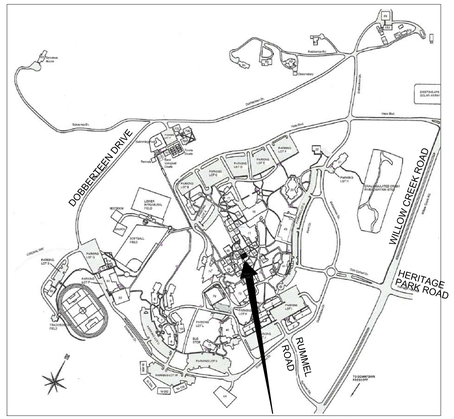
Project Description

Embry-Riddle Aeronautical University intends to renovate the restrooms in existing building 53. All existing fixtures will be removed. The restroom will be renovated to comply with ADA, adding new ADA compliant stalls including an ambulatory accessible toilet stall in each restroom. The men's and women's restrooms will be reversed having the men's restroom on the West side (plan) and the Women's restroom on the East side (plan) to maximize the number of toilet fixtures being provided. A new ceiling and lighting will be added as well as a new water heater. A new heater/swamp cooler and ductwork will be provided for the Restrooms. There will be no work to the other half of the building.

Site / Vicinity Map



Graphic Standards

- NORTH ARROW INDICATOR (North)
- DETAIL DESIGNATOR (NUMBER / SHEET)
- BUILDING SECTION DESIGNATOR (LETTER / SHEET)
- REVISION DESIGNATOR (NUMBER)
- TYPICALLY INDICATES EXISTING DOOR & FRAME TO BE REMOVED
- TYPICALLY INDICATES EXISTING DOOR & FRAME TO REMAIN
- ELEVATION DESIGNATOR (#/SHEET)
- DESCRIPTIVE NOTE DESIGNATOR
- ROOM NUMBER / FINISH DESIGNATOR
- DOOR NUMBER DESIGNATOR (#)
- DOOR TYPE DESIGNATOR (LETTER)
- WINDOW TYPE DESIGNATOR
- GRID LINE DESIGNATOR
- TYPICALLY INDICATES PROPOSED DOOR & FRAME - REFER TO DOOR SCHEDULE

IMPROVEMENTS FOR

EMBRY-RIDDLE

RESTROOM REMODEL BUILDING 53

Project Information

OWNER: Embry-Riddle Aeronautical University, 3700 Willow Creek Road, Prescott, AZ 86301 — PH: 928-777-6600, FAX: 928-777-3950, CONTACT: Carl Beumer, beumerc@erau.edu

PREPARED BY: W. Alan Kenson & Associates, P.C., P.O. Box 11593, Prescott, AZ 86304 — PH: 928-443-5812, FAX: 928-443-5815, CONTACT: Alan Kenson, waka@cableone.net

CONTRACTOR: TO BE DETERMINED

SCOPE OF WORK: Restroom Renovation

PROJECT ADDRESS: 3700 Willow Creek Road (Building 53), Prescott, AZ 86301 (APN: 106-03-004)

ZONE: BG - PAD

OCCUPANCY: B (Educational Facility for students above the 12th grade) , Non-Separated

CONSTRUCTION TYPE: V-B Non Sprinklered

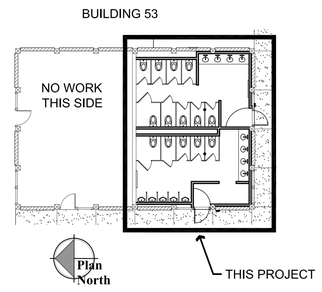
ACTUAL AREA

BUILDING 53: 1,644 SQUARE FEET
RENOVATION AREA: 822 SQUARE FEET

Sheet Index

Key Plan

Scale: Not to Scale



Architect:

W. Alan Kenson & Associates, P.C.

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F 928-443-5815 — Prescott, AZ 86304
email: waka@cableone.net
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ARCHITECTURE & PLANNING

REVISIONS	BY

REGISTERED ARCHITECT — CERTIFICATE NO. 25646 — W. ALAN KENSON — STATE OF ARIZONA — 07/10/15 — EXPIRES: 6/30/18

W. Alan Kenson & Associates, P.C.
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ARCHITECTURE & PLANNING

DRAWING: COVER SHEET

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

DRAWN BY	L.O.
CHECKED BY	W.A.K.
DATE	July 10th, 2015
SCALE	AS NOTED
JOB NO.	670
SHEET	CS

Jul 13, 2015 - 10:56am

A1 Construction Access Plan

Scale: 1"=20'-0"

North

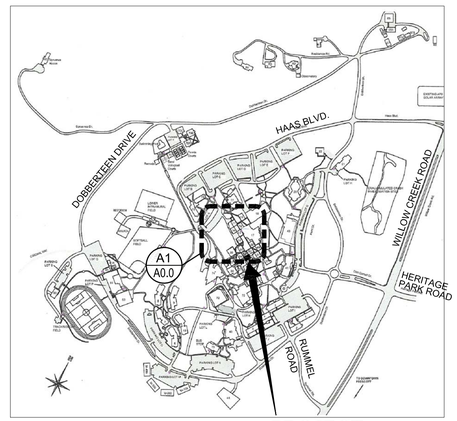
Descriptive Keynotes

1. CONSTRUCTION MATERIAL STAGING AREA.
2. LOCATION FOR J-JON.
3. LOCATION OF TRASH DUMPSTER BY OWNER.
4. CONTRACTOR PARKING AREA. 6 SPACES AVAILABLE. CONTRACTOR TO PROVIDE SIGNAGE DESIGNATING SPACES FOR CONSTRUCTION PARKING.
5. 6' TALL TEMPORARY CHAIN LINK FENCING BY CONTRACTOR.
6. TEMPORARY ±4' WIDE, HINGED, SWINGING GATE WITH LOCK MECHANISM.

B2 Bldg 53 Temporary Fencing

Scale: 1/16"=1'-0"

North



PROJECT
BUILDING 53

B1 Vicinity Map

Scale: N.T.S.

North

REVISIONS	BY

REGISTERED ARCHITECT
CERTIFICATE NO.
25646
W. ALAN KENSON
Date Signed 07/10/15
ARIZONA
EXPIRES: 6/30/18

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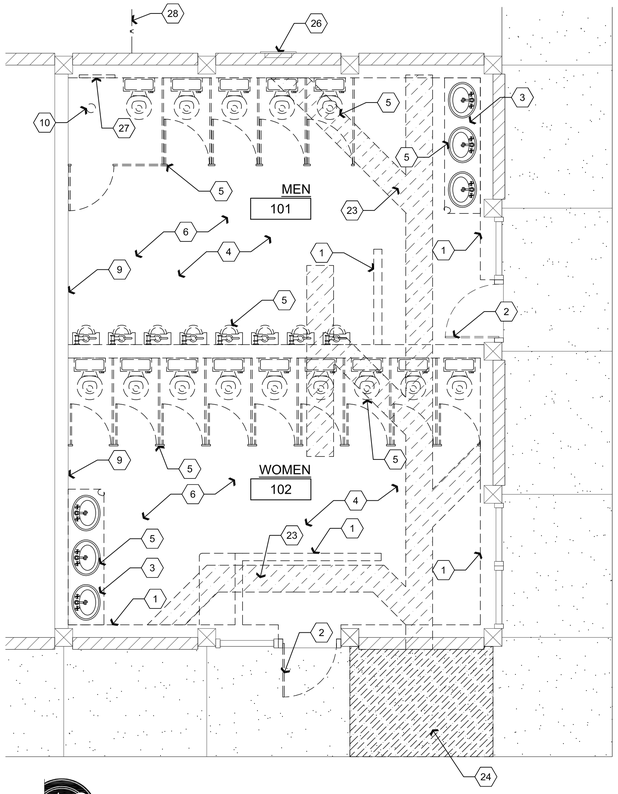
ARCHITECTURE & PLANNING

DRAWING: CONSTRUCTION ACCESS PLAN

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

DRAWN BY	L.O.
CHECKED BY	W.A.K.
DATE	July 10th, 2015
SCALE	AS NOTED
JOB NO.	670
SHEET	A0.0

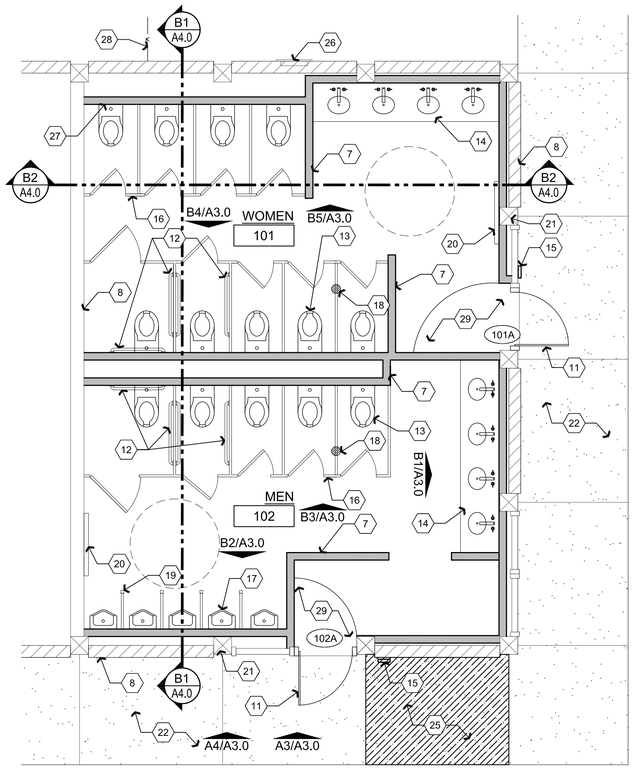
Jul 13, 2015 - 2:32pm



A2 Demolition Plan

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

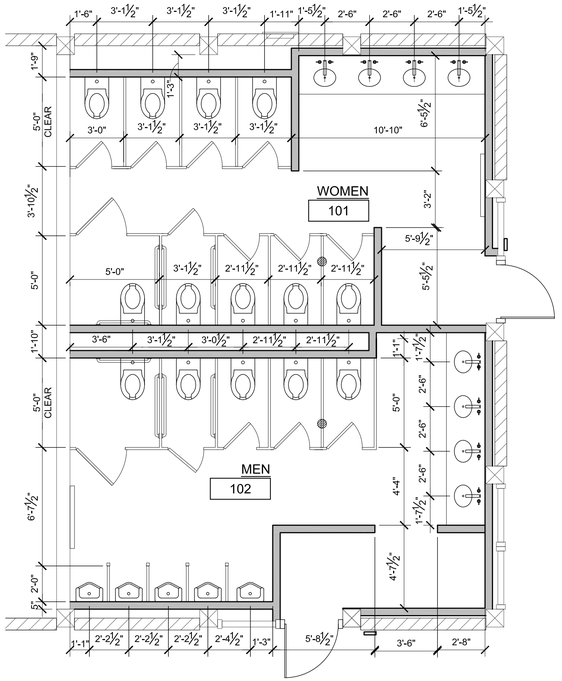
Plan North



B2 Reference Floor Plan

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

Plan North



B1 Dimension Plan

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

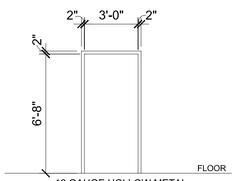
Plan North

Descriptive Keynotes

1. TYPICALLY INDICATES EXISTING WALL TO BE REMOVED.
2. TYPICALLY INDICATES EXISTING DOOR TO BE REMOVED.
3. REMOVE WATER HEATER BELOW.
4. REMOVE FLOORING IN THIS AREA.
5. TYPICALLY INDICATES PLUMBING FIXTURES, TOILET PARTITIONS, ACCESSORIES, ETC. TO BE REMOVED. REFER TO PLUMBING PLANS.
6. REMOVE ENTIRE CEILING THIS AREA, INCLUDING ALL MECHANICAL AND ELECTRICAL. EXISTING TONGUE AND GROOVE SHEATHING & GLULAM BEAMS TO REMAIN.
7. TYPICALLY INDICATES PROPOSED STEEL STUD PARTITION WALL. REFER TO WALL TYPES LEGEND.
8. TYPICALLY INDICATES EXISTING WALL TO REMAIN. PROVIDE NEW GPDW, TEXTURE AND PAINT.
9. REMOVE GPDW THIS SIDE OF WALL ONLY.
10. REMOVE FLOOR DRAIN.
11. INSTALL NEW DOOR AND HOLLOW METAL FRAME, REFER TO DOOR SCHEDULE, TYPICAL.
12. PROVIDE 1-1/2" DIAMETER GRAB BARS PER A.D.A. REQUIREMENTS, 42" LONG AT SIDE OF WATER CLOSET / 36" LONG AT REAR OF WATER CLOSET, PROVIDE SOLID BLOCKING. IN AMBULATORY STALL, PROVIDE 42" GRAB BARS EACH SIDE.
13. PROVIDE WALL HUNG WATER CLOSET, REFER TO PLUMBING DRAWINGS.
14. PROVIDE SELF-RIMMING LAVATORY IN SOLID SURFACE COUNTER TOP. REFER TO PLUMBING DRAWINGS.
15. PROVIDE ACCESSIBILITY SIGNAGE MOUNTED PER A.D.A. REQUIREMENTS.
16. PROVIDE HEAD RAIL-BRACED METAL TOILET PARTITION.
17. PROVIDE WALL HUNG URINAL, REFER TO PLUMBING PLANS.
18. FLOOR DRAIN. REFER TO PLUMBING PLANS.
19. PROVIDE 2"X2" FLOOR TO CEILING URINAL SCREEN POST.
20. PROVIDE ADA COMPLIANT BABY CHANGING TABLE, INSTALL PER MANUFACTURER INSTRUCTIONS, PROVIDE SOLID BLOCKING.
21. EXISTING 12x12 WOOD COLUMN.
22. EXISTING CONCRETE SIDEWALK.
23. SAWCUT AND REMOVE CONCRETE FLOOR TO ACCOMMODATE PLUMBING WASTE LINE. REFER TO PLUMBING PLANS.
24. SAWCUT AND REMOVE CONCRETE SIDEWALK TO ACCOMMODATE PLUMBING WASTE LINE. SAWCUT AT EXISTING CONTROL JOINTS. REFER TO PLUMBING PLANS.
25. REPLACE PORTION OF CONCRETE SIDEWALK BETWEEN CONTROL JOINTS TO MATCH EXISTING. CONCRETE SHALL BE 5" THICK WITH #4 BARS @ 2'-0" O.C. EACH WAY, OVER 4" COMPACTED A.B.C. , DOWEL BARS INTO EXISTING SIDEWALK. PROVIDE 8" TURNDOWN.
26. EXISTING ELECTRIC PANEL TO REMAIN. REFER TO ELECTRICAL PLANS.
27. PLUMBING SHUT OFF VALVES. REFER TO PLUMBING PLANS. PROVIDE NEW ACCESS PANEL AS REQUIRED.
28. EXISTING BELOW GRADE WATER LINE. REFER TO PLUMBING PLANS.
29. WALK-OFF MAT. PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.

Hardware Schedule

Heading # HW-01				
1 SGL	Door 101A	Exterior from Women's 101	LHR	90 Deg
1 SGL	Door 102A	Exterior from Men's 102	LHR	90 Deg
Single Opening	3-0 x 7-0 x 1-3/4 HMD x HMF			
Each Door to Receive:				
3 EA.	Hinge	FBB168 4-1/2 x 4-1/2 NRP	652	Stanley
1 EA.	Classroom D.B.	83T 7S STK	626	Best
1 EA.	Core	By Owner	626	Best
1 EA.	Closer	4040XP S Cush	689	LCN
1 EA.	Push Plate	8200 4" x 16"	630	Ives
1 EA.	Pull Plate	8302G - 8" 4" x 16"	630	Ives
1 EA.	Kick Plate	8400 10" x 34"	630	Ives
1 EA.	Weather-strip	303AS 36" x 84"	Alum	Pemko
1 EA.	Door Sweep	315CN – 36"	Alum	Pemko
1 EA.	Threshold	171A – 36" MS/ES	Alum	Pemko



A1 Door & Frame Type

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

Door Schedule

NO.	ROOM NAME	SIZE	TYPE	DOOR MATERIAL	DOOR FINISH	FRAME MATERIAL	FRAME FINISH	HARDWARE TYPE
101A	WOMEN	3'-0"x6'-8"	A	HM	PAINT	HM	PAINT	01
102A	MEN	3'-0"x6'-8"	A	HM	PAINT	HM	PAINT	01

NOTES:

1. ALL EXIT DOORS & HARDWARE SHALL COMPLY WITH THE 2012 I.B.C.
2. DOOR THRESHOLDS SHALL HAVE A MAX HEIGHT OF 1/2" FOR H.C. ACCESSIBILITY. THRESHOLD SHALL HAVE A MAXIMUM RISE OF 1/4" AND 1/2" RISE WHEN BEVELED WITH MAXIMUM 1:2 SLOPE.
3. ALL GLAZING IN DOORS SHALL BE SAFETY GLAZING.
4. ALL INTERIOR DOORS SHALL BE OPERABLE FOR EMERGENCY EXITING PURPOSES WITHOUT THE USE OF A KEY, SPECIAL KNOWLEDGE NOR EFFORT.
5. ALL GLAZING WITHIN 24" OF OPENINGS SHALL BE SAFETY GLASS.
6. IF A DOOR HAS A CLOSER, THEN THE SWEEP PERIOD OF THE CLOSER SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 70 DEGREES, THE DOOR WILL TAKE AT LEAST 3 SECONDS TO MOVE TO A POINT 3" FROM THE LATCH, MEASURED TO THE LEADING EDGE OF THE DOOR.
7. DOOR HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERATING DEVICES ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING, OR TWISTING OF THE WRIST TO OPERATE. HARDWARE REQUIRED FOR DOOR PASSAGE SHALL BE MOUNTED NO HIGHER THAN 48" ABOVE FINISH FLOOR.
8. DOOR OPENING FORCE SHALL BE: 5lbf MAX INTERIOR HINGED, SLIDING OR FOLDING DOORS; FIRE DOORS SHALL HAVE THE MINIMUM OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY.

Wall Types Legend

EXISTING: 8" WIDE CMU WALL.

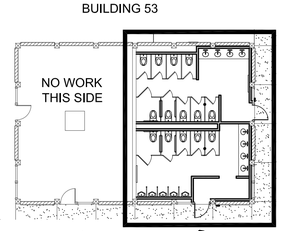
EXISTING: WOOD FRAME WALL

INTERIOR PARTITION WALL CONSTRUCTION: EXISTING CMU WALL (OR FRAMED WALL) WITH 3-5/8" 25 GAUGE METAL STUDS AT 2'-0" O.C. WITH 5/8" GPDW ON EXPOSED SIDE. PROVIDE R-11 UNFACED BATT INSULATION. ALIGN EDGE OF STUD FLUSH WITH EXISTING WOOD COLUMNS UNLESS DIMENSIONED OTHERWISE. **NOTE!!** WHERE PORCELAIN TILE OCCURS, 5/8" DENSHIELD SHEATHING SHALL BE INSTALLED.

INTERIOR PARTITION WALL CONSTRUCTION: 5/8" GPDW ON EXPOSED SIDES OF 3-5/8" 25 GAUGE METAL STUDS AT 2'-0" O.C. PROVIDE R-11 UNFACED BATT INSULATION.

Key Plan

Scale: Not to Scale



REVISIONS	BY

REGISTERED ARCHITECT
CERTIFICATE NO.
25646
W. ALAN KENSON
Date Signed 07/10/15
ARIZONA
EXPIRES: 6/30/18

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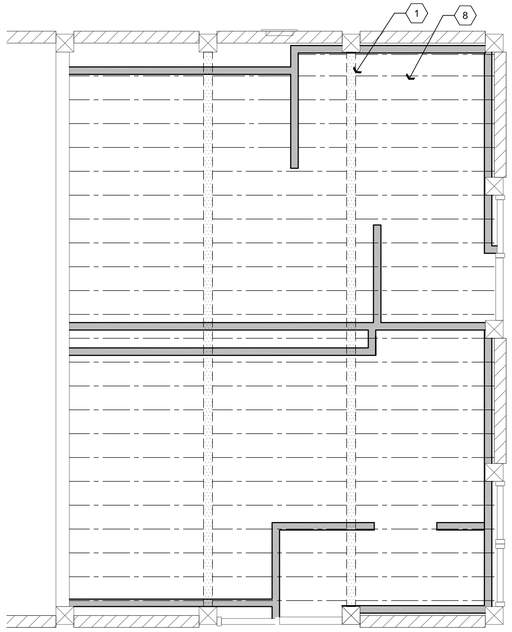
ARCHITECTURE & PLANNING

DRAWING: DEMOLITION PLAN, REFERENCE PLAN, DIMENSION PLAN AND DOOR SCHEDULE

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

DRAWN BY: L.O.
CHECKED BY: W.A.K.
DATE: July 10th, 2015
SCALE: AS NOTED
JOB NO.: 670
SHEET: **A1.0**

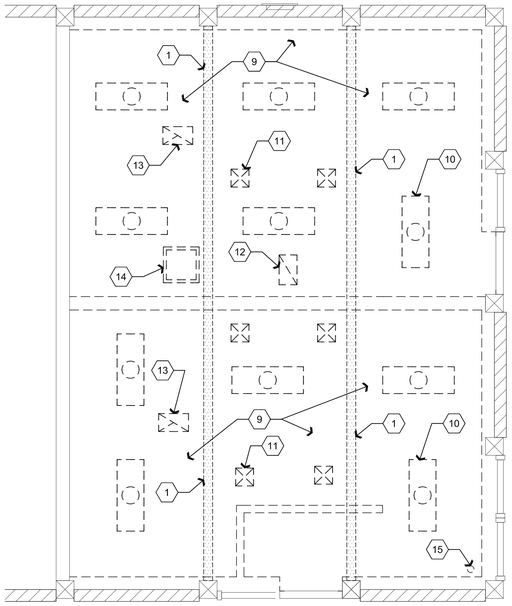
Jul 13, 2015 - 12:11pm



A2 Ceiling Framing Plan

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

Plan North



B2 Demolition Reflected Ceiling Plan

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

Plan North

Descriptive Keynotes

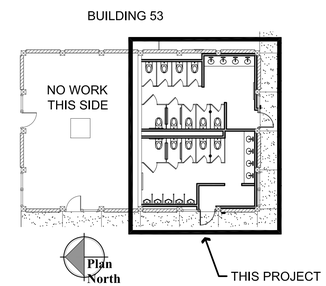
1. EXISTING GLULAM BEAMS @ 8'-0" A.F.F. TO REMAIN.
2. LIGHT FIXTURE(S) SHOWN FOR QUANTITY AND LOCATION ONLY. REFER TO ELECTRICAL PLANS.
3. PROVIDE 5/8" GPDW CEILING.
4. HVAC SUPPLY DIFFUSER, REFER TO MECHANICAL PLANS, TYPICAL.
5. NOT USED.
6. HVAC EXHAUST FAN, REFER TO MECHANICAL PLANS, TYPICAL.
7. NOT USED.
8. 2x4 FRAMING @ 16" O.C.
9. REMOVE ENTIRE GPDW CEILING.
10. REMOVE LIGHT FIXTURE AND ASSOCIATED WIRING, TYPICAL.
11. REMOVE HVAC SUPPLY DIFFUSER AND ASSOCIATED DUCTWORK, TYPICAL
12. REMOVE HVAC RETURN AND ASSOCIATED DUCTWORK, TYPICAL.
13. REMOVE EXHAUST FAN AND ASSOCIATED DUCTWORK, TYPICAL.
14. REMOVE ATTIC SCUTTLE.
15. REMOVE OCCUPANCY SENSOR.
16. INSTALL ROOF CURB AT NEW MECHANICAL UNIT. REFER TO MECHANICAL PLANS. REPAIR ROOF AS REQUIRED.
17. EXISTING HVAC UNIT TO REMAIN.
18. INSTALL NEW EXHAUST FAN AND ROOF CURB. REFER TO MECHANICAL PLANS. REPAIR ROOF AS REQUIRED.

Legend

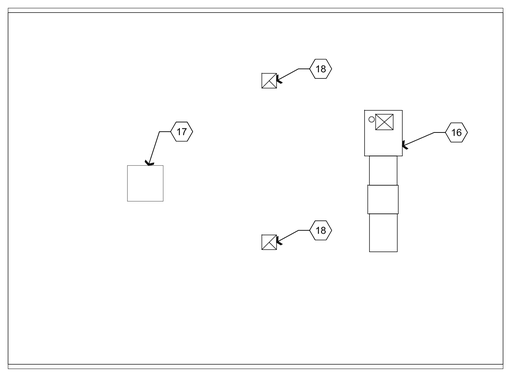
- 18"x4' SURFACE MOUNTED LIGHT FIXTURE TO BE REMOVED.
- HVAC SUPPLY DIFFUSER TO BE REMOVED
- HVAC RETURN TO BE REMOVED
- EXHAUST FAN TO BE REMOVED
- ATTIC SCUTTLE TO BE REMOVED
- CAN LIGHT
- SUPPLY DIFFUSER
- EXHAUST FAN

Key Plan

Scale: Not to Scale



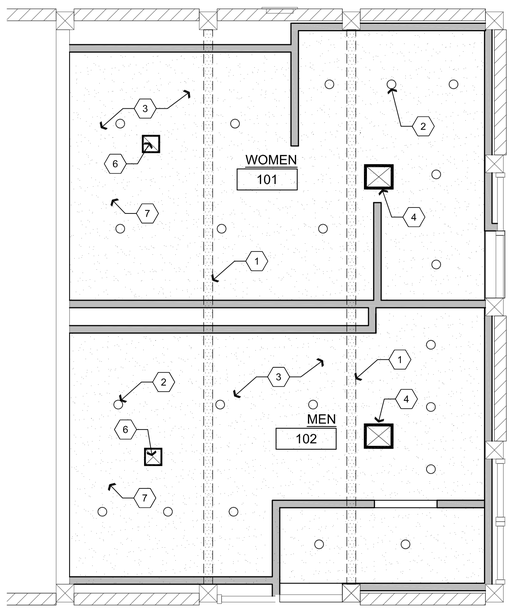
NOTE:
ALL ROOF PENETRATIONS WILL BE MADE BY A CERTIFIED TREMCO ROOF INSTALLER. NO OTHER CONTRACTOR OR ROOFING SYSTEM IS ACCEPTABLE. PROVIDE TREMCO APPROVED ROOF JACK TO ROOFING CONTRACTOR FOR INSTALLATION.
CONTACT TREMCO ROOFING REPRESENTATIVE:
WALT HITCHCOCK
CELL: 480-694-3433
EMAIL: WALT.HITCHCOCK@ME.COM



A1 Roof Plan

Scale: 1/8"=1'-0"

Plan North



B1 Reflected Ceiling Plan

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

Plan North

REVISIONS	BY

REGISTERED ARCHITECT
CERTIFICATE NO.
25646
W. ALAN
KENSON
Date Signed 07/10/15
ARIZONA
EXPIRES: 6/30/18

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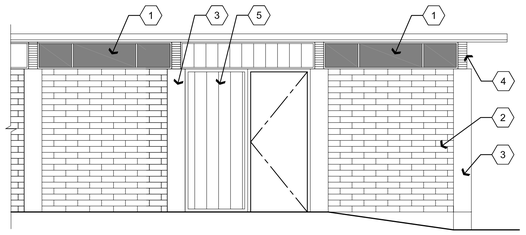
ARCHITECTURE & PLANNING

DRAWING: DEMOLITION & PROPOSED REFLECTED CEILING PLAN AND CEILING FRAMING PLAN

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

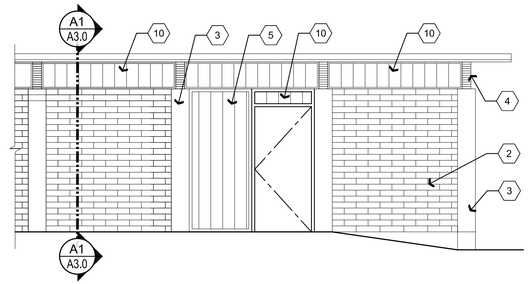
DRAWN BY	L.O.
CHECKED BY	W.A.K.
DATE	July 10th, 2015
SCALE	AS NOTED
JOB NO.	670
SHEET	A2.0

Jul 13, 2015 - 10:58am



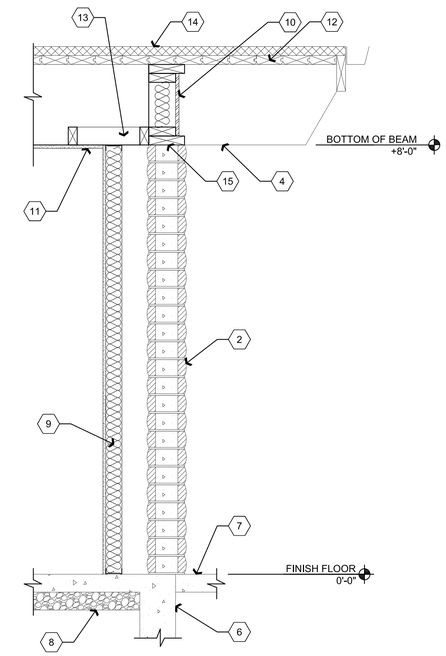
A4 Existing Partial West Elevation

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



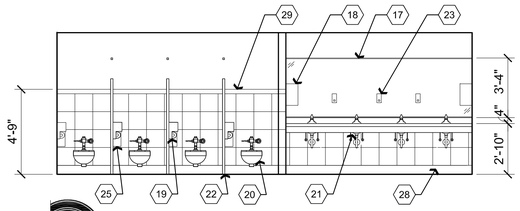
A3 Proposed Partial West Elevation

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



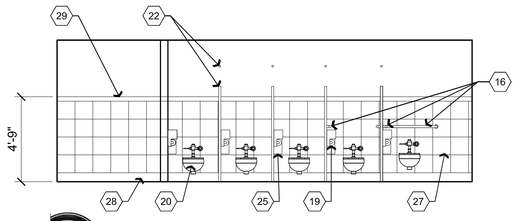
A1 Wall Section

Scale: 3/4"=1'-0"



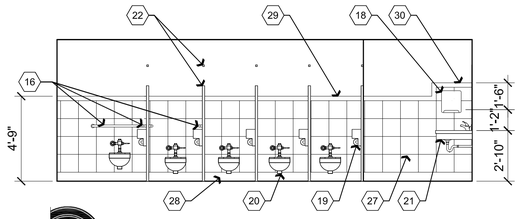
B5 Women's East Elevation - 101

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



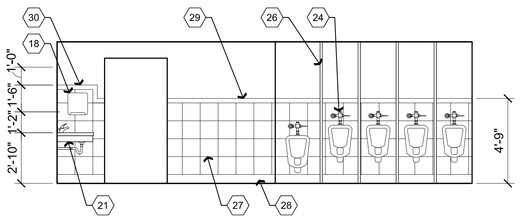
B4 Women's West Elevation - 101

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



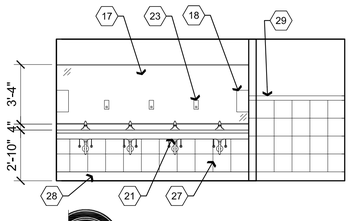
B3 Men's East Elevation - 102

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



B2 Men's West Elevation - 102

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



B1 Men's South Elevation - 102

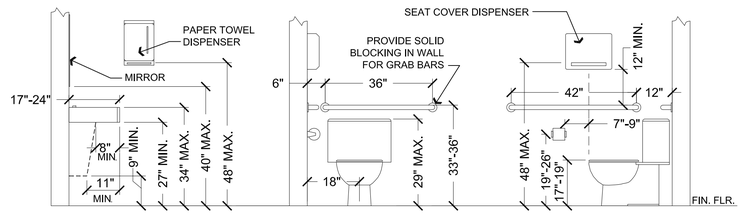
Scale: 1/4"=1'-0"

Descriptive Keynotes

1. REMOVE EXISTING ALUMINUM FRAME CLERESTORY WINDOWS, TYPICAL.
2. EXISTING 8"X4"X16" SLUMP BLOCK INFILL WALL.
3. EXISTING 12"X12" STRUCTURAL WOOD COLUMN.
4. EXISTING 6"X18" GLU-LAM BEAMS.
5. EXISTING WOOD FRAMED INFILL WALL, WITH T-111 SIDING.
6. EXISTING FOUNDATION.
7. EXISTING EXTERIOR CONCRETE SLAB.
8. EXISTING COMPACTED ABC.
9. STEEL STUD WALL, REFER TO WALL TYPES PLAN.
10. INFILL OPENING WITH 2X8 WOOD STUD OUTER FRAME, AND 2X6 INNER FRAME WITH STUDS @ 16" O.C., PROVIDE 5/8" T-111 INSET SHEATHING TO MATCH EXISTING, PROVIDE SEALANT AT ALL EDGES WHERE SHEATHING MEETS OUTER FRAME, PAINT SHEATHING TO MATCH EXISTING AT EXTERIOR. PROVIDE R-19 FRICTION FIT BATT INSULATION AT EACH STUD CAVITY. ON INTERIOR SIDE, PROVIDE 5/8" GPDW, UP TO T&G WOOD ROOF DECK. SECURE WOOD INFILL FRAME WITH SHOT PIN ANCHORS TO MASONRY, AND NAILS TO WOOD MEMBERS.
11. PROVIDE 5/8" GPDW CEILING, REFER TO REFLECTED CEILING PLAN.
12. EXISTING 2x6 TONGUE AND GROOVE WOOD DECK.
13. PROVIDE 2x4 WOODEN BLOCKING @ 4'-0" O.C.
14. EXISTING ROOFING.
15. CUT NAIL / EXPANSION BOLT TO CMU.
16. PROVIDE 1-1/2" DIAMETER GRAB BARS PER A.D.A. REQUIREMENTS, 42" LONG AT SIDE OF WATER CLOSET / 36" LONG AT REAR OF WATER CLOSET. PROVIDE SOLID BLOCKING IN AMBULATORY STALL PROVIDE 42" GRAB BARS EACH SIDE.
17. PROVIDE 1/4" PLATE MIRROR FULL LENGTH OF WALL ABOVE VANITY TOP.
18. PAPER TOWEL DISPENSER PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.
19. TOILET PAPER HOLDER PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.
20. PROVIDE WALL HUNG WATER CLOSET, REFER TO PLUMBING DRAWINGS.
21. PROVIDE SELF-RIMMING LAVATORY IN SOLID SURFACE COUNTER TOP, WITH 4" BACK SPLASH. INSULATE PIPES, REFER TO PLUMBING DRAWINGS. SS-1
22. PROVIDE HEAD RAIL-BRACED TOILET PARTITION. TC-1
23. SOAP DISPENSER PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.
24. PROVIDE WALL HUNG URINAL, REFER TO PLUMBING PLANS.
25. SANITARY NAPKIN DISPOSAL PROVIDED BY OWNER, INSTALLED BY CONTRACTOR.
26. PROVIDE 2"X2" FLOOR TO CEILING URINAL SCREEN POST.
27. PROVIDE 12" X 12" THINSET WALL TILE. CT-4
28. PROVIDE 6" X 12" THINSET COVE BASE TILE. CT-2 CT-5
29. PROVIDE 3" THINSET BULLNOSE TILE. CT-3
30. MODIFY TILE AT PAPER TOWEL DISPENSER LOCATION, SO THE ENTIRE PAPER TOWEL DISPENSER IS FLUSH WITH THE TILE. HEIGHT OF TILE FROM THE FLOOR AND DISTANCE OF SURROUNDING TILE TO BE CONSISTENT WITH ALL 4 PAPER TOWEL DISPENSERS.

Toilet Accessory Schedule

FIXTURE	MANUFACTURER	MODEL	COLOR	CONTACT
BABY CHANGING STATION	KOALA KARE	KB108-12	GREY GRANITE	WWW.KOALABEAR.COM
HAND SOAP DISPENSER				PROVIDED BY OWNER
PAPER TOWEL DISPENSER				PROVIDED BY OWNER
TOILET PAPER DISPENSER				PROVIDED BY OWNER
TOILET SEAT COVER DISPENSER				PROVIDED BY OWNER
SANITARY NAPKIN RECEPTACLE				PROVIDED BY OWNER
GRAB BARS 36" & 42"	GAMCO	150Sx36, 150Sx42		WWW.GAMCOUSA.COM



C1 Typical Fixture Mounting Heights

Scale: 1/2"=1'-0"

REVISIONS	BY

REGISTERED ARCHITECT
CERTIFICATE NO.
25646
W. ALAN
KENSON
Date Signed
07/10/15
ARIZONA
EXPIRES: 6/30/18

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email: waka@cableone.net
www.kenson-associates.com
ARCHITECTURE & PLANNING

DRAWING: INTERIOR AND EXTERIOR ELEVATIONS, DOOR SCHEDULE AND TOILET ACCESSORY SCHEDULE

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

DRAWN BY: L.O.
CHECKED BY: W.A.K.
DATE: July 10th, 2015
SCALE: AS NOTED
JOB NO.: 670
SHEET: **A3.0**

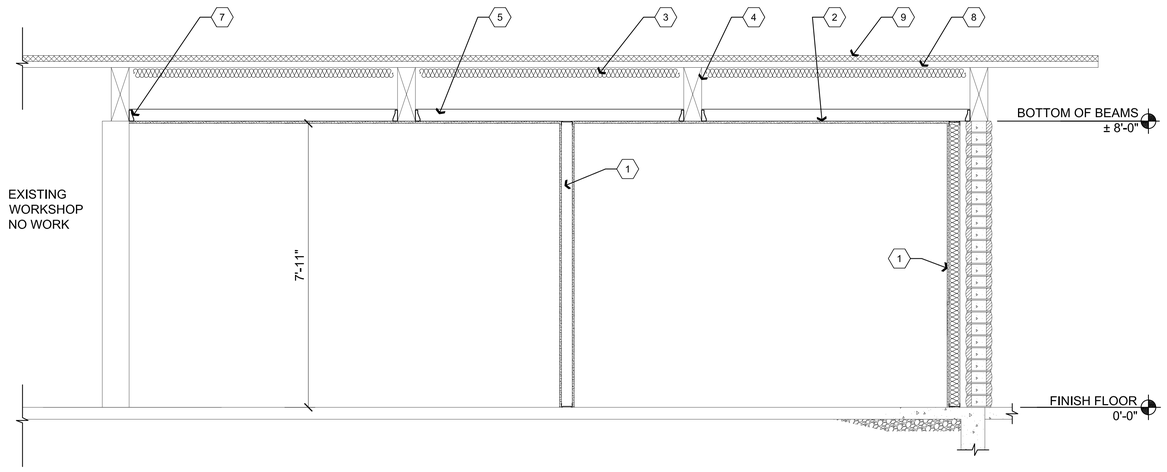
Jul 13, 2015 - 12:21pm

Materials and Finish Schedule (interior and exterior)

CODE	MATERIAL	LOCATION	MANUFACTURER	SPECIFICATION
CT-1	CERAMIC TILE	RESTROOM FLOORS	DALTILE	12x12, CITY VIEW, URBAN EVENING CY08(2)
CT-2	CERAMIC TILE COVE BASE	RESTROOM WALLS	DALTILE	6x12 COVE BASE, CITY VIEW, SEASIDE BOARDWALK CY06 (1)
CT-3	CERAMIC TILE BULLNOSE	RESTROOM WALLS	DALTILE	3x12, BULLNOSE, CITY VIEW, SEASIDE BOARDWALK CY06 (1)
CT-4	CERAMIC WALL TILE	RESTROOM WALLS	DALTILE	12x12, CITY VIEW, SEASIDE BOARDWALK CY06 (1)
CT-5	CERAMIC WALL TILE	RESTROOM WALLS	DALTILE	1x6, COVE BASE OUTCORNER, CITY VIEW, SEASIDE BOARDWALK CY06 (1)
GR-1	GROUT	WALLS AND FLOORS	CUSTOM	PEWTER #19
PT-1	PAINT	INTERIOR CEILINGS & WALLS ABOVE TILE	SHERWIN WILLIAMS	PACER WHITE SW6098
PT-2	PAINT	EXTERIOR NEW SIDING	SHERWIN WILLIAMS	SANDS OF TIME SW 6101 (MATCH EXISTING)
PT-3	PAINT	EXTERIOR TRIM	SHERWIN WILLIAMS	PORTABELLO SW6102 (MATCH EXISTING)
PT-4	PAINT	EXTERIOR OF EXTERIOR DOOR & FRAME	SHERWIN WILLIAMS	RAINSTORM SW6230
PT-5	PAINT	INTERIOR OF EXTERIOR DOOR & FRAME	SHERWIN WILLIAMS	PV 6153, ALL SURFACE WATER BASE ENAMEL, LOW SHEEN
SS-1	SOLID SURFACE	RESTROOM COUNTERTOPS	LG SURFACES	HI-MACS SEA OAT QUARTZ 638
TC-1	POWDER COATED METAL TOILET PARTITIONS	RESTROOMS	HADRIAN	504 LINEN, HEADRAIL BRACED
WM-1	WALK-OFF MAT	RESTROOM ENTRY	TANDUS	BIRCH BARK NRG714 - PROVIDED BY OWNER

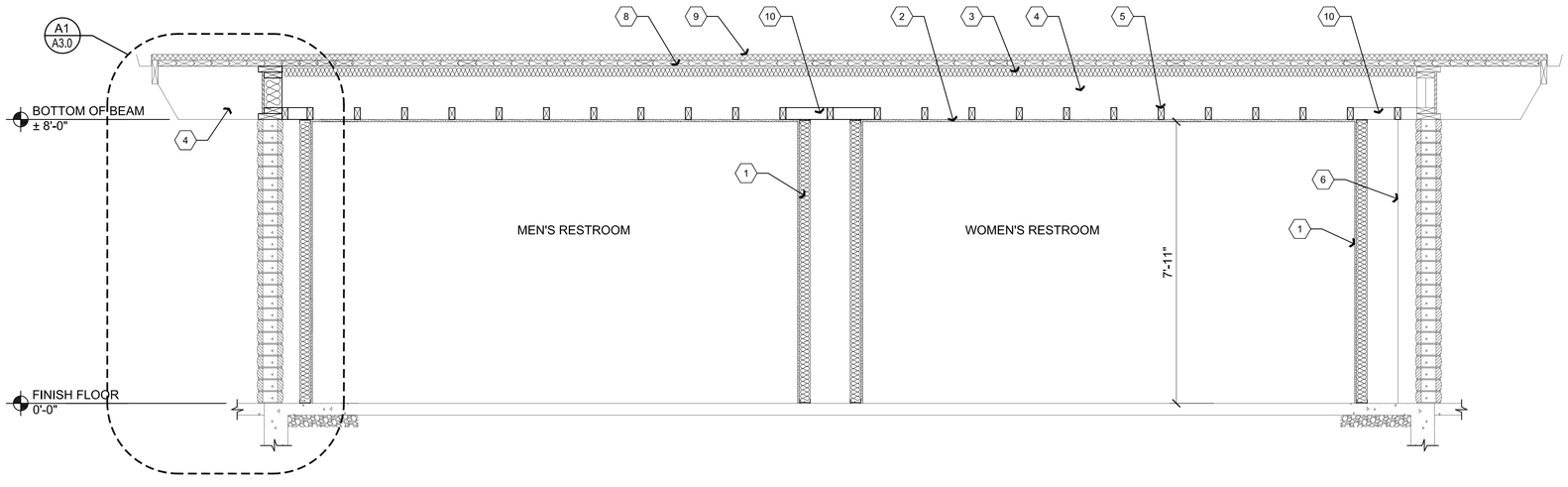
Descriptive Keynotes

1. TYPICALLY INDICATES INTERIOR PARTITION WALL, REFER TO WALL TYPES LEGEND AND REFERENCE FLOOR PLAN.
2. PROVIDE 5/8" GPDW CEILING.
3. PROVIDE R-19 UNFACED BATT INSULATION, WIRED IN PLACE.
4. EXISTING ROOF BEAM.
5. 2x4 FRAMING AT 16" O.C.
6. EXISTING WOOD COLUMN BEYOND.
7. SIMPSON U24 JOIST HANGAR, TYPICAL.
8. EXISTING 2X6 TONGUE AND GROOVE WOOD DECK.
9. EXISTING ROOFING.
10. 2x4 BLOCKING AS REQUIRED.



B2 Building Section

SCALE: 1/2" = 1'-0"



B1 Building Section

SCALE: 1/2" = 1'-0"

Jul 13, 2015 - 2:36pm

REVISIONS	BY

REGISTERED ARCHITECT
CERTIFICATE NO.
25646
W. ALAN
KENSON
Date Signed 07/10/15
ARIZONA
EXPIRES: 6/30/18

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ARCHITECTURE & PLANNING

DRAWING: BUILDING SECTIONS AND MATERIALS & FINISH SCHEDULE

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS REINOVATIONS
Prescott, AZ

DRAWN BY	L.O.
CHECKED BY	W.A.K.
DATE	July 10th, 2015
SCALE	AS NOTED
JOB NO.	670
SHEET	A4.0

00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

00 70 00 - GENERAL CONDITIONS

General Conditions of the Contract for Construction, AIA Document A201, 2007 Edition, is made a part of the Construction Documents by reference. A copy of the referenced document is available for inspection at the office of the Architect.

01 - GENERAL REQUIREMENTS

01 30 00 - ADMINISTRATIVE REQUIREMENTS

Shop Drawings Two (2) paper copies of Shop Drawings and/or Catalog Cut Sheets and one (1) electronic file are to be submitted to the Architect for review and approval. The Architect will review the shop drawings and affix a stamp to the electronic file and paper copy, indicating the findings of the review and return to the Contractor. The Contractor shall correct and resubmit as necessary. Required for all products and samples and materials to be included in the project.

Meetings Contractor shall hold construction progress meetings at jobsite every week. Representatives from owner, architect, contractor, and any relative subcontractor or suppliers shall attend. Contractor shall take minutes of the meetings and distribute to all attendees.

Portable Toilet Facility Contractor to maintain portable toilet facility throughout construction period.

Dumpster Contractor to provide dumpster throughout construction period.

Samples Three (3) samples of each color or style of the products to be submitted to the Architect.

01 50 00 - TEMPORARY FACILITIES AND CONTROLS

Designated Areas Owner shall provide designated areas for the contractor's employee parking, material storage and staging. Contractor shall control his employees, sub-contractors and material suppliers from parking in un-designated areas.

Protection Contractor shall take All necessary precautionary measures to protect their work and ensure the safety of workmen, public and property. Neither the Owner nor Architect shall have any responsibility or control of construction means, methods, techniques, sequences or procedures affecting job-site safety, or for safety precautions and programs. contractor shall legally defend and hold harmless the Owner and Architect from all such claims.

Contractor's Responsibility The Contractor shall supervise and direct the work, and be solely responsible for and have control over all methods, techniques and procedures necessary for the proper execution of the work. Where the work of this agreement affects owner's utilities, fire alarm, fire suppression or controls systems, the contractor shall give the owner a minimum of 24 hours advance notice.

The Contractor shall be responsible to the owner for the acts and omissions of the Contractor's employees, agents, sub-contractors, and their agents, employees, and other persons performing portions of the work under a contract with the Contractor to the fullest extent permitted by law.

The Contractor shall indemnify and hold harmless the Owner, the Owner's consultants, agents and employees of any of them from and against claims, damages, losses and expenses including but not limited to attorney's fees arising out of or resulting from performance of the work, provided that such claim damages, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury or destruction of tangible property other than the work itself, including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the contractor, a sub-contractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable regardless of whether or not such damage, claim, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this paragraph.

Material The Contractor warrants that unless otherwise specified, all materials and equipment shall be new, free from defects, suitable for the intended purpose, and in conformance with laws in effect on the date of this agreement.

01 70 00 - EXECUTION REQUIREMENTS

General Contractor shall field verify all existing conditions and lay out all of the work prior to starting construction on any part of the work. As a minimum contractor shall verify:
- all dimensions, both horizontal and vertical
- Utility locations, buried and overhead
- existing conditions affecting this project

Conflicts If Contractor discovers an existing condition which differs from that shown (or is not shown), Contractor shall immediately notify the Architect.

Cutting and Demolition In all cases, exercise extreme care in cutting operations and perform such operations under adequate supervision by competent mechanics skilled in the applicable trade. Openings shall be neatly cut and shall be kept as small as possible to avoid unnecessary damage. careless and/or avoidable cutting damage, etc. will not be tolerated and the contractor will be held responsible for such avoidable or willful damage.

Patching and Refinishing All replacing, patching and repairing of materials and surfaces cut or damaged in the execution of the work shall be performed by experienced mechanics of the specific trades involved. Such repairing and/or patching shall be done with the applicable materials in a manner that all surfaces so replaced, etc. will, upon completion of the work, match the surrounding similar surfaces.

Locations Walls - paint all affected walls, interior and exterior from corner to corner. (e.g. if you install a door in an existing frame, you need only to paint the door and frame, but if you install a door and frame, paint the entire wall to match existing)
Gypsum wall board ceilings - Paint the entire ceiling of the room affected. (e.g. if anything is installed in/on/through the ceiling of a room, paint the ceiling of that room)
Roofs - Replace portion of roof covering as required to flash new assembly. If roof warranty is still in effect, Contractor issuing warranty shall perform the required work. All patching and refinishing will be performed in a manner such that at the completion of the work, it shall not be obvious where an item was removed from, or added to.

Disposal Remove all materials noted on the drawings and all miscellaneous materials which will be rendered useless with removal of the item noted. Unless specifically noted otherwise, materials shall become the property of the contractor and shall be removed from the site in a legal and safe manner. Patch and repair all adjacent surfaces such that at the completion of the work, it shall not be obvious where an item was removed from or added to. Final appearance shall be totally acceptable to the owner.
Contractor shall provide and maintain his own trash receptacles, unless specifically directed otherwise. All surplus materials become the property of the contractor. Remove all trash, rubbish and surplus materials from the site and dispose of in a legal and safe manner.

As-Builts Contractor shall maintain a clean set of drawings at the job site that is specifically set aside for recording:
- all differences between the work as shown on the drawings and the work installed.
- All work added or deleted during the course of construction
- Exact measurements of all buried and/or concealed work (e.g. conduit below slab, conduit and data cable below raised platforms, conduit in walls etc.)

All recordings shall be neat and legible. Stamp this set of drawings 'As-Built drawings' and list as a minimum, the name, address and telephone number of the General Contractor and all major sub-contractors. (e.g. electrical, HVAC, etc.) At the completion of the project as prerequisite for final payment, Contractor shall turn these as-builts over to the owner.

Final Cleaning After the construction of each phase and before occupancy, thoroughly clean the space by dusting the sills, washing windows, vacuuming the carpet and replace all HVAC filters. Clean site areas of any refuse created in the scope of work.

03 - CONCRETE

03 30 00 CAST-IN-PLACE-CONCRETE

Mix Design Concrete Mix # 160X109 in Winter and #160X149 in Summer as produced by Hanson products.

Curing compound provided on all slabs per ACI and ASTM specifications.

06 - WOOD, PLASTICS, COMPOSITES

06 40 00 - ARCHITECTURAL WOODWORK

General The installation of all architectural woodwork and casework shall comply with premium grade per AWI specifications. This section also includes natural stone, engineered stone, recycled glass and all materials associated with millwork.

Custom Casework Restroom counter tops for lavatories will be composite material open on bottom with self-rimming sinks. Sheet mirror mounted full length of wall above top. Top manufacturer to cut lavatory openings in top to dimensions supplied by the plumber.

Refer to materials & finish schedule for finishes.

08 - OPENINGS

08 11 00 - METAL DOORS AND FRAMES

General Provide metal doors and frames as shown on the drawings per steel door institute standards.

08 70 00 - HARDWARE

General Refer to hardware schedule.

09 - FINISHES

09 29 00 - GYPSUM BOARD

General Installation and application of materials to be in accordance with the latest printed instructions of the U.S. gypsum company or approved equal. After finishing, make joints invisible. No gaps or voids between gypsum board units or between drywall and adjacent work unless otherwise detailed. Not more than 1/8" in 10'-0" deviation from true plane, plumb and level in finished work.

Gypsum Board ASTM C 36; regular types except where special types are required. Minimum 5/8" thick. Texture: Light Hawk and Trowel.

DensShield 5/8" thick DensShield - Install In accordance with ASTM C840, manufacturer's recommendations and TCA Handbook for Ceramic Tile Installation.

09 30 00 - TILE

General Install ceramic tile as indicated on the drawings and in strict accordance with manufacturer's recommended instructions.

09 90 00 - PAINTING

General Painting products shall be specified from Sherwin Williams.
Restrooms, doors, and door trim shall be Semi-gloss.
All wet areas to have semi-gloss mildew resistant paint.

Scope of Work Items included, but not limited to interior conditions:
1. Refer to materials and finish schedule.
2. New drywall partitions and ceilings.
3. Hollow metal doors and hm frames.
4. Access doors and panels, electric panels, exposed cable trays, miscellaneous trim and surfaces not prefinished or excluded specifically.

Number of Coats Number of coats listed below are minimum number. Apply as many coats as necessary to obtain full coverage and uniform appearance.

Paint Schedule
Interior drywall — 1 coat latex wall primer, 2 coats eggshell
Gypsum ceilings — 1 coat latex wall primer, 2 coats flat
Hollow metal doors, finish - semi gloss
Frames and other ferrous materials — 1 coat ferrous metal primer, 2nd -3rd coats acrylic eggshell enamel
Refer to materials and finish schedule for color and location.

Jul 13, 2015 - 10:59am

REVISIONS	BY

REGISTERED ARCHITECT CERTIFICATE NO. 25646 W. ALAN KENSON Date Signed 07/10/15 ARIZONA EXPIRES: 6/30/18

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F 928-443-5815 Prescott, AZ 86304
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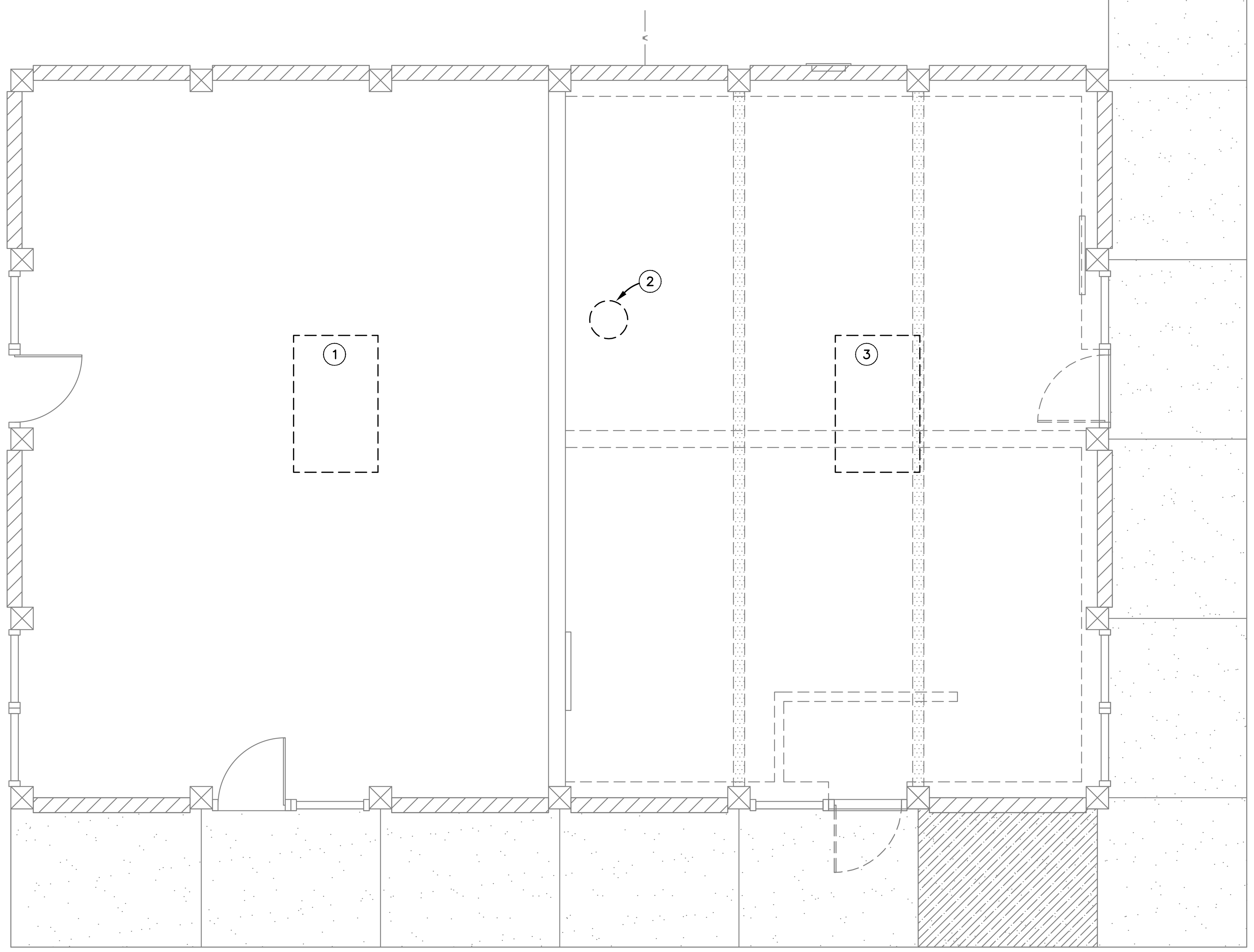
www.kenson-associates.com
ARCHITECTURE & PLANNING

DRAWING: SPECIFICATIONS

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

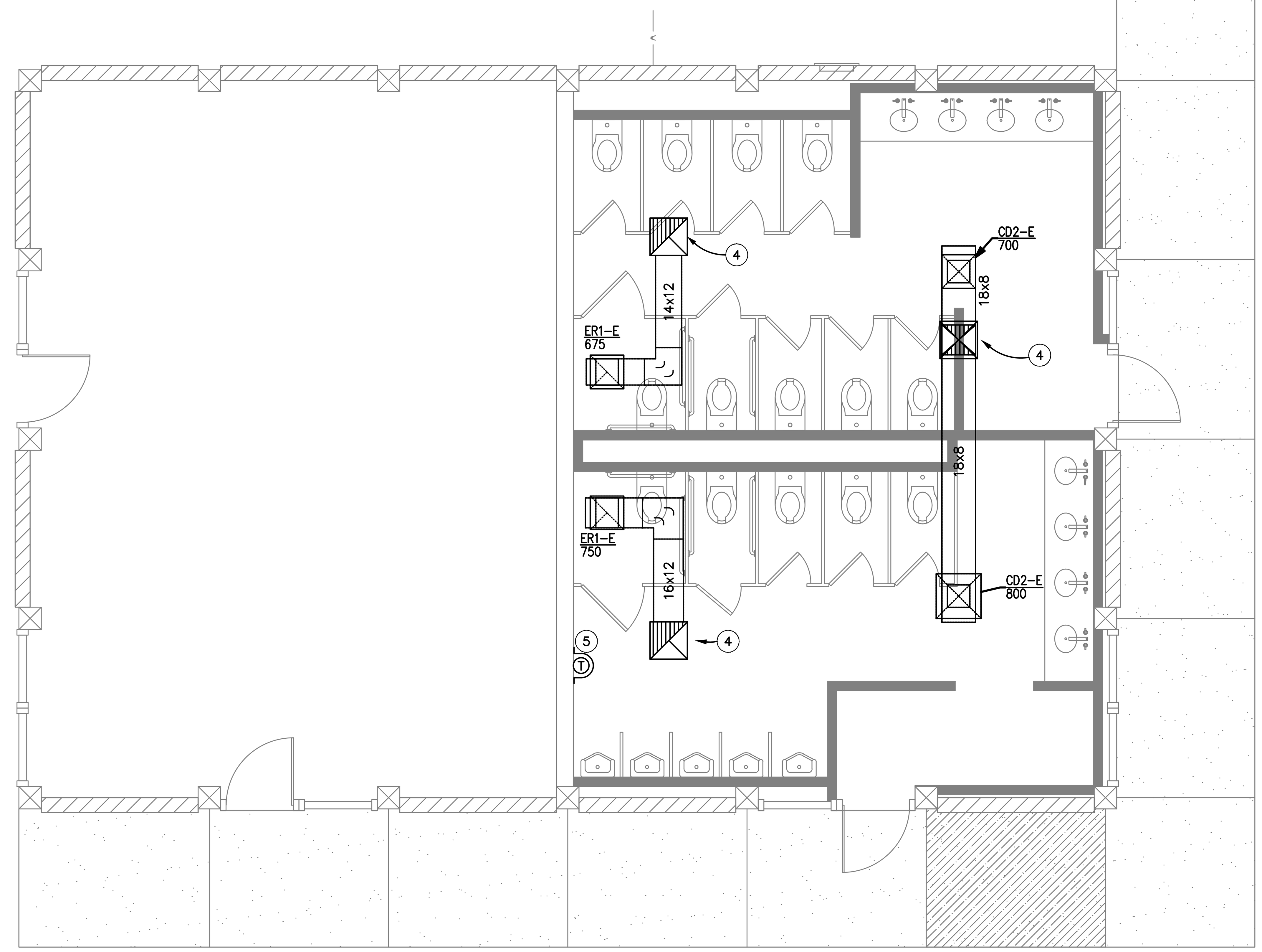
DRAWN BY	L.O.
CHECKED BY	W.A.K.
DATE	July 10th, 2015
SCALE	AS NOTED
JOB NO.	670
SHEET	A5.0



M2 Mechanical Demo Plan

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

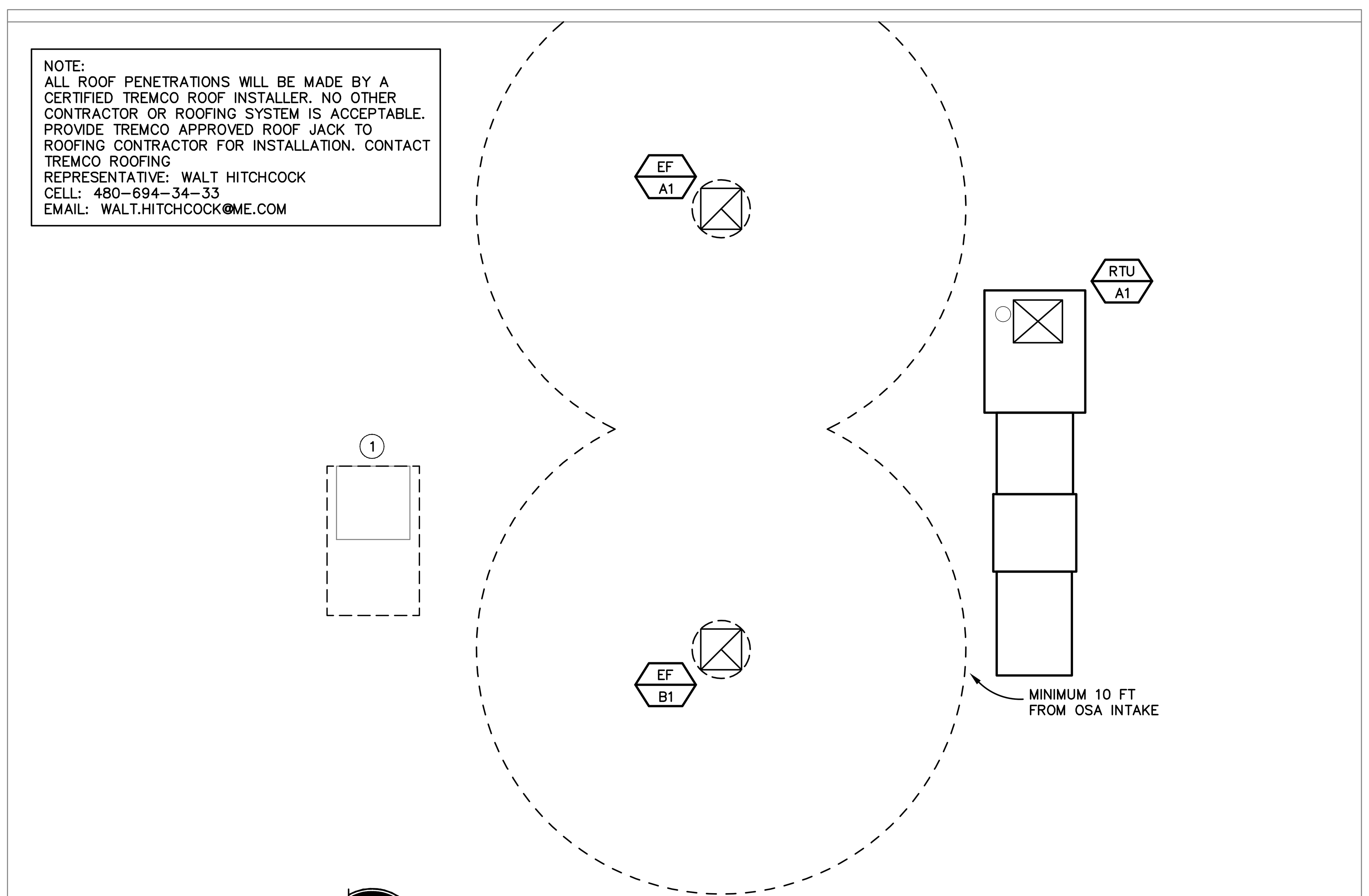
Plan North



M1 Mechanical Floor Plan

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

Plan North


NOTE:
ALL ROOF PENETRATIONS WILL BE MADE BY A CERTIFIED TREMCO ROOF INSTALLER. NO OTHER CONTRACTOR OR ROOFING SYSTEM IS ACCEPTABLE. PROVIDE TREMCO APPROVED ROOF JACK TO ROOFING CONTRACTOR FOR INSTALLATION. CONTACT TREMCO ROOFING
REPRESENTATIVE: WALT HITCHCOCK
CELL: 480-694-34-33
EMAIL: WALT.HITCHCOCK@ME.COM
EF
A1
RTU
A1
1
EF
B1
MINIMUM 10 FT
FROM OSA INTAKE

M3 Mechanical Roof Plan

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

Plan North

KEYED NOTES : (#)

1. EXISTING AC UNIT TO REMAIN.
2. EXISTING EXHAUST FAN AND ALL CONNECTED DUCTWORK TO BE REMOVED. EXISTING OPENING MAYBE REUSED VERIFY IN FIELD.
3. EXISTING AC UNIT AND ALL CONNECTED DUCTWORK TO BE REMOVED. PATCH OPENING AS REQUIRED.
4. DUCT UP TO EQUIPMENT ON ROOF. SEE ROOF PLAN.
5. T'STAT WITH LOCKABLE COVER.

FIELD VERIFICATION NOTES :

1. THE HVAC CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO FIELD VERIFY ALL EXISTING CONDITIONS WHICH MAY AFFECT HIS BID. THE FOLLOWING ITEMS SHALL BE VERIFIED.
2. ALL REFERENCES ON THESE DRAWINGS TO EXISTING EQUIPMENT DUCTWORK, DIFFUSERS, THERMOSTATS AND PIPING ARE FOR REFERENCE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL THESE ITEMS PRIOR TO BID AND INCLUDE IN HIS BID ANY AND ALL AMOUNTS REQUIRED TO ACCOMMODATE EXISTING CONDITIONS.
3. NO ALLOWANCES WILL BE MADE AFTER THE PROJECT HAS BEEN AWARDED FOR FAILURE TO VERIFY EXISTING CONDITIONS.
4. ANY DISCREPANCIES WHICH MAY AFFECT THE CONTRACTORS BID SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND ARCHITECT FOR DIRECTION

GENERAL NOTES :

1. MOUNT THERMOSTATS 48" ABOVE FINISH FLOOR TO CENTER.
2. DUCTWORK AND EQUIPMENT SHOWN IS DIAGRAMMATIC. COORDINATE AND ROUTE DUCTWORK TO MEET JOB REQUIREMENTS. LOCATION OF EQUIPMENT MUST BE COORDINATED WITH ALL DISCIPLINES BEFORE FINAL LOCATIONS ARE SELECTED. WEIGHTS OF EQUIPMENT MUST BE VERIFIED AND COORDINATED WITH STRUCTURAL SYSTEMS BEFORE EQUIPMENT CAN BE INSTALLED AT JOBSITE.
3. SPACE ALLOCATED FOR MECHANICAL AND OTHER WORK ABOVE THE SUSPENDED CEILINGS IS CRITICAL. LIGHT FIXTURES AND AIR DIFFUSERS HAVE BEEN LOCATED TO ACHIEVE A DEFINITE ARCHITECTURAL EFFECT AND MAY NOT BE CHANGED WITHOUT THE CONSENT OF THE ARCHITECT. BECOME FAMILIAR WITH THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS PRIOR TO FABRICATING AND INSTALLING ANY MATERIALS. HANG DUCTWORK AS CLOSE AS POSSIBLE TO THE STRUCTURE ABOVE, UNLESS INDICATED OTHERWISE.
4. COORDINATE THE LOCATION OF CEILING DIFFUSERS, REGISTERS AND GRILLES WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
5. PASSAGES OF PIPES, CONDUITS, BUS DUCTS, CABLES, WIRES, AIRDUCTS, PNEUMATIC DUCTS, AND SIMILAR BUILDINGS SERVICE EQUIPMENT THROUGH FIRE BARRIERS SHALL BE PROTECTED AS FOLLOWS: THE SPACE BETWEEN THE PENETRATING ITEM AND FIRE BARRIER SHALL: BE FILLED WITH A MATERIAL CAPABLE OF MAINTAINING THE FIRE RESISTANCE RATING OF THE FIRE BARRIER PRODUCT. PRODUCT USED MUST MEET TEST METHODS ASTM E814 OR NFPA 251 FOR FIRE RATING.
6. CONTRACTOR SHALL BALANCE ALL SYSTEMS TO CFM'S SHOWN. PROVIDE 3RD PARTY INSPECTION & PROVIDE COPY OF REPORT TO THE ARCHITECT.
7. PLANS SHALL CONFORM TO THE 2012 IMC, 2012 IECC AND ALL CITY OF PRESCOTT ADOPTED CODES AND AMENDMENTS.
8. MECHANICAL DESIGN IS INTENDED SO THAT THE MAKE-UP AIR SYSTEM WILL OPERATE CONTINUOUSLY DURING OCCUPIED HOURS TO MAINTAIN CURRENT VENTILATION REQUIREMENTS.
9. ALL DIFFUSERS AND GRILLES ARE LESS THAN 20LBS, CONTRACTOR SHALL POSITIVELY ATTACH TO CEILING.
10. VENTS SHALL BE TERMINATED A MINIMUM OF 1'-0" ABOVE ROOF AND 2'-0" ABOVE OR 8'-0" AWAY FROM PARAPETS OR WALLS.
11. PROVIDE FACTORY PROGRAMMABLE THERMOSTATS AND ARE TO BE LOCATED AS SHOWN.
12. REFER TO ARCHITECTURAL LOCATION OF DRAWINGS FOR EXACT REGISTERS, GRILLES & DIFFUSERS.
13. CALL FOR INSPECTION OF ALL MECHANICAL SYSTEM PRIOR TO COVER AND CONCEALMENT.

MAVEN ENGINEERING
Job #15EMB084
Tel: (480) 303-0180
Fax: (480) 303-0184
2245 West University Drive, Suite 10
Tempe, Arizona 85281

Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

REVISIONS	BY

Registered Professional Engineer (Mechanical)
Certificate 24488
Kirk J. Hoffman
No. 24488
Date Signed 07-13-15
ARIZONA, U.S.A.
EXPIRES 03/31/18

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ARCHITECTURE & PLANNING

DRAWING: MECHANICAL FLOOR PLAN

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

DRAWN BY	AJW
CHECKED BY	KJH
DATE	July 10, 2015
SCALE	AS NOTED
JOB NO.	670
SHEET	M1.0

Jul 13, 2015 - 8:05am

AIR CONDITIONING SPECIFICATIONS

1. GENERAL REQUIREMENTS AND SCOPE OF WORK:
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, FOR THE INSTALLATION OF COMPLETE AND WORKING AIR CONDITIONING, HEATING AND VENTILATING SYSTEMS WHICH COMPLIES WITH ALL CODES. CHECK FIELD CONDITIONS AND MAKE MEASUREMENTS BEFORE ORDERING MATERIALS.

MAINTENANCE MANUAL SHALL INCLUDE ALL AVAILABLE MANUFACTURERS' OPERATION AND MAINTENANCE INSTRUCTIONS TOGETHER WITH THE RECORD DRAWINGS TO PROPERLY OPERATE AND MAINTAIN THE EQUIPMENT. THE MANUAL SHALL ALSO INCLUDE THE NAME, ADDRESS, AND PHONE NUMBER OF THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS INVOLVED IN ANY OF THE WORK SPECIFIED HEREIN.

THE CONTRACTOR MUST COMPLY WITH ALL STATE AND MUNICIPAL BUILDING AND SAFETY LAWS, ORDINANCES AND REGULATIONS RELATING TO BUILDING AND PUBLIC HEALTH & SAFETY. ALL WORK AND MATERIALS SHALL BE IN CONFORMANCE WITH THE GOVERNING CODES.

PROVIDE MECHANICAL EQUIPMENT HAVING MOTORS WITH MOTOR PROTECTORS AND INTEGRAL STARTERS. WIRING AND PROPER OPERATION OF THE MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. ALL WIRING SHALL BE ROUTED IN CONDUIT OR IN PLENUM RATED WIRING.

THE SYSTEM SHALL HAVE A WARRANTY COVERING LABOR, MATERIALS AND EQUIPMENT FOR A PERIOD OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. REPLACE OR REPAIR ALL DEFECTIVE WORKMANSHIP, EQUIPMENT, AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

THE MECHANICAL CONTRACTOR SHALL COORDINATE EXACT DIFFUSER AND GRILLE LOCATIONS WITH ELECTRICAL CONTRACTOR AND ALL OTHER TRADES AND ALSO COORDINATE SPACE AVAILABILITY FOR DUCTWORK ABOVE RECESSED LIGHTING TO AVOID RELOCATING DUCTWORK AT THE MECHANICAL CONTRACTORS EXPENSE.

SHOULD A CHANGE ORDER TO THE CONTRACT DOCUMENTS BE NECESSARY, THE CONTRACTOR SHALL SUBMIT A FORMAL CHANGE ORDER TO THE ARCHITECT/ENGINEER FOR REVIEW BEFORE ANY WORK COMMENCES. ANY WORK DONE WITHOUT PRIOR WRITTEN APPROVAL IS SUBJECT TO COMPLETION AT THE CONTRACTOR'S EXPENSE. CHANGE ORDERS SHALL INCLUDE A DETAILED MATERIAL, EQUIPMENT, AND LABOR TAKE-OFF IDENTIFYING ALL NEW AND CREDITED ITEMS. COSTS FOR SUCH ITEMS SHALL NOT EXCEED THE VALUES LISTED IN THE LATEST EDITION OF THE MEANS ESTIMATING GUIDE.

PERFORM COMPLETE TESTING AND BALANCING OF ALL MECHANICAL SYSTEMS IN ACCORDANCE WITH AABC OR NEBB LATEST STANDARDS WITH REPORT. MECHANICAL CONTRACTOR TO PROVIDE BALANCE REPORT TO ARCHITECT AT FINAL INSPECTION.

2. CONDENSATE DRAIN PIPING:
USE TYPE "M" HARD DRAWN COPPER FOR ALL CONDENSATE DRAIN LINES WITH MINIMUM FALL 1/8" PER FOOT FROM UNITS TO APPROVED PLUMBING CONNECTION. PROVIDE TRAPS AT UNIT AND INSTALL OVERFLOW DRAINS AS REQUIRED BY MECHANICAL CODE. TEST CONDENSATE PIPING TO HIGHEST POINT IN SYSTEM AND HOLD FOR FOUR HOURS.

3. DUCTWORK:
INSTALL ALL DUCTWORK IN ACCORDANCE WITH SMACNA GUIDELINES AND LOCAL STANDARDS FOR A MINIMUM OF 1" STATIC PRESSURE. RADIUS ELBOWS SHALL HAVE A MINIMUM RADIUS OF 1.5 TIMES THE DUCT DIMENSION IN THE DIRECTION OF TURN, AND SQUARE ELBOWS SHALL HAVE SINGLE THICKNESS TURNING VANES. ALL JOINTS SHALL BE TAPED WITH GLASS CLOTH AND HARDCAST OR ADHESIVE (UL LISTED). ALL DUCT SIZES ARE TO THE INSIDE OF LINING, INCREASE OUTSIDE DIMENSIONS AS NECESSARY. COVERINGS, LININGS, ADHESIVES AND INSULATION SHALL HAVE A SPREAD INDEX OF NOT OVER 25 AND A SMOKE-DEVELOPED INDEX OF NOT OVER 50. ALL INSULATION SHALL COMPLY WITH THE INTERNATIONAL ENERGY CONSERVATION CODE.

ALL INSULATION ADHESIVES & INSTALLATION SHALL COMPLY WITH NFPA_E 84.

CONCEALED DUCTS INSIDE OF BUILDING: SHALL BE SHEET METAL WRAPPED WITH 1" THERMAL INSULATION (MINIMUM OF R-5), WITH VAPOR BARRIER COVER.

EXPOSED SQUARE DUCTS INSIDE BUILDING AND DUCTS WITHIN 10 FEET OF A MECHANICAL UNIT SHALL BE SHEET METAL LINED WITH 1" ACOUSTICAL INSULATION. EXPOSED ROUND DUCTS DO NOT REQUIRE INSULATION.

FLEX DUCT: FLEX DUCT SHALL BE CLASS 0 OR 1 AND TESTED PER UL 181.

DUCTS OUTSIDE BUILDING OR IN UNCONDITIONED CEILING OR ATTIC SHALL BE SHEET METAL LINED WITH 2" ACOUSTICAL INSULATION (MINIMUM OF R-8).

4. GRILLES AND REGISTERS
GRILLES AND REGISTERS SHALL BE OF THE TYPE AND FINISH AS INDICATED ON THE DRAWINGS, COMPLETE WITH OPPOSED BLADE DAMPERS EXTRACTORS AND STRAIGHTENING GRIDS AS REQUIRED.

5. START-UP FOR MECHANICAL EQUIPMENT
ALL UNITS SHALL BE INSPECTED, CHECKED, AND STARTED UP BY MANUFACTURER'S FACTORY CERTIFIED HVAC TECHNICIAN. UPON COMPLETION, MANUFACTURER SHALL PROVIDE ONE YEAR PARTS AND LABOR WARRANTY.

6. EXHAUST FANS
DESCRIPTION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO FURNISH AND INSTALL EXHAUST FANS AND BLOWERS FOR A COMPLETE AND OPERATIONAL SYSTEM. ITEMS NOT LISTED BUT REQUIRED DUE TO LOCAL CODES OR OPERATIONAL REQUIREMENTS SHALL BE INCLUDED UNDER BASE BID.

PROVIDE ROOF CAPS, WALL CAPS, FLASHINGS, BASES, SPEED SWITCHES, APPROVED VIBRATION ISOLATORS, INTEGRAL INLET GRILLES, INTEGRAL STARTERS AND DUCT CONNECTIONS AS INDICATED OR SPECIFIED. PROVIDE INTERNAL DISCONNECTING MEANS AND OVERLOAD PROTECTION ON ALL UNITS 1/2 HP AND SMALLER AND/OR 120 VOLT, SINGLE PHASE. TWO SPEED MOTOR SHALL BE TWO WINDING TYPE. ALL BELT DRIVEN EXHAUST FANS SHALL HAVE ADJUSTABLE MOTOR PULLEYS FOR FAN SPEED CONTROL. RATE BELTS FOR 150% OF MOTOR RATED HP. ALL FANS, EXCEPT TOILET EXHAUST FANS 200 CFM AND BELOW, SHALL BE AMCA CERTIFIED AND APPROVED.

7. FURNACE WITH EVAP COOLER:
DESCRIPTION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO FURNISH AND INSTALL FURNACE, EVAP SECTION AND BLOWERS FOR A COMPLETE AND OPERATIONAL SYSTEM. ITEMS NOT LISTED BUT REQUIRED DUE TO LOCAL CODES OR OPERATIONAL REQUIREMENTS SHALL BE INCLUDED UNDER BASE BID.

PROVIDE FLASHINGS, BASES, SPEED SWITCHES, APPROVED VIBRATION ISOLATORS, INTEGRAL INLET GRILLES, DISPOSABLE FILTER AND ALUM MESH PREFILTER, INTEGRAL STARTERS AND DUCT CONNECTIONS AS INDICATED OR SPECIFIED. PROVIDE INTERNAL DISCONNECTING MEANS AND OVERLOAD PROTECTION ON ALL UNITS 1/2 HP AND SMALLER AND/OR 120 VOLT, SINGLE PHASE. TWO SPEED MOTOR SHALL BE TWO WINDING TYPE. ALL BELT DRIVEN EXHAUST FANS SHALL HAVE ADJUSTABLE MOTOR PULLEYS FOR FAN SPEED CONTROL. RATE BELTS FOR 150% OF MOTOR RATED HP. ALL FANS SHALL BE AMCA CERTIFIED AND APPROVED. FURNACE SECTION SHALL BE STAINLESS STEEL AND EVAPORATIVE COOLING SECTION SHALL HAVE AUTOMATIC DRAIN FEATURE FOR COLD WEATHER AND BE CEL-DECK TYPE MEDIA.

MECHANICAL EQUIPMENT SCHEDULE

NOTE: 1. AMBIENT TEMPERATURE 96 F COOLING, 20 F HEATING.
2. NO EQUIPMENT WITH LESS THAN 98% OF LISTED CAPACITIES WILL BE APPROVED. COOLING CAPACITY INCLUDES FAN HEAT.
3. PROVIDE ONE ELECTRICAL CONNECTION FOR EACH UNIT.
4. APPROVED HVAC MANUFACTURERS ARE: REZNOR, CAPTUREAIRE.
5. ALL UNITS SHALL BE INSPECTED, CHECKED, AND STARTED UP BY MANUFACTURER'S FACTORY CERTIFIED HVAC TECHNICIAN. UPON COMPLETION, MANUFACTURER SHALL PROVIDE ONE YEAR PARTS AND LABOR WARRANTY.
6. RTU-A1 PROVIDE WITH TWO STAGE MAKE UP AIR HEATING, 70% AND 100%, PROGRAMMABLE T'STAT W/ AUTO CHANGE OVER AND NIGHT SETBACK, EVAP COOLER SECTION WITH ECD2 AND 12" MEDIA. PROVIDE WITH THE FOLLOWING OPTIONS AC2, AG8, AN2, AQ8, ASC4, AW21, BA6, CL52, CJ8B, CT3, CT6, DR2, ECD2, PF5, AND RC9.

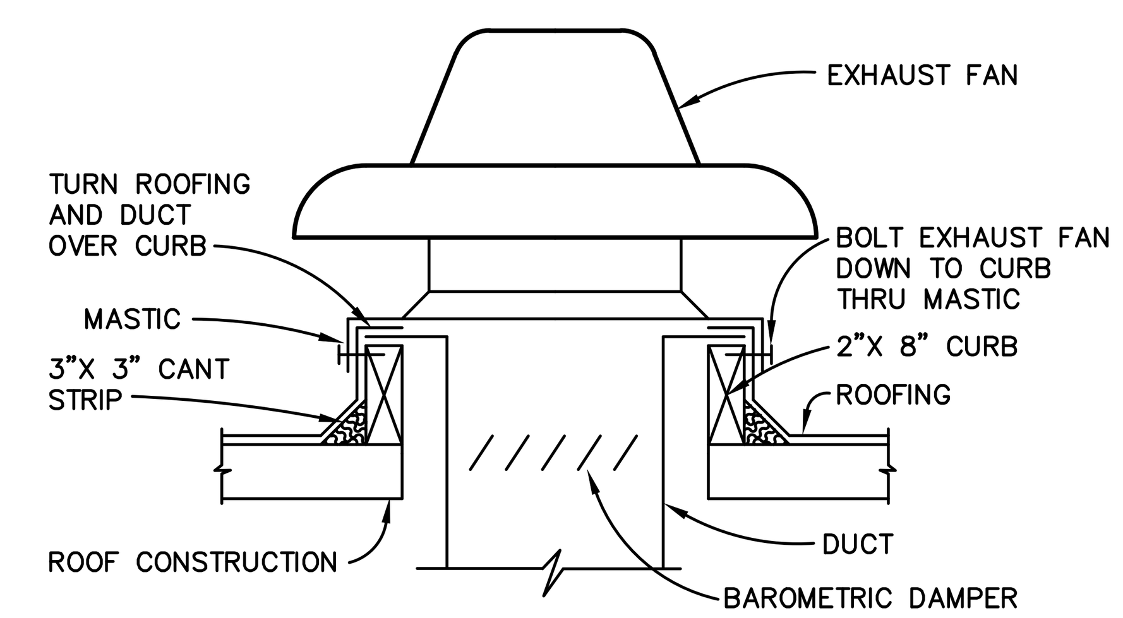
UNIT										COOLING				HEATING						
MARK	MANUFACTURER	MODEL	SEER /EER	CFM	ESP "WG"	HP	VOLT	PH	MCA	SEN MBH	TOT MBH	ENT AIR DB	ENT AIR WB	GAS MBH	STAGES			OSA CFM	WEIGHT LBS	NOTES
RTU-A1	REZNOR	RDH-125	–	1500	0.5	1/2	230	1	8.6	–	–	–	–	125	2	–	–	–	1075	NOTE 6
EF-A1	GREENHECK	GB-091	–	675	0.5	1/4	120	1	–	–	–	–	–	–	–	–	–	–	65	INTERLOCK W/RTU-A1
EF-B1	GREENHECK	GB-091	–	750	0.5	1/4	120	1	–	–	–	–	–	–	–	–	–	–	65	INTERLOCK W/RTU-A1

LEGEND: EXHAUST FAN (EF), SPLIT SYSTEM: INDOOR UNIT (IU), OUTDOOR UNIT (OU), HEATPUMP (HP), AIR HANDLING UNIT (AHU), AIR CONDITIONER (AC), EVAPORATIVE COOLER (EC), MAKE-UP AIR UNIT (MUA)

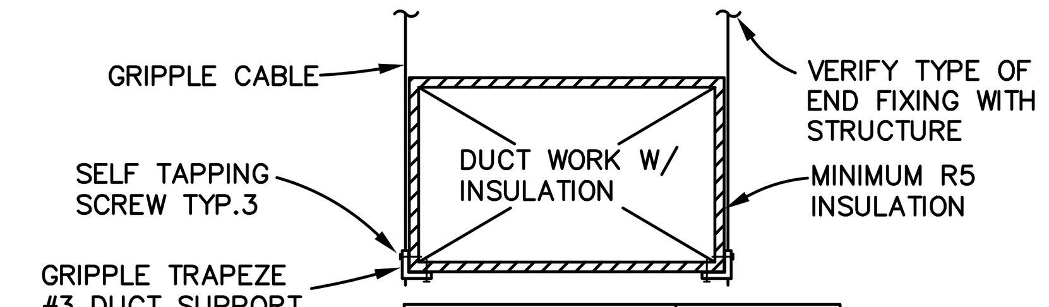
~ GRILLES, REGISTERS AND DIFFUSER SCHEDULE

NOTE: 1. PROVIDE OBD'S SHALL BE PROVIDED AT TAKE-OFF OF MAIN DUCT FOR ALL LAY-IN TYPE DIFFUSERS OR GRILLES AND OBD'S AT THE DIFFUSER OR GRILLE WHEN FLANGE TYPE.
2. SEE SIZING SCHEDULES FOR NECK AND FLEX DUCT SIZES, UNLESS OTHERWISE DIRECTED.
3. ALL LAY-IN DIFFUSERS OR GRILLES SHALL BE WHITE IN COLOR UNLESS DIRECTED OTHERWISE. ALL FLANGE TYPE DIFFUSERS, REGISTERS OR GRILLE COLORS SHALL BE AS DIRECTED BY THE ARCHITECT.
4. CONTRACTOR SHALL PROVIDE SQUARE TO ROUND ADAPTERS AS REQUIRED FOR INSTALLATION.

MARK	DESCRIPTION	MANUFACTURER	MODEL	MATERIAL	BORDER	FRONT BLADES	DAMPER	REMARKS
CD1	CEILING DIFFUSER	TITUS	TDC	ALUMINUM	FLANGE	HORIZONTAL	OBD	–
ER1	EXH. REGISTER	TITUS	350RS	ALUMINUM	FLANGE	HORIZONTAL	–	–

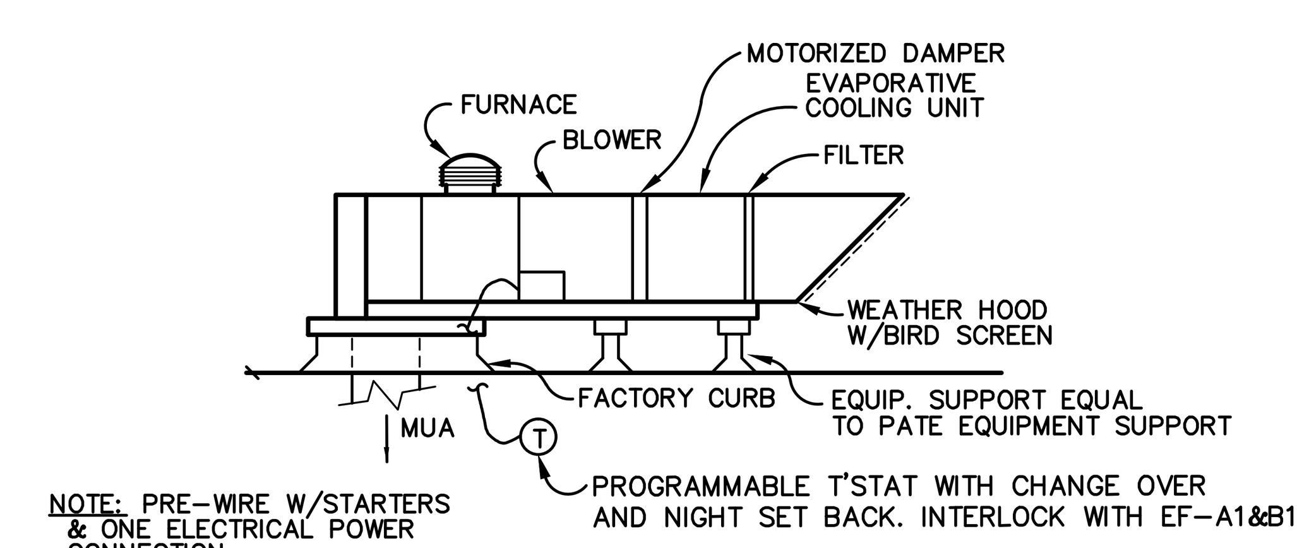


1 EXHAUST FAN N.T.S.



DUCT PERIMETER	SPACING
UP TO 60"	10'-0"
61" - 144"	10'-0"

2 RETANGULAR DUCTWORK GRIPPLE SUPPORTS N.T.S.



3 MAKE-UP FURNACE N.T.S.

H1078-1

DUCTWORK SYMBOLS

SINGLE	DOUBLE	ABBR.	DESCRIPTION
		●	RECTANGULAR DUCT
		●	ROUND DUCT
		●	45 DEG. TAP: USE AT BRANCH DUCTS ONLY
		●	DUCT SPLIT W/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
		FD	FIRE DAMPER
		BD	BALANCING DAMPER (USE O.B.D. UNLESS NOTED OTHERWISE)
		●	SPIN-IN FLEX DUCT TAKE-OFF W/DAMPER
●	☒	SA	SUPPLY AIR
●	☒	EXH	EXHAUST AIR
●	▨	RA	RETURN AIR
●	R/L	REL	RELIEF AIR
●	O/A	OSA	OUTSIDE AIR
●	(T) X	T	THERMOSTAT X: UNIT OR ZONE NUMBER
◕			POINT OF CONNECTION
SD			SMOKE DUCT DETECTOR

AIR BALANCE SCHEDULE

OSA CFM	UNIT NO.		EXH CFM	UNIT NO.
1500	RTU-A1	–	1500	EF-A1
–	–	–	–	–
1500	–	TOTAL	1500	–

MAVEN ENGINEERING Job #15EMB084
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Tempe, Arizona 85281
Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

Jul 13, 2015 - 8:05am

REVISIONS	BY

Registered Professional Engineer (Mechanical) CERTIFICATE NO. Kirk J. Hoffman No. 24488 Date Signed 07-13-15 ARIZONA, U.S.A.
EXPIRES 03/31/18

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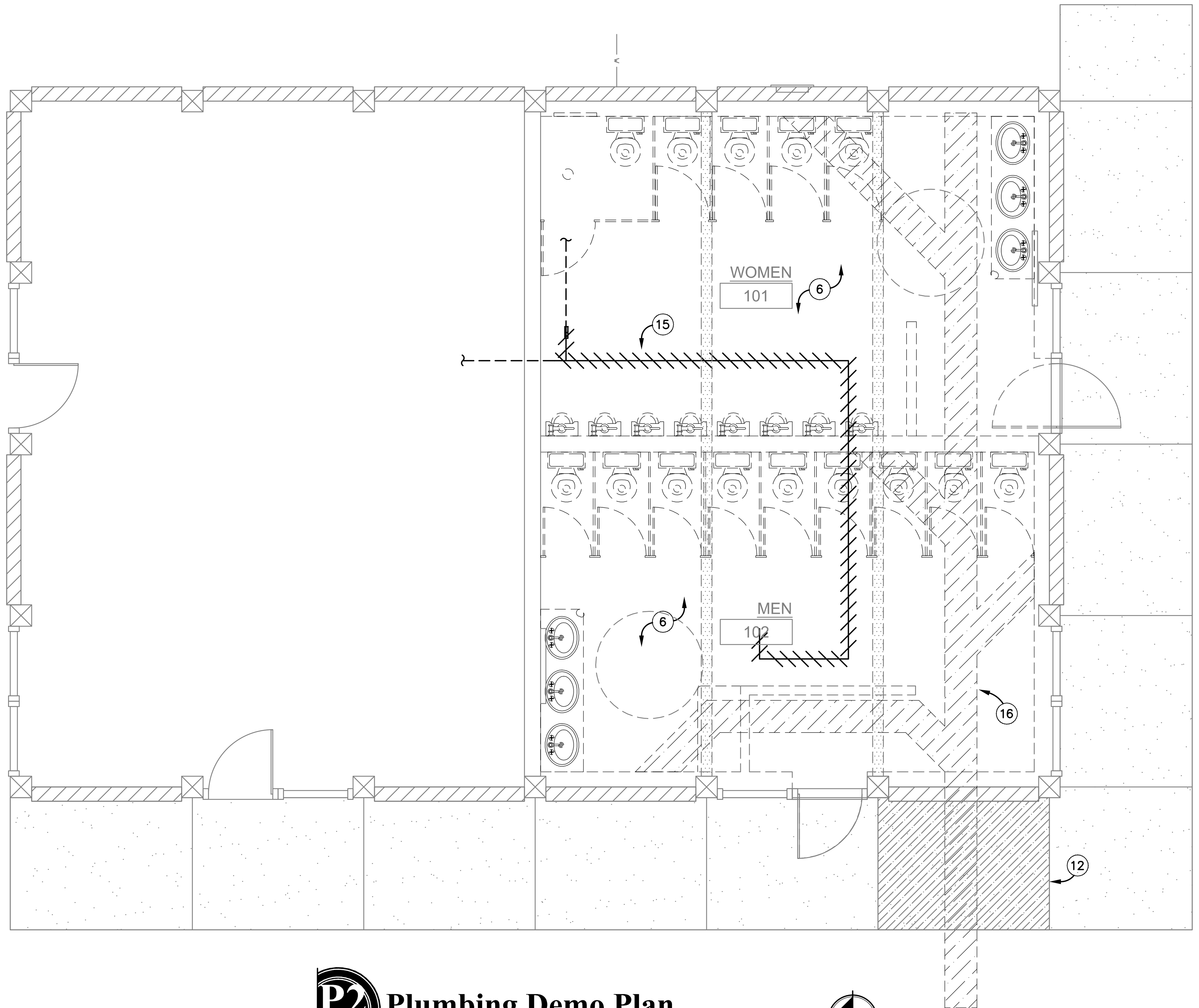
ARCHITECTURE & PLANNING

DRAWING: MECHANICAL SCHEDULE

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

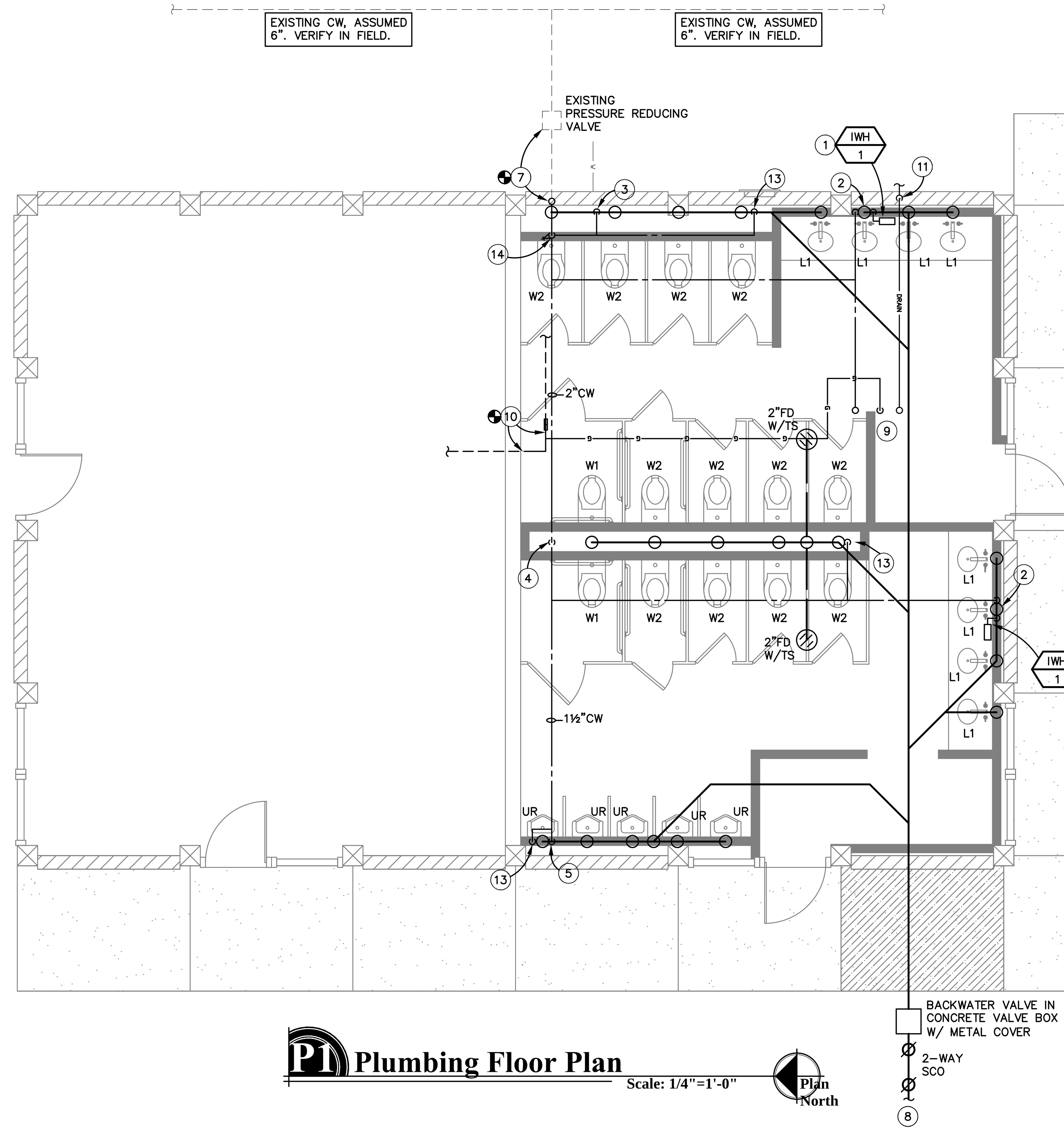
DRAWN BY AJW
CHECKED BY KJH
DATE July 10, 2015
SCALE AS NOTED
JOB NO. 670
SHEET M2.0



P2 Plumbing Demo Plan

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

Plan North



P1 Plumbing Floor Plan

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

Plan North

GENERAL NOTES :

1. EXACT LOCATION OF PLUMBING FIXTURES SHALL BE DETERMINED FROM ARCHITECTURAL DRAWINGS.
2. BEFORE SUBMITTING BID, THE PLUMBING CONTRACTOR SHALL REVIEW THE ARCHITECTURAL DRAWINGS AND INCLUDE IN HIS BID AN AMOUNT TO FURNISH AND INSTALL ANY FIXTURES WHICH ARE SHOWN IN ADDITION TO FIXTURES SHOWN ON THE PLUMBING DRAWINGS.
3. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS OF SEWERS TO WHICH NEW WASTE LINES ARE TO BE CONNECTED BEFORE MAKING UP OR INSTALLATION OF NEW WASTE SYSTEM.
4. CONTRACTOR SHALL VERIFY AND COORDINATE LOCATION OF ALL PLUMBING LINES WITH DUCTWORK AND ELECTRICAL SERVICES.
5. THE INSTALLATION OF ALL VALVES, UNIONS, THERMOMETERS, GAUGES, OR OTHER INDICATING OR RECORDING EQUIPMENT, OR SPECIALTIES REQUIRING FREQUENT READING, REPAIRS, ADJUSTMENT, INSPECTION, REMOVAL OR REPLACEMENT SHALL BE CONVENIENTLY AND ACCESSIBLY LOCATED WITH REFERENCE TO THE FINISHED BUILDING.
6. ALL VENTS THROUGH ROOF SHALL BE 10'–0" REMOVED FROM ALL AIR INTAKES, EVAPORATIVE COOLERS, ETC.
7. WHERE POSSIBLE, TIE VENTS TOGETHER SO THAT A MINIMUM NUMBER TERMINATE THROUGH THE ROOF.
8. WATER CLOSETS IN PUBLIC TOILET ROOMS SHALL CENTER ON THE FINAL LAYOUT OF TOILET PARTITIONS.
9. CONTRACTOR SHALL NOT CUT HOLES IN STRUCTURAL MEMBERS WITHOUT FIRST SECURING WRITTEN APPROVAL FROM THE ARCHITECT.
10. CONTRACTOR SHALL INSTALL DIELECTRIC UNIONS AT CONNECTIONS OF DISSIMILAR METALS.
11. CONTRACTOR SHALL ROUGH–IN ALL WASTES AND SUPPLIES TO SPECIAL EQUIPMENT ACCORDING TO MANUFACTURERS SHOP DRAWINGS AND MAKE FINAL CONNECTIONS. ALL SUPPLIES SHALL BE VALVED.
12. ASSUMED WATER PRESSURE–CONTRACTOR SHALL VERIFY ACTUAL WATER PRESSURE PRIOR TO CONSTRUCTION. IF PRESSURE IS LESS THAN 50 PSI CONTRACTOR SHALL CONTACT THE ENGINEER FOR PIPE SIZING EVALUATION. IF PRESSURE EXCEEDS 80 PSI, A PRESSURE REDUCING VALVE SHALL BE PROVIDED. PIPING VELOCITY SHALL NOT EXCEED 8 FEET PER SECOND.

FIELD VERIFICATION NOTES :

1. THE PLUMBING CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO FIELD VERIFY ALL EXISTING CONDITIONS WHICH MAY AFFECT HIS BID. THE FOLLOWING ITEMS SHALL BE VERIFIED.

1.A. EXACT PLACEMENT, SIZE, CAPACITY, MANUFACTURER, AND CONDITION OF ALL EXISTING PLUMBING EQUIPMENT WITHIN SCOPE OF WORK, WHETHER SPECIFICALLY SHOWN OR NOT.

1.B. SIZE AND LOCATION OF ALL EXISTING WASTE, VENT AND WATER PIPING.

2. ALL REFERENCES ON THESE DRAWINGS TO EXISTING EQUIPMENT, WATER, WASTE, AND VENT PIPING ARE FOR REFERENCE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL THESE ITEMS PRIOR TO BID AND INCLUDE IN HIS BID ANY AND ALL AMOUNTS REQUIRED TO ACCOMMODATE EXISTING CONDITIONS.
3. NO ALLOWANCES WILL BE MADE AFTER THE PROJECT HAS BEEN AWARDED FOR FAILURE TO VERIFY EXISTING CONDITIONS.
4. ANY DISCREPANCIES WHICH MAY AFFECT THE CONTRACTORS BID SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND ARCHITECT FOR DIRECTION

PIPING MATERIALS

SANITARY WASTE AND VENT SYSTEMS
PIPING:
ABS CONFORMING TO ASTM D 2661.

DOMESTIC WATER SYSTEM
PIPING:
TYPE "L" HARD DRAWN COPPER, CONFORMING TO ASTM B–88. TYPE "K" HARD DRAWN COPPER, CONFORMING TO ASTM B–88. TYPE "K" SOFT DRAWN COPPER, CONFORMING TO ASTM B–88.

FUEL GAS SYSTEM
PIPE:
BLACK STEEL PIPE, SCHEDULE 40 BLACK STEEL CONFORMING TO ASTM A–53, GRADE A OR B, SEAMLESS OR WELDED PIPE.

KEYED NOTES : (#)

1. ¾"CW TO IWH. PROVIDE ½"HW TO EACH L1.
2. ¾"CW DOWN IN WALL. PROVIDE ½"CW TO EACH L1 AND ¾"CW TO IWH.
3. 2"CW DOWN IN WALL. PROVIDE 1¼"CW TO EACH W2 W/ SHOCK ABSORBER.
4. 2"CW DOWN IN WALL. PROVIDE 1¼"CW TO EACH W1 AND W2 W/ SHOCK ABSORBER.
5. 1½"CW DOWN IN WALL. PROVIDE 1"CW TO EACH UR W/ SHOCK ABSORBER.
6. ALL EXISTING PLUMBING FIXTURES TO BE REMOVED. CAP ALL WASTE IN FLOOR AND WATER IN CEILING.
7. UPSIZE EXISTING 1½"CW TO 2½" AND CONNECT NEW CW. VERIFY EXACT LOCATION IN FIELD.
8. EXTEND AND CONNECT NEW WASTE TO EXISTING. VERIFY EXACT LOCATION AND INVERT IN FIELD.
9. ½"CW AND ¾"GAS TO AND ¾"DRAIN DOWN FROM RTU.
10. CONNECT NEW ¾"GAS TO REGULATOR.
11. ¾"DRAIN DOWN IN WALL TO TERMINATE AT EXTERIOR.
12. PORTION OF EXISTING SIDEWALK TO BE REMOVED AND REPLACED. REFER TO ARCH. PLANS.
13. SHOCK ABSORBER. SEE DETAIL FOR SIZING.
14. 2½"SOV IN WALL BEHIND NEW ACCESS PANEL – ALL DISTRIBUTION SHALL BE DOWNSTREAM.
15. REMOVE ALL EXISTING GAS AS SHOWN BACK TO MAINLINE. SEE GAS SCHEMATIC SHT P2.0 FOR REPLACEMENT SIZING.
16. EXISTING FLOORING TO BE TRENCHED FOR NEW WASTE LINES AS SHOWN. SEE ARCH PLANS.

MAVEN ENGINEERING
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Tempe, Arizona 85281

Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

REVISIONS	BY

Registered Professional Engineer (Mechanical) Certificate No. Kirk J. Hoffman No. 24488 Date Signed 07-13-15 Arizona, U.S.A. EXPIRES 03/31/18

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ARCHITECTURE & PLANNING

DRAWING: PLUMBING FLOOR PLAN

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

DRAWN BY	KEF
CHECKED BY	AJW
DATE	July 10, 2015
SCALE	AS NOTED
JOB NO.	670
SHEET	P1.0

Jul 13, 2015 - 8:05am

PLUMBING SPECIFICATIONS

1. SCOPE
THE WORK SPECIFIED UNDER THIS CONTRACT INCLUDES THE FURNISHING OF ALL LABOR, MATERIALS, TOOLS, TRANSPORTATION, SERVICES, PERMITS, INSPECTION FEES, ETC., REQUIRED IN THE COMPLETE INSTALLATION OF PLUMBING WORK AS SPECIFIED HEREIN AND SHOWN ON ACCOMPANYING DRAWINGS AND AS REQUIRED BY THE CONDITIONS AT THE SITE. THE GENERAL AND SPECIAL CONDITIONS ARE HEREBY MADE A PART OF THIS SECTION. IN ADDITION, WORK IN THESE SECTIONS ARE GOVERNED BY ALL PROVISIONS OF THE CONTRACT DOCUMENTS.

2. SUBMITTALS
SUBMIT SHOP DRAWINGS AND ALL DATA REQUIRED IN ACCORDANCE WITH DETAILED REQUIREMENTS OF DIVISION 1, GENERAL REQUIREMENTS, FOR ALL WORK PROVIDED UNDER DIVISION 15.

3. RECORD DRAWINGS
PROVIDE RECORD DRAWINGS WHICH SHALL CLEARLY SHOW ALL DIFFERENCES BETWEEN THE CONTRACT WORK AS DRAWN AND INSTALLED. PIPING MAINS BELOW SLAB AND/OR GRADE AND ALL BRANCH LINES BELOW SLAB OR GRADE IN EXCESS OF 5 FT. IN LENGTH SHALL BE DIMENSIONED FROM COLUMNS OF ANY PERMANENT STRUCTURE. ALSO, SHOW ALL WORK ADDED TO THE CONTRACT WHICH IS NOT SHOWN ON THE CONTRACT DRAWINGS.

4. EQUIPMENT LIST AND MAINTENANCE MANUAL
MAINTENANCE MANUAL SHALL INCLUDE ALL AVAILABLE MANUFACTURERS' OPERATION AND MAINTENANCE INSTRUCTIONS TOGETHER WITH THE RECORD DRAWINGS HERE IN BEFORE SPECIFIED AND ALL OTHER DIAGRAMS AND INSTRUCTIONS NECESSARY TO PROPERLY OPERATE AND MAINTAIN THE EQUIPMENT. THE MANUAL SHALL ALSO INCLUDE THE NAME, ADDRESS, AND PHONE NUMBER OF THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS INVOLVED IN ANY OF THE WORK SPECIFIED HEREIN.

5. CODES, PERMITS, FEES, INSPECTIONS, RULES & REGULATIONS
THE CONTRACTOR MUST COMPLY WITH ALL STATE AND MUNICIPAL BUILDING AND SAFETY LAWS, ORDINANCES AND REGULATIONS, RELATING TO BUILDING AND PUBLIC HEALTH AND SAFETY. ALL WORK SHALL BE IN CONFORMANCE WITH THE GOVERNING CITY CODES.

NATURAL GAS: CONTRACTOR MUST, AT HIS OWN EXPENSE, SUBMIT ALL NECESSARY DRAWINGS TO SOUTHWEST GAS.

6. EXCAVATION AND BACKFILL
COMPLETE ALL SAW CUTTING, EXCAVATION AND BACKFILL AS NECESSARY FOR THE INSTALLATION OF UNDERGROUND PIPING. COMPACT AND TAMP BACKFILL TO ORIGINAL GRADE AND REMOVE EXCESS DIRT AS DIRECTED. NO WORK SHALL BE COVERED UNTIL PROPERLY TESTED AND APPROVED. ALL PAVEMENT, SIDEWALK, PIPING, ELECTRICAL CONDUIT, ETC., CAUSED TO BE CUT OR DAMAGED BY THIS SECTION SHALL BE RESTORED TO ORIGINAL CONDITION BY WORKMEN QUALIFIED AND ACTIVE IN THE TRADES INVOLVED.

7. ELECTRIC WIRING
ALL POWER WIRING IS INCLUDED IN ELECTRICAL DRAWINGS.

8. WARRANTY
WARRANT THE SYSTEM, LABOR, MATERIALS AND EQUIPMENT FOR ONE (1) YEAR AFTER COMPLETION AND ACCEPTANCE. REPLACE OR REPAIR ALL DEFECTIVE WORKMANSHIP, EQUIPMENT, AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

9. WORK SPECIFIED HEREIN
PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO FURNISH AND INSTALL COMPLETE PLUMBING AND PIPING SYSTEMS AS INDICATED OR SPECIFIED. INSTALL AND DELIVER ALL SYSTEMS COMPLETE, IN PERFECT WORKING ORDER, AND IN FULL ACCORDANCE WITH THE INTENT AND MEANING OF THE DRAWINGS AND SPECIFICATIONS. THE WORK, IN GENERAL, CONSISTS OF, BUT IS NOT NECESSARILY LIMITED TO, THE FOLLOWING:

COMPLETE SANITARY PLUMBING SYSTEMS FOR THE BUILDING WITH CONNECTIONS FROM EXISTING LINE IN THE BUILDING.

COMPLETE GAS SYSTEM PIPING AS INDICATED.

DOMESTIC WATER SYSTEM INCLUDING CONNECTION TO EXISTING STUB OUT, AND CONNECTIONS TO ALL PLUMBING FIXTURES AND EQUIPMENT.

ROUGH-IN AND FINAL CONNECTIONS OF WASTE AND WATER AND NATURAL GAS TO EQUIPMENT, CONDENSATE DRAIN PIPING, P-TRAPS, WASTE TUBING STOPS, FLEXIBLE TUBE RISERS, ETC. AS REQUIRED.

VALVED OUTLETS AND CONNECTIONS TO ALL HEATING, AIR CONDITIONING, OR ELECTRICAL EQUIPMENT WITH LOCATION AS REQUIRED.

INSULATION INCLUDING DOMESTIC HOT WATER SUPPLY PIPING EQUAL TO ARMAFLEX ¾" THICK RUBBER SELF-SEAL PIPE WRAP.

FUEL GAS SYSTEM, INCLUDING METER, SERVICE LINE, AND VALVED CONNECTIONS TO ALL EQUIPMENT USING SAME.

PLUMBING SPECIALTIES, INCLUDING CLEAN-OUTS, DRAINS, FIXTURE SUPPORTS, INTERCEPTORS, ETC.

PLUMBING EQUIPMENT AS SPECIFIED AND SCHEDULED.

PLUMBING FIXTURES AS SPECIFIED.

ADEQUATE SUPERVISION OF ERECTION, BALANCING, ADJUSTMENTS AND INSTRUCTIONS FOR PROPER OPERATION AND MAINTENANCE.

STERILIZATION OF POTABLE WATER SYSTEM.

10. APPROVED MANUFACTURERS
SPECIFICATION HEREIN BY BRAND NAME IS INTENDED TO ESTABLISH A STANDARD OF QUALITY. FURTHER, THIS EQUIPMENT HAS BEEN CHECKED AS TO SIZE AND WEIGHT REQUIREMENTS AND SPACE ALLOCATION HAS BEEN MADE ACCORDINGLY.

SUBMITTAL OF EQUIPMENT BY OTHER MANUFACTURERS IS NOT ACCEPTABLE.

11. MATERIALS
MANUFACTURERS INDICATE A STANDARD OF QUALITY, OTHER MANUFACTURES MUST BE PRIOR APPROVED AS AN EQUAL.

SANITARY WASTE VENT AND STORM DRAINAGE: ABS CONFORMING TO ASTM D 2661.

DOMESTIC WATER: TYPE 'L' HARD DRAWN COPPER, CONFORMING TO ASTM B-88, TYPE 'K' HARD DRAWN COPPER CONFORMING TO ASTM B-88, TYPE 'K' SOFT DRAWN COPPER CONFORMING TO ASTM B-88.

NATURAL GAS: PIPE, BLACK STEEL PIPE, SCHEDULE 40 BLACK STEEL CONFORMING TO ASTM A-53, GRAD A OR B, SEAMLESS WELDED PIPE.

GENERAL: WRAP ALL GAS PIPING INSTALLED BELOW GRADE OR EXPOSED TO WEATHER IN ACCORDANCE WITH MANVILLE SPECIFICATION 220. PROVIDE CATHODIC PROTECTION FOR GAS PIPING INSTALLED BELOW GRADE.

CLEAN OUTS: INTERIOR CONCRETE AND TILE FLOORS: 'JR SMITH 4020'. INTERIOR FINISHED WALLS: 'JR SMITH 4402'. EXTERIOR AREAS: 'JR SMITH 4250'.

FLOOR DRAINS: TOILET ROOMS AND FINISHED AREAS: 'J. R. SMITH #2005-A'.

BALL VALVES: NIBCO #S-585-70, 150# SOLDER JOINT FOR ALL LINES UP TO 2' IN DIAMETER.

CHECK VALVES: NIBCO #S-413-Y, 150# SOLDER JOINT FOR ALL VALVES UP TO 2' IN DIAMETER.

GLOBE VALVES: NIBCO #S-235-Y, 150# SOLDER JOINT FOR ALL VALVES UP TO 2' IN DIAMETER.

FIXTURES: USE POLISHED CHROME PLATED, ADJUSTABLE BRASS P-TRAPS AND WASTE ARMS WITH WALL ESCUTCHEONS AT ALL EXPOSED LOCATIONS. USE POLISHED CHROME PLATED FAUCETS WITH REMOVABLE TRIP, BRASS BODY AND BRASS HANDLES. FIXTURES AND SUPPLY FITTING SHALL BE AS SPECIFIED. PROVIDE DIAPHRAGM TYPE POLISHED CHROME PLATED FLUSH VALVES WITH INTEGRAL VACUUM BREAKERS AND SCREW DRIVER STOPS. PROVIDE FIXTURE STOPS AND VALVES AHEAD OF ALL EQUIPMENT OR FIXTURES. AFTER FIXTURES ARE SET IN PLACE AND SECURED TO WALLS, CAULK ALL AROUND BETWEEN FIXTURES AND WALL WITH EITHER 'DOW CORNING #780' OR G. E. CONSTRUCTION SEALANT' WHITE SILICONE CAULKING COMPOUND.

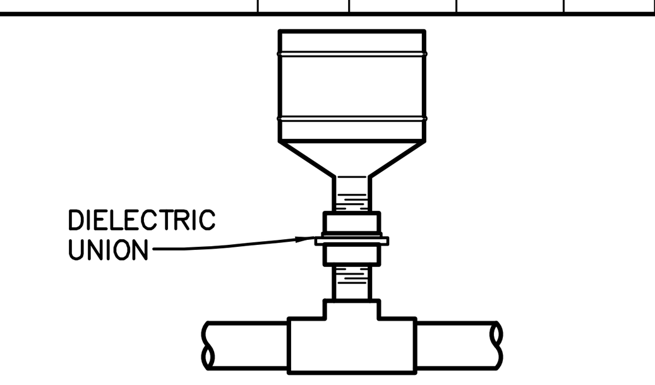
12. INSTALLATION
THE ENTIRE PLUMBING SYSTEM SHALL BE INSTALLED IN A NEAT, WORKMANLIKE, FINISHED, AND SAFE MANNER. CONCEAL ALL PIPING IN FINISHED AREAS UNLESS NOTED OTHERWISE. ALL PIPING SHALL BE ADEQUATELY SUPPORTED AND INSTALLED PARALLEL WITH THE BUILDING WALLS. THE ENTIRE INSTALLATION SHALL BE SUBJECT TO THE ARCHITECT'S APPROVAL.

13. TESTS
TEST WATER PIPING TO 100 PSI AND HOLD FOR 4 HOURS.
TEST SEWER AND VENT PIPING WITH A 10 FOOT HEAD OF WATER FOR 4 HOURS.
TEST FUEL GAS SYSTEM TO 50 PSI AIR PRESSURE AND HOLD FOR 4 HOURS.
REPAIR ALL LEAKS UNTIL SYSTEMS ARE WATERTIGHT.

END OF SECTION

Jul 13, 2015 - 8:05am

SHOCK ABSORBER DETAIL						
SIOUX CHIEF HYDRA RESTER	652A	653B	654C	655D	656E	657F
FIXTURE UNIT RATING	1-9	10-19	20-34	3564	64-129	130-250



1. CONTRACTOR SHALL FURNISH & INSTALL SHOCK ABSORBERS ON ALL FLUSH VALVE OPERATED FIXTURES OR FIXTURES W/QUICK CLOSING VALVES.

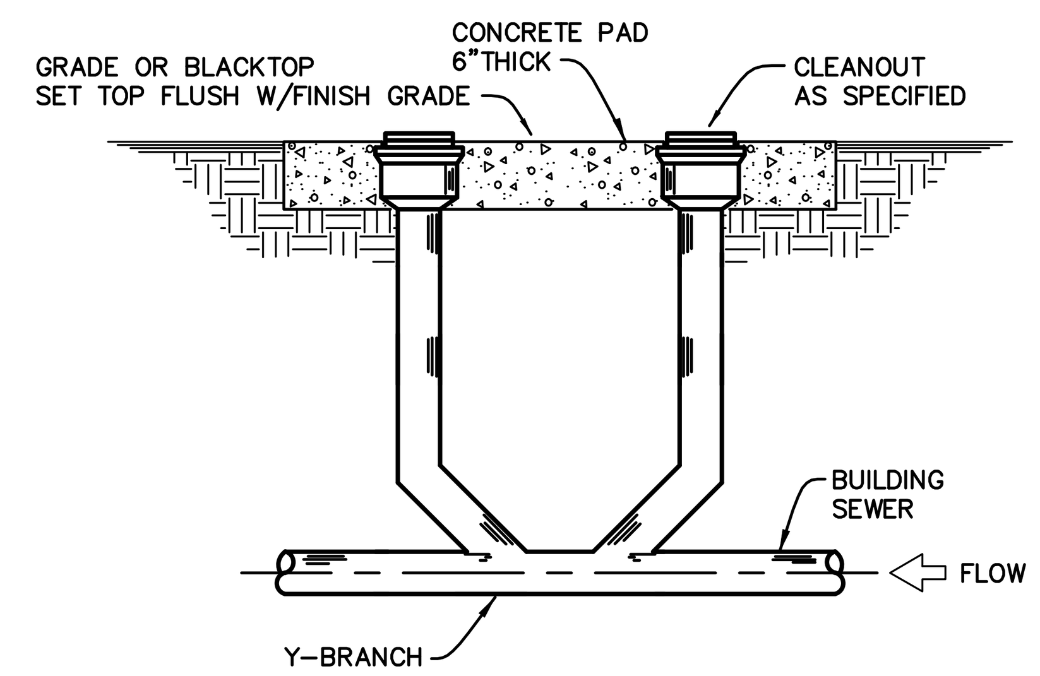
2. WHEN WATER PRESSURE IN THE LINE IS OVER 65 PSI, INSTALL THE NEXT LARGER UNIT.

3. CONTRACTOR SHALL PIPE AIR CHAMBERS 12" LONG & (2) PIPE SIZES LARGER THAN SUPPLY LINE AT ALL ISOLATED FIXTURES OR BATTERY OF FIXTURES NOT REQUIRING SHOCK ABSORBERS.

4. SIZE OF SHOCK ABSORBERS REQUIRED ON BATTERY OF FIXTURES SHALL BE BASED ON FIXTURE UNIT VALVES OF FLUSH VALVE OPERATED FIXTURES ONLY.

5. SHOCK ABSORBERS MANUFACTURED BY SIOUX CHIEF, ZURN, JOSAM OR WADE EQUAL TO LIST ABV. ARE APPROVED.

1 SHOCK ABSORBER DETAIL
N.T.S.



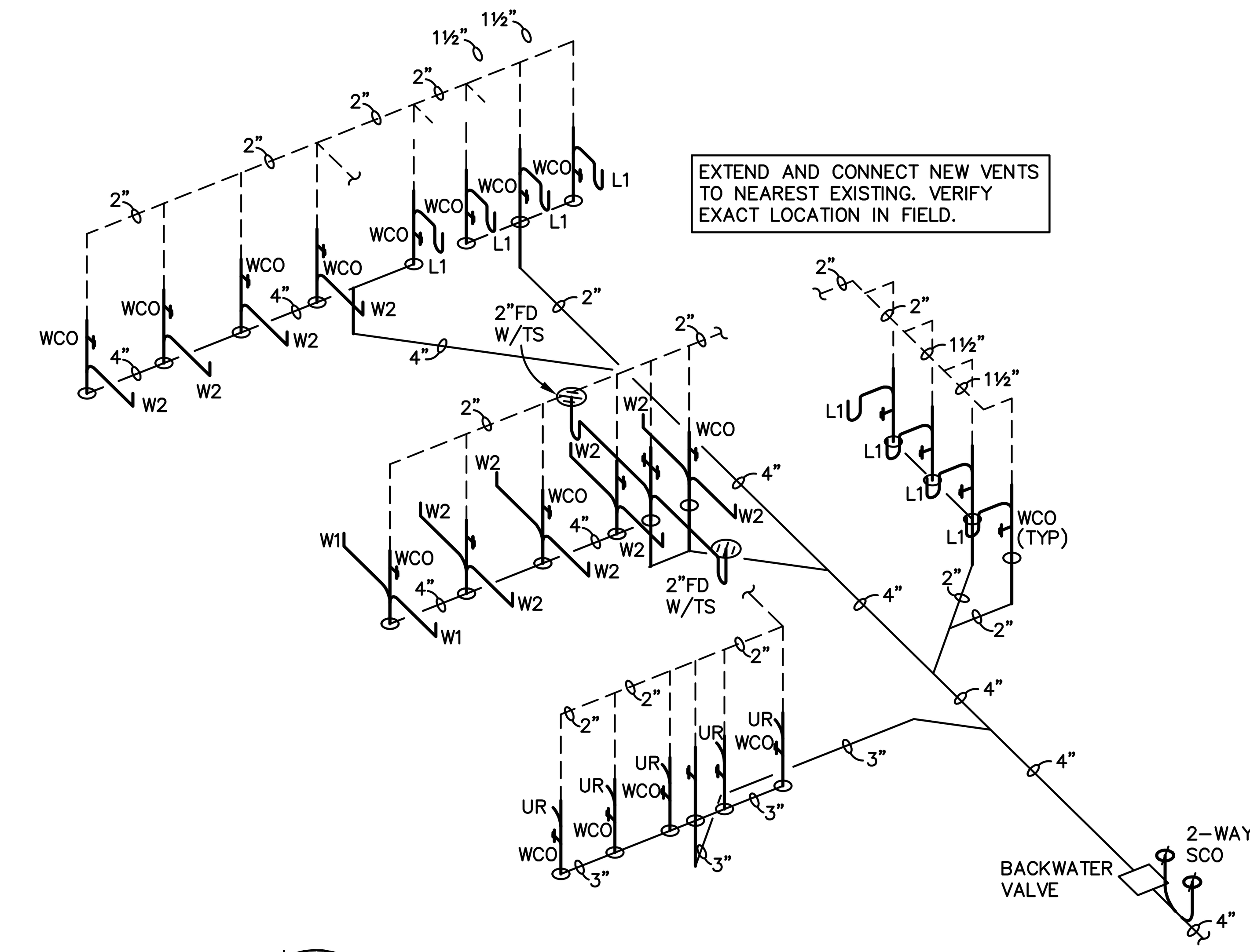
2 2-WAY SURFACE CLEANOUT
N.T.S.

PLUMBING SYMBOL LIST			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
—GW—	GREASE WASTE (GW)	⊕	POINT OF CONNECTION
– – – –	EXISTING (E)	⋈	SHUT OFF VALVE (GATE)
———	SOIL WASTE LINE (W)	⊣/⊢	CHECK VALVE
– – – –	VENT LINE (V)	⊣∣⊢	UNION
—·–	COLD WATER (C.W.)	⊣∣▽∣⊢	LUBRICATED PLUG VALVE
—··–	HOT WATER (H.W.)	——⊣	HOSE BIBB (H.B.)
—···–	HOT WATER RETURN	—⌽—	BRANCH RISE OFF MAIN
— G —	GAS LINE	⌀S.C.O.	SURFACE CLEANOUT
—TW—	TEMPERED WATER	⌀F.C.O.	FLOOR CLEANOUT
—SW—	SOFT WATER	⋈	GLOBE VALVE
—— ——	BUILDING SEWER	⊣●⊢	BALL VALVE
▨	FLOOR DRAIN (F.D.)	-R.D.L.-	ROOF DRAIN LEADER
⊠	FLOOR SINK (F.S.)	-O.D.L.-	OVERFLOW DRAIN LEADER
◉	ROOF DRAIN (R.D.)	—CD—	CONDENSATE DRAIN LINE
◎	OVER FLOW DRAIN	—ICW—	INDUSTRIAL COLD WATER

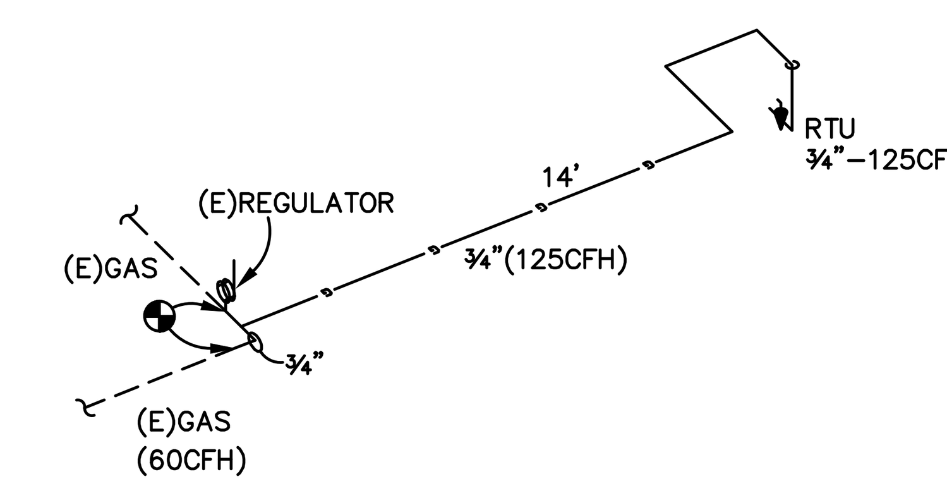
NOTE: ONLY THOSE SYMBOLS SHOWN ON THE DRAWING APPLY

PLUMBING FIXTURE SCHEDULE

FIXTURE SPECIFICATIONS					FIXTURE CONNECTIONS			
MARK	DESCRIPTION	MANUFACTURER AND MODEL NUMBER	FITTING & CAPACITY	ACCESSORIES/ REMARKS	C.W.	H.W.	WASTE	VENT
W1	HANDICAP WATER CLOSET WALL MOUNTED FLUSH VALVE	"AMERICAN STANDARD" MODEL# AFWALL 3351.001	"SLOAN" OPTIMA #8111-1.28 1.28 GAL PER FLUSH	JR SMITH #0210 SERIES WALL SUPPORT W/ TOTO #534 SEAT	1¼"	–	4"	2"
W2	WATER CLOSET WALL MOUNTED FLUSH VALVE	"AMERICAN STANDARD" MODEL# AFWALL 3351.001	"SLOAN" OPTIMA #8111-1.28 1.28 GAL PER FLUSH	JR SMITH #0210 SERIES WALL SUPPORT W/ TOTO #534 SEAT	1¼"	–	4"	2"
UR	URINAL WALL MOUNTED FLUSH VALVE	"AMERICAN STANDARD" MAYBROOK #6581.015	"SLOAN" OPTIMA #8186 1.0 GAL PER FLUSH	JR SMITH #0615 WALL SUPPORT –	1"	–	3"	2"
L1	OVAL SELF RIMMING LAVATORY VITREOUS CHINA	"AMERICAN STANDARD" AQUALYN #0476.028 WHITE	"SLOAN" #EBF-650-BDT W/ MIXING VALVE	¼ TURN ANGLE STOPS & RISER TAILPIECE P-TRAP	½"	½"	2"	1½"
FD	– FLOOR DRAIN –	"J.R.SMITH" #2005-A –	"J.R.SMITH" TRAP SEAL #2692	– SQUARE TOP –	–	–	2"	1½"
IWH-1	INSTANTANEOUS WATER HEATER –	"STIEBEL ELTRON" MINI 3.5 #232099	– 31 AMPS –	32°F RISE @ .75 GPM FLOW RATE 120V/1ø –	¾"	¾"	–	–



P1 Waste & Vent Schematic
Scale: N.T.S.



SIZING BASED ON 2000 IFGC TABLE 402(2) WITH A MAXIMUM CONNECTED LOAD OF 185 CFH AND A TOTAL LENGTH OF 20' FEET.

P2 Gas Schematic
Scale: N.T.S.

8.0 PSI DROP

PIPE SIZE	GPM	FU (FT)	FU (FV)
½"	3	3	–
¾"	8	11	–
1"	18	25	–
1¼"	30	55	14
1½"	44	103	35
2"	77	259	135
2½"	120	479	365
3"	170	748	739

WATER CALCULATION

STATIC PRESS.:	60 PSI		
BLDG. HEIGHT :	20		
60.00	PSI PRESSURE IN MAIN		
20.00	PSI PRESSURE REQUIRED AT FURTHEST FIXTURE		

40.00	PSI SUBTOTAL		
7.00	PSI PRESSURE DROP THRU EXISTING METER		
10.00	PSI DROP THRU RPPBFP		

23.00	PSI SUBTOTAL		
8.66	PSI DROP FOR ELEVATION		

14.34	PSI ALLOWABLE FOR PIPE FRICTION		

TOTAL LENGTH OF WTR SYSTEM	=	40	
EQUIVALENT FEET OF PIPE ALLOWED FOR			
TEES, ELBOWS, FITTINGS, ETC.	=	13.2	
TOT. DEVELOPED LENGTH OF WTR SYSTEM=		53.2	
******** ********* *** ********* ********* ****** *********			
* ALLOWABLE FRICTION LOSS	=	=	27.0 PSI/100'*
******** ********* *** ********* ********* ****** *********			
8 LAV	2 FU	=	16 FU
14 WC	10 FU	=	140 FU
5 UR	5 FU	=	25 FU

	TOTAL FU	181	

	TOTAL	181	90 GPM

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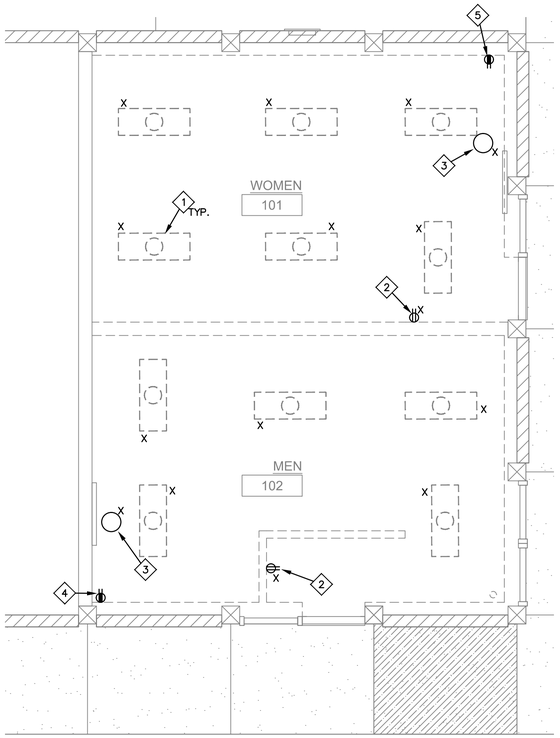
ARCHITECTURE & PLANNING

DRAWING: WASTE & VENT SCHEMATIC, DETAILS, AND SPECS

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

DRAWN BY
KEF
CHECKED BY
AJW
DATE
July 10, 2015
SCALE
AS NOTED
JOB NO.
670
SHEET
P2.0



KEYED NOTES : (#)

1. DEMOLISH EXISTING SURFACE MOUNTED LIGHTS.

2. DEMOLISH EXISTING DRINKING FOUNTAIN OUTLET. CONTRACTOR TO VERIFY EXISTING CIRCUIT AND REUSE OR SPARE OUT AS NEEDED.

3. DEMOLISH EXISTING WATER HEATER. CONTRACTOR TO VERIFY EXISTING CIRCUIT AND REUSE AS NEEDED.

4. DEMOLISH EXISTING COUNTER TOP GFCI RECEPTACLE CONTRACTOR TO VERIFY EXISTING CIRCUIT AND REUSE.

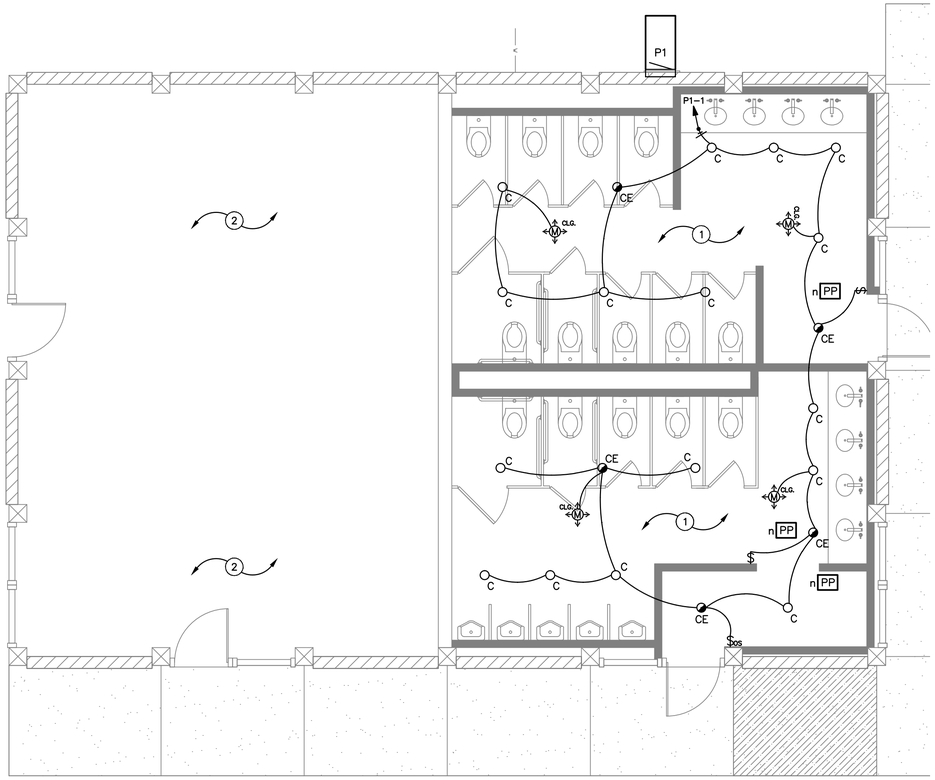
5. REMOVE EXISTING OUTLET AND PROVIDE NEW COUNTER TOP GFCI RECEPTACLE. CONTRACTOR TO VERIFY EXISTING CIRCUIT AND REUSE. SEE SHEET E2.0.

E2 Electrical Demo Plan

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

Plan North

FIXTURE / ITEM IDENTIFIED WITH LETTER:
'E' – INDICATES EXISTING TO REMAIN.
'N' – INDICATES NEW TO MATCH EXISTING.
'R' – INDICATES EXISTING TO BE RELOCATED.
'X' – INDICATES EXISTING TO BE REMOVED.



LIGHTING

GENERAL NOTES:

A. PRIOR TO ROUGH–IN, THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF ALL LIGHT FIXTURES: TO INCLUDE MOUNTING HEIGHTS AND LOCATIONS. ALL CONFLICTS SHALL BE REPORTED TO THE ENGINEER/ARCHITECT.

B. THE ELECTRICAL CONTRACTOR SHALL (PRIOR TO THEIR BID) a) VISIT THE SITE AND FIELD VERIFY ALL EXISTING CONDITIONS AND b) TAKE ALL CONSIDERATIONS INTO ACCOUNT AT THE TIME OF BID. NO CONSIDERATIONS WILL BE GRANTED THE CONTRACTOR AFTER THE BID IS ACCEPTED.

C. THE ELECTRICAL LIGHTING INSTALLATIONS SHALL CONFORM TO ALL STATE AND LOCAL SEISMIC AND CODE REQUIREMENTS REGARDING LIGHT FIXTURE SUPPORT.

D. ALL ELECTRICAL METALLIC TUBING (EMT), RIDGED NON–METALLIC CONDUITS, "SEAL TIGHT" TYPE CONDUITS AND ALL OTHER CONDUITS THAT DO NOT CONTAIN A CODE SIZED GROUND WIRE SHALL HAVE A CODE SIZED BOND WIRE INSTALLED WITH THE CIRCUIT CONDUCTORS.

E. ALL FIXTURES INSTALLED OUTDOORS SHALL BE RATED FOR DAMP/WET LOCATIONS AS REQUIRED. THE CONTRACTOR SHALL COORDINATE DAMP/WET LOCATION RATING PER NEC ARTICLE 410.10(A). ALL INSTALLATIONS SHALL CONFORM TO NEC ARTICLE 410, ALL SUB ARTICLES.

F. ALL FLUORESCENT FIXTURES THAT UTILIZE DOUBLE ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL BE CODE COMPLIANT WITH N.E.C. 410.130(G)

KEYED NOTES : (#)

1. PROVIDE NEW CAN LIGHTING IN THIS AREA CONNECT CONNECT TO EXISTING LOCAL AREA LIGHTING CIRCUIT.

2. EXISTING LIGHTING & POWER TO REMAIN IN THIS AREA.

E1 Electrical Lighting Plan

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

Plan North

Symbol	Manufacturer	Catalog Number	Description
$	nLIGHT	nPODM WH	nLIGHT LOW VOLTAGE SWITCH
$OS	SENSOR SWITCH	WSX PDT SA WH	SENSOR SWITCH LINE VOLTAGE WALL SWITCH DUAL TECH VACANCY SENSOR
n PP	nLIGHT	nPP16	nLIGHT POWER PACK-MULTI VOLT
	nLIGHT	nRM PDT 10	nLIGHT RECESSED MOUNT DUAL TECH MOTION SENSOR

LUMINAIRE SCHEDULE

CALLOUT	SYMBOL	LAMP	MODEL	DESCRIPTION	BALLAST	MOUNTING	INPUT WATTS	VOLTS
C	○	18.4W LED	LITHONIA LIGHTING LDN6–40/10–6AR–120	6" LED DOWNLIGHT, 4000K, 1000LUMENS, STANDARD DISTRIBUTION WITH CLEAR SEMI SPECULAR RELFECTOR.	ELECTRONIC	RECESSED	18.4	120V 1P 2W
CE	◒	18.4W LED	LITHONIA LIGHTING LDN6–40/10–6AR–120–EL	6" LED DOWNLIGHT, 4000K, 1000LUMENS, STANDARD DISTRIBUTION WITH CLEAR SEMI SPECULAR RELFECTOR. PROVIDE EMERGENCY BATTERY BACK UP 90 MIN. MINIMUM.	ELECTRONIC	RECESSED	18.4	120V 1P 2W

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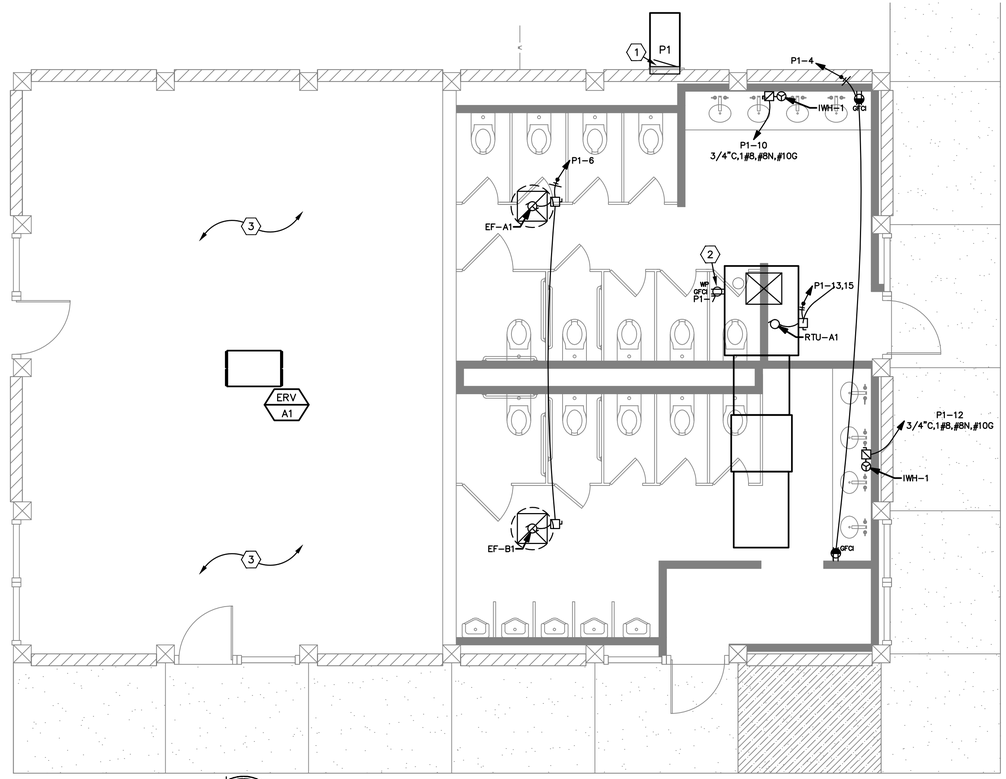
DRAWING: ELECTRICAL LIGHTING PLAN

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

DRAWN BY	ERC
CHECKED BY	KJH
DATE	July 10, 2015
SCALE	AS NOTED
JOB NO.	670
SHEET	E1.0

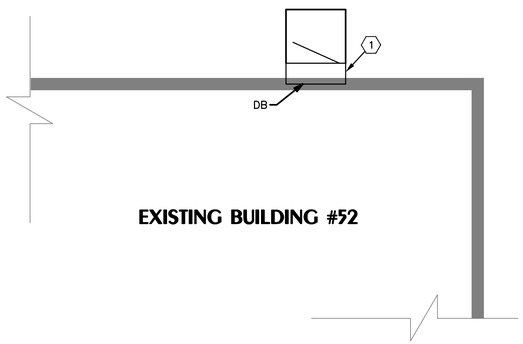
Jul 13, 2015 - 1:34pm



Electrical Power Plan

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

Plan North



POWER
GENERAL NOTES:

A. ALL EXTERIOR DISCONNECTS SHALL BE W.P. TYPE.

B. ALL RECEPTACLES WITHIN 6'-0" OF A SINK TO BE GFCI RATED.

C. REFER TO MECHANICAL AND PLUMBING PLANS FOR EXACT SIZE, LOCATION, AND ELECTRICAL REQUIREMENTS FOR ALL MECHANICAL AND PLUMBING EQUIPMENT. PROVIDE ELECTRICAL SERVICE AS REQUIRED FOR EACH ITEM.

D. ELECTRICAL CONTRACTOR RESPONSIBLE FOR COORDINATING EXACT LOCATION, QUANTITIES, AND INSTALLATION REQUIREMENTS OF ELECTRICAL EQUIPMENT IN MILL WORK.

F. ALL EXTERIOR RECEPTACLES SHALL BE W.P./GFCI TYPE.

G. ALL ELECTRICAL SWITCHGEAR EQUIPMENT SHOWN IS BASED ON SIEMENS BRAND EQUIPMENT U.N.O.

H. ALL ELECTRICAL PANEL BOARDS SHALL MAINTAIN 3'-0" INFRONT WORKING CLEARANCE REFER TO ONE-LINE FOR DETAILS.

I. PER NEC 430.102 A DISCONNECTING MEANS SHALL BE PROVIDED FOR A MOTOR IN ACCORDANCE WITH NEC 430.102(B)(1) OR (B)(2).

J. ALL 125VOLT, 15/20 AMP RECEPTACLES IN GARAGE SHALL BE GFCI TYPE PER NEC 210.8(B)(8)

KEYED NOTES : (#)

1. EXISTING PANEL BOARD MAINTAIN 3'-0" INFRONT WORKING CLEARANCE REFER TO ONE-LINE FOR DETAILS.

2. PROVIDE MAINTENANCE RECEPTACLE WITHIN 25' OF ALL MECHANICAL EQUIPMENT UNLESS EXISTING RECEPTACLES ARE PRESENT PER NEC 210.63.

3. EXISTING LIGHTING & POWER TO REMAIN IN THIS AREA.

GENERAL EQUIPMENT SCHEDULE

CALLOUT	SYMBOL	NEMA	VOLTS	CALCULATED AMPS	KVA	CALC. LOAD KVA	MCA	MOCP	CIRCUIT	WIRE CALLOUT	NOTE 1
EF-A1		NEMA 3R	120V 1P 2W	5.8	0.7	0.87			P1-6	3/4"C,1#12,#12N,#12G	ON TIME CLOCK
EF-B1		NEMA 3R	120V 1P 2W	5.8	0.7	0.87			P1-6	3/4"C,1#12,#12N,#12G	ON TIME CLOCK
IWH-1			120V 1P 2W	31	3.72	3.72			P1-10	3/4"C,1#8,#8N,#10G	
IWH-1			120V 1P 2W	31	3.72	3.72			P1-12	3/4"C,1#8,#8N,#10G	
RTU-A1		NEMA 3R	240V 2P 2W	4.9	1.18	1.47	8.6	20	P1-13,15	3/4"C,2#12,#12G	PROVIDE 30A/2P NEMA 3R FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION

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FAULT CURRENT SCHEDULE

DEVICE	FAULT	AIC RATING	L-N VOLTS	UTILITY			FED FROM				FEEDER						TOTAL MOTOR	DIRECTLY CONNECTED MOTOR LOAD			
				FAULT	X	R	DEVICE	FAULT	X	R	SIZE	X / 1000'	R / 1000'	LENGTH	X	R	FAULT	KVA	FAULT	X	R
DB	51,611	65,000	120V	51,502	0.002285	0.000457					(3)#600kcmil	0.013	0.0077		0	0	109				
P1	10,557	22,000	120V	10,448	0.007001	0.009104	DB	51,502	0.002285	0.000457	#3/0	0.042	0.077	112'-4"	0.0047	0.0086	109	6.57	109	1.063	0.2659

P1

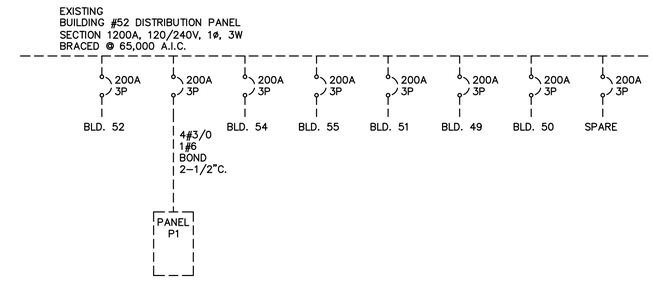
ROOM — VOLTS 240/120V 2P 3W — AIC 22,000
MOUNTING FLUSH — BUS AMPS 200 — MAIN BKR 200
FED FROM DB — NEUTRAL 100% — LUGS STANDARD
NOTE NEMA-3R

	CKT #	CKT BKR	CIRCUIT DESCRIPTION	KVA LOAD A	KVA LOAD B	CKT #	CKT BKR	CIRCUIT DESCRIPTION	KVA LOAD A	KVA LOAD B	
(2)	1	20/1	RR LIGHTING	0.386		2	20/1	W.OUTSIDEGFCI	0.18		(1)
	3	20/1	SPARE		0	4	20/1	RECEPTACLE		0.36	(2)
	5	20/1	SPARE	0		6	20/1	EF-A1, EF-B1	1.39		(2)
(1)	7	20/1	N.OUTSIDE GFCI RECEPTACLE		0.36	8	20/1	SPARE		0	
	9	20/1	SPARE	0		10	40/1	IWH-1	3.72		(3)
	11	20/1	SPARE		0	12	40/1	IWH-1		3.72	(3)
(3)	13	20/2	RTU-A1	0.588		14	30/2	AC	2		(1)
	15	|			0.588	16	|			2	
(1)	17	20/2	"230V OUTLET IN"	1		18	20/1	OUTSIDE LIGHTS	1		(1)
	19	|			1	20	20/1	POWER POLES		1.08	(1)
								TOTAL CONNECTED KVA BY PHASE	10.3	9.11	
								TOTAL CONNECTED AMPS BY PHASE	85.6	75.9	

	CONN. KVA	CALC. KVA			CONN. KVA	CALC. KVA	
LIGHTING	1.39	1.73	(125%)	CONTINUOUS	0	0	(125%)
LARGEST MOTOR	4	5	(125%)	HEATING	0	0	(100%)
OTHER MOTORS	2.57	2.57	(100%)	NONCONTINUOUS	7.44	7.44	(100%)
RECEPTACLES	3.98	3.98	(50%>10)	KITCHEN EQUIP	0	0	(N/A)
				NONCOIN/DIVERSE	0	0	(N/A)
				TOTAL KVA	19.4	20.7	

EXISTING SUSE RATED PANEL — BALANCED PHASE AMPS 86.3

* E.C. TO VERIFY USED BREAKERS TO REMAIN FOR EXISTING SPACE.



PARTIAL ONE-LINE DIAGRAM

N.T.S.

GENERAL NOTES :(1) (1)

A. DASHED LINES INDICATE EXISTING EQUIPMENT. SOLID LINES INDICATE NEW EQUIPMENT U.N.O.

B. ALL NEW ELECTRICAL GEAR TO MATCH EXISTING EQUIPMENT U.N.O.

C. PER NEC 210.4(B), ALL MULTIWIRE BRANCH CIRCUITS ARE TO BE PROVIDED WITH A DEVICE THAT WILL DISCONNECT POWER TO ALL UNGROUNDED CONDUCTORS SIMULTANEOUSLY AT POINT OF ORIGIN.

ONE-LINE NOTES:

A. SWITCHBOARD COMPONENTS, INCLUDING OVERCURRENT PROTECTIVE DEVICES SHALL BE FULLY RATED FOR THE AVAILABLE FAULT CURRENT SHOWN.

B. PROVIDE ARC FLASH AND SHOCK HAZARD WARNING IDENTIFICATION PER NEC ARTICLE 110.16

C. "NO DESIGN CHANGES MAY BE MADE TO THE SYSTEM WITHOUT THE PRIOR APPROVAL OF THE DESIGN ENGINEER AND THE ELECTRICAL INSPECTOR."

PANEL SCHEDULE NOTES:

A. A.I.C. RATING SHOWN ON PANEL SCHEDULES ARE THE MINIMUM RATING FOR NEW AND REPLACEMENT OVERCURRENT PROTECTIVE DEVICES. EACH DEVICE SHALL BE FULLY RATED AT AFC AS SHOWN ON ONE-LINE DIAGRAM.

B. ALL PANEL BOARDS SHALL HAVE A TYPE WRITTEN DIRECTORY IDENTIFYING EACH NUMBERED CIRCUIT PLACED IN A DIRECTORY HOLDER INSIDE THE DOOR.

C. THE CONTRACTOR SHALL PERMANENTLY MARK WITH PERMANENT MARKER THE CIRCUIT IDENTIFICATIONS ON THE COVERPLATES OF RECEPTACLES, EQUIPMENT, AND LIGHTING JUNCTION BOXES. (STICK ON LABELS NOT ACCEPTABLE)

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Registered Professional Engineer
32857
BRYAN P. JEHLING
Date Signed 07.8.15
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DRAWING: ELECTRICAL ONE-LINE DIAGRAM

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

DRAWN BY	ERC
CHECKED BY	KJH
DATE	July 10, 2015
SCALE	AS NOTED
JOB NO.	670
SHEET	E3.0

Jul 13, 2015 - 1:34pm

ELECTRICAL SPECIFICATIONS

1 GENERAL PROVISIONS:

_SUMMARY: THIS SECTION DESCRIBES IN GENERAL, REQUIREMENTS OF THE ELECTRICAL AND RELATED ITEMS OF WORK NECESSARY FOR THE COMPLETE JOB INDICATED BY THE CONTRACT DOCUMENTS. THE GENERAL CONDITIONS ARE APPLICABLE TO THIS SECTION AND SHALL FORM A PART OF THE CONTRACT.

GENERAL LIST OF WORK: RELATED WORK DESCRIBED IN OTHER SECTIONS WHICH IS COMMONLY EXECUTED BY AN ELECTRICAL SUB-CONTRACTOR AND/OR HIS SUPPLIER INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

FURNISHING AND INSTALLING:

DISTRIBUTION SYSTEMS FOR LIGHTING AND POWER INCLUDING FEEDERS, BRANCH CIRCUIT PANELS, LIGHTING FIXTURES WITH LAMPS, CONTROL SWITCHES, RECEPTACLES, AND DISCONNECT SWITCHES.

WIRING TO AND CONNECTION OF MOTORS AND CONTROLS AND INSTALLING MOTORS, CONTROLS AND MOTORIZED EQUIPMENT. STARTERS NOT FURNISHED INTEGRAL WITH THE EQUIPMENT SHALL BE FURNISHED AS A PART OF THIS CONTRACT.

SLEEVES, BLOCKOUTS, INSERTS, ANCHORAGE DEVICES, ETC.

WORK LISTED ELSEWHERE:

THE FOLLOWING ITEMS OF WORK, EVEN IF DESCRIBED IN THIS SECTION SHALL BE EXECUTED UNDER OTHER SECTIONS.

FURNISHING AND INSTALLING MOTORS AND CONTROLS.

FURNISHING HOLE CUTTING IN PRE-CAST STRUCTURAL CONCRETE.

CODES AND ORDINANCES: INSTALL ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ITS LATEST REVISIONS, WITH THE REGULATIONS OF ANY AND ALL STATE AND LOCAL CODES AND ORDINANCES STANDARD SPECIFICATIONS OF THE POWER COMPANY.

CERTIFICATES:

ALL WORK INCLUDED SHALL COMPLY WITH ALL STATE AND LOCAL RULES AND REGULATIONS. FURNISH TO THE OWNER ALL CERTIFICATES OF INSPECTION AND APPROVAL AS REQUIRED.

EXAMINATION OF PREMISES:

PRIOR TO SUBMITTING PROPOSAL, THE BIDDER SHALL EXAMINE ALL GENERAL CONSTRUCTION DRAWINGS AND VISIT CONSTRUCTION SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS UNDER WHICH HE WILL HAVE TO OPERATE AND WHICH WILL IN ANY WAY AFFECT THE WORK UNDER THIS CONTRACT. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN THIS CONNECTION ON BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.

PRIOR TO ORDERING ANY MATERIALS OR DOING ANY WORK, VERIFY THE DIMENSIONS AT THE SITE; CORRECTNESS OF DIMENSIONS WILL BE THIS CONTRACTOR'S RESPONSIBILITY. NO EXTRA CHARGES OR COMPENSATION WILL BE ALLOWED FOR DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE DRAWINGS. IMMEDIATELY REPORT DIFFERENCES TO THE ARCHITECT AND DO NOT PROCEED WITH WORK UNTIL THE ARCHITECT RENDERS HIS DECISION.

HANGERS: FURNISH AND INSTALL ALL UNISTRUT, HANGERS, SUPPORTS, ETC., REQUIRED FOR WORK UNDER THIS DIVISION. SUPPORT CONDUIT FROM BUILDING STRUCTURE, NOT FROM CEILING SUPPORTS. BRANCH CIRCUIT CONDUIT 3/4" AND SMALLER MAY BE RUN FROM CEILING SUPPORTS USING SPRING STEEL CLIPS.

FINAL LOCATION OF SURFACE FEATURES: SHALL BE ACCOMPLISHED IN THE FIELD, SUBJECT TO THE APPROVAL OF THE ARCHITECT. THE LOCATION OF ALL SWITCHES, FIXTURES, PANELS, ETC., AND THEIR PROXIMITY AND RELATIONSHIP TO ALL VISIBLE FEATURES OF EQUIPMENT FURNISHED BY OTHER TRADES, SHALL BE MADE KNOWN TO THE ARCHITECT. IN CASE OF CONFLICT BETWEEN TRADES, OR BETWEEN A TRADE AND THE ARCHITECT, THE DECISION OF THE ARCHITECT SHALL BE FINAL AND HIS INSTRUCTIONS IN THESE MATTERS SHALL BE FOLLOWED BY ALL CONCERNED.

STANDARD OF MATERIAL AND WORKMANSHIP: ALL MATERIALS SHALL BE NEW AND SHALL CONFORM TO UL STANDARDS IN EVERY CASE WHERE SUCH A STANDARD HAS BEEN ESTABLISHED AND SHALL BEAR THE UL LABEL. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE BEST ACCEPTED STANDARDS OF GOOD WORKMANSHIP AND SHALL PRESENT A NEAT APPEARANCE WHEN COMPLETE.

CUTTING AND PATCHING:

ALL CUTTING NECESSARY FOR INSTALLATION OF THE WORK AND REPAIR OF ALL DAMAGE TO WORK UNDER OTHER SECTIONS, SHALL BE INCLUDED IN WORK SPECIFIED UNDER THIS SECTION INCLUDING PATCHING, FLASHING AND SEALING ALL ROOF PENETRATIONS RELATING TO OVERHEAD SERVICES. NO CUTTING SHALL BE DONE WITHOUT APPROVAL OF ARCHITECT.

CONTRACTOR SHALL REPAIR ANY DAMAGE DONE BY HIMSELF OR HIS WORKMEN AND SHALL COORDINATE HIS WORK WITH THAT OF OTHER PARTIES. CUTTING, PATCHING, AND PROVIDING ANY OPENINGS, LINTEL, OR SUPPORTS REQUIRED FOR INSTALLATION OF THE WORK SHALL BE INCLUDED IN THIS SECTION.

PAINTING:

ALL EXPOSED ELECTRICAL EQUIPMENT, CONDUIT, FLUSH PANEL FRONTS, TRANSFORMERS, SWITCHES, SWITCHBOARDS, PANELS AND SIMILAR ITEMS SHALL BE PAINTED AS SPECIFIED UNDER THE PAINTING SECTION OF ARCH. SPECIFICATIONS.

SUPERVISE ALL PAINTING OF ELECTRICAL EQUIPMENT.

2 BASIC MATERIALS AND METHODS:

WIRE AND CABLE:

GENERAL: ALL CONDUCTORS SHALL BE COPPER.

ALL INTERIOR BRANCH WIRING SHALL BE TYPE "THW-2", "THHN-2" OR "THWN-2", 600 VOLT AND A MINIMUM OF #12 EXCEPT FOR CONTROL WIRING WHICH SHALL BE STRANDED AND A MINIMUM OF #14.

WIRE #8 AND LARGER SHALL BE STRANDED. WIRE #2 AND LARGER, OR AS NOTED, SHALL BE TYPE "XHHW-2" WITH CROSS LINK POLYETHYLENE INSULATION.

MANUFACTURERS SHALL BE GENERAL CABLE, OKONITE, ROME CABLE, ANACONDA, GENERAL ELECTRIC, KAISER OR SOUTHWIRE.

INSTALLATION: MC CABLE MAY BE USED WHERE CONCEALED ONLY IN ACCESSIBLE SPACES AND ONLY WITH WRITTEN PERMISSION FROM THE OWNER PRIOR TO INSTALLATION. ALL INSTALLATIONS SHALL COMPLY WITH NEC 330.

WIRE SINGLE PHASE EQUIPMENT AND LIGHTING SO THERE IS A MINIMUM OF IMBALANCE BETWEEN CURRENT CARRYING CONDUCTORS. CONDUCTORS SHALL BE CONTINUOUS AND OF SUCH LENGTHS THAT NO SPLICE OCCURS EXCEPT WITHIN OUTLET, JUNCTION OR PULLBOXES, SWITCH, CONDUIT FITTINGS, OR OTHER SIMILAR DEVICES IN EQUIPMENT. SPLICES SHALL JOIN CONDUCTORS SECURELY TOGETHER BOTH MECHANICALLY AND ELECTRICALLY.

MAKE CONNECTIONS AND SPLICES FOR #10 WIRE AND SMALLER WITH BUCHANAN B-CAP, 3-M SCOTCHLOK OR IDEAL WING-NUT, PRE-INSULATED WIRE CONNECTORS (SIZES AS RECOMMENDED BY MANUFACTURER). MAKE CONNECTIONS AND SPLICES FOR #8 COMPRESSION TYPE CONNECTORS BY O.Z., BURNDY, BUCHANAN, T & B OR ILSCO. TAPE ALL SPLICES WITH PLASTIC SO INSULATION IS AT LEAST EQUIVALENT TO INSULATION OF CONDUCTORS. THOROUGHLY CLEAN ENDS BEFORE SPLICING. WHERE PLASTIC TAPE IS USED AND THERE IS ANY DANGER OF INSULATION DAMAGE FROM PRESSURE OR JOINT AGAINST NON-CURRENT CARRYING METAL PARTS, USE FRICTION TAPE FOR ADDITIONAL PROTECTION.

ALL WIRING IN PANELBOARDS, CENTERS AND GUTTERS SHALL BE NEATLY ARRANGED. WIRE SHALL BE HELD BUNDLED BY TY-RAPS. WIRES SHALL BE CONNECTED TO CIRCUIT BREAKERS, SWITCHES AND OTHER DEVICES PERPENDICULAR TO TERMINAL LUGS.

LIGHTING AND POWER CIRCUITS SHALL BE IDENTIFIED BY PANEL LETTER AND CIRCUIT NUMBER WITH BRADY WRAPAROUND CLOTH WIRE MARKERS AT ALL TERMINATIONS AND JUNCTIONS.

ALL BRANCH CIRCUIT AND FEEDER CONDUCTORS SHALL BE COLOR- CODED TO CONFORM TO THE EXISTING COLOR CODES.

SOLID CONDUCTORS SHALL LOOP TIGHTLY AND COMPLETELY AROUND TERMINAL SCREWS ON ALL WIRING DEVICES.

CONDUIT RACEWAYS:

CONDUIT SYSTEMS SHALL BE RIGID GALVANIZED METAL, INTERMEDIATE METAL CONDUIT (IMC), ELECTRICAL METALLIC TUBING (EMT), RIGID ALUMINUM, NON-METALLIC FIBER OR AS SPECIFIED HEREIN OR AS INDICATED ON THE PLANS. ALL SYSTEMS SHALL BE CONTINUOUS.

RIGID STEEL CONDUIT SHALL BE HEAVY-WALLED, HOT-DIPPED, GALVANIZED OR SHERARIZED. USE RIGID STEEL CONDUIT IN CONCRETE SLABS, IN GRADE, IN EXPOSED LOCATIONS SUCH AS TUNNELS AND EQUIPMENT ROOMS, WHERE EXPOSED TO WEATHER AND WHERE BURIED IN EARTH. SCHEDULE 40 PVC NON-METALLIC CONDUIT MAY BE USED BURIED IN EARTH MINIMUM 24" BELOW GRADE. ALL CONDUIT EXTENDED UNDER DRIVEWAYS OR AREAS OF VEHICULAR USAGE SHALL BE GALVANIZED HEAVY WALL STEEL CONDUIT OR SCHEDULE 80 PVC NON-METALLIC CONDUIT, MINIMUM 30" BELOW GRADE. STEEL CONDUIT INSTALLED UNDERGROUND SHALL BE ENCASED IN TWO INCH MINIMUM, CONCRETE ENVELOPE OR COMPLETELY COVERED WITH HALF-LAPPED #50 SCOTCH-WRAP TOP OF UNDERGROUND CONDUITS SHALL NOT BE LESS THAN 24". PVC ELECTRICAL CONDUIT, UL LISTED MAY BE USED FOR UNDERGROUND SECTIONS OF LIGHTING CIRCUITS AND FEEDER RACEWAYS. ALL NON-METALLIC CONDUITS SHALL HAVE BOND WIRES, EXCEPT WHEN FEEDING SERVICES.

IMC SHALL BE ZINC COATED STEEL TUBING. IMC MAY BE USED WHERE RIGID STEEL IS PERMITTED.

EMT SHALL BE ZINC-COATED. EMT MAY BE USED IN FURRED SPACES, IN METAL OR WOOD STUD WALLS IN EITHER EXPOSED OR CONCEALED FASHION AND WHERE NOT SUBJECT TO DAMAGE EXCEPT FOR BRANCH CIRCUITS AND FEEDERS OVER 100A. EMT SHALL BE REAMED AFTER CUTTING AND SHALL BE MADE TO BUTT IN THE CENTER OF THE COUPLING.

FLEXIBLE CONDUIT SHALL BE USED IN MINIMUM LENGTHS TO CONNECT TO MOTORS, RECESSED FIXTURES, TRANSFORMERS AND EQUIPMENT SUBJECT TO VIBRATION. IN EXTERIOR AND WET LOCATIONS, USE ANACONDA TYPE VA FLEXIBLE CONDUIT WITH APPLETON OR T & B WATER TIGHT CONNECTORS. FLEXIBLE CONDUIT CONNECTORS SHALL BE COMPRESSION OR CLAMP TYPE; SCREW ON TYPE NOT PERMITTED.

WHERE EXPOSED, INSTALL CONDUIT PARALLEL TO WALLS AND PARTITIONS; DO NOT CROSS WINDOW OPENINGS.

WHERE SUSPENDED CEILING OCCURS, RUN CONDUIT CONCEALED ABOVE FURRED CEILING AND IN WALLS.

ALL CONDUIT STUBBED-UP THROUGH ROOF SHALL BE FLASHED WITH A TYPE OF FLASHING APPROVED BY MANUFACTURER OF ROOFING MATERIALS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

CONDUIT SHALL BE FIRMLY FASTENED WITHIN 3 FEET OF EACH OUTLET BOX, JUNCTION BOX, CABINET OR FITTING AND SHALL BE SUPPORTED AT LEAST EVERY 10 FEET.

CONDUIT FITTINGS:

EMT OR THREADLESS RIGID SHALL BE COMPRESSION TYPE, MACHINE STEEL INSULATED THROAT, APPLETON, RACO, T & B, OR TOMIC INSULATED TAP-ON. SET SCREW FITTINGS WILL NOT BE PERMITTED.

PROVIDE DOUBLE LOCKNUTS AND BUSHINGS AT ALL RIGID CONDUIT TERMINATIONS EXCEPT AT THREADED HUBS. BUSHINGS SHALL BE O.Z. TYPE A, MOLDED BAKELITE EXCEPT FOR 2" CONDUIT AND LARGER SHALL BE O.Z. TYPE B OR BL WHERE GROUNDING IS REQUIRED.

GUTTER, PULLBOXES AND JUNCTION BOXES:

BOXES SHALL BE FABRICATED FROM CODE GAUGE STEEL WITHOUT KNOCKOUTS AND A MINIMUM 14 GAUGE FRONT COVER. FINISH SHALL BE GALVANIZED STEEL OR PHOSPHATE UNDERCOATING WITH 2 FINISH COATS; HAMMER GRAY OR BAKED ENAMEL.

JUNCTION BOXES SHOWN OUTSIDE, FLUSH OR SURFACE MOUNTED, SHALL BE WATER TIGHT, ALL WELDED CONSTRUCTION WITH NEOPRENE GASKETED SCREWED COVERS, NEMA TYPE III.

NAMEPLATES:

PROVIDE CONTRAST PLASTIC EMBOSSING TAPE, ADHESIVE BACKED NAMEPLATES FOR ALL STARTERS AND DISCONNECT SWITCHES.PROVIDE LAMICOID NAMEPLATES FOR ALL DISTRIBUTION SWITCHES, BREAKERS, LIGHTING AND POWER PANELS; SIZE OF LETTERS SHALL BE A MINIMUM OF 3/16" HIGH.

FUSES:

FUSES SHALL BE HIGH-CAPACITY, CURRENT-LIMITING, LOW-PEAK OR DUAL ELEMENT AS INDICATED.

DUAL-ELEMENT FUSES SHALL BE USED FOR ALL MOTOR LOADS.

TYPE "R" FUSE SHALL BE USED FOR MOTOR LOADS AND WHERE INDICATED ON DRAWINGS.

FURNISH TO THE OWNER AT EACH SWITCHBOARD, 2 SETS OF SPARE FUSES FOR EACH SIZE USED BELOW 100 AMPS AND ONE SET FOR EACH SIZE 100 AMPS AND ABOVE.

ALL FUSES SHALL BE ON THE SAME MANUFACTURER.

FUSES AS SPECIFIED ON THE DRAWINGS ARE SELECTED TO PROVIDE COMPLIANCE WITH SECTION 110-9, 110-10 AND 230-98 OF THE NATIONAL ELECTRICAL CODE. SUBSTATION OF FUSES BY OTHER MANUFACTURER'S (BUSSMAN, ECONOMY FUSE OR SHAWMUT) WILL BE CONSIDERED WHEN SHORT CIRCUIT CALCULATIONS AND FUSE CURVES ARE PROVIDED TO THE ENGINEER FOR REVIEW. ADDITIONALLY, THE CONTRACTOR SHALL PROVIDE CALCULATIONS TO SHOW THE PROPOSED FUSES PROVIDE FOR A SELECTIVELY COORDINATED DESIGN.

OUTLETS:

OUTLET BOXES SHALL BE STANDARD GALVANIZED STEEL TYPE MINIMUM 1.5" DEEP, SINGLE OR GANG STYLE, OF SIZE TO ACCOMMODATE DEVICE NOTED AND INSTALLED IN ACCORDANCE WITH ARTICLE 370 OF THE NEC. HANDY BOXES AND SECTIONAL SWITCH BOXES WILL NOT BE PERMITTED.
BOXES EXPOSED OUTDOORS SHALL BE CAST FERROUS ALLOY, TYPE FS UNILETS WITH SCREW HUBS OR EQUAL.

BOXES SHALL BE SECURELY AND RIGIDLY FASTENED TO THE STRUCTURE UPON WHICH THEY ARE MOUNTED OR SECURELY AND RIGIDLY EMBEDDED IN CONCRETE OR MASONRY.

PROVIDE FIXTURE STUDS AND PLASTER RINGS AS REQUIRED TO BRING ALL OUTLETS TO WITHIN 1/8" OR LESS OF FINISHED SURFACE.

APPROVED MANUFACTURERS ARE: APPLETON, RACO, STEEL CITY OR BOWERS.

LIGHT SWITCHES: (COLOR SELECTION BY ARCH.)

HUBBELL #1221-I 20A SINGLE POLE

HUBBELL #1223-I 20A THREE WAY

MANUFACTURERS SHALL BE HUBBELL, BRYANT OR SIERRA.

RECEPTACLES:

HUBBELL #5362-I 20A/125V/DUPLEX
OR #5242 MOUNT WITH GROUND "U" SLOT DOWN
FOR ISOLATED GROUND - HUBBELL #IG8300 (ORANGE)

FINISH WALL PLATES:

PLATES SHALL BE S = POSTSC MOOTH PLASTIC TO MATCH RECEPTACLE AND OF ONE MANUFACTURER; BRYANT, SIERRA OR APPROVED EQUAL. COLOR MUST BE SELECTED BY ARCH.

DEVICE PLATES SHALL BE INSTALLED SO AS TO COMPLETELY SEAT AGAINST THE WALL SURFACE.

3 SERVICE AND DISTRIBUTION:

LIGHTING PANELS:

LIGHTING PANELS SHALL BE CIRCUIT BREAKER TYPE. CABINETS SHALL HAVE DOORS FASTENED TO TRIM WITH CONCEALED HINGES AND BE PROVIDED WITH FLUSH TYPE COMBINATION LATCH AND LOCK; THREE KEYS FOR EACH. ALL PANELS SHALL BE KEYED ALIKE. CABINETS AND TRIMS SHALL BE FACTORY PAINTED TWO FINISH COATS AND SHALL BE FLUSH OR SURFACE MOUNTED AS INDICATED. EACH CIRCUIT SHALL BE NUMBERED AND COMPLETELY IDENTIFIED BY MEANS OF A TYPEWRITTEN CARD PLACED IN DIRECTORY HOLDER ON INSIDE OF DOOR. ALL DIRECTORY HOLDERS SHALL BE SIX (6) INCHES WIDE. BEFORE INSTALLING, TIGHTEN ALL BOLTED CONNECTIONS THAT MAY HAVE BECOME LOOSE IN SHIPPING.

CABINETS SHALL BE WITHOUT KNOCKOUTS. ALL KNOCKOUTS SHALL BE CUT ON THE JOB.

STUB UP ON 3/4" CONDUIT INTO THE FURRED SPACE ABOVE FLUSH MOUNTED CABINETS FOR EACH TWO SPARE CIRCUITS OR SPACES; TO A MAXIMUM OF 5 CONDUITS.

ALL PANELS SHALL BE EQUIPPED WITH GROUND BUS.

ALL PANELBOARDS SHALL HAVE THE SIZE OF THE FEEDER AND CONDUIT STENCILED ON THE INSIDE OF THE DOOR. "DYMO" TAPE OR EQUIVALENT IS NOT ACCEPTABLE.

SAFETY (DISCONNECT) SWITCHES:

SHALL BE HEAVY DUTY TYPE WITH COVER INTERLOCKS. PROVIDE ALL DISCONNECT SWITCHES REQUIRED BY CODE. SWITCHES FOR MOTOR APPLICATIONS SHALL BE HORSEPOWER RATED.

SWITCHES LOCATED OUTSIDE THE BUILDING SHALL HAVE NEMA TYPE 3R ENCLOSURES.

FURNISH AND INSTALL THE PROPER SIZE FUSES (DETERMINED FROM FULL LOAD NAMEPLATE READINGS ON MOTORS AND COMPENSATED FOR AMBIENT TEMPERATURE) IN ALL SAFETY SWITCHES WHETHER THEY BE FURNISHED BY THIS CONTRACTOR OR OTHERS.

MOTOR WIRING:

ALL MOTORS WILL BE FURNISHED AND SET IN PLACE BY TRADE FURNISHED THE DRIVEN EQUIPMENT. FURNISH AND INSTALL ALL CONDUIT, WIRING, CIRCUIT PROTECTIVE DEVICES, SWITCHES AND SUCH OTHER APPURTENANCES NECESSARY TO COMPLETE CONNECTION OF ALL MOTORS AND CONTROLS. THIS SHALL INCLUDE THE HIGH AND LOW VOLTAGE CONTROL WIRING. MOTORS AND CONTROLS FOR MECHANICAL EQUIPMENT SHALL BE WIRED IN ACCORDANCE WITH MANUFACTURER'S WIRING DIAGRAMS.

CONNECTIONS TO MOTOR STARTERS AND CONTROLS SHALL BE MADE WITH CONDUIT. FINAL CONNECTIONS TO MOTORS ON ADJUSTABLE BASES OR MOTORS SUBJECT TO EXCESSIVE VIBRATION SHALL BE MADE WITH FLEXIBLE CONDUIT, EXCEPT FOR OUTDOOR INSTALLATION IN WHICH CASE SEAL-TITE NEOPRENE COVERED FLEXIBLE CONDUIT WITH SEAL-TITE FITTINGS OR TYPE "SO" CORD WITH RUBBER GLAND WATER-TITE CORD GRIPS SHALL BE USED, BUT ONLY TO THE EXTENT OF MINIMUM LENGTHS REQUIRED FOR A CASE GROUND. REFER TO AIR CONDITIONING SECTION FOR SPECIFIC CONTROLS, SWITCHES, THERMOSTATS, ETC., FURNISHED FOR INSTALLATION UNDER THIS SECTION.

VERIFY HORSEPOWER RATINGS AND FULL LOAD CURRENTS OF MOTORS BEING SUPPLIED BY OTHER TRADES. ANY DISCREPANCY BETWEEN ACTUAL FULL LOAD CURRENTS OF MOTORS DELIVERED TO THE JOB SITE AND STANDARD FULL LOAD CURRENTS OF SINGLE PHASE AND THREE PHASE SQUIRREL CAGE INDUCTION MOTORS, (HORSEPOWER RATING AS LISTED) SHALL BE REPORTED TO THE ARCHITECT FOR CORRECTION AND DECISION BEFORE ANY AFFECTED WORK IS DONE.

GROUNDING:

THE NEUTRAL CONDUCTORS AND ALL OTHER EXPOSED NON CURRENT CARRYING METAL PARTS AS REQUIRED BY CODE SHALL BE GROUNDED. GROUNDING BUSHINGS SHALL BE USED AS REQUIRED AND SHALL BE O.Z. INSULATED TYPE BL OR APPROVED EQUAL. NO GROUNDING SHALL BE MADE TO GAS PIPING. WHERE EQUIPMENT OR DEVICES ARE SERVED BY NON-METALLIC DUCTS, ENCLOSURES SHALL BE GROUNDED BY MEANS OF A CODE SIZE BARE OR GREEN INSULATED EQUIPMENT GROUND WIRE INSTALLED IN THE DUCT WITH THE CURRENT CARRYING CONDUCTORS AND BE BONDED SECURELY IN EACH CABINET TERMINATING THE GROUND WIRE. COPPER JUMPERS SHALL BRIDGE FLEXIBLE CONDUIT AND BE INSTALLED IN THE CONDUIT. ALL SERVICE GROUNDS SHALL BE IN ACCORDANCE WITH THE UFER GROUND.

4 LIGHTING:

LIGHTING FIXTURES:

FIXTURES SHALL BE FURNISHED COMPLETE WITH LAMPS OF PROPER WATTAGE AND BE UL LISTED IN ACCORDANCE WITH LIGHTING FIXTURE SCHEDULE. PROVIDE ALL FITTINGS, HANGERS, SUPPORTS, PLASTER FRAMES AND OTHER NECESSARY APPURTENANCE. FIXTURES SHOWN IN FIXTURE SCHEDULE WITH SAME LETTER DESIGNATION SHALL BE OF ONE MANUFACTURER AND BE IDENTICAL IN DESIGN AND APPEARANCE.

ALL FLUORESCENT FIXTURES SHALL BE UL APPROVED AND HAVE PROTECTED BALLASTS, UL CLASS P RATED CBM APPROVED, ETL TESTED.

FIXTURE MANUFACTURER SHALL PROVIDED THE PROPER BALLAST WITH THE FIXTURE TO PERMIT CONTINUOUS OPERATION WITHIN THE TEMPERATURE CONDITION OF THE INSTALLED LOCATION.

VERIFY THE TYPE AND CONSTRUCTION OF ALL CEILINGS BEFORE SUBMITTING SHOP DRAWINGS OR ORDERING FIXTURES TO DETERMINE COMPATIBILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE CEILING SUPPLIER AND MODIFICATION NECESSARY FOR PROPER INSTALLATION OF THE FIXTURES WITHIN OR ON THE CEILINGS.

INCANDESCENT FIXTURES SHALL BE UL LISTED FOR THE APPLICATION AND BE PROVIDED WITH JUNCTION BOXES APPROVED FOR THROUGH WIRING. FLUSH OR RECESSED INCANDESCENT FIXTURES SHALL HAVE THERMAL PROTECTION AND SHALL BE IDENTIFIED AS THERMALLY PROTECTED.

LAMPS:

FLUORESCENT LAMPS SHALL BE T-8, RAPID-START, UNLESS OTHERWISE NOTED. ALL INCANDESCENT LAMPS SHALL BE 130 VOLTS UNLESS OTHERWISE SPECIFIED.

APPROVED MANUFACTURERS ARE: GENERAL ELECTRIC, SYLVANIA OR PHILLIPS.

LIGHTING FIXTURE INSTALLATION:

FIXTURES SHALL BE WIRED COMPLETE WITH COLOR-CODED WIRES TO INDICATED POLARITY. WHITE FIXTURE WIRE SHALL BE CONNECTED TO THE SHELL TERMINALS OF SOCKETS AND CONNECTED TO THE NEUTRAL WIRE OF THE LIGHTING SYSTEM.

INSTALL AND CONNECT LIGHTING FIXTURES ON ALL DESIGNATED OUTLETS IN BUILDING. NON-DESIGNATED OUTLETS SHALL BE EQUIPPED WITH FIXTURES SIMILAR TO LIKE AREAS.

ALL FIXTURES SHALL BE TESTED BEFORE AND AFTER INSTALLATION AND SHALL SHOW FREE OF GROUNDS, SHORTS, ETC.

ALL FIXTURES AND FIXTURE SUPPORTS SHALL BE CLEANED, PAINTED WHERE NECESSARY AND LEFT IN FIRST CLASS OPERATING CONDITION UPON COMPLETION OF THE WORK. THIS CONTRACTOR SHALL MAKE GOOD ALL BREAKAGE OF LAMPS, GLASS AND FIXTURE BOWLS OR OTHER DAMAGE OR ARRANGE FOR REPLACEMENT WITH THE ARCHITECT.

ALL FIXTURES SHALL BE PROPERLY SUPPORTED FROM CEILING STRUCTURE.

COMPLETE THE CONNECTION OF ALL FIXTURES TO THE BUILDING WIRING AT THE OUTLET FOR FIXTURES. CIRCUIT WIRES FOR FLUORESCENT FIXTURES THAT RUN THROUGH THE RACEWAYS OF SAID FIXTURES SHALL BE TYPE THHN, RHH, OR MTW. MINIMUM SIZE SHALL BE #12.

ALL FLUORESCENT FIXTURES RECESSED IN THE CEILING OR IN A GRID CEILING SHALL BE PROVIDED WITH EARTHQUAKE CLIPS.

END OF SECTION

ELECTRICAL/ SPECIAL SYSTEM SYMBOLS

NOT ALL SYMBOLS MAY APPLY.

- FLUORESCENT SURFACE MOUNTED FIXTURE. LETTER OR NOTE INDICATES TYPE:
- FLUORESCENT STRIP FIXTURE (LETTER OR NOTE INDICATES TYPE)
- 2'X4' FLUORESCENT LIGHT FIXTURE (LETTER OR NOTE INDICATES TYPE)
- N.L. — INDICATES N.L. & EMERGENCY LIGHT FIXTURE. BALLAST TO BE CONNECTED TO UNSWITCHED CONDUCTORS WITH BATTERY BACK-UP TO BE BODINE #B50 (OR EQUAL). TYPICAL OF SHADED FIXTURES.
- 2'X2' FLUORESCENT LIGHT FIXTURE (LETTER OR NOTE INDICATES TYPE)
- RECESSED DOWNLIGHT, SUPERSCRIPT INDICATES TYPE. SHADED INDICATES BATTERY BACK-UP TO BE PROVIDED.
- EMERGENCY EXIT SIGN, CONNECT TO UNSWITCHED CONDUCTORS WITH BATTERY BACK UP. FACES & MOUNTING TO BE FIELD VERIFIED WITH LOCAL AUTHORITY. AUDIBLE AND VISIBLE ANNUNCIATION IN EMERGENCY MODE TIED TO FIRE/ALARM.
- WALL MOUNTED LIGHTING FIXTURE; SUPERSCRIPT INDICATES TYPE:
- POLE MOUNTED LIGHTING FIXTURE; SUPERSCRIPT INDICATES TYPE:
- DUPLEX RECEPTACLE, NEMA 5-20R, 18" A.F.F., UNLESS NOTED OTHERWISE.
- DUPLEX RECEPTACLE, NEMA 5-20R, MTD. 6" ABOVE COUNTER BACK SPLASH OR PER ADA AND ARCHITECT, OR U.N.O.
- 1/2 SWITCHED DUPLEX RECEPTACLE.
- FOURPLEX RECEPTACLE, NEMA 5-20R, 18" A.F.F., U.N.O.
- D — WALL MOUNTED DUPLEX RECEPTACLE IN DEDICATED CIRCUIT; 20R, 120V., 3 WIRE GROUNDED, 5-20R, MTD. @ +18" A.F.F., (U.N.O.). "HUBBEL" #5362-1, OR EQUAL.
- GFCI — WALL MOUNTED DUPLEX RECEPTACLE WITH GROUNDED FAULT CIRCUIT INTERRUPTER; 20A., 125V., 3 WIRE, GROUNDED, NEMA 5-20R, MTD. @ +18" A.F.F. (U.N.O.). "HUBBEL" #GF-5362-1, OR EQUAL & SHALL BE ON ALL RECEPTS. WITHIN 6' OF SINKS.
- E — EXISTING RECEPTACLE OUTLET TO REMAIN-NO CHANGES MADE OR RECIRCUIT AS INDICATED ON PLAN.
- I.G. — ALL ISOLATED GROUND RECEPTACLE TO HAVE ORANGE COVER OR ISOLATED GROUND SYMBOL. PROVIDE (1) NEUTRAL, (1) GROUND, & (1) ISOLATED GROUND. PROVIDE I.G. RECEPTACLE WHEN PANEL SCHEDULE(S) INDICATE ISOLATED GROUND WIRES ON CIRCUIT(S).
- FLOOR BOX FLUSH MOUNTED IN FLOOR BOX WITH DUPLEX RECEPTACLE (20A., 125V., 3W., GROUNDED) NEMA 5-20R WITH CARPET FLANGE IN CARPETED AREAS. STEEL-CITY #664-SC/664-CST.
- FLOOR BOX FLUSH MOUNTED IN FLOOR BOX WITH QUAD-PLEX RECEPTACLE (20A., 125V., 3W., GROUNDED) NEMA 5-20R WITH CARPET FLANGE IN CARPETED AREAS. STEEL-CITY #842-SC/P64.
- FLUSH FLOOR BOX WITH TWO DUPLEX RECEPTACLE, NEMA 5-20R.
- SPECIAL OUTLET, VERIFY NEMA CONFIGURATION WITH EQUIP.
- JUNCTION BOX, SIZE PER N.E.C.
- JUNCTION BOX IN ACCESSIBLE LOCATION WITH FLEXIBLE CONDUIT CONNECTION TO LIGHTING FIXTURE OR EQUIPMENT AS NOTED.
- $ — SINGLE POLE, SINGLE THROW 20A. ROCKER LIGHT SWITCH.
- S_2 — DOUBLE POLE, SINGLE THROW 20A. ROCKER LIGHT SWITCH.
- S_3 — THREE-WAY, 20A. ROCKER LIGHT SWITCH.
- S_4 — FOUR-WAY, 20A. ROCKER LIGHT SWITCH.
- S_D — INCANDESCENT SLIDE TYPE DIMMER SWITCH RATED FOR 1500W U.N.O. (PROVIDE FLUORESCENT DIMMING BALLASTS TO FLUORESCENT FIXTURES SHOWN CONTROLLED WITH DIMMER(S). FLUORESCENT DIMMERS TO BE RATED FOR 1500W @ 120 VOLT AND 2200W @ 277 VOLT.
- Sm — H.P. RATED MANUAL MOTOR STARTER WITH THERMAL OVERLOADS (WEATHERPROOF WHERE OUTSIDE).
- MOTOR (SIZE AS INDICATED IN DRAWINGS)
- 120/208V PANELBOARD, FLUSH MOUNTED. PROVIDE (2) 3/4" SPARE CONDUITS STUBBED INTO ACCESSIBLE CEILING SPACE.
- 120/208V PANELBOARD, SURFACE MOUNTED.
- 277/480V PANELBOARD, FLUSH MOUNTED. PROVIDE (2) 3/4" SPARE CONDUITS STUBBED INTO ACCESSIBLE CEILING SPACE.
- 277/480V PANELBOARD, SURFACE MOUNTED.
- DISCONNECT SWITCH, SIZE AND POLES AS SHOWN (i.e., 30/3); FUSED WITH BUSSMAN, LPNRK TYPE. U.N.O.
- T — TELEPHONE HOMERUN TO CABINET, 3/4"C.
- STUB-OUT ABOVE CEILING, INSTALL INSULATED BUSHING TYPE AS REQUIRED.
- EQUIPMENT CONNECTION
- INDICATES CIRCUIT IN CONDUIT CONCEALED IN OR UNDER FLR. CONSTRUCTION OR BELOW GRADE.
- INDICATES CIRCUIT IN CONDUIT CONCEALED IN WALL OR CEILING SPACE.
- INDICATES HOMERUN TO PANELBOARD OR AS NOTED. HASH MARKS INDICATES NUMBER OF CONDUCTORS. IF NO HASH MARKS PROVIDE 2 CONDUCTORS #12 AWG. MINIMUM. CONDUIT 3/4"ø MINIMUM.

PUBLIC ADDRESS/INTERCOM SYMBOLS

- CEILING SPEAKER.
- V — WALL MOUNTED VOLUME CONTROL. MOUNT AT +48" A.F.F.
- H WP — EXTERIOR INTERCOM HORN, WEATHER PROOF.
- A — SPEAKER/DIGITAL CLOCK COMBINATION. 'A' DENOTES ANALOG CLOCK.
- A — ADMIN. CONTROL CONSOLE. MOUNT AT +18" A.F.F.
- VOICE OUTLET, MOUNTED AT +18" A.F.F. U.N.O. PROVIDE 3/4" CONDUIT STUBBED UP TO ACCESSIBLE CEILING SPACE.
- DATA OUTLET, MOUNTED AT +18" A.F.F. U.N.O. PROVIDE 3/4" CONDUIT STUBBED UP TO ACCESSIBLE CEILING SPACE U.N.O.
- VOICE AND DATA OUTLET, MOUNTED AT +18" A.F.F. U.N.O. PROVIDE (2)-3/4" CONDUIT STUBBED UP TO ACCESSIBLE CEILING SPACE U.N.O. PROVIDE (1) 3/4"C. ONLY WHEN VENDOR IS SIMILAR FOR TELEPHONE AND DATA SYSTEMS.
- VOICE AND/OR DATA OUTLET MOUNTED IN FLOORBOX WITH FLUSH TYPE BUSHED COMPLETE WITH CARPET FLANGE IN CARPETED AREAS. STEEL CITY #664-CST.
- TELEPHONE OUTLET, FLOOR MOUNTED.
- T.V. OUTLET @ +18" U.N.O.
- S — FLUSH MOUNTED WALL SPEAKER.
- CLOCK RECEPTACLE.
- WALL MOUNTED CALL SWITCH.

FIRE ALARM SYMBOLS

- F — MANUAL PULL STATION. MOUNT AT +48" A.F.F.
- C — CHIME/STROBE. MOUNT AT +80" A.F.F.
- F WP — EXTERIOR WEATHER-PROOF HORN.
- HORN/STROBE. MOUNT AT +80" A.F.F.
- V — STROBE. MOUNT AT +80" A.F.F.
- IONIZATION SMOKE DETECTOR.
- D — DUCT SMOKE DETECTOR. FIREX #2650-660, OR EQUAL. FURNISHED AND CONNECTED BY ELECTRICAL. MOUNTED BY MECHANICAL.
- SFD — SMOKE FIRE DAMPER.
- FS — FLOW SWITCH.
- TS — TAMPER SWITCH.
- H — HEAT DETECTOR. CEILING MOUNTED.
- MAGNETIC DOOR HOLDER.
- A — ANSUL (KITCHEN HOOD SYSTEM).
- FACP — FIRE ALARM CONTROL PANEL.
- FAAP — FIRE ALARM ANNUNCIATOR PANEL.

SECURITY SYSTEMS SYMBOLS

- P — POPIT.
- T — THERMOSTAT CONTACT FOR FREEZERS..
- K_S — SUB-ZONE KEY PAD MOUNTED AT +48" A.F.F.
- K_M — MASTER KEY PAD MOUNTED AT +48" A.F.F.
- CR — CARD READER. MOUNT AT +48" A.F.F.
- M — MOTION DETECTOR, WIDE ANGLE.
- M — MOTION DETECTOR, 360° ANGLE.
- D — DOOR CONTACT/ROLL-UP DOOR CONTACT.

SOUND SYSTEM SYMBOLS

- M — WALL MOUNTED MIC. JACK.
- M — FLOOR MOUNTED MIC. JACK.
- S — SURFACE MOUNTED SPEAKER CAB.

MISCELLANEOUS SYMBOLS

- TC — TIME CLOCK. REFER TO ONE-LINE DIAGRAM.

ABBREVIATIONS

C · CONDUIT	GND · GROUND	S.E.S. · SERVICE ENTRANCE SECTION	WP · WEATHERPROOF
CCTV · CLOSED CIRCUIT TELEVISION.	M.L.O. · MAIN LUGS ONLY	TTB · TELEPHONE TERMINAL BOARD.	U.N.O. · UNLESS NOTED OTHERWISE
EC · EMPTY CONDUIT WITH PULLWIRE.	M.C.B. · MAIN CIRCUIT BREAKER	TMC · TELEPHONE MOUNTING CABINET.	I.G. · ISOLATED GROUND
EDF · ELECTRIC DRINKING FOUNTAIN.	N.E.C. · NATIONAL ELECTRICAL CODE	VP · VANDAL-PROOF.	E.P. · EXPLOSION PROOF
	N.L. · NIGHT LIGHT	WG · WIRE GUARD.	

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Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

REVISIONS	BY

Registered Professional Engineer (Electrical) CERTIFICATE NO. 32857 BRYAN P. JEHLING ARIZONA, U.S.A. Date Signed 07.13.15
EXPIRES 09/30/16

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DRAWING: ELECTRICAL SPECIFICATIONS

PROJECT: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 53 RESTROOMS RENOVATIONS
Prescott, AZ

DRAWN BY	ERC
CHECKED BY	KJH
DATE	July 10, 2015
SCALE	AS NOTED
JOB NO.	670
SHEET	E4.0

Jul 13, 2015 - 1:34pm