARED NEUTRAL CIRCUITS.
3 PHASE DEMAND (VA)														
FEED THROUGH LUGS (PANEL "M")							45300.0							SYMBOL LIST
							0.0							(MCB) MAIN CIRCUIT BREAKER
							0.0							
RECEPTACLES							1260.0							
							0.0							
							0.0							
MISCELLANEOUS							58378.0							
							0.0							
							0.0							
							0.0							
							0.0							
TOTAL VA							105936.0							

105.9 KVA @ 208V, 3Ø
294.3 Amps @ 208V, 3Ø (CODE LOAD)

LABELS TO BE PROVIDED:
1. PHENOLIC TAG INDICATING PANEL NAME, SOURCE PANEL, VOLTAGE/PHASE, AND ELECTRICAL BRANCH OF THE ELECTRICAL SYSTEM.
2. PHENOLIC TAG INDICATING THE AVAILABLE FAULT CURRENT AT PANEL, EQUIPMENT BRACING RATING, AND DATE SHORT CIRCUIT CALCULATION PERFORMED.
3. PHENOLIC TAG OR STICKER PROVIDING ARC FLASH HAZARD INFORMATION. INCLUDING FLASH HAZARD BOUNDARY, INCIDENT ENERGY AT INDICATED DISTANCE, PPE CATEGORY PER NFPA 70E, VOLTAGE OF PANEL TO INDICATE SHOCK HAZARD, AND LIMIT, RESTRICTED, AND PROHIBITED APPROACH DISTANCES PER NFPA 70E.

NOTES:
1. ARC FLASH HAZARD INFORMATION AND FAULT CURRENT VALUES SHALL BE DETERMINED BY MANUFACTURERS ARC FLASH STUDY, SHORT CIRCUIT ANALYSIS, AND COORDINATION STUDY.
2. OF ARC FLASH STUDY DETERMINES THAT THE INCIDENT ENERGY AT THE EQUIPMENT IS >40 CAL/CM², THE ARC FLASH STICKER OR PHENOLIC TAG SHALL BE PROVIDED WITH A RED BACKGROUND AND HAVE THE WORD "DANGER" INCLUDED IN THE TAG.
3. REFER TO SPECIFICATIONS FOR BACKGROUND AND TEXT COLORS, FONT SIZE, AND ANY ADDITIONAL INFORMATION.
4. DISTRIBUTION EQUIPMENT SHALL BE LABELED IN ACCORDANCE WITH 2011 NEC SECTIONS 110.16 AND 110.24.

PANEL "---"
FED FROM PANEL
"---"
480Y/277V, 3Ø, 4W
NORMAL BRANCH

AVAILABLE FAULT CURRENT:
##,###A SYMMETRICAL
EQUIPMENT BRACED AT:
42,000A SYMMETRICAL
DATE 5/26/15

WARNING
ARC FLASH AND SHOCK HAZARD

18 INCHES	FLASH HAZARD BOUNDARY	
1.2 CAL/CM²	FLASH HAZARD AT 18"	
CATEGORY 0	PPE CATEGORY PER NFPA 70E	
480 VAC	SHOCK HAZARD WHEN COVER IS OPEN	
42 INCHES	LIMITED APPROACH	CATEGORY 0
12 INCHES	RESTRICTED APPROACH PER NFPA 70E	
1 INCH	PROHIBITED APPROACH	

PANEL "H1" DATE 5/26/15

NOTE: CHANGES IN EQUIPMENT SETTINGS OR SYSTEM CONFIGURATION MAY INVALIDATE THE CALCULATED VALUES AND PPE REQUIREMENTS LISTED ABOVE.

CITY OF PHOENIX
PLANNING & DEVELOPMENT DEPARTMENT
This set of plans must be reviewed on site prior to construction and shall be kept at the construction site. Such review shall not prevent the City from requiring correction of errors in the plans where such errors are subsequently found to be in violation of any law, ordinance, health, safety, or other design issues.
Inspector: _____ Number: _____ Date: _____

ASEIENGINEERING
2410 w. royal palm rd. suite A, phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440
DFT: JN
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CHK: CS

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Architecture & Interiors, L.C.
5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number: 1784325-01
Project Manager: OT
Drawn By: OT
Checked By: JP

No.	Revision	Date
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Sheet Description
PANEL SCHEDULES

27677
CHRIS L. SARMIENTO
01/04/18
REGISTERED PROFESSIONAL ENGINEER
ARIZONA, U.S.A.
EXPIRES 03/31/2018

Sheet No.
E3.2

Issue Date: 12.15.17

NEW — ELECTRICAL PANELBOARD SCHEDULE

PANEL:JA — 22KAIC FULLY RATED

LOCATION: PER PLAN — BREAKER : BOLT-ON — Voltage : 208VY/120V, 3Ø , 4W
MOUNTING SURFACE — NEMA RATING : 1 — MAINS: 400 Amp MLO — BUS: 400 Amp CU

LOAD DESCRIPTION	EMT COND	CU GRND	PHASE NEUT	CKT BRKR	CIR NO.	LOAD AMPS PHASE A	LOAD AMPS PHASE B	LOAD AMPS PHASE C	CIR NO.	CKT BRKR	PHASE NEUT	CU GRND	COND	LOAD DESCRIPTION
MISC	3/4"	12	12	20	1	10.0				20	12	12	3/4"	RECEPTACLES
PRINTER 10						6.0			2					S. DISPLAY GENERAL S.
MISC			12	2	3		10.0			20	12	12	3/4"	RECEPTACLES
CONT.							4.5		4					S. DISPLAY GENERAL S.
RECEPTACLES	3/4"	12	12	20	5			6.0		20	12	12	3/4"	RECEPTACLES
S. DISPLAY GENERAL E.								4.5	6					S. DISPLAY GENERAL N.
RECEPTACLES	3/4"	12	12	20	7	1.5				20	12	12	3/4"	RECEPTACLES
S. DISPLAY FLR GENERAL						6.0			8					S. DISPLAY GENERAL N.
RECEPTACLES	3/4"	12	12	20	9		6.0			20	12	12	3/4"	RECEPTACLES
S. DISPLAY GENERAL N.							3.0		10					N. DISPLAY GENERAL
MISC	3/4"	12	12	20	11			10.0		20	12	12	3/4"	MISC
PRINTER 11								10.0	12					PRINTER 12
MISC	3/4"	12	12	20	13	10.0				20	12	12	3/4"	MISC
PRINTER 13						10.0			14					PRINTER 14
MISC	3/4"	12	12	20	15		10.0			20	12	12	3/4"	MISC
PRINTER 15							10.0		16					PRINTER 16
MISC	3/4"	12	12	20	17			10.0		20	12	12	3/4"	MISC
PRINTER 17								10.0	18					PRINTER 18
MISC	3/4"	12	12	20	19	10.0				20	12	12	3/4"	MISC
PRINTER 19						10.0			20					PRINTER 20
MISC	3/4"	12	12	20	21		10.0			20	12	12	3/4"	MISC
PRINTER 21							10.0		22					PRINTER 22
MISC	3/4"	12	12	20	23			10.0		20	12	12	3/4"	MISC
PRINTER 23								10.0	24					PRINTER 24
MISC	3/4"	12	12	20	25	10.0				20	12	12	3/4"	MISC
PRINTER 25						10.0			26					PRINTER 26
MISC	3/4"	12	12	20	27		10.0			20	12	12	3/4"	MISC
PRINTER 27							10.0		28					PRINTER 28
MISC	3/4"	12	12	20	29			10.0		20	12	12	3/4"	MISC
PRINTER 29								10.0	30					PRINTER 30
MISC	3/4"	12	12	20	31	10.0				20	12	12	3/4"	MISC
OCE COLORWAVE 25X3.5						10.0			32					DUPLO 6.5X3.5
MISC	3/4"	12	12	20	33		10.0			20	12	12	3/4"	MISC
SENDPRO 300 3.5X3.5							10.0		34					PITNEY INSERTER 7X3
MISC	3/4"	12	12	20	35			10.0		20	12	12	3/4"	MISC
ENVELOPE PRINTER 6.5X3.5								10.0	36					PRINTER 31
MISC	3/4"	12	12	20	37	10.0				20	12	12	3/4"	MISC
PRINTER 32						10.0			38					PRINTER 33
MISC	3/4"	12	12	20	39		10.0			20	12	12	3/4"	MISC
PRINTER 34							10.0		40					PRINTER 35
MISC	3/4"	12	12	20	41			10.0		20	12	12	3/4"	MISC
PRINTER 36								10.0	42					PRINTER 37
AMPS PER PHASE (CONNECTED LOAD)						123.5	123.5	130.5						

CONTRACTOR TO INSTALL APPROVED HANDLE TIE ON ALL SHARED NEUTRAL CIRCUITS.

3 PHASE DEMAND (VA)	
	0.0
	0.0
	0.0
RECEPTACLES	4500.0
	0.0
	0.0
MISCELLANEOUS	40800.0
	0.0
	0.0
	0.0
	0.0
	0.0
TOTAL VA	45300.0

45.3 KVA @ 208V, 3Ø
125.8 Amps @ 208V, 3Ø (CODE LOAD)

SYMBOL LIST
(MLO) MAIN LUGS ONLY / (FTL) FEED THRU LUGS

EXISTING — ELECTRICAL PANELBOARD SCHEDULE

PANEL:WH-2 — 22KAIC FULLY RATED

LOCATION: PER PLAN — BREAKER : BOLT-ON — Voltage : 208VY/120V, 3Ø , 4W
MOUNTING SURFACE — NEMA RATING : 1 — MAINS: 200 Amp MCB — BUS: 200 Amp CU

LOAD DESCRIPTION	EMT COND	CU GRND	PHASE NEUT	CKT BRKR	CIR NO.	LOAD AMPS PHASE A	LOAD AMPS PHASE B	LOAD AMPS PHASE C	CIR NO.	CKT BRKR	PHASE NEUT	CU GRND	COND	LOAD DESCRIPTION
MECH				20	1	10.0				20				LIGHTING
EC-12						10.0			2					HIGH BAY LIGHTING
MECH					3		10.0			2				LIGHTING
CONT.							10.0		4	**				CONT.
MECH				3	5			10.0		20				LIGHTING
CONT.				**				10.0	6					HIGH BAY LIGHTING
MECH				20	7	10.0				2				LIGHTING
EC-13						10.0			8	**				CONT.
MECH					9		10.0			20				LIGHTING
CONT.							10.0		10					HIGH BAY LIGHTING
MECH				3	11			10.0		2				LIGHTING
CONT.				**				10.0	12	**				CONT.
RECEPTACLES				20	13	6.0				20				LIGHTING
RECEPTS				**		10.0			14					HIGH BAY LIGHTING
RECEPTACLES				20	15		6.0			2				LIGHTING
RECEPTS				**			10.0		16	**				CONT.
LIGHTING				20	17			7.5		20				LIGHTING
DOCK LIGHTS				**				10.0	18					HIGH BAY LIGHTING
RECEPTACLES				20	19	3.0				2				LIGHTING
TMB				**		10.0			20	**				CONT.
MISC				20	21		12.0			20				LIGHTING
EXISTING				**			10.0		22					HIGH BAY LIGHTING
MISC				20	23			4.2		2				LIGHTING
RISER ALARM				**				10.0	24	**				CONT.
RECEPTACLES				20	25	4.5				20				LIGHTING
ROOF RECEPTS				**		7.5			26	**				NIGHT LIGHTS
MISC				20	27		12.0			20				LIGHTING
EXISTING				***			7.5		28	**				NIGHT LIGHTS
MISC				40	29			24.2		20				LIGHTING
TRASH COMPACTOR								7.5	30	**				NIGHT LIGHTS
MISC					31	24.2				20				LIGHTING
CONT.						7.5			32	**				LIGHTS
MISC				3	33		24.2			20				LIGHTING
CONT.				**			7.5		34	**				LIGHTS
MISC				30	35			24.0		20				LIGHTING
WH-4								7.5	36	**				LIGHTS
MISC				2	37	24.0				100				PANEL
CONT.				**		32.8			38		SEE			PANEL WH-2A
MISC				30	39		21.6					ONE		PANEL
4.5KW BATTERY CHARGER							35.9		40				LINE	CONT.
MISC				2	41			21.6		3				PANEL
CONT.				**				30.4	42	*				CONT.
AMPS PER PHASE (CONNECTED LOAD)						169.5	186.7	186.9						

CONTRACTOR TO INSTALL APPROVED HANDLE TIE ON ALL SHARED NEUTRAL CIRCUITS.

3 PHASE DEMAND (VA)	
	0.0
LIGHTING	20700.0
25% OF LIGHTING	5175.0
RECEPTACLES	2340.0
	0.0
MECHANICAL	7200.0
MISCELLANEOUS	23044.0
	0.0
PANEL	11892.0
	0.0
	0.0
	0.0
TOTAL VA	70351.0

70.4 KVA @ 208V, 3Ø
195.4 Amps @ 208V, 3Ø (CODE LOAD)

SYMBOL LIST
(MLO) MAIN LUGS ONLY / (FTL) FEED THRU LUGS
(***) EXIST CIRCUIT BREAKER TO BE RELOCATED
(**) EXIST CIRCUIT BREAKER / EXISTING LOAD
(*) NEW CIRCUIT BREAKER / NEW LOAD

NEW — ELECTRICAL PANELBOARD SCHEDULE

PANEL:WH-2A — 22KAIC FULLY RATED

LOCATION: PER PLAN — BREAKER : BOLT-ON — Voltage : 208VY/120V, 3Ø , 4W
MOUNTING SURFACE — NEMA RATING : 1 — MAINS: 100 Amp MLO — BUS: 100 Amp CU

LOAD DESCRIPTION	EMT COND	CU GRND	PHASE NEUT	CKT BRKR	CIR NO.	LOAD AMPS PHASE A	LOAD AMPS PHASE B	LOAD AMPS PHASE C	CIR NO.	CKT BRKR	PHASE NEUT	CU GRND	COND	LOAD DESCRIPTION
MECH	3/4"	12	12	20	1	5.4				20	12	12	3/4"	MECH (LARGEST)
FC-1						11.0			2					CU-1
MECH			12	2	3		5.4				12			MECH (LARGEST)
CONT.							11.0		4					CONT.
MECH	3/4"	12	12	20	5			5.4		3	12			MECH (LARGEST)
FC-2								11.0	6					CONT.
MECH			12	2	7	5.4				20	12	12	3/4"	MECH
CONT.						11.0			8					CU-2
LIGHTING	3/4"	12	12	20	9		8.5				12			MECH
WAREHOUSE OFFICE LTS							11.0		10					CONT.
RECEPTACLES	3/4"	12	12	20	11			3.0		3	12			MECH
MAINTENANCE RECPT								11.0	12					CONT.
BUSSED SPACE					13	0.0								BUSSED SPACE
						0.0			14					
BUSSED SPACE					15		0.0							BUSSED SPACE
							0.0		16					
BUSSED SPACE					17			0.0						BUSSED SPACE
								0.0	18					
BUSSED SPACE					19	0.0								BUSSED SPACE
						0.0			20					
BUSSED SPACE					21		0.0							BUSSED SPACE
							0.0		22					
BUSSED SPACE					23			0.0						BUSSED SPACE
								0.0	24					
BUSSED SPACE					25	0.0								BUSSED SPACE
						0.0			26					
BUSSED SPACE					27		0.0							BUSSED SPACE
							0.0		28					
BUSSED SPACE					29			0.0						BUSSED SPACE
								0.0	30					
BUSSED SPACE					31	0.0								BUSSED SPACE
						0.0			32					
BUSSED SPACE					33		0.0							BUSSED SPACE
							0.0		34					
BUSSED SPACE					35			0.0						BUSSED SPACE
								0.0	36					
BUSSED SPACE					37	0.0								BUSSED SPACE
						0.0			38					
BUSSED SPACE					39		0.0							BUSSED SPACE
							0.0		40					
BUSSED SPACE					41			0.0						BUSSED SPACE
								0.0	42					
AMPS PER PHASE (CONNECTED LOAD)						32.8	35.9	30.4						

CONTRACTOR TO INSTALL APPROVED HANDLE TIE ON ALL SHARED NEUTRAL CIRCUITS.

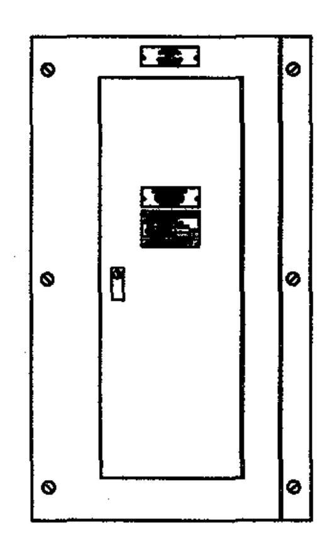
3 PHASE DEMAND (VA)	
	0.0
LIGHTING	1020.0
25% OF LIGHTING	255.0
RECEPTACLES	360.0
MECH (LARGEST) @ 1.25%	4950.0
MECHANICAL	6552.0
	0.0
	0.0
	0.0
	0.0
	0.0
	0.0
TOTAL VA	13137.0

13.1 KVA @ 208V, 3Ø
36.5 Amps @ 208V, 3Ø (CODE LOAD)

SYMBOL LIST
(MLO) MAIN LUGS ONLY / (FTL) FEED THRU LUGS

LABELS TO BE PROVIDED:

1. PHENOLIC TAG INDICATING PANEL NAME, SOURCE PANEL, VOLTAGE/PHASE, AND ELECTRICAL BRANCH OF THE ELECTRICAL SYSTEM.
2. PHENOLIC TAG INDICATING THE AVAILABLE FAULT CURRENT AT PANEL, EQUIPMENT BRACING RATING, AND DATE SHORT CIRCUIT CALCULATION PERFORMED.
3. PHENOLIC TAG OR STICKER PROVIDING ARC FLASH HAZARD INFORMATION, INCLUDING FLASH HAZARD BOUNDARY, INCIDENT ENERGY AT INDICATED DISTANCE, PPE CATEGORY PER NFPA 70E, VOLTAGE OF PANEL TO INDICATE SHOCK HAZARD, AND LIMIT, RESTRICTED, AND PROHIBITED APPROACH DISTANCES PER NFPA 70E.



PANEL "--"
FED FROM PANEL
"--"
480V/277V, 3ϕ, 4W
NORMAL BRANCH

AVAILABLE FAULT CURRENT:
##,###A SYMMETRICAL
EQUIPMENT BRACED AT:
42,000A SYMMETRICAL
DATE 5/26/15

WARNING
ARC FLASH AND SHOCK HAZARD

18 INCHES	FLASH HAZARD BOUNDARY
1.2 CAL/CM²	FLASH HAZARD AT 18"
CATEGORY 0	PPE CATEGORY PER NFPA 70E
480 VAC	SHOCK HAZARD WHEN COVER IS OPEN
42 INCHES	LIMITED APPROACH } PER NFPA 70E
12 INCHES	RESTRICTED APPROACH } PER NFPA 70E
1 INCH	PROHIBITED APPROACH } PER NFPA 70E

CATEGORY 0

PANEL "H1" — DATE 5/26/15

NOTE: CHANGES IN EQUIPMENT SETTINGS OR SYSTEM CONFIGURATION MAY INVALIDATE THE CALCULATED VALUES AND PPE REQUIREMENTS LISTED ABOVE.

NOTES:

1. ARC FLASH HAZARD INFORMATION AND FAULT CURRENT VALUES SHALL BE DETERMINED BY MANUFACTURERS ARC FLASH STUDY, SHORT CIRCUIT ANALYSIS, AND COORDINATION STUDY.
2. OF ARC FLASH STUDY DETERMINES THAT THE INCIDENT ENERGY AT THE EQUIPMENT IS >40 CAL/CM², THE ARC FLASH STICKER OR PHENOLIC TAG SHALL BE PROVIDED WITH A RED BACKGROUND AND HAVE THE WORD "DANGER" INCLUDED IN THE TAG.
3. REFER TO SPECIFICATIONS FOR BACKGROUND AND TEXT COLORS, FONT SIZE, AND ANY ADDITIONAL INFORMATION.
4. DISTRIBUTION EQUIPMENT SHALL BE LABELED IN ACCORDANCE WITH 2011 NEC SECTIONS 110.16 AND 110.24.

ASEIENGINEERING
2410 w. royal palm rd. suite A, phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440
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ARCHICON
Architecture & Interiors, L.C.
5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION
4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Sheet Description
PANEL SCHEDULES

Registered Professional Engineer (Electrical)
CERTIFICATE NO. 27677
CHRIS L. SARMIENTO
Date Signed 01/04/18
ARIZONA, U.S.A.
EXPIRES 03/31/2018

Sheet No.
E3.3

Issue Date: 12.15.17

COMcheck Software Version 4.0.7.2 Review

Interior Lighting Compliance Certificate

Project Information

Energy Code:	2012 IECC
Project Title:	Pacific Office Automation
Project Type:	Alteration

Construction Site:
4501 E McDowell Rd
Phoenix, AZ 85034

Owner/Agent:
Orlando Taylor
Archicon Architecture & Interiors, L.C.
5055 E Washington Street
Suite 200
Phoenix, AZ 85034
6022224266
OrlandoT@archicon.com

Designer/Contractor:
Jonathan Rios Nollola
ASEI Engineering
2410 W Royal Palm Rd.
Suite #A
Phoenix, AZ 85021
6022870300

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Conference Space Addition (Common Space Types:Conference / Meeting / Multipurpose)	184	1.20	221
		Total Allowed Watts =	221

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)
Conference Space Addition (Common Space Types:Conference / Meeting / Multipurpose 184 sq.ft.)				
LED 1: A: 4" Recessed Down-Light: Other:	1	3	35	104
		Total Proposed Watts =		104

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 2012 IECC requirements in COM*check* Version 4.0.7.2 Review and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

COMcheck Software Version 4.0.7.2 Review

Inspection Checklist

Energy Code: 2012 IECC

Requirements: 75.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.2.1 [EL22][2]	Automatic controls to shut off all building lighting installed in all buildings.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Lighting controlled by occupancy sensors.
C405.2.1.1 [EL23][2]	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.1.2 [EL15][3]	Lighting controls installed to uniformly reduce the lighting load by at least 50%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.2.3 [EL16][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.3 [EL17][2]	Sleeping units have at least one master switch at the main entry door that controls wired luminaires and switched receptacles.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.2.2 [EL18][3]	Occupancy sensors installed in required spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.2.3 [EL20][3]	Primary sidelighted areas are equipped with required lighting controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.2.3 [EL21][3]	Enclosed spaces with daylight area under skylights and rooftop monitors are equipped with required lighting controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.3 [EL4][1]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.3 [EL19][2]	Fluorescent luminaires with odd numbered lamp configurations that are within 10 feet center to center (if recess mounted) or are within 1 foot edge to edge (if pendant or surface mounted) shall be tandem wired.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.4 [EL6][1]	Exit signs do not exceed 5 watts per face.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.3 [EL8][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C408.2.5.1 [FI16][3]	Furnished as-built drawings for electric power systems within 30 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C303.3, C408.2.5.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.5.2 [FI18][3]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
C408.3 [FI33][3]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

CITY OF PHOENIX

PLANNING & DEVELOPMENT DEPARTMENT

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Inspector _____ Number: _____ Date: _____

ASEIENGINEERING
2410 w. royal palm rd. suite A, phoenix, AZ 85021
aseiengineering.com o 602.287.0300 f 602.287.0600

JOB NO: 173440
DFT: JN
DSN: JN
CHK: CS

ARCHICON
Architecture & Interiors, L.C.

5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number:	1784325-01
Project Manager:	OT
Drawn By:	OT
Checked By:	JP

No.	Revision	Date
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Sheet Description
COMCHECK - SHOWROOM

REGISTERED PROFESSIONAL ENGINEER
CERTIFICATE NO.
27677
CHRIS L. SARMIENTO
01/04/18
ARIZONA, U.S.A.

EXPIRES 03/31/2018

Sheet No.

E4.1

Issue Date: 12.15.17

COMcheck Software Version 4.0.7.2 Review

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2012 IECC
Project Title: Pacific Office Automation
Project Type: Alteration

Construction Site:
4501 E McDowell Rd.
Phoenix, AZ 85034

Owner/Agent:
Orlando Taylor
Archicon Architecture & Interior, L.C.
5055 E Washington Street
Suite 200
Phoenix, AZ 85034
6022224266
OrlandoT@archicon.com

Designer/Contractor:
Jonathan Rios Nollola
ASEI Engineering
2410 W Royal Palm Rd
Suite #A
Phoenix, AZ 85021
6022870300

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Office Space Inside Warehouse (Common Space Types:Office - Enclosed)	1708	1.10	1879
		Total Allowed Watts =	1879

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 Space Inside Warehouse (Common Space Types:Office - Enclosed 1708 sq.ft.)				
LED 1: B: 2X4 LED LAY-IN: Other:	1	30	35	1044
		Total Proposed Watts =		1044

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 2012 IECC requirements in COMcheck Version 4.0.7.2 Review and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

COMcheck Software Version 4.0.7.2 Review

Inspection Checklist

Energy Code: 2012 IECC

Requirements: 75.0% were addressed directly in the COMcheck software

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PLANNING & DEVELOPMENT DEPARTMENT
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Inspector _____ Number _____ Date _____

ARCHICON
Architecture & Interiors, L.C.
5055 E. Washington Street
Suite 200
Phoenix, Arizona 85034
P: 602.222.4266
www.archicon.com

PACIFIC OFFICE AUTOMATION

4501 E. MCDOWELL RD.
PHOENIX, AZ. 85034

Project Number: 1784325-01
Project Manager: OT
Drawn By: OT
Checked By: JP

No.	Revision	Date
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Sheet Description
COMCHECK - WAREHOUSE

Professional Engineer Certificate No. 27677 CHRIS L. SARMIENTO 01/04/18 Date Signed ARIZONA U.S.A.
EXPIRES 03/31/2018

Sheet No.
E4.2

Issue Date: 12.15.17