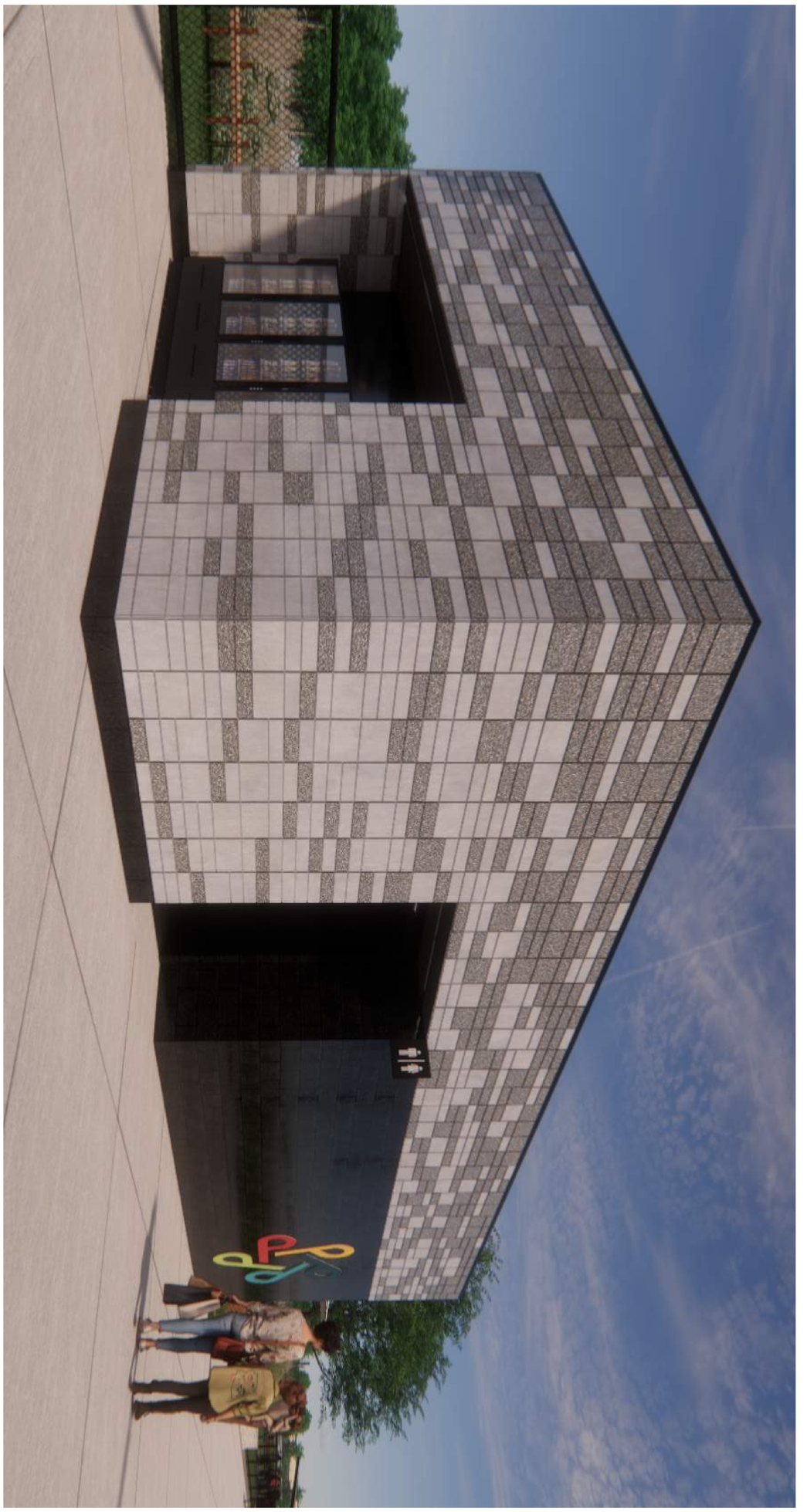
C:\Users\Jessica\Documents\Paragon Star_South Restrooms_Central-VE-R21_jreedshultz@finklewilliams.com.rvt

RENDERING FOR CONCEPTUAL REFERENCE ONLY; IMAGE MAY NOT REFLECT LATEST DESIGN. REFERENCE ELEVATIONS AND SCHEDULES FOR FINISHES. CONSULT ARCHITECT REGARDING DISCREPENCIES.

DRAWING INDEX



Paragon Star - SOUTH RESTROOMS

PROJECT NUMBER
19050.04A

RELEASE DATE
02.03.23

ISSUED FOR
PERMIT SET

PROJECT TEAM

ARCHITECT
FINKLE + WILLIAMS ARCHITECTURE
9200 Bluejacket St. Suite 100
Lenexa, Kansas 66219
PH: 913.498.1550

CIVIL
GBA
9801 Renner Blvd, Suite 300
Lenexa, Kansas 66219
PH: 913-577-8341

LANDSCAPE
Landworks Studio
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Kansas City, Missouri 64108
PH: 312-492-6001

FOUNDATIONS
BSE
11320 West 79th St.
Lenexa, Kansas 66214
PH: 913-492-7400

STRUCTURAL
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11320 West 79th St.
Lenexa, Kansas 66214
PH: 913-492-7400

CONTRACTOR
FOGEL-ANDERSON
1721 Baltimore St.
Kansas City, Missouri 64106
PH: 816-842-6914

MECHANICAL
HENDERSON
8345 Lenexa Dr. Suite 300
Lenexa, Kansas 66214
PH: 913-742-5000

PLUMBING
HENDERSON
8345 Lenexa Dr. Suite 300
Lenexa, Kansas 66214
PH: 913-742-5000

ELECTRICAL
HENDERSON
8345 Lenexa Dr. Suite 300
Lenexa, Kansas 66214
PH: 913-742-5000

FIRE PROTECTION
HENDERSON
8345 Lenexa Dr. Suite 300
Lenexa, Kansas 66214
PH: 913-742-5000

FINKLE + WILLIAMS
ARCHITECTURE

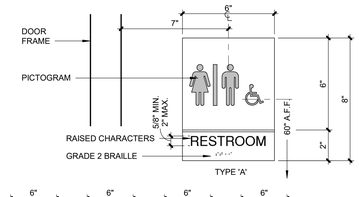
PROJECT ADDRESS
PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

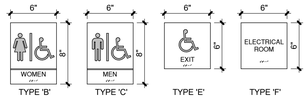
ACCESSIBLE SIGNAGE REQUIREMENTS

PERMANENT ROOMS AND SPACES

SEE SCHEDULE BELOW FOR INTERIOR SIGNAGE LOCATIONS:

SIGNS WHICH DESIGNATE PERMANENT ROOMS AND SPACES SHALL COMPLY WITH ADAAG SECTIONS 4.30.1, 4.30.4, 4.30.5, 4.30.6





INTERIOR SIGNAGE SCHEDULE

DOOR NO.	ROOM NAME	SIGN TYPE	SIGN TEXT
AA	UNISEX SHARED SINKS	A	
OPENING TO MEN'S	MEN'S RR	C	CUSTOM RR GRAPHIC TBD BY OWNER AND ARCHITECT
OPENING TO WOMEN'S	WOMEN'S RR	B	CUSTOM RR GRAPHIC TBD BY OWNER AND ARCHITECT

1. TACTILE & BRAILE CHARACTERS
   a. CHARACTERS SHALL BE RAISED MINIMUM 1/32"
   b. CHARATERS SHALL BE ACCOMPANIED BY GRADE 2 BRAILLE
2. TYPESTYLES
   a. CHARACTERS SHALL BE UPPER CASE & SANS SERIF OR SERIF TYPESTYLE
   b. CHARACTERS SHALL BE A MINIMUM OF 5/8" HIGH AND MAXIMUM 2" HIGH
3. PICTOGRAMS (SYMBOLS)
   a. PICTOGRAMS SHALL BE ACCOMPANIED BY THE EQUIVALENT VERBAL DESCRIPTION PLACED DIRECTLY BELOW THE PICTORGRAM AS INDICATED.
   b. THE BORDER DIMENSION OF THE PICTORGRAM SHALL BE 6" MIN. IN HEIGHT
4. MATERIAL AND FINISH
   a. CHARACTERS AND BACKGROUND SHALL BE EGGSHELL, MATTE OR OTHER NON-GLARE FINISH AS RECOMMENDED BY THE SIGN MANUFACTURER.
   b. BACKGROUND SHALL CONSIST OF 1/4" ACRYLIC, COLOR TO MATCH **ADJACENT WALL COLOR**
   c. CHARACTERS AND SYMBOLS SHALL BE WHITE
5. MOUNTING LOCATION AND HEIGHT
   a. MOUNT AT 60" ABOVE FINISH FLOOR TO THE CENTER OF SIGN
   b. MOUNT ON WALL ADJACENT TO THE LATCH SIDE OF THE DOOR
   c. IF NO WALL SPACE EXISTS ON THE LATCH SIDE OF THE DOOR, INCLUDING DOUBLE LEAF DOORS, MOUNT ON THE NEAREST ADJACENT WALL
6. FIRE SPRINKLER ROOM
   a. INCLUDE 4" HIGH VINYL WHITE LETTERS W/ MIN. 0.5" STROKE READING "SPRINKLER ROOM" APPLIED TO EXTERIOR SIDE OF DOOR, AS REQUIERD BY LOCAL FIRE DEPT.

DIRECTIONAL INFORMATION

OTHER SIGNS WHICH PROVIDE DIRECTION TO OR INFORMATION ABOUT FUNCTIONAL SPACES OF THE BUILDING SHALL COMPLY WITH ADAAG SECTIONS: 4.30.1, 4.30.2, 3.30.3, 4.30.5

DRAWING SYMBOLS LEGEND

EXISTING CONSTRUCTION TO REMAIN

EXISTING CONSTRUCTION TO BE DEMOLISHED

NEW CONSTRUCTION

XX — WALL TYPE DESIGNATION -
REFERENCE FLOOR PLAN(S) FOR LOCATIONS.
REFERENCE DRAWING *A0.02* FOR CONSTRUCTION REQUIREMENTS.

X / X — ROOM NAME AND NUMBER -
REFERENCE FLOOR PLAN(S) FOR LOCATIONS.
REFERENCE FINISH SCHEDULE FOR FINISHES.

XX — DOOR AND FRAME DESIGNATION -
REFERENCE FLOOR PLAN(S) FOR LOCATIONS.
REFERENCE DOOR AND FRAME SCHEDULE FOR REQUIREMENTS.

ELEVATION SYMBOL

X1 / X2 — REFERENCE ELEVATION
REFERENCE SHEET

SECTION SYMBOL

X1 / X2 — REFERENCE SECTION
REFERENCE SHEET

ENLARGED DETAIL / ENLARGED PLAN SYMBOL

X1 / X2 — REFERENCE DETAIL
REFERENCE SHEET

INTERIOR ELEVATION SYMBOL

X1 / X2 — REFERENCE ELEVATION
REFERENCE SHEET

FINISH DESIGNATION SYMBOL

XX-1 / XX-1 — WALL FINISH DESIGNATION
BASE FINISH DESIGNATION
LIMITS OF WALL AND BASE FINISHES

REFERENCE FLOOR PLAN(S) FOR LOCATIONS.
REFERENCE FINISH SCHEDULE FOR DESCRIPTIONS.

XX-# — FLOOR FINISH DESIGNATION -
REFERENCE FLOOR PLAN(S) FOR LOCATIONS.
REFERENCE FINISH SCHEDULE FOR DESCRIPTIONS.

X — REVISION NOTE

XX — CONSTRUCTION NOTE

— DEMOLITION NOTE

RESTROOM ACCESSORY DESIGNATION -

CMJ — CONCRETE MASONRY CONTROL JOINT -
REFERENCE FLOOR PLAN(S) FOR LOCATIONS.
REFERENCE DETAIL **11/A8.02** FOR CONSTRUCTION REQUIREMENTS.

FE — WALL MOUNTED FIRE EXTINGUISHER BY LARSEN'S MANUFACTURING COMPANY, WWW.LARSENMFG.COM, MODEL MP10 W/B2 MOUNTING BRACKET, REFERENCE FLOOR PLAN(S) FOR LOCATIONS. MOUNT SO CENTERLINE OF EXTINGUISHER IS 46" A.F.F.

FEC — SEMI-RECESSED FIRE EXTINGUISHER BY LARSEN'S MANUFACTURING COMPANY, WWW.LARSENMFG.COM OR APPROVED EQUAL: ARCHITECTURAL SERIES, MODEL # AL-2409-6R. ALUMINUM, SEMI-RECESSED (2 ½" PROTRUSION FROM WALL WITH ROLLED EDGES), SOLID DOOR WITH RECESSED HANDLE, ENGRAVED VERTICAL LETTERS WITH NO BACKFILL "FIRE EXTINGUISHER" ON DOOR. CABINET TO BE PROVIDED WITH MP10 FIRE EXTINGUISHER AND MANUFACTURER'S STANDARD MOUNTING BRACKET. MOUNT SO CENTERLINE OF CABINET HANDLE IS 46" A.F.F.

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE MINIMUM STANDARDS OF THE APPLICABLE CODE INDICATED IN THE BUILDING SUMMARY COLUMN AND ALL LOCAL CODES PRESENTLY IN EFFECT UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED.
2. ALL NEW CONSTRUCTION SHALL COMPLY W/THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) AND CHAPTER 11 OF THE INTERNATIONAL BUILDING CODE (INCLUDES ICC A117.1 PER IBC)
3. THE GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS, LICENSES, AND ALL UTILITY CHARGES, AND ARRANGE FOR ALL REQUIRED INSPECTIONS.
4. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING BUILDING & SITE UTILITIES BETWEEN CIVIL & MEP DRAWINGS. THE CONTRACTOR SHALL ALSO CONTACT ALL APPLICABLE UTILITY COMPANIES & PROVIDE CONDUIT & OTHER FACILITIES AS REQUIRED.
5. THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS & CONDITIONS ON THE JOB SITE PRIOR TO THE BIDDING OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES.

   IN CASES OF DISCREPANCY CONCERNING DIMENSIONS, QUANTITIES AND LOCATION, THE CONTRACTOR SHALL, IN WRITING, CALL TO THE ATTENTION OF THE ARCHITECT ANY DISCREPANCIES BETWEEN SPECIFICATIONS, PLANS, DETAILS OR SCHEDULES. THE ARCHITECT WILL THEN INFORM THE CONTRACTOR, IN WRITING, WHICH DOCUMENT TAKES PRECEDENCE. THERE SHALL BE NO ADJUSTMENT TO THE COST OR TIME OF THE WORK RESULTING FROM CLARIFICATION OF SUCH DISCREPANCIES.
6. DIMENSIONS ON DRAWINGS ARE SHOWN TO FINISHED FACE OF WALLS AND PARTITIONS OF EXISTING OR NEW CONSTRUCTION UNLESS OTHERWISE NOTED. CEILING HEIGHT DIMENSIONS AND ALL OTHER VERTICAL DIMENSIONS ARE TO THE FINISHED FLOOR SURFACE UNLESS OTHERWISE NOTED.
7. ALL MATERIALS SPECIFIED OR NOTED SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING SHOP DRAWINGS, PRODUCT DATA, OR SAMPLES FOR CASEWORK, FINISHES, DOORS, FRAMES, HARDWARE, MECHANICAL, ELECTRICAL, AND PLUMBING FIXTURES, AND OTHER ITEMS REQUIRING ARCHITECTS REVIEW FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, AND FOR ALL ITEMS WHICH ALLOWED CONTRACTOR OPTIONS. PRIOR TO FORWARDING TO THE ARCHITECT FOR REVIEW. THESE SUBMITTALS MUST BE REVIEWED BY THE CONTRACTOR FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL AFFIX A STAMP TO SUBMITTAL INDICATING HIS REVIEW. SUBMITTALS FORWARDED WITHOUT A STAMP WILL BE RETURNED. ALL SUBMITTALS MUST BE REVIEWED BY THE ARCHITECT PRIOR TO CONSTRUCTION.
9. CONTRACTOR SHALL GUARANTEE ALL WORK AGAINST FAULT OF ANY MATERIAL OR WORKMANSHIP FOR A PERIOD OF NOT LESS THAN ONE YEAR AFTER COMPLETION OR ACCEPTANCE. FAULTY WORK SHALL BE REPLACED OR REPAIRED AS REQUIRED AT NO COST TO THE OWNER.
10. CONTRACTOR SHALL COORDINATE WITH OWNER ALL ITEMS TO BE SALVAGED PRIOR TO SUBMISSION OF BIDS AND START OF CONSTRUCTION. OWNER SHALL HAVE SALVAGE RIGHTS TO RETAIN ALL REMOVED ITEMS.
11. ALL CHANGES PROPOSED DURING CONSTRUCTION WHICH RESULT IN A CHANGE TO THE CONTRACT TIME AND/OR SUM SHALL BE SUBMITTED TO THE ARCHITECT IN WRITING AND APPROVED BY THE ARCHITECT AND OWNER BEFORE SUCH WORK SHALL COMMENCE.
12. CONTRACTOR SHALL COORDINATE CLEAR OPENINGS FOR ALL APPLIANCES PRIOR TO CONSTRUCTION OF CASEWORK.
13. CONTRACTOR SHALL FURNISH AND INSTALL CONCEALED FIRE-RETARDANT TREATED WOOD BLOCKING BEHIND ALL CABINETS, TOILET ACCESSORIES, PLUMBING FIXTURES, AND OTHER WALL MOUNTED ITEMS AS REQUIRED FOR ADEQUATE SUPPORT.
14. CONTRACTOR SHALL COORDINATE ALL LOCK AND LATCH SETS AND FINAL KEYING WITH OWNER. DOUBLE KEYED LOCKS ARE NOT PERMITTED ON ANY REQUIRED OR MARKED EXIT. MATCH EXISTING KEYING SYSTEM IF ONE IS EXISTING.
15. ALL DOOR HARDWARE ON EXIT DOORS SHALL BE READILY OPERABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY, SPECIAL KNOWLEDGE, OR EFFORT.
16. CONTRACTOR SHALL PREPARE ALL NEW AND EXISTING SURFACES SCHEDULED TO RECEIVE NEW FINISHES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE SUBSTRATE & FINISH BEING APPLIED.
17. CONTRACTOR SHALL COORDINATE FINAL QUANTITY AND LOCATIONS OF FIRE EXTINGUISHERS WITH THE FIRE DEPARTMENT AND/OR BUILDING DEPARTMENT. SEE SYMBOLS LEGEND FOR TYPE OF EXTINGUISHER.
18. ALL CONSTRUCTION MATERIALS EXPOSED WITHIN PLENUMS SHALL BE NON-COMBUSTIBLE OR SHALL HAVE A MAXIMUM FLAME SPREAD RATING OF 25 AND MAXIMUM SMOKE DEVELOPED RATING OF 50.
19. ALL PIPING, LOW VOLTAGE WIRE AND CABLE, OPTICAL FIBER, PNEUMATIC TUBING, AND ALL DUCT AND DUCT COVERINGS, LININGS AND CONNECTORS INSTALLED WITHIN PLENUMS MUST BE RATED FOR PLENUM USE.
20. TENANT SHALL BE RESPONSIBLE FOR COORDINATION AND INSTALLATION OF VOICE AND DATA CABLING AND EQUIPMENT.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE AUTOMATIC SPRINKLER SYSTEM. THE DESIGN SHALL BE PER NFPA REQUIREMENTS.
22. ALL NEW GLASS AND GLAZING LOCATED IN HAZARDOUS LOCATIONS AS DEFINED IN IBC SECTION 2406.3 SHALL MEET THE REQUIREMENTS FOR SAFETY GLAZING AS DEFINED IN IBC SECTION 2406.
23. IF THE CONTRACTOR FAILS TO SUBMIT A MATERIAL FOR APPROVAL, THE MATERIAL MAY BE REQUIRED TO BE REMOVED BY THE CONTRACTOR EITHER BY DIRECTION OF THE OWNER OR ARCHITECT.
24. ALL HIGH-PILED STORAGE SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE APPLICABLE EDITION OF THE INTERNATIONAL FIRE CODE.
25. THE CONTRACTOR IS TO PROVIDE AS BUILT DRAWINGS IN HARD COPY & AN ELECTRONIC AUTOCAD FILE TO THE OWNER AT THE CONCLUSION OF THE PROJECT.
26. INSTALL ELASTOMERIC JOINT SEALER AROUND ALL PIPES, DUCTWORK, & STRUCTURE PASSING THRU INTERIOR NON-RATED CONCRETE AND MASONRY WALLS, GYPSUM BOARD PARTITIONS, AND CONCRETE FLOOR/ROOF SLABS. FOR FIRE RATED INTERIOR CONCRETE AND MASONRY WALLS, GYPSUM BOARD PARTITIONS, AND CONCRETE FLOOR/ROOF SLABS SEAL ALL PIPES, DUCTWORK, AND STRUCTURE. INSTALL FIRESTOP MATERIALS IN ALL GAPS PRIOR TO SEALANT APPLICATION. INSTALL SEALER ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
27. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL EXISTING CONSTRUCTION INDICATED TO REMAIN AND SHALL REPAIR AND/OR REPLACE ALL AREAS AND /OR MATERIAL DAMAGED DURING CONSTRUCTION AT A MINIMUM TO THE CONDITION WHICH EXISTED PRIOR TO CONSTRUCTION.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR PRICING RADIO COVERAGE AMPLIFIER FOR EMERGENCY RESPONDERS AS AN ALTERNATE. PRIOR TO CONSTRUCTION COMPLETION, AMPLIFIER SHALL BE PROVIDED ONLY IF REQUIRED BY AHJ .

PROFESSIONAL SERVICES DISCLAIMER

THIS DISCLAMER SERVES NOTICE OF ACCEPTANCE OF RESPONSIBILITY AND DISCLAIMER OF RESPONSIBILITY AS TO THE CONTRACT DOCUMENTS PREPARED FOR PROJECT NUMBER:

19050.04A, Paragon Star - SOUTH RESTROOMS BY FINKLE + WILLIAMS, INC.

THE UNDERSIGNED ARCHITECT, AND FINKLE + WILLIAMS, INC., ARE RESPONSIBLE FOR PREPARATION OF ONLY THE NOTED CONSTRUCTION DRAWINGS BELOW:

NO.	TITLE	DATE
A0.00	COVER SHEET	02.03.23
A0.01	LEGENDS & GEN. NOTES	02.03.23
A0.02	WALL TYPES	02.03.23
A0.10	ARCHITECTURAL SITE PLAN & DETAILS	02.03.23
A1.01	FLOOR PLAN AND SLAB EDGE PLAN	02.03.23
A2.01	ENLARGED TOILET PLANS AND DETAILS	02.03.23
A2.02	ENLARGED TOILET PLANS	02.03.23
A2.10	INTERIOR ELEVATIONS	02.03.23
A2.11	INTERIOR ELEVATIONS	02.03.23
A3.01	ROOF PLAN & RCP	02.03.23
A4.01	EXTERIOR ELEVATIONS	02.03.23
A5.00	BUILDING SECTIONS	02.03.23
A5.01	WALL SECTIONS	02.03.23
A7.01	DETAILS	02.03.23
A8.01	DOOR AND FINISH SCHEDULES AND DETAILS	02.03.23
A8.02	DOOR HEAD, JAMB, AND SILL DETAILS	02.03.23
A11.10	PROJECT SPECIFICATIONS	02.03.23
A11.11	PROJECT SPECIFICATIONS	02.03.23
A11.12	PROJECT SPECIFICATIONS	02.03.23

THE UNDERSIGNED ARCHITECT AND FINKLE + WILLIAMS DISCLAIM RESPONSIBILITY FOR ALL OTHER CONSTRUCTION DOCUMENTS, AND ANY OTHER SPECIFICATIONS, REPORTS, ESTIMATES, SHOP DRAWINGS, ETC. RELATING TO OR INTENDED TO BE USED FOR ANY PART OF THE ARCHITECTURAL OR ENGINEERING PROJECT, INCLUDING ANY GEOTECHNICAL ENGINEERING SERVICES, OR ENVIRONMENTAL REPORTS.

THIS NOTICE IS EXECUTED BY THE UNDERSIGNED AND AUTHENTICATED BY THE ARCHITECTURAL SEAL OF THE PERSON PREPARING THS NOTICE.

ARCHITECT: DAVID A. WILLIAMS

BUILDING SUMMARY

GENERAL BUILDING INFORMATION

PROJECT NAME: Paragon Star - SOUTH RESTROOMS
ADDRESS: PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

PROPOSED USE: (U)

APPLICABLE CODES

INTERNATIONAL BUILDING CODE (IBC)	2018 EDITION
INTERNATIONAL MECHANICAL CODE (IMC)	2018 EDITION
INTERNATIONAL PLUMBING CODE (IPC)	2018 EDITION
NATIONAL ELECTRIC CODE (NEC)	2015 EDITION
INTERNATIONAL FIRE CODE (IFC)	2018 EDITION
INTERNATIONAL FUEL GAS CODE (IFGC)	2018 EDITION
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) LIFE SAFETY CODE 101	2018 EDITION
DEPT OF JUSTICE ADA STANDARDS FOR ACCESSIBLE DESIGN	2010 EDITION

GENERAL BUILDING LIMITATIONS (CHAPTER 3, 5)

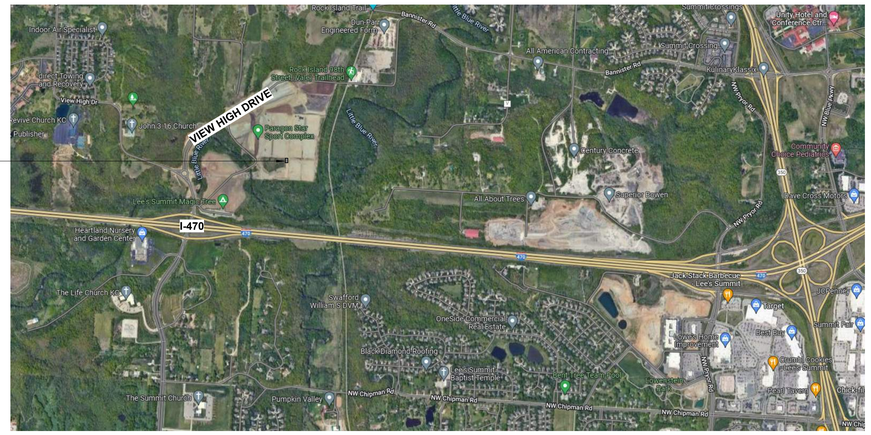
OCCUPANCY CLASSIFICATION: Group (U), ACCESSORY USE TO SOCCER COMPLEX
CONSTRUCTION TYPE: TYPE II-B
BASIC ALLOWABLE FLOOR AREA: 8,500 sf
BASIC ALLOWABLE HEIGHT: 55', (2) stories

HEIGHT MODIFICATIONS (Sec. 504)
SPRINKLER INCREASE: N/A
TOTAL ALLOWABLE HEIGHT: 55' (2 stories)
TOTAL PROPOSED HEIGHT: 13' 4", (1) Stories

UNLIMITED AREA BUILDINGS (Sec. 507)
YARD INCREASE: Surrounded by Public Ways or Yards > 60 feet 4 Sides
SPRINKLER INCREASE: N/A
TOTAL ALLOWABLE FLOOR AREA: 8,500 S.F.
TOTAL PROPOSED FLOOR AREA: 929 S.F.

SITE LOCATION PLAN

SOUTH RESTROOM, LOCATED WITHIN PARAGON STAR SPORTS COMPLEX



REGISTRATION

DAVID ALAN WILLIAMS
NUMBER A-5540
STATE OF MISSOURI
REGISTERED ARCHITECT

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 02.03.23
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

FINKLE + WILLIAMS
ARCHITECTURE

8787 RENNER BLVD., SUITE 100
LENEXA, KANSAS 66219
913 .498.1550
www.finklewilliams.com

SHEET TITLE

LEGENDS & GEN. NOTES

SHEET NUMBER

A0.01

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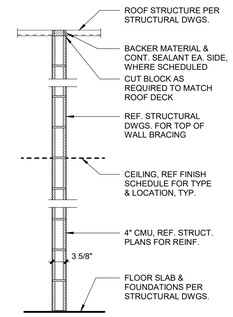
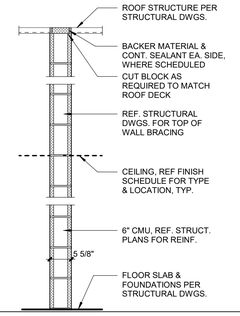


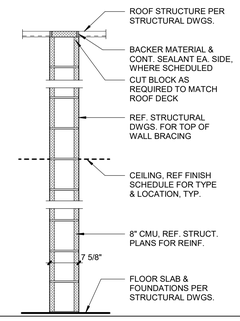
71

Type	Sound Batt Insul	Mold & Water Resist GWB	Fire Rating	Comments
71	No	No		



61

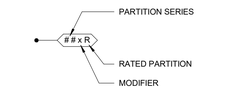
Type	Sound Batt Insul	Mold & Water Resist GWB	Fire Rating	Comments
61	No	No		



51

Type	Sound Batt Insul	Mold & Water Resist GWB	Fire Rating	Comments
51	No	No		

PARTITION LEGEND



PARTITION SERIES	
01 - 39	METAL STUD WALLS
40 - 79	MASONRY WALLS
80 - 99	WOOD STUD WALLS

MODIFIER	
a	SOUND BATT INSULATION FULL DEPTH OF STUD
b	MOLD & WATER RESISTANT GYP. BD. ON "WET ROOM WALLS"
c	INSULATION AND MOLD & WATER RESISTANT GYP. BD. ON "WET ROOM WALLS"
d-z	VARIES, SEE PARTITION SCHEDULE COMMENTS

RATING	
R	FIRE RATED, SEE SCHEDULE FOR ADDITIONAL INFO.

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paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 02.03.23
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
DAVID ALAN WILLIAMS
NUMBER A-5540
REGISTERED ARCHITECT

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

FINKLE + WILLIAMS
ARCHITECTURE
8787 RENNER BLVD., SUITE 100
LENEXA, KANSAS 66219
913 .498.1550
www.finklewilliams.com

SHEET TITLE

WALL TYPES

SHEET NUMBER

A0.02

SITE PLAN GENERAL NOTES

1. CONTROL JOINT SEALANT FOR CONCRETE PAVING AND BETWEEN BUILDING AND PAVING TO BE GRAY COLOR TO MATCH CONCRETE.
2. ARCHITECTURAL SITE PLANS ARE FOR REFERENCE ONLY; REF CIVIL/LANDSCAPE DRAWINGS FOR ACCURATE BUILDING LOCATIONS

1 ARCHITECTURAL SITE PLAN
A0.10 SCALE : 1" = 60'-0"

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paragon star

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PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
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SHEET TITLE

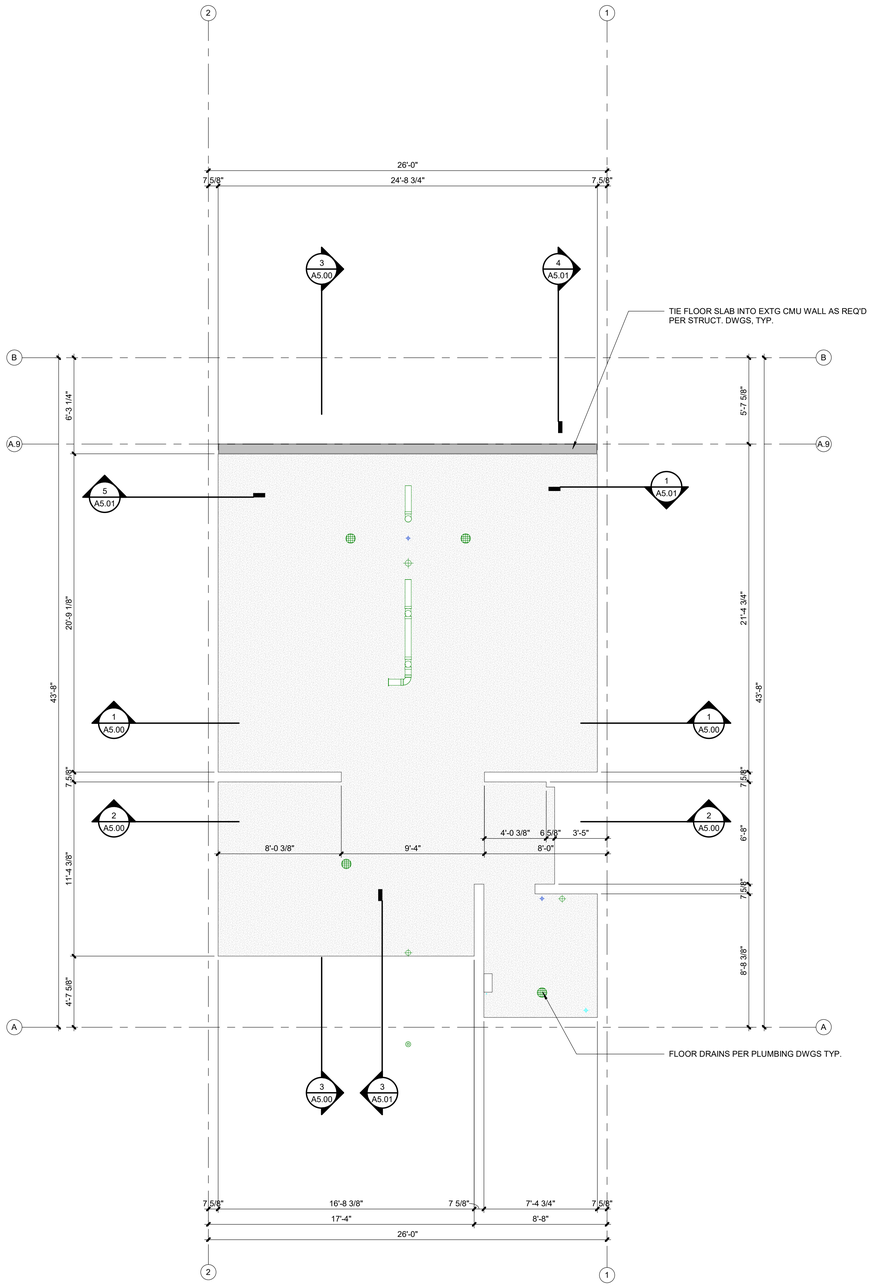
ARCHITECTURAL SITE PLAN & DETAILS

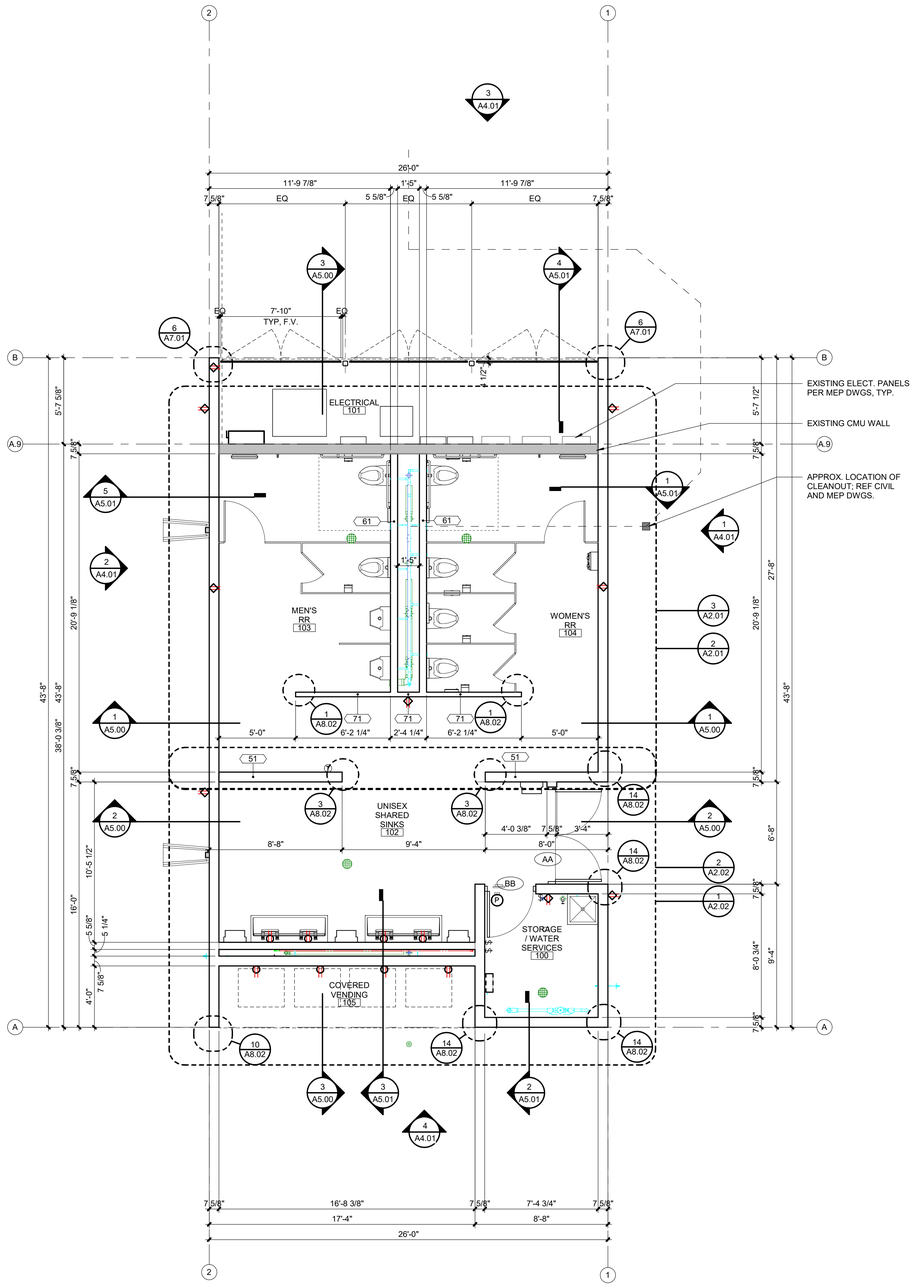
SHEET NUMBER

A0.10

CONSTRUCTION GENERAL NOTES

1. PROVIDE TERMITE CONTROL UNDER NEW FLOOR SLABS.
2. ALL STRUCTURAL STEEL TO BE FACTORY PRIMED GRAY.
3. ALL CMU CORNERS ARE TO BE CONSTRUCTED OF BULLNOSE BLOCK.
4. ALL SWITCHES, RECEPTACLES, PHONE/DATA, AND CONTROLS ARE TO BE GRAY COLOR WITH STAINLESS STEEL COVER PLATES.
5. ALL SWITCHES, REEPTACLE, PHONE/DATA, AND CONTROLS LOCATED ON EXPOSED CMU WALLS ARE TO HAVE CONDUIT RUN W/IN THE CMU, NOT SURFACE MOUNTED; REF MEP DWGS FOR ALL LOCATIONS PRIOR TO GROUTING AS REQ'D PER STRUCT. DWGS.





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2	SLAB EDGE PLAN		SLAB EDGE PLAN FOR COORDINATION PURPOSES ONLY; REF STRUCTURAL DRAWINGS FOR ACTUAL DIMENSIONS AND COORDINATE ANY DISCREPENCIES WITH ARCHITECT AND ENGINEER.
A1.01	SCALE : 1/4" = 1'-0"		

1	1ST FLOOR PLAN	
A1.01	SCALE : 1/4" = 1'-0"	

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.:	19050.04A
Date:	02.03.23
Issued For:	PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
DAVID ALAN WILLIAMS
NUMBER A-5540
REGISTERED ARCHITECT

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

FINKLE + WILLIAMS
ARCHITECTURE
8787 RENNER BLVD., SUITE 100
LENEXA, KANSAS 66219
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www.finklewilliams.com

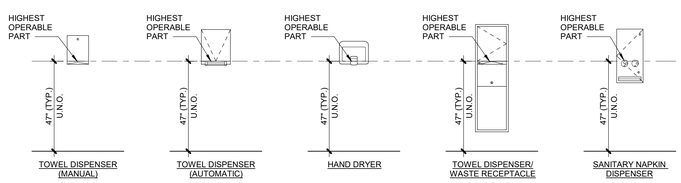
SHEET TITLE

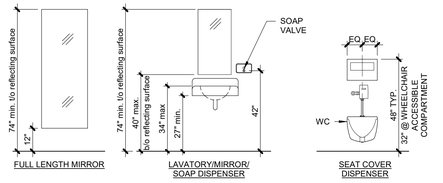
FLOOR PLAN AND SLAB EDGE PLAN

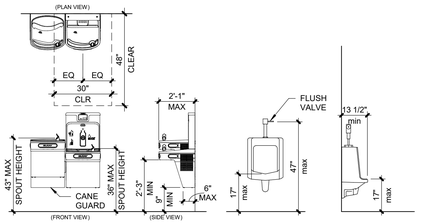
SHEET NUMBER

A1.01

TOILET ACCESSORY MOUNTING HEIGHTS

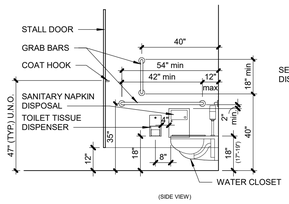


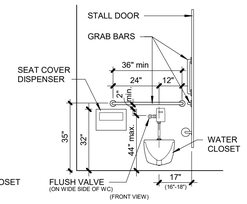


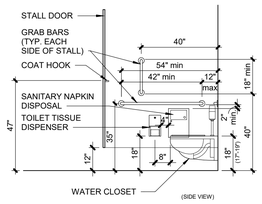


Maximum Reach Depth	.05 inch	2 inches	5 inches	6 inches	9 inches	11 inches
Maximum Reach Height	48 inches	46 inches	42 inches	40 inches	36 inches	34 inches

TABLE 603.6 - ANSI-117.1-2009



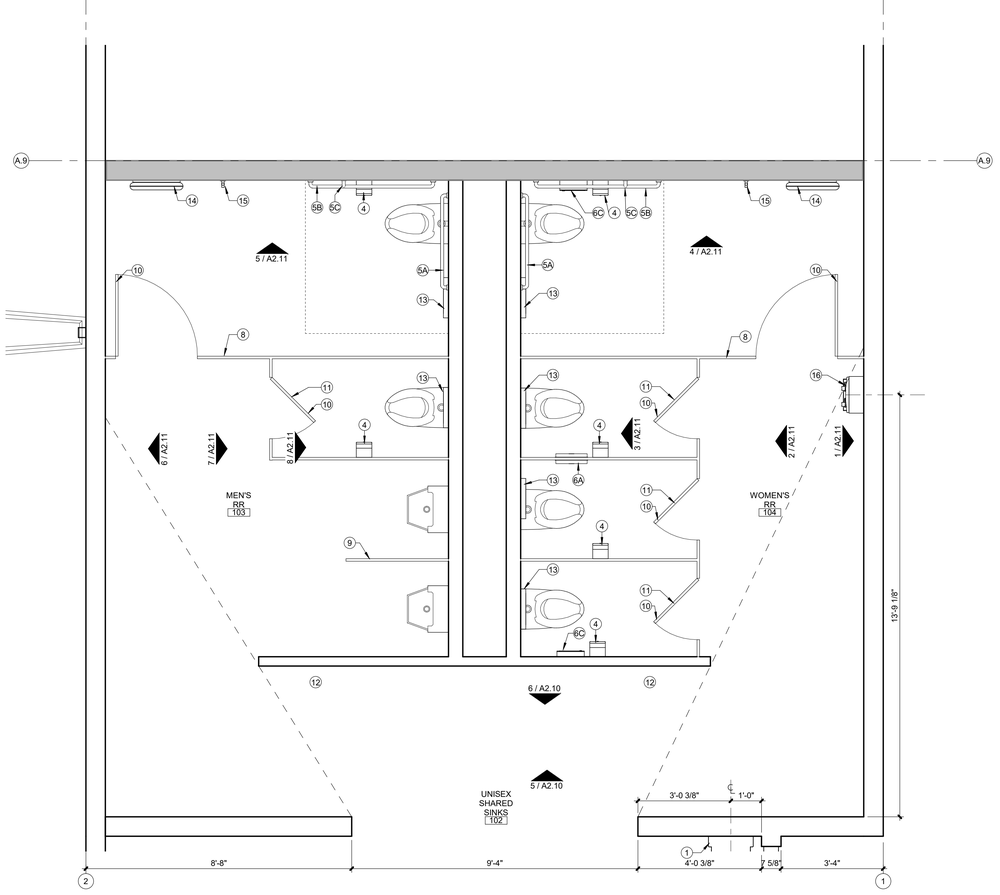




TOILET ACCESSORY / EQUIPMENT LEGEND

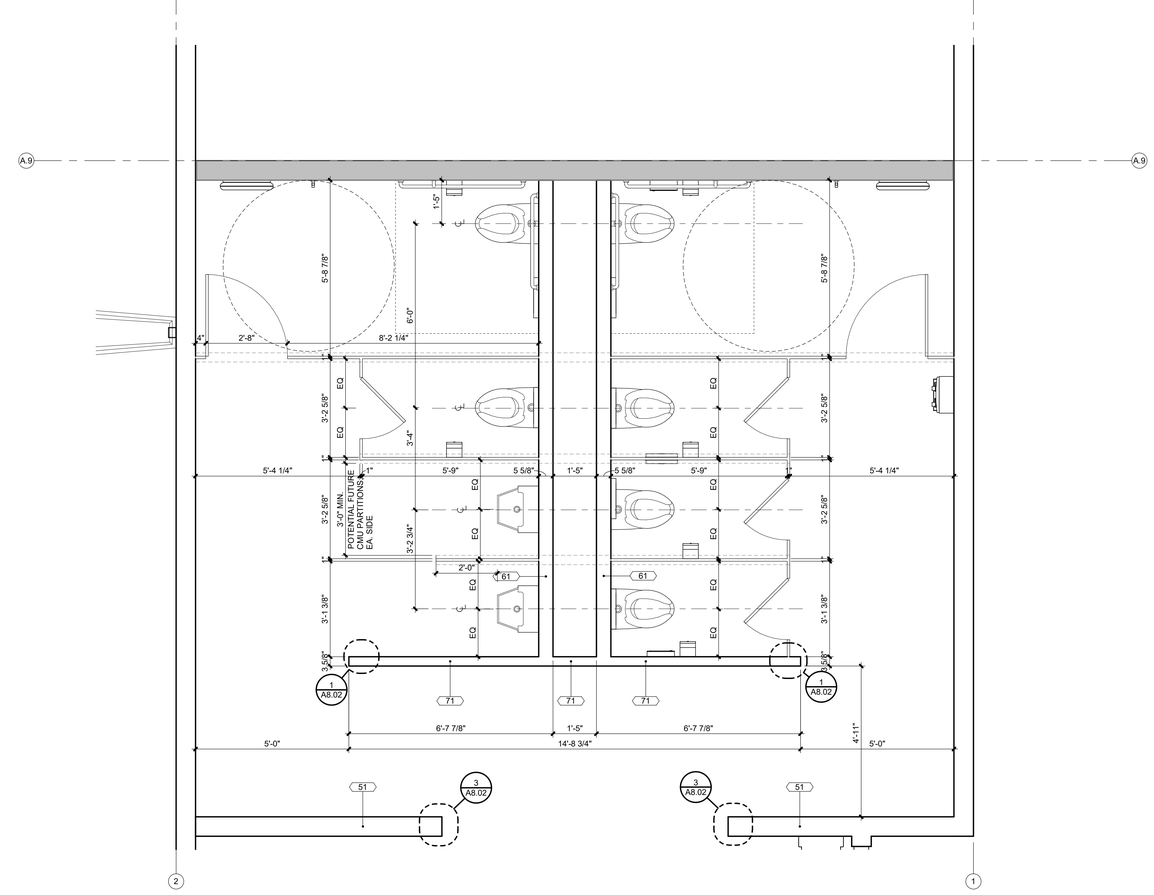
ALL ACCESSORIES SHALL BE STAINLESS STEEL; MODELS TBD PER OWNER, UNLESS NOTED OTHERWISE.
ALL ACCESSORIES SHALL BE DESIGNED TO MEET ADA STANDARDS.

1. COMBINATION PAPER TOWEL DISPENSER/WASTE RECEPTACLE, SURFACE MOUNT
3A. UNFRAMED MIRROR (FULL WIDTH OF VANITY X 48"H) PER DIVISION 08
4. MULTI-ROLL TOILET TISSUE DISPENSER W/NO KEYED LOCK
5. GRAB BARS AS SHOWN ON PLANS AND ELEVATIONS (BOBRICK B-6806 SERIES)
5A. GRAB BAR (BOBRICK B6806 X 42) LOCATE AS SHOWN IN ACCESSORY MOUNTING HEIGHTS
5B. GRAB BAR (BOBRICK B6806 X 36) LOCATE AS SHOWN IN ACCESSORY MOUNTING HEIGHTS
5C. GRAB BAR (BOBRICK B6806 X 18) LOCATE AS SHOWN IN ACCESSORY MOUNTING HEIGHTS
6A. SANITARY NAPKIN DISPOSAL, SHARED PARTITION (BOBRICK B-354)
6C. SANITARY NAPKIN DISPOSAL, SURFACE WALL MOUNT (BOBRICK B-254)
8. FLOOR MOUNTED OVERHEAD BRACED HDPE TOILET PARTITIONS TYP. DOORS: 2'-6" MIN., ADA DOORS: 3'-0", COLOR TBD
9. WALL MOUNTED CONTINUOUS BRACED HDPE URINAL PARTITION, 48" TALL; COLOR TBD
10. RUBBER TIPPED DOOR BUMBER (BOBRICK B-687)
11. COAT AND HAT HOOK (BOBRICK B-6827)
12. A.D.A. RESTROOM SIGNAGE, SEE SHEET A0.01
13. TOILET SEAT COVER DISPENSER
14. WALL MOUNTED CHANGING STATION (KOALA KARE KB301-01SS)
15. CHANGING STATION ROD BAG HOOK (KOALA KARE KB301-01SS)
16. SANITARY NAPKIN DISPENSER (B-47069C)



2 ENLARGED RR ACCESSORIES

A2.01 SCALE : 1/2" = 1'-0"



3 ENLARGED RR PLAN

A2.01 SCALE : 1/2" = 1'-0"

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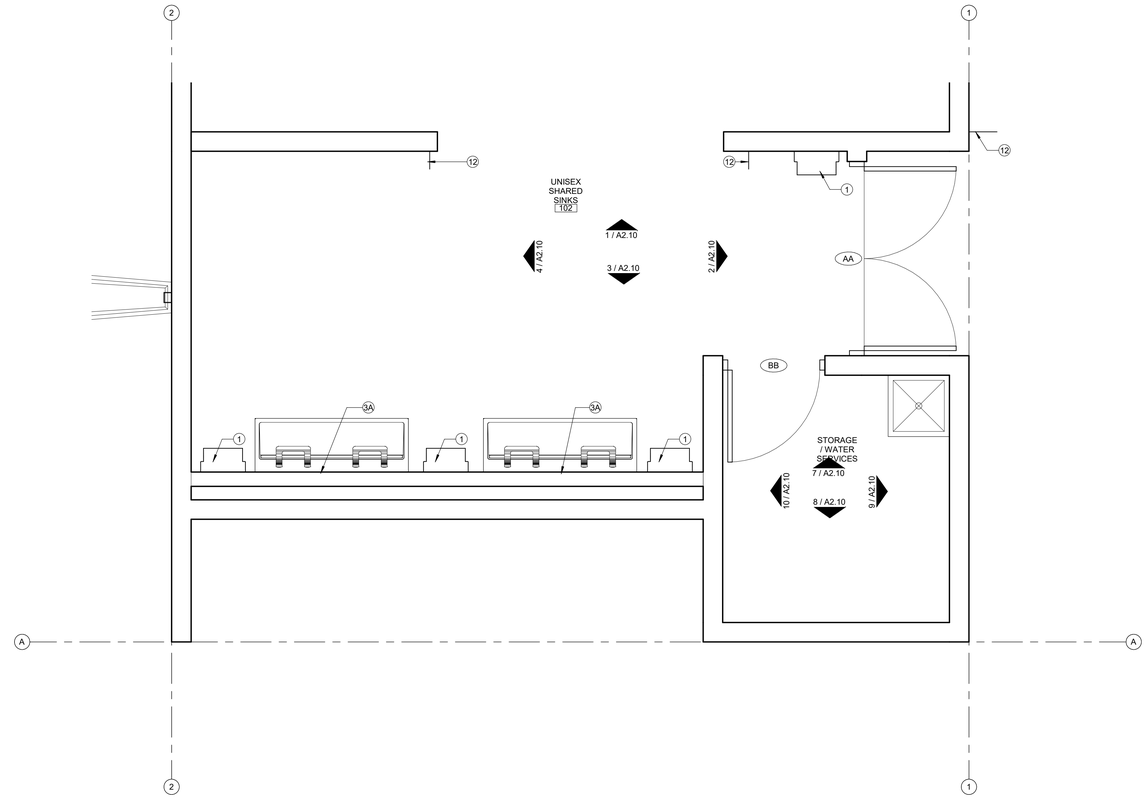
SHEET TITLE

ENLARGED TOILET PLANS AND DETAILS

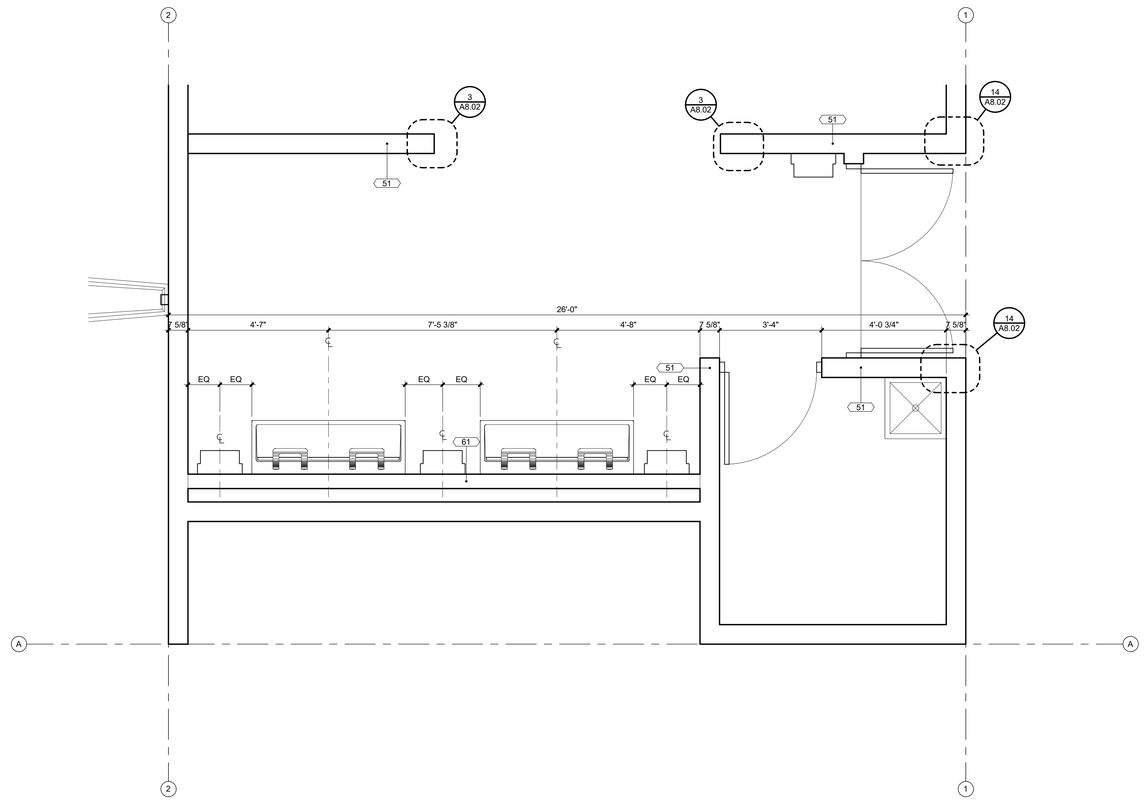
SHEET NUMBER

A2.01



2 ENLARGED RR SINK ACCESORIES

A2.02 SCALE : 1/2" = 1'-0"



1 ENLARGED RR SINK PLAN

A2.02 SCALE : 1/2" = 1'-0"

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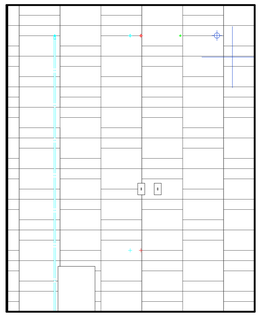
SHEET TITLE

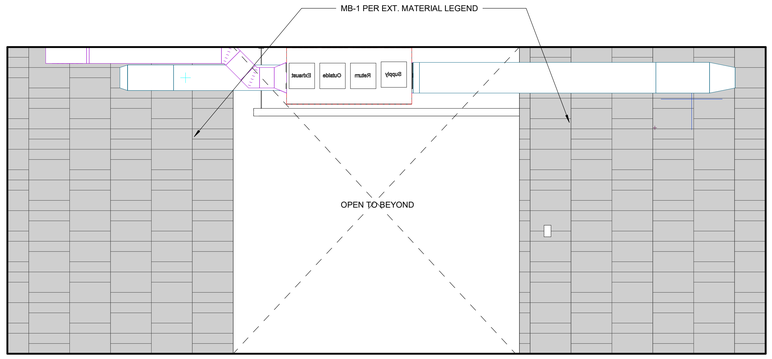
ENLARGED TOILET PLANS

SHEET NUMBER

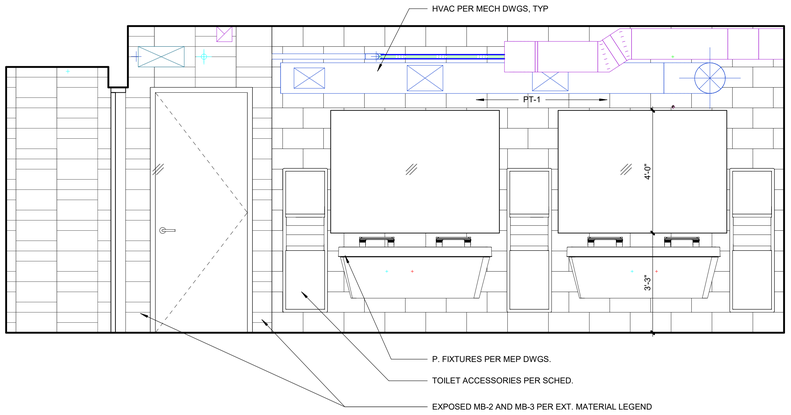
A2.02



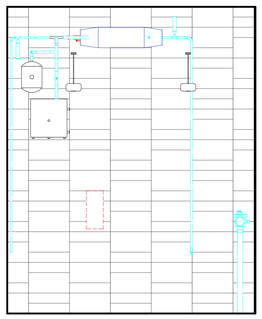
10 FAMILY RR ELEVATION- W
A2.10 SCALE : 1/2" = 1'-0"



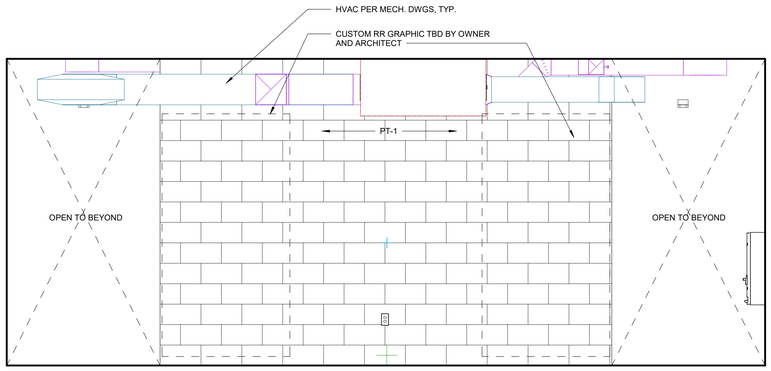
6 SHARED RR WALL ELEVATION- S
A2.10 SCALE : 1/2" = 1'-0"



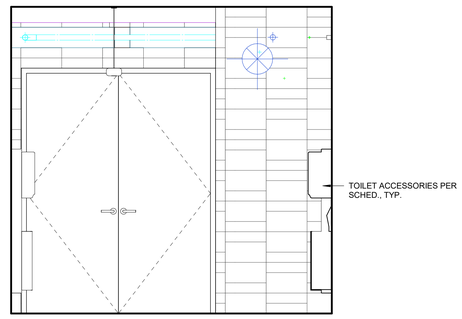
3 SHARED SINKS ELEVATION-S
A2.10 SCALE : 1/2" = 1'-0"



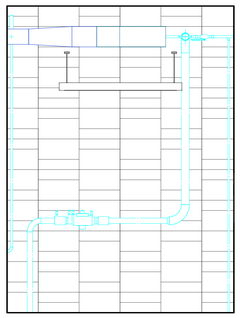
9 FAMILY RR ELEVATION- E
A2.10 SCALE : 1/2" = 1'-0"



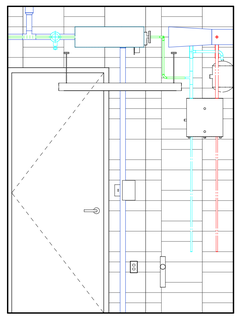
5 SHARED RR WALL ELEVATION- N
A2.10 SCALE : 1/2" = 1'-0"



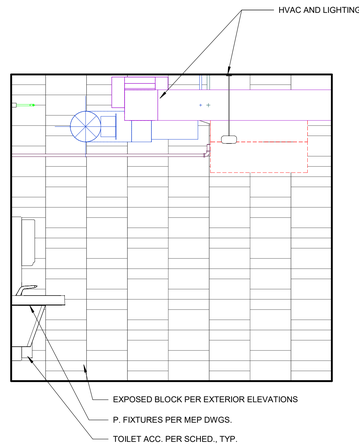
2 RR ENTRY ELEVATION - E
A2.10 SCALE : 1/2" = 1'-0"



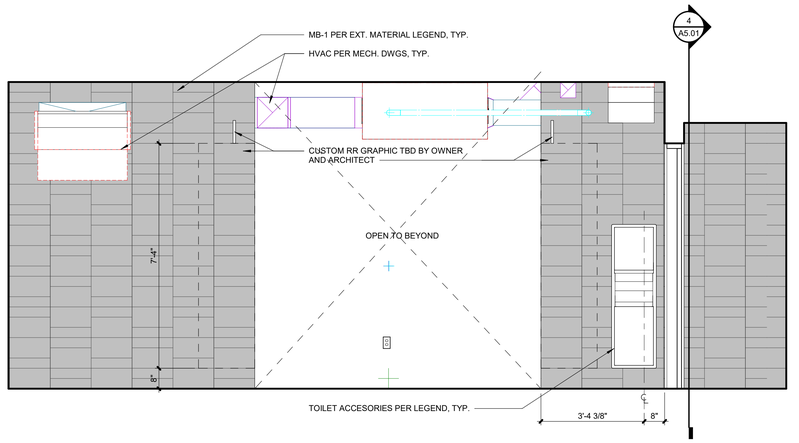
8 FAMILY RR ELEVATION- S
A2.10 SCALE : 1/2" = 1'-0"



7 FAMILY RR ELEVATION- N
A2.10 SCALE : 1/2" = 1'-0"



4 RR ENTRY ELEVATION- W
A2.10 SCALE : 1/2" = 1'-0"



1 RR ENTRY ELEVATION- N
A2.10 SCALE : 1/2" = 1'-0"

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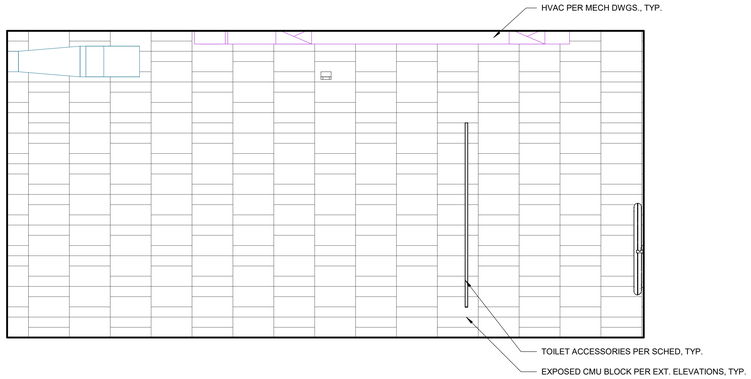
SHEET TITLE

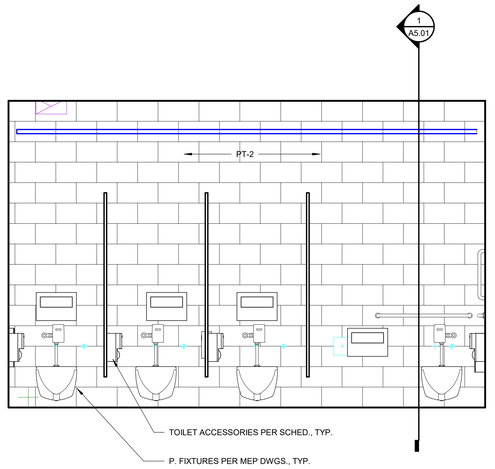
INTERIOR ELEVATIONS

SHEET NUMBER

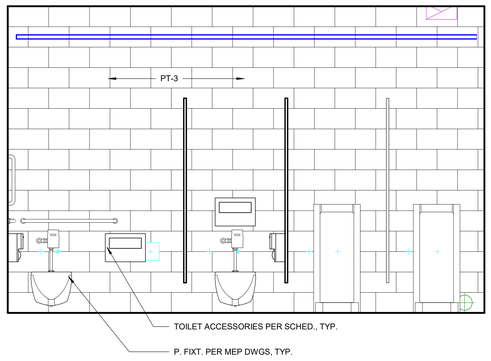
A2.10



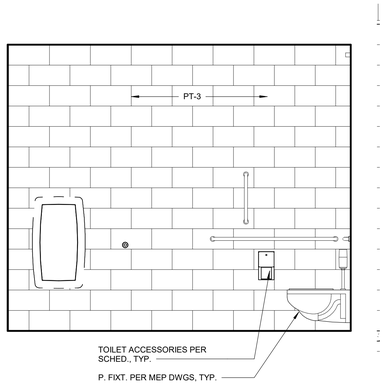
6 MENS RR ELEVATION- W
A2.11 SCALE : 1/2" = 1'-0"



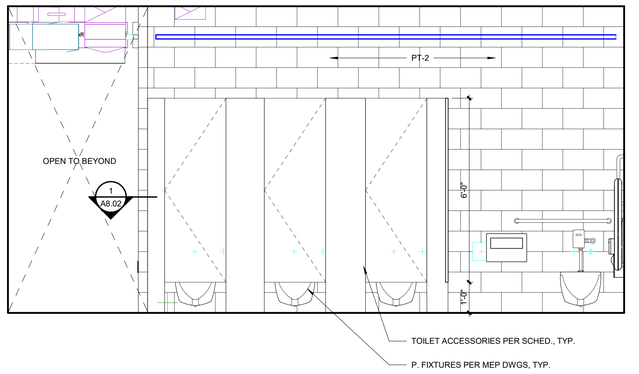
3 WOMEN'S RR TOILET- W
A2.11 SCALE : 1/2" = 1'-0"



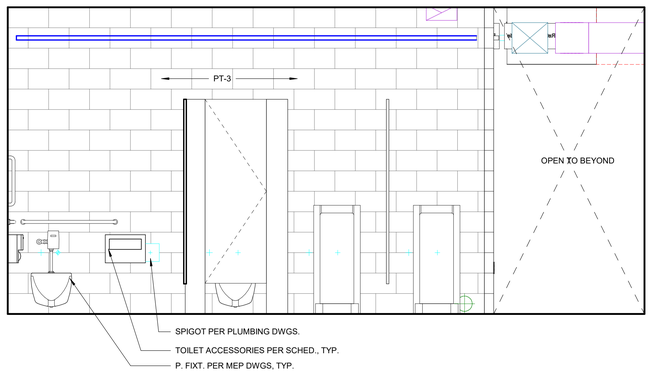
8 MENS RR TOILET ELEVATION-E
A2.11 SCALE : 1/2" = 1'-0"



5 MENS RR ELEVATION- N
A2.11 SCALE : 1/2" = 1'-0"



2 WOMEN'S RR ELEVATION- W
A2.11 SCALE : 1/2" = 1'-0"



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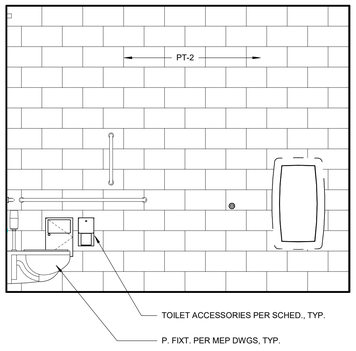
A2.11 SCALE : 1/2" = 1'-0"



4 WOMEN'S RR ELEVATION- N
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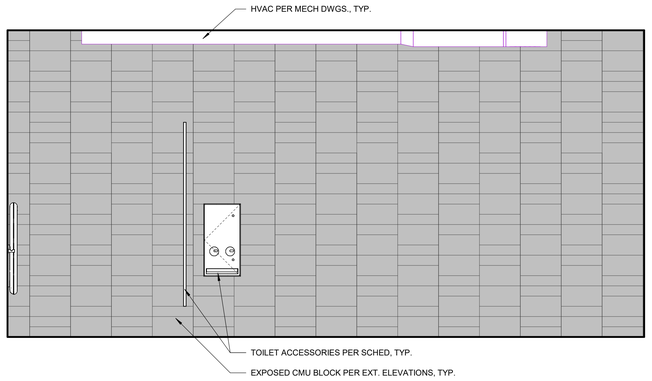

1 WOMEN'S RR ELEVATION- E
A2.11 SCALE : 1/2" = 1'-0"

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MECHANICAL	HENDERSON
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SHEET TITLE

INTERIOR ELEVATIONS

SHEET NUMBER

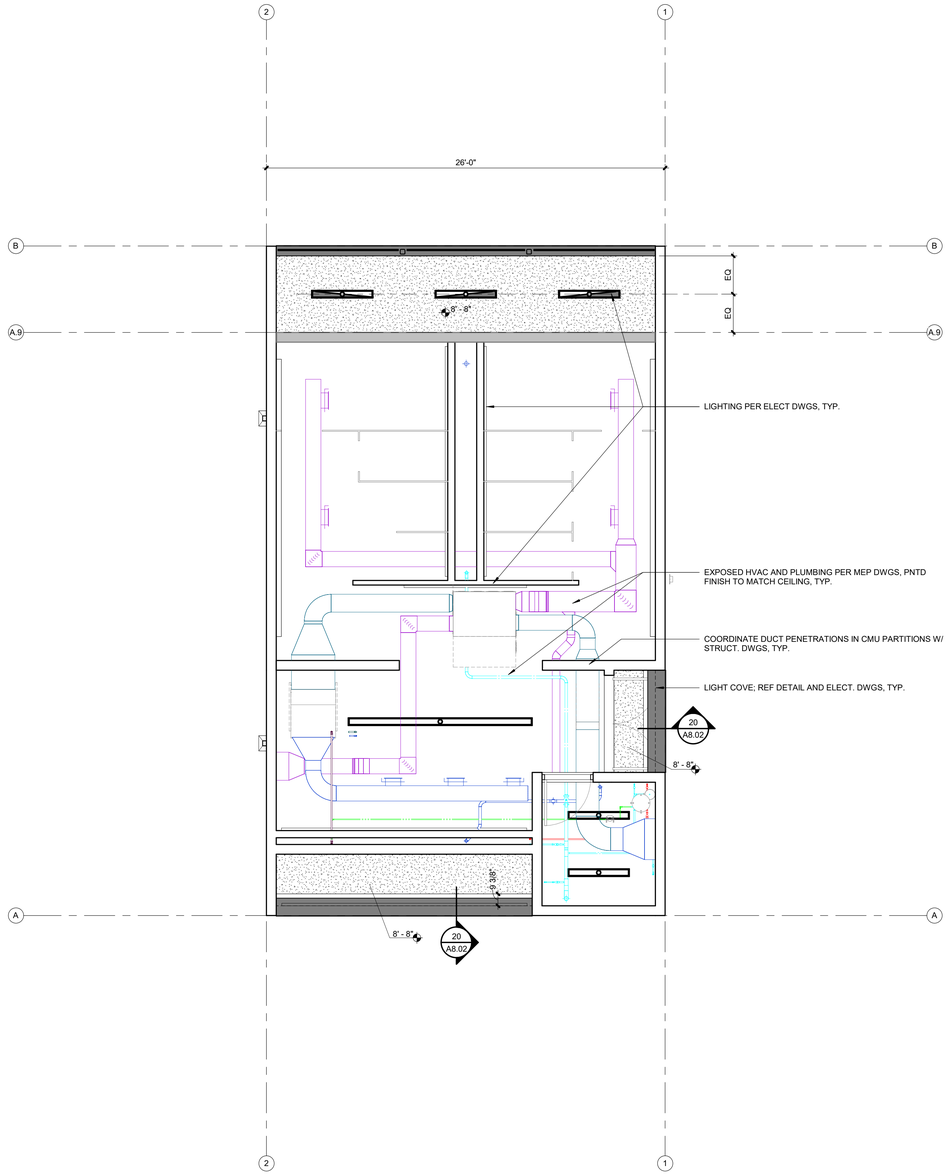
A2.11

REFLECTED CEILING PLAN GENERAL NOTES

1. NO BUILDING ELEMENTS SHALL BE CONNECTED TO OR SUSPENDED FROM DUCTWORK. ALL MATERIALS SHALL BE INDEPENDENTLY SUPPORTED FROM STRUCTURE.

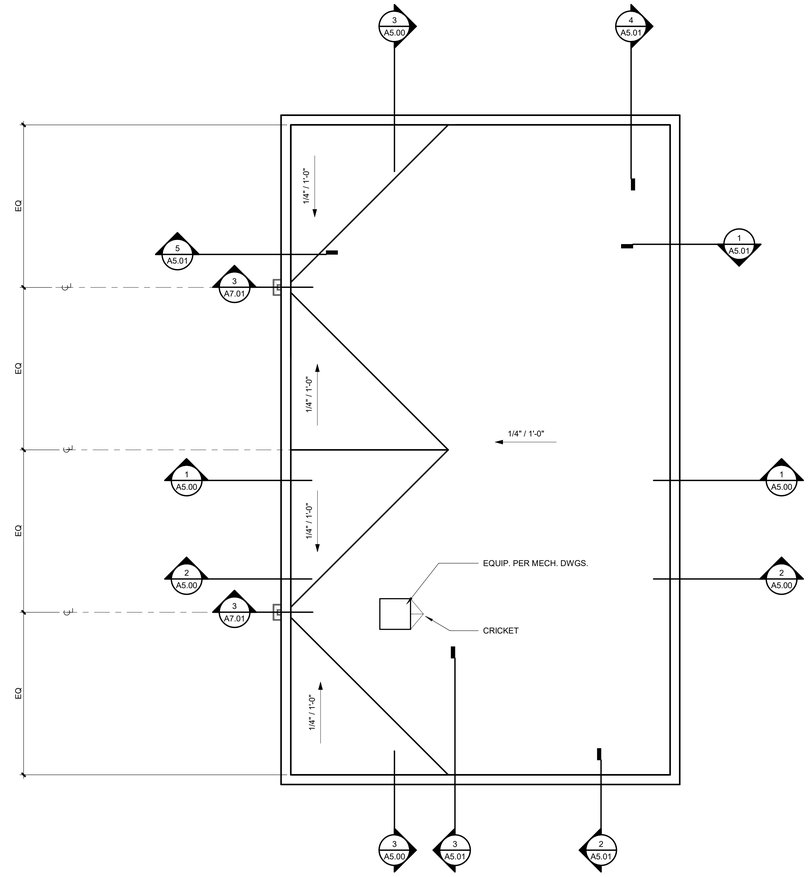
REFLECTED CEILING PLAN LEGEND

- FLAT FINISH ACRYLIC LATEX PAINT ON GYPSUM WALLBOARD, 2 FINISH COATS OVER PRIMER.
- 2'x2' SUSPENDED ACOUSTICAL CEILING. REFERENCE FINISH SCHEDULE FOR TYPE.
- 2'x4' SUSPENDED ACOUSTICAL CEILING. REFERENCE FINISH SCHEDULE FOR TYPE.
- 2'x4' DIRECT INDIRECT LIGHT TROFFER PER ELECTRICAL DRAWINGS
- 2'x2' DIRECT INDIRECT LIGHT TROFFER PER ELECTRICAL DRAWINGS
- LINEAR DIRECT LED PER ELECTRICAL DRAWINGS
- 4' STRIP FIXTURE WITH STEEL HOUSING PER ELECTRICAL DRAWINGS
- LED CAN LIGHT FIXTURE PER ELECTRICAL DRAWINGS
- LINEAR PENDANT LIGHT FIXTURE PER ELECTRICAL DRAWINGS
- PENDANT LIGHT FIXTURE PER ELECTRICAL DRAWINGS
- SUPPLY AIR DIFFUSER PER MECHANICAL DRAWINGS
- RETURN AIR DIFFUSER PER MECHANICAL DRAWINGS
- LINEAR SLOT DIFFUSER PER MECHANICAL



ROOF PLAN GENERAL NOTES

1. THE SINGLE PLY ROOF SHALL BE TPO, 60 MIL, WHITE MEMBRANE, INVISIWELD OR APPROVED EQ, W/A 20 YEAR NO DOLLAR LIMIT MANUFACTURER'S WARRANTY.
2. ROOF DRAINS ARE TO BE COLLECTED UNDERGROUND AND CONTINUED PER CIVIL ENGINEERING PLANS.
3. SEE SHEET A7.01 FOR TYPICAL ROOF DETAILS.
4. SEE PLUMBING AND MECHANICAL PLANS FOR ROOF TOP EQUIPMENT AND PENETRATION LOCATIONS.



2 REFLECTED CEILING PLAN
A3.01 SCALE : 1/4" = 1'-0"

1 ROOF PLAN
A3.01 SCALE : 1/4" = 1'-0"

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paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 02.03.23
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI · DAVID ALAN WILLIAMS · NUMBER A-5540 · REGISTERED ARCHITECT

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

FINKLE + WILLIAMS
ARCHITECTURE
8787 RENNER BLVD., SUITE 100
LENEXA, KANSAS 66219
913 .498.1550
www.finklewilliams.com

SHEET TITLE

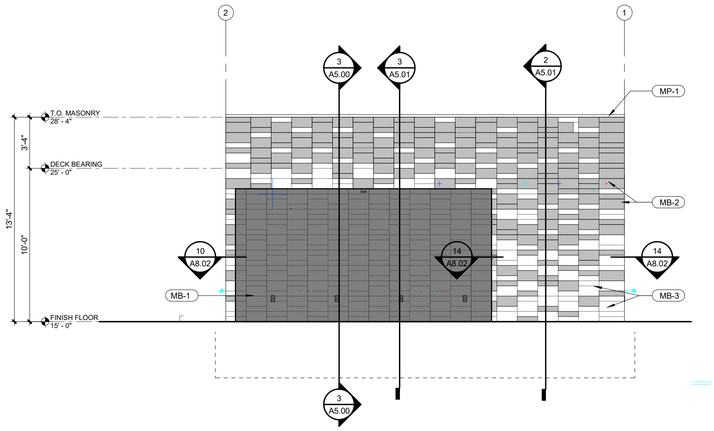
ROOF PLAN & RCP

SHEET NUMBER

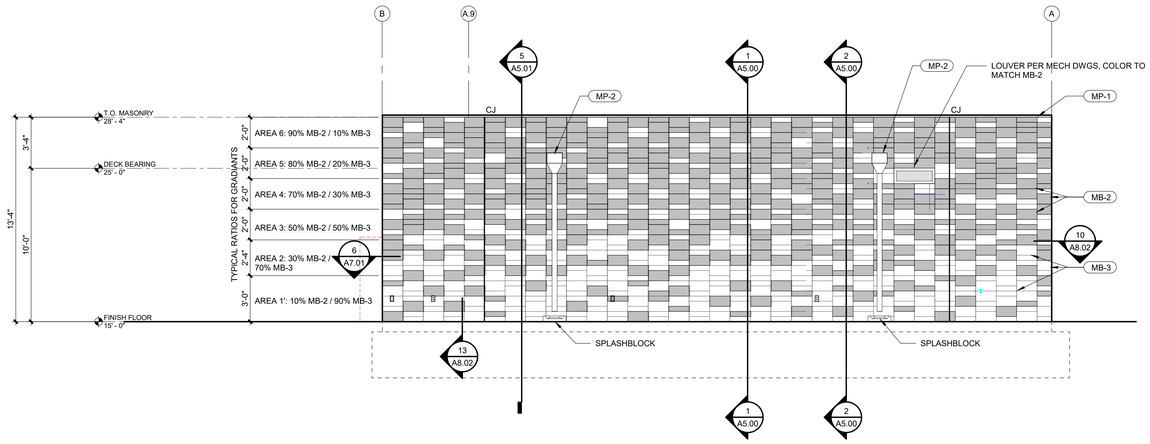
A3.01

EXTERIOR MATERIAL LEGEND

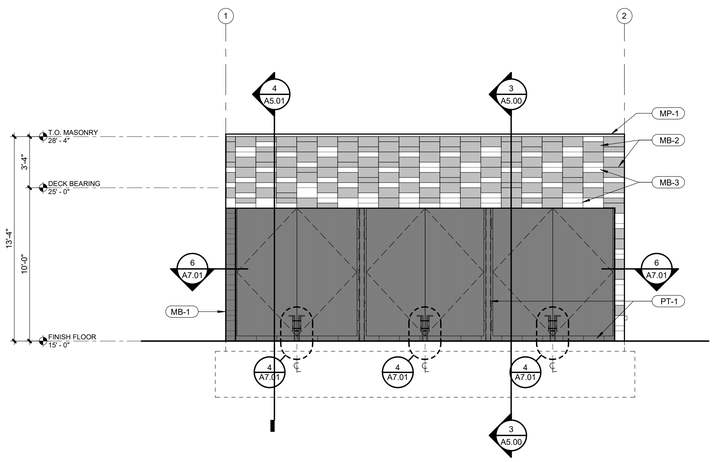
M-1	SIGNAGE: FONT AND FINISH TBD
MB-1	GROUND FACE MASONRY BLOCK, STACK BOND, RANDOM 8"/4" COURSING; TRENDSTONE PLUS GROUND AND POLISHED, COLOR: MIDWEST SLATE
MB-2	GROUND FACE MASONRY BLOCK, STACK BOND, RANDOM 8"/4" COURSING; TRENDSTONE PLUS GROUND AND POLISHED, COLOR: CHICAGO GREY
MB-2	GROUND FACE MASONRY BLOCK, STACK BOND, RANDOM 8"/4" COURSING; TRENDSTONE PLUS GROUND AND POLISHED, COLOR: ALMOND BARK
MP-1	PREFIN. COPING, 24 GA METAL WESTERN STATES MTL; COLOR: TBD TO MATCH BLOCK
MP-2	DOWNSPOUTS, 24 GA METAL WESTERN STATES MTL; COLOR: TBD TO MATCH BLOCK
MP-3	ELECT. ROOM GATES, 24 GA METAL, WESTERN STATES MTL ON EXPOSED STEEL, GALV. & PAINTED; COLOR: TBD TO MATCH BLOCK
PT-1	PAINT EXPOSED CMU AND METAL PARTS TO MATCH MB-1



4 SOUTH ELEVATION
A4.01 SCALE : 1/4" = 1'-0"



2 WEST ELEVATION
A4.01 SCALE : 1/4" = 1'-0"



3 NORTH ELEVATION
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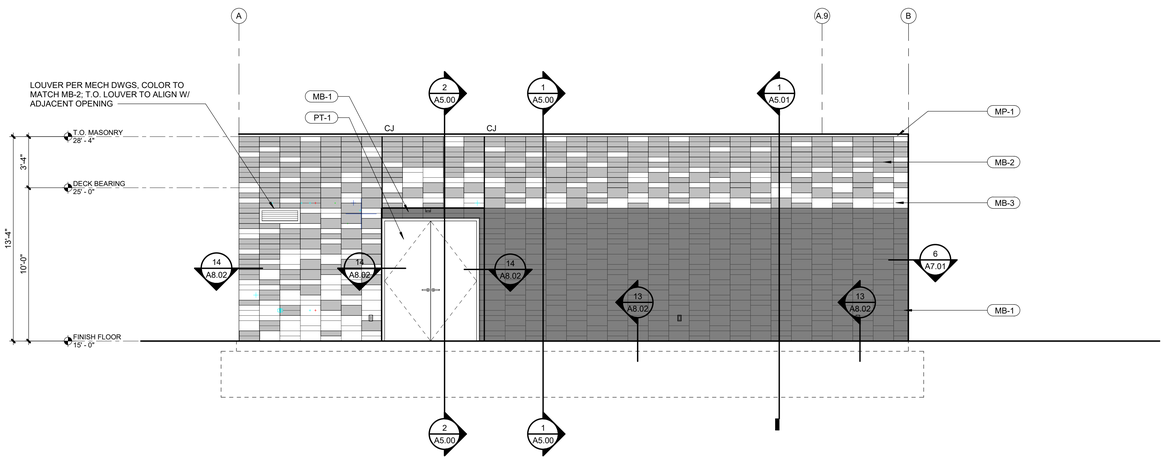

1 EAST ELEVATION
A4.01 SCALE : 1/4" = 1'-0"

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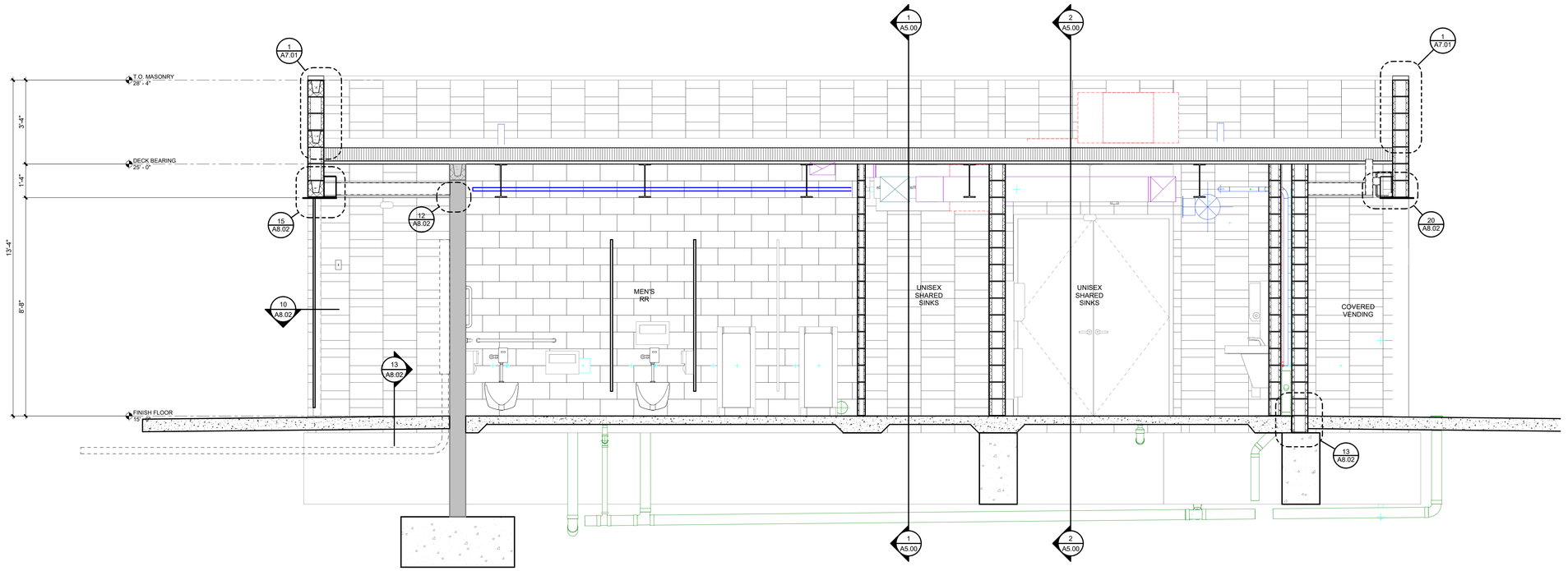
SHEET TITLE

EXTERIOR ELEVATIONS

SHEET NUMBER

A4.01



3 BUILDING SECTION

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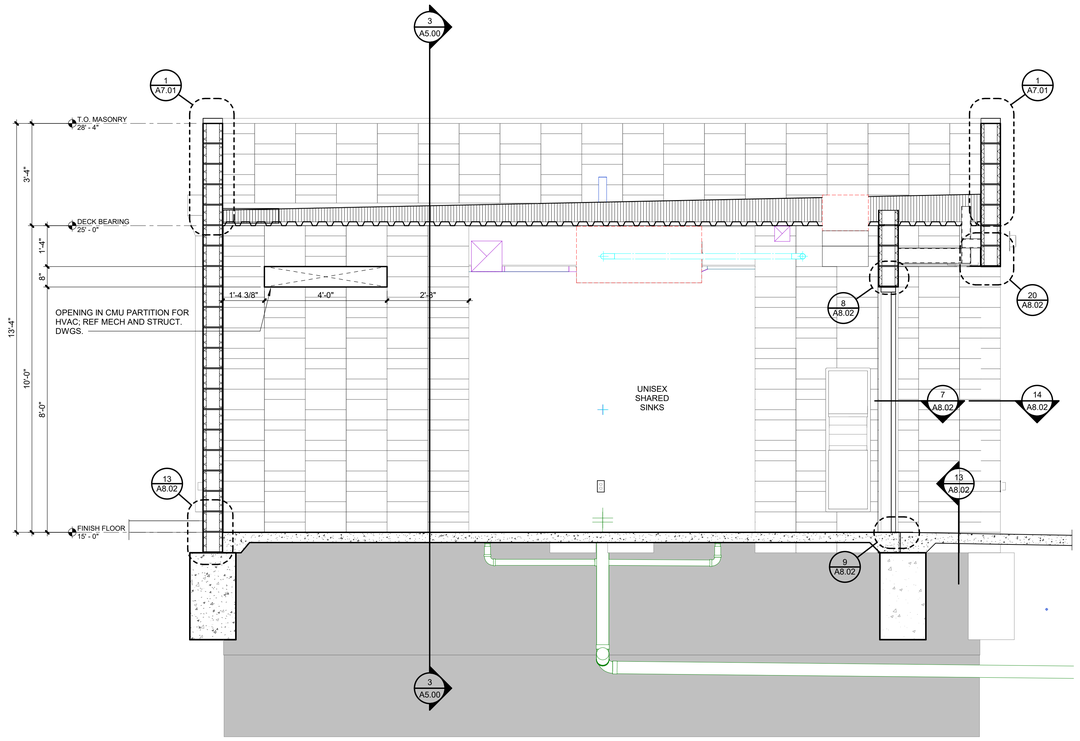

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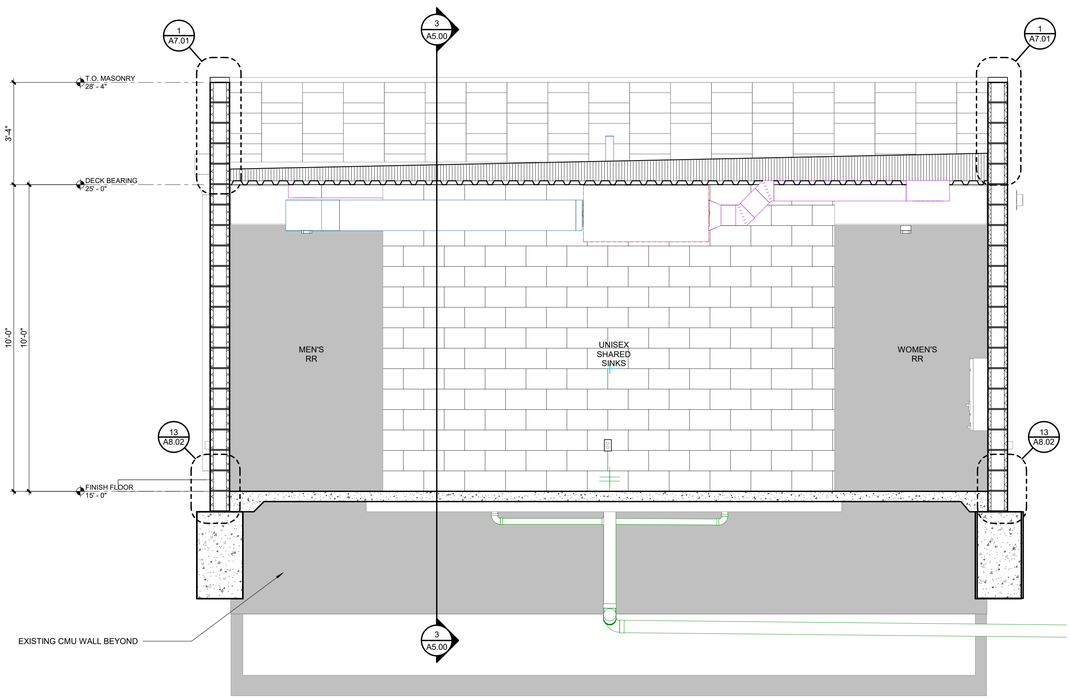

1 BUILDING SECTION

A5.00 SCALE : 1/2" = 1'-0"

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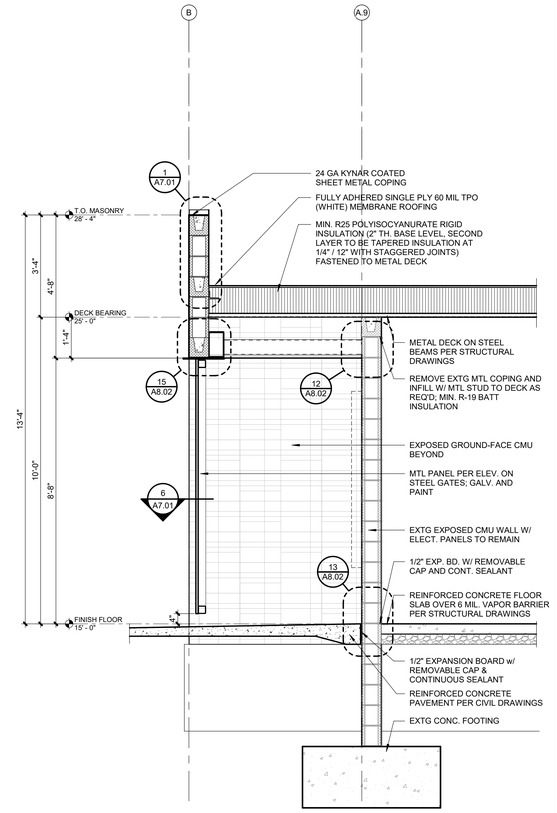
BUILDING SECTIONS

SHEET NUMBER

A5.00



4 WALL SECTION
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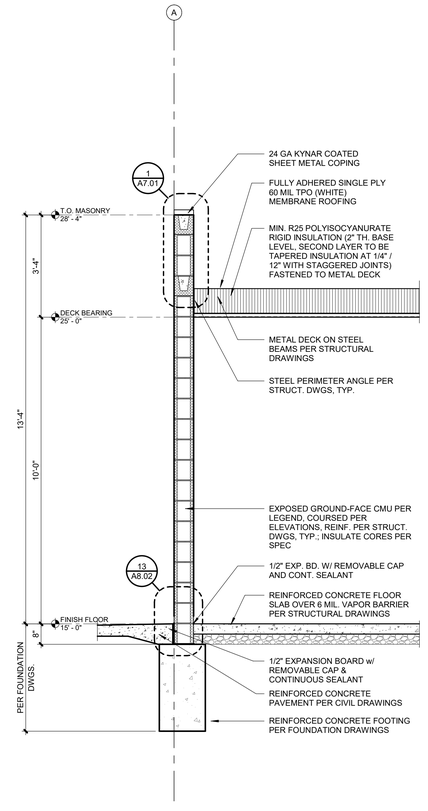

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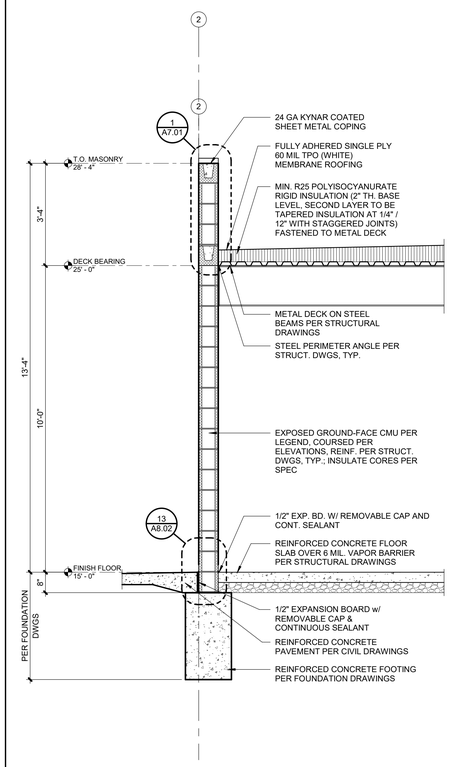

5 WALL SECTION
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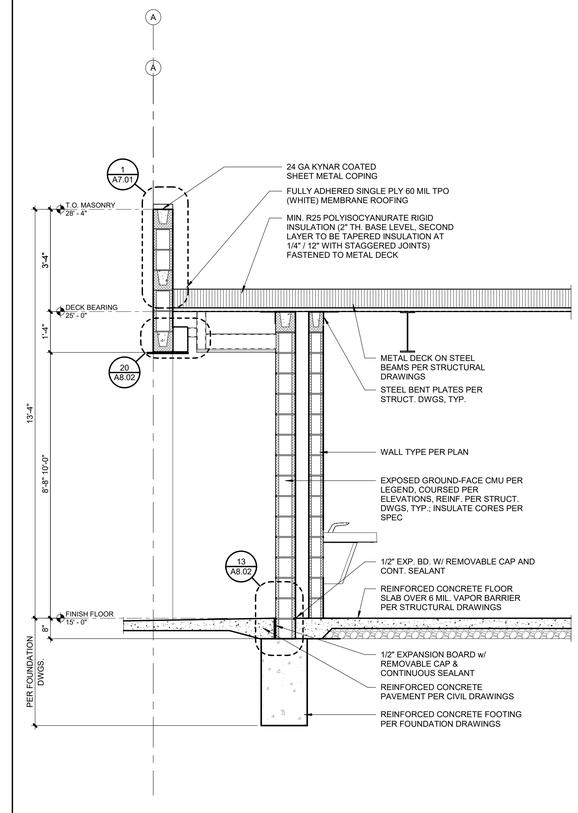

3 WALL SECTION
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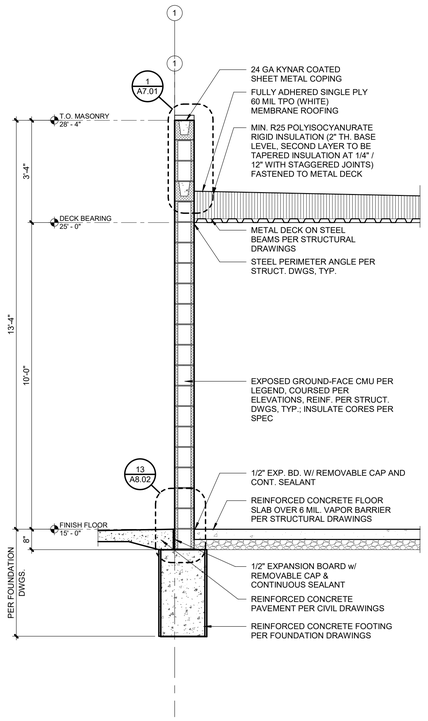

1 WALL SECTION
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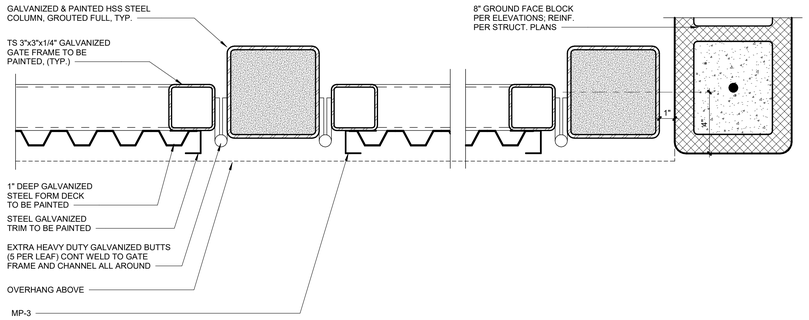
SHEET TITLE

WALL SECTIONS

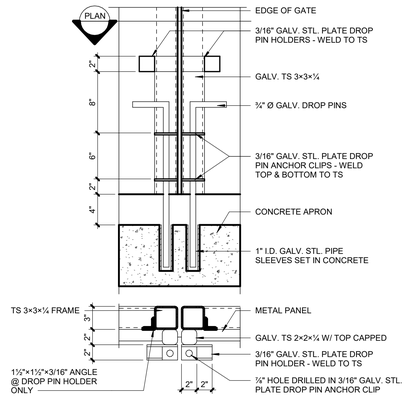
SHEET NUMBER

A5.01



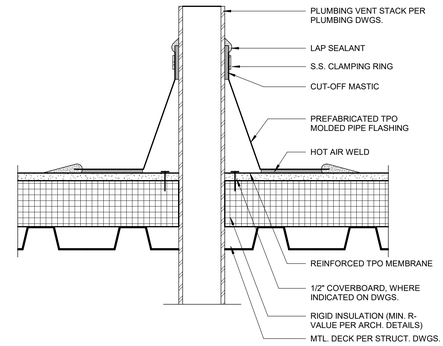
6 JAMB DETAIL

A7.01 SCALE : 3" = 1'-0"



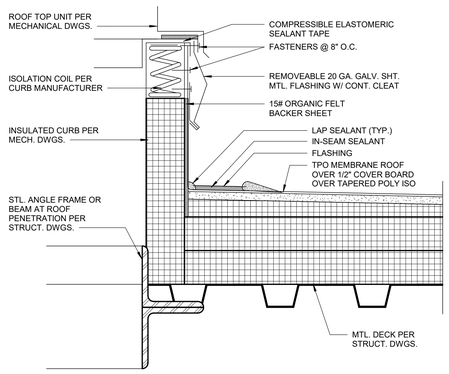
4 DROP PIN DETAILS

A7.01 SCALE : 1 1/2" = 1'-0"



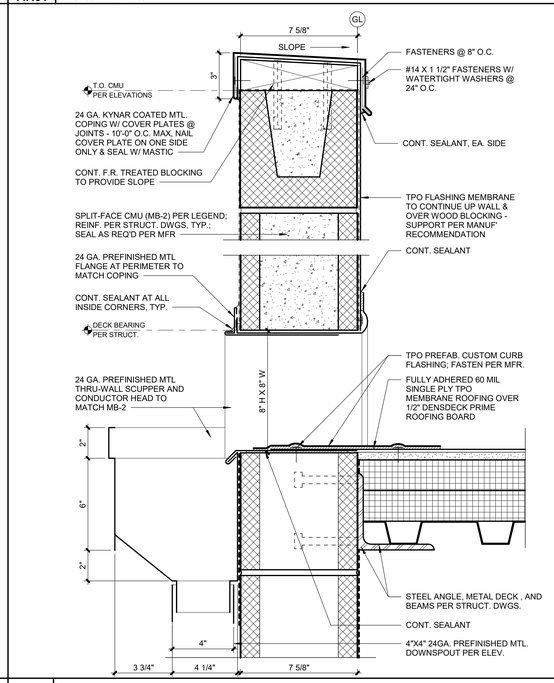
2 VENT STACK DETAIL

A7.01 SCALE : 3" = 1'-0"



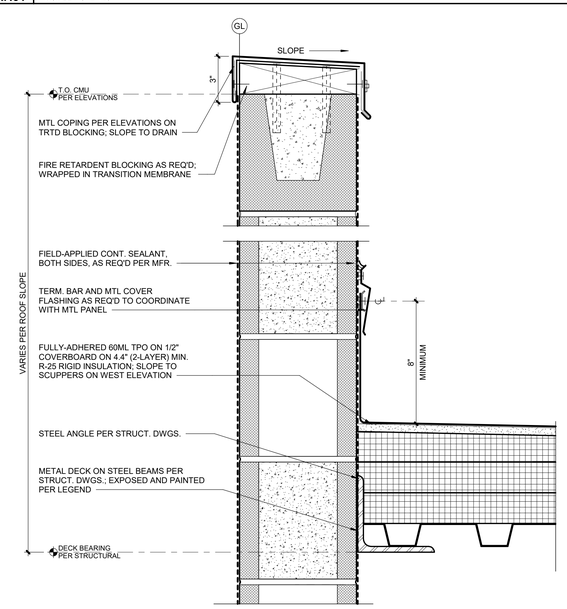
5 MECHANICAL CURB DETAIL

A7.01 SCALE : 3" = 1'-0"



3 ROOF DETAIL

A7.01 SCALE : 3" = 1'-0"



1 PARAPET DETAIL

A7.01 SCALE : 3" = 1'-0"

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SHEET TITLE

DETAILS

SHEET NUMBER

A7.01

ROOM FINISH SCHEDULE

ROOM				WALLS					MILLWORK		
NO.	NAME	FLOOR	BASE	N	E	S	W	CEILING	TOP	BASE	REMARKS
100	STORAGE / WATER SERVICES	SC-01	RB-1	-	-	-	-	EXP-1			(1)
101	ELECTRICAL	-	-	-	-	-	-	PT-4			(1)
102	UNISEX SHARED SINKS	PC-01	RB-1	-	-	PT-1	-	EXP-1			(1)
103	MEN'S RR	PC-01	RB-1	PT-3	PT-3	-	-	EXP-1			(1)
104	WOMEN'S RR	PC-01	RB-1	PT-2	-	-	PT-2	EXP-1			(1)
105	COVERED VENDING	-	-	-	-	-	-	PT-4			(1)

FINISH SCHEDULE REMARKS

(1) DASHED LINE INDICATES EXPOSED GROUND FACE CMU PER EXT. LEGEND; REF INTERIOR ELEVATIONS

ROOM FINISH LEGEND

FLOOR FINISHES
REFERENCE FLOOR PLAN FOR LOCATION OF FLOOR FINISH TRANSITIONS & PATTERN.

CONC: CONCRETE

- **SC-01**: CONCRETE W/ASHFORD FORMULA SEALER WITH METZGER/MCGUIRE RE 88 SEMI-RIGID POLYUREA OR EQUAL FLOOR JOINT FILLER.
- **PC-01**: CONCRETE FLOOR GRINDED, HONED, AND POLISHED TO 'SURFACE CREAM FINISH'. METZGER/MCGUIRE RE 88 SEMI-RIGID POLYREA OR EQUAL FLOOR JOINT FILLER TO BE USED TO FILL ALL FLOOR JOINTS. REFERENCE PROJECT SPECIFICATIONS. INITIAL PASS TO BE DONE PRIOR TO WALL CONSTRUCTION & FLOOR TO BE PROTECTED DURING CONSTRUCTION.

BASE FINISHES
REFERENCE ROOM FINISH DESIGNATIONS ON FLOOR PLAN & INTERIOR ELEVATIONS FOR BASE FINISH LOCATIONS & TRANSITIONS.

RB: .125" THERMOPLASTIC RUBBER RESILIENT WALL BASE

- **RB-1:** MFR: TARKETT, SIZE: 4", COLOR: TBD TO MATCH WALL COLOR
  1. NOTE: ROLL GOODS ONLY

WALL FINISHES
ALL GYPSUM BOARD WALLS, SOFFITS AND CEILINGS PERPENDICULAR TO EXTERIOR WALL WITH WINDOWS TO RECEIVE PAINT ARE TO HAVE A LEVEL 5 DRYWALL FINISH.

PT: ACRYLIC LATEX COATING - 2 FINISH COATS OVER PRIMER

- **PT-1:** SHERWIN WILLIAMS, COLOR NAME, SW####, EGG-SHELL OR SEMI-GLOSS EPOXY COATING
- **PT-2:** SHERWIN WILLIAMS, COLOR NAME, SW####, EGG-SHELL OR SEMI-GLOSS EPOXY COATING
- **PT-3:** SHERWIN WILLIAMS, COLOR NAME, SW####, EGG-SHELL OR SEMI-GLOSS EPOXY COATING
- **PT-4:** SHERWIN WILLIAMS, COLOR NAME, SW####, EGG-SHELL OR SEMI-GLOSS EPOXY COATING

CEILING FINISHES
REFERENCE REFLECTED CEILING PLAN(S) FOR CEILING FINISH LOCATIONS & TRANSITIONS.

EXP: EXPOSED PAINTED ROOF DECK & STRUCTURE PER STRUCT. DWGS.; AND DUCTS / PIPES PER MEP DWGS.

- **EXP-1:** SHERWIN WILLIAMS, WTAERBORNE ACRYLIC DRYFALL, DARK COLOR TBD

GENERAL FINISH NOTES

1. ROOM FINISH SCHEDULE IS FOR GENERAL COORDINATION OF FINISHES. REFERENCE ROOM FINISH PLANS, INTERIOR ELEVATIONS AND REFLECTED CEILING PLANS FOR COORDINATION OF ALL FINAL FINISHES.
2. WHERE MULTIPLE FINISHES ARE INDICATED ON ANY SURFACE REFER TO THE DRAWINGS FOR EXTENT OF EACH FINISH.
3. STOP WALL / CEILING PAINT COLORS AND FINISH MATERIAL CHANGES AT INSIDE CORNERS, UNLESS NOTED OTHERWISE.
4. ALCOVES AND CLOSETS WITHOUT A ROOM IDENTIFICATION NUMBER SHALL HAVE THE SAME FINISHES AS THE ADJOINING SPACE.
5. ALL FLOOR FINISHES TRANSITIONING AT DOORWAYS SHALL BE CENTERED ON THE CLOSED DOOR, UNLESS NOTED OTHERWISE.
6. WHERE NO BASE IS INDICATED CONTINUE WALL FINISH TO FLOOR.
7. CONTINUE WALL AND FLOOR FINISH AS SCHEDULED BEHIND OR UNDER OPEN MILLWORK / CASEWORK WHEN WALL OR FLOOR IS EXPOSED TO VIEW, UNLESS NOTED OTHERWISE.
8. SOFFITS TO BE PAINTED TO MATCH GB-1 UNLESS NOTED OTHERWISE.
9. ALL EXPOSED DUCTWORK, ELECTRICAL CONDUIT, PLUMBING SUPPLY, WASTE OR VENTING AND ALL OTHER PIPING SHALL BE PAINTED TO MATCH ADJACENT WALL OR CEILING FINISH, UNLESS NOTED OTHERWISE.
10. ALL MECHANICAL GRILLES, ACCESS PANELS, RECESSED SPEAKERS (IF APPROVED BY MANUFACTURER), AND OTHER MECHANICAL PANELS SHALL BE PAINTED TO MATCH ADJACENT SURFACES UNLESS FACTORY FINISH OR OTHER COLOR IS SPECIFIED. CONCEALED SPRINKLER HEADS TO BE PROVIDED WITH FACTORY-APPLIED FINISH TO MATCH ADJACENT FINISH, UNLESS NOTED OTHERWISE.
11. TILE INDICATED ON WALLS IS TO BE FULL HEIGHT, UNLESS NOTED OTHERWISE.
12. ALIGN FLOOR AND WALL TILE JOINTS, UNLESS NOTED OTHERWISE.
13. UNFINISHED EXPOSED TILE EDGES TO RECEIVE STAINLESS STEEL TRIM EQUAL TO SCHLUTER - QUADEC/-K, FINISH EB, U.N.O
14. PAINT ALL HOLLOW METAL DOORS AND FRAMES W/ 2 COATS OF SEMI-GLASS, ACRYLIC LATEX PAINT TO MATCH ADJACENT WALL, U.N.O.
15. DOOR FRAME FINISH TRANSITIONS SHALL BE AT THE INSIDE CORNER OF THE STOP ON THE DOOR SIDE.
16. DUAL FINISH DOORS SHALL HAVE MATCHING FRONT FACE AND STRIKE EDGE AND MATCHING BACK FACE AND HINGE EDGE.
17. REFER TO FLOOR TRANSITION DETAILS WHERE DISSIMILAR FLOOR MATERIALS MEET.

HARDWARE SETS

GENERAL NOTES:

1. ALL HARDWARE SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA).
2. ALL DOOR HARDWARE SHALL BE FINISH US26D OR EQUIVALENT.
3. ALL LATCHSETS AND LOCKSETS SHALL BE EQUIPPED WITH LEVER TYPE OPERATING TRIM W/ THE "CLUTCH" FEATURE.
4. ALL CLOSERS SHALL BE LOCATED ON ROOMS SIDES OF DOORS.
5. CONTRACTOR'S HARDWARE CONSULTANT SHALL BE RESPONSIBLE FOR DETERMINING APPROPRIATE HARDWARE FUNCTION AND OPTIONS.
6. CONTRACTOR SHALL COORDINATE FINAL KEYING WITH OWNER.

(LA) LATCHSETS

SET # LA.1 (INTERIOR SINGLE W/ LATCH)
- HINGES
- LATCHSET
- WALL STOP
- SILENCERS

SET # LA.2 (INTERIOR SINGLE W/ LATCH & CLOSER)
- HINGES
- LATCHSET
- CLOSER
- WALL STOP
- SILENCERS

(LK) INTERIOR LOCKSETS

SET # LK.1 (INTERIOR SINGLE W/ LOCK)
- HINGES
- LOCKSET
- WALL STOP
- SILENCERS

SET # LK.2 (INTERIOR SINGLE W/ LOCK & CLOSER)
- HINGES
- LOCKSET
- CLOSER
- WALL STOP
- SILENCERS

(PP) PUSH/PULLS

SET # PP.1 (INTERIOR SINGLE PUSH/PULL - TOILET ROOMS)
- HINGES
- PUSH/PULL
- CLOSER
- WALL STOP
- SILENCERS

SET # PP.2 (INTERIOR SINGLE PULL ONLY - CLOSETS)
- HINGES
- PULL
- CATCHES
- WALL STOP

SET # PP.3 (INTERIOR POCKET DOOR)
- POCKET DOOR KIT
- PRIVACY LOCK

SET # PP.4 (INTERIOR SLIDING PAIR)
- BI-PASS DOOR KIT
- WROUGHT PULLS

SET # PP.5 (INTERIOR BI-FOLD
- HINGES
- TRACK
- FINGER PULL

SET # PP.6 (INTERIOR TEMP. GLASS)
- PIVOTS (CONCEALED TOP & BOTTOM)
- HEAD RAIL (RECESSED)
- CLOSER (CONCEALED OVERHEAD)
- PULLS

(EL) EXTERIOR LOCKSETS

SET # EL.1 (EXTERIOR SINGLE W/ LOCK)
- HINGES
- LOCKSET
- CLOSER
- THRESHOLD
- WEATHERSTRIP
- BOTTOM SWEEP
- DRIP CAP
- LATCH GUARD
- STORM CHAIN

SET # EL.2 (EXTERIOR PAIR W/ LOCK, CLOSERS, & MANUAL FLUSHBOLTS)
- HINGES
- LOCKSET
- FLUSHBOLTS
- ASTRAGAL
- CLOSERS
- THRESHOLD
- WEATHERSTRIP
- BOTTOM SWEEP
- DRIP CAP
- LATCH GUARD
- STORM CHAIN

SET # EL.3 (EXTERIOR PAIR W/ LOCK, CLOSERS, & AUTO FLUSHBOLTS)
- HINGES
- LOCKSET
- FLUSHBOLTS
- ASTRAGAL
- CLOSERS
- COORDINATOR
- THRESHOLD
- WEATHERSTRIP
- BOTTOM SWEEP
- DRIP CAP
- LATCH GUARD
- STORM CHAIN

DOOR AND FRAME SCHEDULE

DOOR						FRAME			DETAILS				
	SIZE												
NO.	W.	H.	Th.	TYPE	MAT.	TYPE	MAT.	RATING	JAMB	HEAD	SILL	HARDWARE	REMARKS
AA	6' - 0"	7' - 10"	1 3/4"	H2	HM	1	HM	-	7/A8.02	8/A8.02	9/A8.02	EL.3	(1), (2)
BB	3' - 0"	7' - 10"	1 3/4"	H1	HM	2	HM	-	7/A8.02	8/A8.02	-	LK.2	(2)

DOOR SCHEDULE REMARKS

(1) PROVIDE APPROVED ENTRANCE AND EGRESS ACCESS CONTROL SYSTEM, LISTED IN ACCORDANCE WITH UL 294 AND INSTALLED IN COMPLIANCE WITH CRITERIA 1 THROUGH 6 IN SECTION 1008.1.9.8 OF IBC 2012

(2) PROVIDE 16" X 34" KICK PLATE

DOOR TYPES

ALL DOORS TO BE FACTORY PRIMED. PAINT TO BE SPRAYED

EXT. DOOR TO BE GRADE III EXTRA HEAVY DUTY, MODEL 4 INSUL., MIN. 16 GA. GALV. STL. (FINISH W/ 2 COATS SEMI-GLOSS ACRYLIC LATEX PAINT)

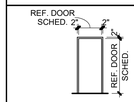
H1

PAIR: EXT. DOOR TO BE GRADE III EXTRA HEAVY DUTY, MODEL 4 INSUL., MIN. 16 GA. GALV. STL. (FINISH W/ 2 COATS SEMI-GLOSS ACRYLIC LATEX PAINT)

H2

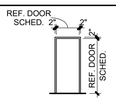
FRAME TYPES

ALL FRAMES TO BE FACTORY PRIMED. PAINT TO BE SPRAYED



14 GA. GALV. WELDED HOLLOW METAL FRAMES, FINISH TO BE SPRAYED W/ 2 COATS SEMI-GLOSS ACRYLIC LATEX PAINT

1

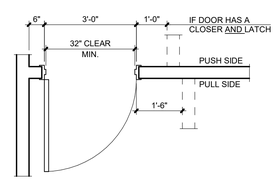


16 GA. WELDED HOLLOW METAL FRAMES, FINISH TO BE SPRAYED W/ 2 COATS SEMI-GLOSS ACRYLIC LATEX PAINT

2

DOOR LOCATION PLAN

FOR ALL DOORS NOT LOCATED ON PLAN



MATERIAL LEGEND

GL	-	GLASS
HM	-	HOLLOW METAL
WD	-	WOOD
STL	-	STEEL
AL	-	ALUMINUM
MFR	-	PER MANUFACTURER
POLY	-	POLYETHYLENE
P	-	POLYCARBONATE

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 02.03.23
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI · DAVID ALAN WILLIAMS · NUMBER A-5540 · REGISTERED ARCHITECT

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

FINKLE + WILLIAMS
ARCHITECTURE
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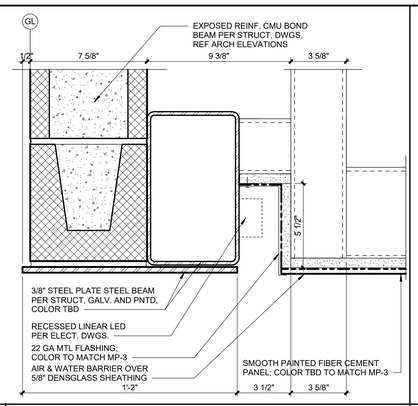
LENEXA, KANSAS 66219
913 .498.1550
www.finklewilliams.com

SHEET TITLE

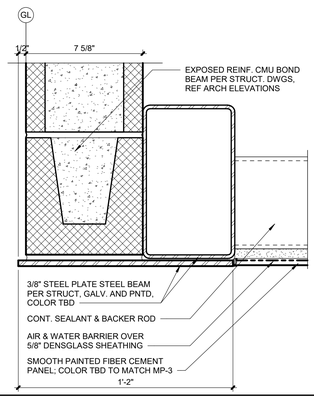
DOOR AND FINISH SCHEDULES AND DETAILS

SHEET NUMBER

A8.01



20 HEAD DETAIL
A8.02 SCALE : 3" = 1'-0"



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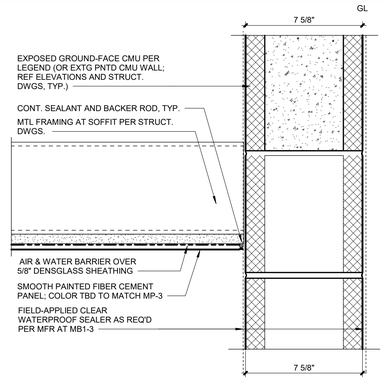

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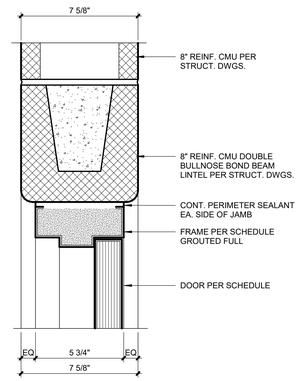

8 DOOR HEADS DETAIL
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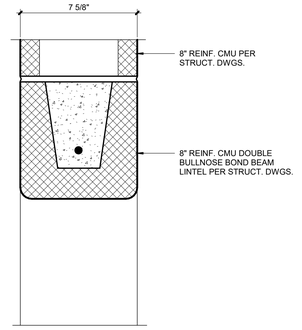

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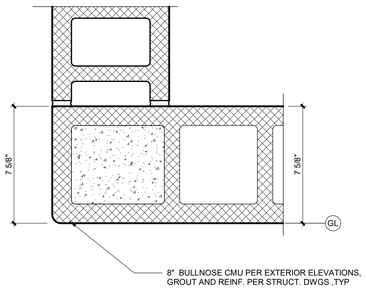

14 PLAN DETAIL
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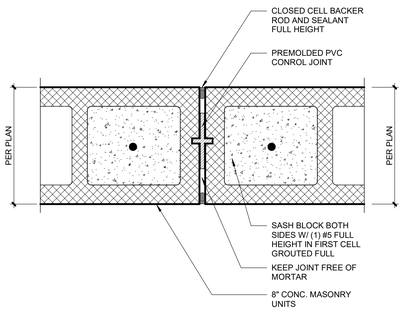

11 CONTROL JOINT
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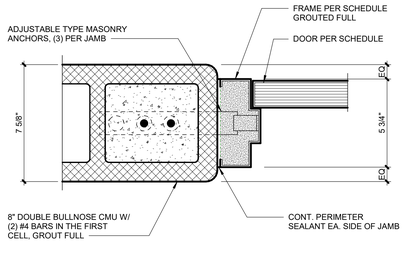

7 DOOR JAMB DETAIL
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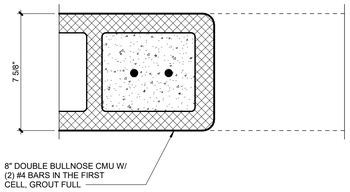

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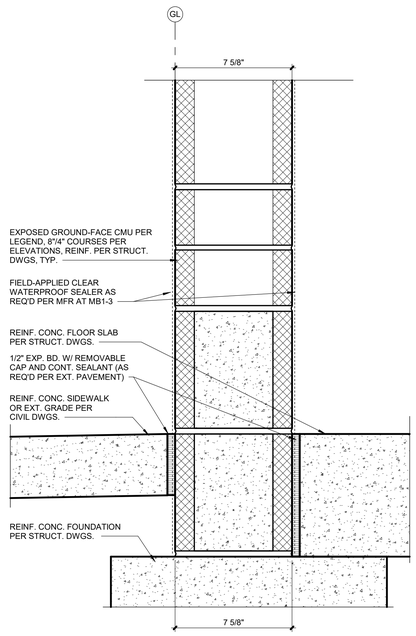

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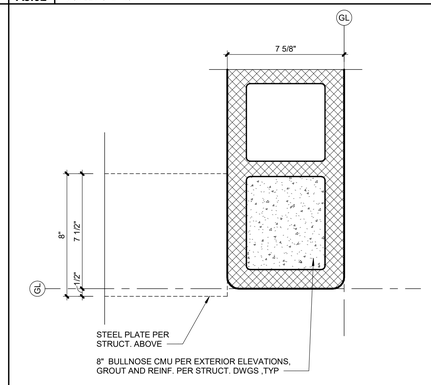

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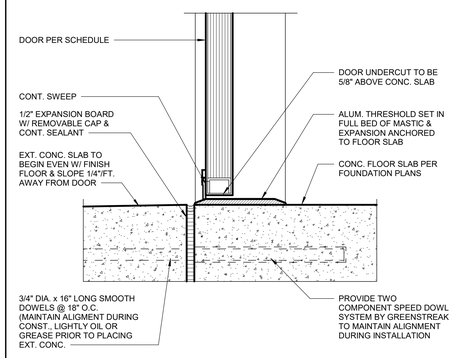

9 SILL DETAIL
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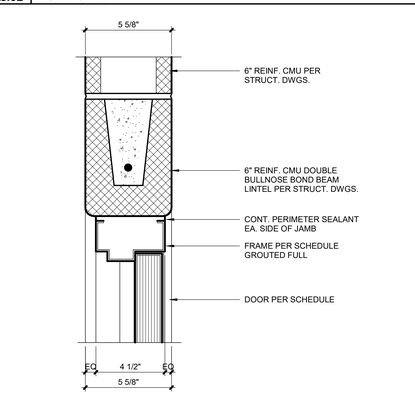

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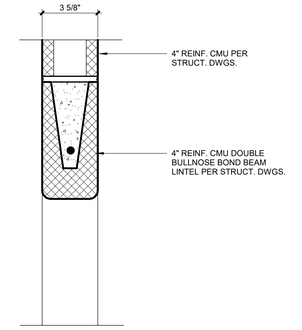

2 DOOR HEAD DETAIL
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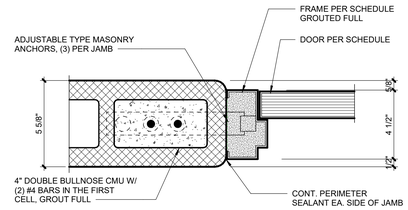

5 DOOR JAMB DETAIL
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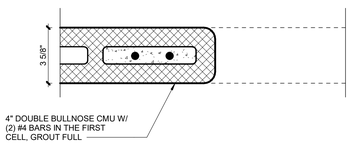

1 DOOR JAMB DETAIL
A8.02 SCALE : 3" = 1'-0"

C:\Users\Jessica\Documents\Paragon Star_South Restrooms_Central-VE-R21_jreedshultz@finklewilliams.com.rvt

paragon star

Paragon Star - SOUTH RESTROOMS

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LENEXA, KANSAS 66219
913 .498.1550
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SHEET TITLE

DOOR HEAD, JAMB, AND SILL DETAILS

SHEET NUMBER

A8.02

DIVISION 1 - GENERAL REQUIREMENTS

11 ALLOWANCES
A. IF ANY PORTIONS OF THE PROJECT ARE INDICATED TO BE BID BY A COST PER UNIT ALLOWANCE, THE ALLOWANCE STATED IN THE DOCUMENTS IS THE COST TO THE CONTRACTOR OF THE PRODUCTS OR MATERIALS ONLY. ANY TAXES, FREIGHT, MARKUP, DELIVERY, AND LABOR SHALL BE IN ADDITION TO THE MATERIAL ALLOWANCE.

1.2 ALTERNATES
A. IF ANY ALTERNATES ARE INDICATED IN THE CONSTRUCTION DOCUMENTS, THE CONTRACTOR SHALL FURNISH A SEPARATE PRICE FOR ALL MATERIAL, TAXES, FREIGHT, MARKUP, DELIVERY, LABOR, OVERHEAD AND PROFIT FOR THAT PORTION OF THE WORK. THE PROPOSED ALTERNATE MAY THEN BE ADDED OR DEDUCTED FROM THE CONTRACT SUM IF THE OWNER ACCEPTS THE ALTERNATE.

1.3 UNIT PRICES
A. IF ANY UNIT PRICES ARE REQUESTED IN THE CONSTRUCTION DOCUMENTS, THE CONTRACTOR SHALL FURNISH A PRICE INCLUDING ALL NECESSARY MATERIAL, TAXES, FREIGHT, MARKUP, DELIVERY, LABOR, OVERHEAD, AND PROFIT PER UNIT OF MEASUREMENT FOR WORK THAT MAY BE ADDED OR DEDUCTED FROM THE CONTRACT SUM IF ESTIMATED QUANTITIES OF WORK REQUIRED BY THE CONSTRUCTION DOCUMENTS ARE INCREASED OR DECREASED.

1.4 CHANGE ORDERS
A. WHEN CHANGES TO THE CONTRACT SUM OR SCHEDULE ARE NECESSARY, CONTRACTOR SHALL SUBMIT FOUR (4) COPIES OF THE PROPOSED CHANGE ORDER AND SUPPORTING DOCUMENTATION TO ARCHITECT FOR REVIEW IN A FORMAT AGREED UPON BETWEEN THE OWNER, ARCHITECT, AND CONTRACTOR. BEFORE PROCEEDING WITH WORK RELATED TO CHANGE ORDERS, CONTRACTOR SHALL OBTAIN OWNER'S WRITTEN APPROVAL.

1.5 PAYMENT APPLICATIONS
A. PRIOR TO SUBMITTAL OF EACH FORMAL MONTHLY PAYMENT APPLICATION, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT A DRAFT COPY OF THE PROPOSED PAYMENT APPLICATION WITH A SCHEDULE OF VALUES INDICATING THE ESTIMATED PERCENT COMPLETE IN EACH CATEGORY.
B. FOLLOWING REVIEW AND ADJUSTMENT (IF ANY) OF THE DRAFT, CONTRACTOR SHALL SUBMIT FOUR (4) COPIES OF THE PROPERLY EXECUTED PAYMENT APPLICATION, SCHEDULE OF VALUES, AND LIEN WAIVERS FOR ARCHITECT'S REVIEW AND FORWARDING TO OWNER FOR PAYMENT.

1.6 SUBMITTALS
A. CONTRACTOR SHALL PREPARE AND SUBMIT SUBMITTALS REQUIRED BY INDIVIDUAL SPEC SECTIONS [AS PDF UPLOADED TO ON-LINE PROJECT SOFTWARE WEBSITE] OR [PDF SENT VIA EMAIL] FOR ARCHITECT'S REVIEW.
B. PROCESSING TIME:
1. INITIAL REVIEW: MIN. 10 DAYS
2. RESUBMITTAL REVIEW (AS REQUIRED): MIN. 5 DAYS
C. CERTIFICATES AND CERTIFICATIONS SUBMITTALS: INCLUDES SIGNATURE OF ENTITY RESPONSIBLE FOR PREPARING CERTIFICATION [PROVIDE DIGITAL SIGNATURE ON ELECTRONICALLY SUBMITTED CERTIFICATES AND CERTIFICATIONS WHERE INDICATED]
D. DELEGATED-DESIGN SERVICES CERTIFICATION: IN ADDITION TO OTHER REQUIRED SUBMITTALS, SUBMITAL [DIGITALLY SIGNED PDF ELECTRONIC FILE] [AND] [THREE] PAPER COPIES OF CERTIFICATE, SIGNED AND SEALED BY THE RESPONSIBLE DESIGN PROFESSIONAL
E. BIM INCORPORATION [BY CONTRACTOR] IF REQUIRED BY OWNER.
F. CONTRACTOR'S SUBMITTAL REVIEW: CONTRACTOR SHALL REVIEW EACH SUBMITTAL AND CHECK FOR COORDINATION WITH OTHER WORK OF THE CONTRACT AND FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. MARK WITH APPROVAL STAMP BEFORE SUBMITTING TO ARCHITECT.
1. ARCHITECT WILL NOT REVIEW SUBMITTALS THAT DO NOT HAVE CONTRACTOR'S REVIEW AND APPROVAL.

1.7 CONSTRUCTION PERIOD TESTING
A. THE OWNER SHALL ENGAGE AN INDEPENDENT TESTING AGENCY TO PERFORM CODE-REQUIRED "SPECIAL INSPECTIONS" AND QUALITY CONTROL TESTING. CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING TIMES FOR TESTS, INSPECTIONS, AND OBTAINING SAMPLES AND NOTIFYING TESTING AGENCY.

1.8 REFERENCE STANDARDS
A. CONSTRUCTION AND MATERIALS SHALL COMPLY WITH THE MOST RECENT STANDARDS IN EFFECT AS OF THE DATE OF THE CONSTRUCTION DOCUMENTS, UNLESS INDICATED OTHERWISE.

1.9 CLOSEOUT PROCEDURES
A. PUNCHLIST - PRIOR TO SCHEDULING A SUBSTANTIAL COMPLETION WALK-THROUGH TO DEVELOP A PUNCHLIST OF ITEMS REQUIRING COMPLETION, PROJECT SHALL BE FINAL CLEANED, TOUCH-UP PAINTED, AND DAMAGED CEILING TILE REPLACED. UPON ARRIVAL, IF THE ARCHITECT DETERMINES THE PROJECT IS NOT READY FOR WALK-THROUGH, THE PUNCHLIST SHALL BE RESCHEDULED.
1. WHEN THE CONTRACTOR CONSIDERS THE PUNCHLIST ITEMS FULLY COMPLETED, A FINAL WALK-THROUGH SHALL BE SCHEDULED TO REVIEW THE COMPLETED CONSTRUCTION.
B. PRIOR TO PROJECT COMPLETION, CONTRACTOR SHALL SUBMIT/COMPLETE THE FOLLOWING:
1. ELECTRONIC (PDF) SET OF CONSTRUCTION DRAWINGS NEATLY MARKED UP TO SHOW ACTUAL INSTALLATION WHERE INSTALLATION VARIES FROM THAT SHOWN ON ORIGINALLY ON THE CONSTRUCTION DOCUMENTS.
2. TWO (2) COPIES AND ELECTRONIC (PDF) OF OPERATION AND MAINTENANCE MANUALS INCLUDING SUBCONTRACTOR AND SUPPLIER CONTACT INFORMATION, MAINTENANCE AND SERVICE INSTRUCTIONS. SCHEDULES, EMERGENCY INSTRUCTIONS, SPARE PARTS LISTS, WIRING DIAGRAMS, AND WARRANTY INFORMATION.
3. TRAINING OF OWNER PERSONNEL ON USE AND MAINTENANCE OF MECHANICAL, ELECTRICAL, PLUMBING, FIRE SPRINKLER, ALARM, SECURITY, IRRIGATION, AND OTHER BUILDING SYSTEMS.

DIVISION 2 - SITE WORK

SEE CIVIL AND LANDSCAPE PLANS AND SPECIFICATIONS

DIVISION 3 - CONCRETE

SEE STRUCTURAL PLANS AND SPECIFICATIONS

CONC. SLAB TO BE FINISHED IN A WAY THAT WILL ALLOW FOR FUTURE EPOXY FLOOR/BASE.

DIVISION 4 - MASONRY

042000 UNIT MASONRY

A. SUBMITTALS:
1. PRODUCT DATA FOR EACH TYPE OF PRODUCT, SHOP DRAWINGS FOR REINFORCING STEEL, AND THREE (3) SAMPLES FOR EACH TYPE AND COLOR OF MASONRY UNIT TO ILLUSTRATE COLOR AND TEXTURE RANGE.

B. QUALITY ASSURANCE:
1. BUILD SAMPLE PANEL TO DEMONSTRATE QUALITY AND AESTHETICS, SIZE: APPROX. 48" X 60" FOR EACH TYPICAL WALL AREA.

C. MATERIALS:
1. CONCRETE MASONRY UNITS (CMU'S): ASTM C90, NORMAL WEIGHT, SPECIAL SHAPES FOR LINTELS, CORNERS, JAMBS, SASH, CONTROL JOINTS, AND OTHER SPECIAL CONDITIONS. BULLNOSE UNITS FOR OUTSIDE CORNERS, DOOR AND WINDOW JAMBS, AND SILLS, UNLESS OTHERWISE INDICATED.
a. UNITS MADE WITH INTEGRAL WATER REPELLENT [FOR EXPOSED UNITS] AND [WHERE INDICATED]
b. DECORATIVE CMU'S: [NORMAL WEIGHT] WITH GROUND-FACE FINISH, *BASIS OF DESIGN TRENDSTONE PLUS, FILLED AND POLISHED, REF EXT. MATERIAL LEGEND FOR COLOR SELECTIONS*
c. INSULATED CMU'S
• PROVIDE CORE-LINER INSULATION IN NON-GROUTED CELLS AS MUCH AS POSSIBLE, BASIS OF DESIGN: **KORFIL BLOCK INSULATION OR APPROVED EQ.**
• ***ADD/ALT:*** CLOSED CELL SPRAY INSULATION IN NON-GROUTED CELLS
2. MORTAR AND GROUT:
a. MORTAR: ASTM C 270, TYPE N ABOVE GRADE, TYPE S BELOW GRADE.
b. GROUT: ASTM C 476 WITH A SLUMP OF 8-11 INCHES, 28-DAY COMPRESSIVE STRENGTH OF 2,000 PSI MINIMUM.
c. COLOR TO BE SELECTED FROM MANUFACTURER'S FULL RANGE TO BEST MATCH ADJACENT BLOCK
3. REINFORCEMENT: SEE STRUCTURAL CONSTRUCTION DOCUMENTS FOR SPECIFICATIONS ON REINFORCEMENT.
4. TIES AND ANCHORS:
a. THERMALLY BROKEN, THERMAL 2-SEAL WING NUT ANCHOR (BY HOHMANN & BARNARD INC. OR APPROVED EQUAL), STAINLESS STEEL TYPE 304 (BARREL, HOOK & WIRE), 3/16" DIA. COMPRESSED LEG HOOK, 9 GA CONTINUOUS WIRE.
5. FLASHING:
a. THRU-WALL: 40 MIL EPDM WITH STAINLESS STEEL TERMINATION BAR, EXTEND MINIMUM OF 6" ABOVE MORTAR NET.
b. DRIP PLATE: 26 GA STAINLESS STEEL (TYPE 316), FULL-DEPTH PROFILE WITH HEMMED VISIBLE EDGE AND EXTENDING UP WALL SHEATHING A MINIMUM OF 4". PROVIDE PREFABRICATED FULLY WELDED INSIDE AND OUTSIDE CORNERS.
6. ACCESSORIES:
a. COMPRESSIBLE FILLER: PREMOLDED STRIPS ASTM D 1056. GRADE 2A1
b. PREFORMED CONTROL JOINT GASKETS: SBR OR PVC DESIGNED TO FIT STANDARD SASH BLOCK.
c. WEEP HOLES: WEEPVENT BY MORTAR NET SOLUTIONS OR APPROVED EQUAL.
d. MORTAR NET: INSTALL 10" HIGH BY 2" WIDE SAWTOOTH MORTAR NET WITH INSECT SHIELD. PROVIDE AT WALL BASE AND STRUCTURAL STEEL LINTELS.
e. AIR AND WATER BARRIER TRANSITION FLASHING AS SPECIFIED IN DIVISION 7.
f. RIGID XPS INSULATION AS SPECIFIED IN DIVISION 7.
g. BOND-BREAKER STRIPS: ASPHALT-SATURATED FELT COMPLYING W/ ASTM D 226.
7. MASONRY-CELL FILL:
a. *LIGHTWEIGHT AGGREGATE*

D. INSTALLATION:
1. MIX MASONRY UNITS FROM DIFFERENT PALLETS FOR UNIFORM BLEND OF COLOR AND TEXTURE. INSTALL MASONRY UNITS W/ UNIFORM BED AND HEAD JOINTS IN FULL BED OF MORTAR WITH FULL HEAD JOINTS IN RUNNING BOND (UNLESS NOTED OTHERWISE) KEEPING CAVITIES CLEAN OF MORTAR AND DEBRIS. TOOL MORTAR JOINTS SLIGHTLY CONCAVE.
2. FLASHING: INSTALL CONTINUOUS THRU-WALL FLASHING AND DRIP PLATE AT ALL SHELF ANGLES, LINTELS, LEDGES, AND OTHER OBSTRUCTIONS TO THE DOWNWARD FLOW OF WATER. DRIP PLATE SHALL BE PLACED ON A SLOPING BED OF MORTAR AND SHALL EXTEND 1/4" BEYOND FACE OF MASONRY WITH HEMMED LEADING EDGE. JOINTS IN FLASHING SHALL BE SEALED AND 2" HIGH DAMS SHALL BE FORMED AT END OF FLASHING.
3. WEEP HOLES: PROVIDE AT 24" O.C. AT ALL THRU-WALL FLASHINGS.
4. LINTELS: INSTALL LINTELS ABOVE ALL OPENINGS AND WHERE INDICATED WITH MINIMUM 8" BEARING AT EACH JAMB AND FILL CORES IN MASONRY UNDER EACH LINTEL BEARING FULL HEIGHT OF JAMB.
5. EXPANSION JOINTS: PROVIDE CLOSED CELL PREMOLDED FILLER STRIP, FOAM BACKER ROD AND SEALANT COMPLYING WITH ASTM C920, GRADE NS, USE M, CLASS 50.

E. CLEANING: CLEAN MASONRY AS THE WORK PROGRESSES AND WHEN MORTAR IS THOROUGHLY SET AND CURED, CLEAN WITH A PROPRIETARY CLEANER APPROVED BY BRICK MANUFACTURER TO REMOVE EXCESS MORTAR.

F. **SEALANT**: PROVIDE CLEAR SEALANT, BOTH SIDES, AS REQ'D PER MFR.

047200 CAST STONE

A. SUBMITTALS:
1. PRODUCT DATA, SAMPLES, AND SHOP DRAWINGS INDICATING DIMENSIONS, JOINT LOCATIONS, RUSTICATION, EDGE CONDITIONS, EMBED LOCATIONS, AND ANCHORAGE DETAILS.

B. QUALITY ASSURANCE:
1. MANUFACTURER QUALIFICATIONS: A PLANT CERTIFIED BY THE CAST STONE INSTITUTE.
2. MOCK-UP

C. MATERIALS:
1. CAST STONE UNITS: *BASIS OF DESIGN: (MANUFACTURER, COLOR, SIZE)*
a. COMPLY WITH ASTM C1364
b. SHALL BE RESISTANT TO FREEZING AND THAWING
c. SLOPE EXPOSED HORIZONTAL SURFACES 1:12 TO DRAIN
d. PROVIDE DRIPS ON PROJECTING ELEMENTS UNLESS OTHERWISE NOTED.
e. COLORS & TEXTURES: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE INCLUDING PREMIUM COLORS.
f. JOINTS TO ALIGN WITH ADJACENT MULLIONS
2. MORTAR: TYPE N
a. COLOR TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE, INCLUDING PREMIUM COLORS

D. ACCESSORIES:
1. ANCHORS: TYPE 304 STAINLESS STEEL
2. DOWELS: 1/2" DIA. ROUND BARS, TYPE 304 STAINLESS STEEL.

E. INSTALLATION: UNITS SHALL BE FULLY CURED PRIOR TO INSTALLATION.
1. INSTALL CAST STONE UNITS SET IN FULL BED OF MORTAR WITH FULL HEAD JOINTS. RAKE OUT ALL JOINTS TO MINIMUM 3/4"
2. INSTALL SEALANT TO MATCH CAST STONE (COLOR TO BE SELECTED FROM MANUFACTURER'S FULL RANGE OF AVAILABLE COLORS AND SHALL BE VERIFIED FROM A 12" LONG FIELD APPLIED SAMPLE PRIOR TO COMPLETE INSTALLATION).

F. CLEANING AND PATCHING:
1. EXPOSED FACES OF CAST STONE UNITS SHALL BE PROTECTED FROM MORTAR AND STAINING DURING CONSTRUCTION. AFTER MORTAR IS THOROUGHLY SET AND CURED, CAST STONE SHALL BE CLEANED WITH A PRODUCT EXPRESSLY APPROVED FOR USE BY CLEANER MANUFACTURER AND CAST STONE MANUFACTURER. EXCESSIVE STAINING AND AN UNEVEN APPEARANCE SHALL BE CAUSE FOR REJECTION. MINOR PATCHING SHALL BE ALLOWED PROVIDED PATCH CAN BE BLENDED TO MATCH UNITS. UNITS WITH SIGNIFICANT CHIPS OR BREAKAGE SHALL BE REFABRICATED.

- END DIVISION 4 -

DIVISION 5 - METALS

051200 STRUCTURAL STEEL FRAMING

A. SEE STRUCTURAL CONSTRUCTION DOCUMENTS FOR STRUCTURAL STEEL SPECIFICATIONS.
B. FINISH:
1. EXTERIOR FABRICATIONS: ALL STRUCTURAL STEEL EXPOSED TO THE EXTERIOR INCLUDING MASONRY LINTELS SHALL BE GALVANIZED AND FACTORY PRIMED READY FOR FINISH PAINTING, UNLESS NOTED OTHERWISE.
2. INTERIOR FABRICATIONS: FACTORY PRIMED, UNLESS NOTED OTHERWISE.

055113 METAL PAN STAIRS AND RAILINGS

A. SUBMITTALS:
1. SHOP DRAWINGS AND CALCULATIONS INDICATING MEMBER SIZES AND LAYOUT, VERTICAL AND HORIZONTAL DIMENSIONS, EDGE CONDITIONS, AND CONNECTION DETAILS SIGNED AND SEALED BY A QUALIFIED STRUCTURAL ENGINEER.
B. DESIGN:
1. METAL STAIRS AND RAILINGS SHALL BE DESIGNED BY FABRICATOR TO SUPPORT CODE-REQUIRED LOADING AND TO MATCH THE CONFIGURATIONS INDICATED IN THE CONSTRUCTION DOCUMENTS.
C. FABRICATIONS:
1. FABRICATE ITEMS IN LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE WITH JOINTS TIGHTLY FITTED AND SECURED WITH EXPOSED JOINTS WELDED AND GROUND FLUSH AND SMOOTH.
D. ACCESSORIES:
1. WALL-MOUNT HANDRAIL BRACKETS: SINGLE HOLE FORMED HANDRAIL BRACKET W/ WALL FILLER AND SNAP-ON COVER (WAGNER 1929, OR SIMILAR)
E. FINISH:
1. EXTERIOR FABRICATIONS: GALVANIZED AND PRIME PAINTED READY FOR FINISH PAINTING, UNLESS NOTED OTHERWISE.
2. INTERIOR FABRICATIONS: PRIME PAINTED READY FOR FINISH PAINTING
F. INSTALLATION:
1. SUPPLY COMPONENTS REQUIRED FOR ANCHORAGE FABRICATED FROM SAME MATERIAL AND FINISH AS FABRICATION UNLESS NOTED OTHERWISE. SHIM AND LEVEL FABRICATIONS AS NECESSARY.
2. COAT CONCEALED SURFACES OF ALUMINUM FABRICATIONS IN CONTACT WITH CONCRETE, GROUT, MASONRY, WOOD, OR DISSIMILAR METALS WITH BITUMINOUS PAINT.

- END DIVISION 5 -

DIVISION 6 - WOOD AND PLASTICS

061000 ROUGH CARPENTRY

SEE STRUCTURAL CONSTRUCTION DOCUMENTS FOR SPECIFICATIONS RELATED TO STRUCTURAL LUMBER, ENGINEERED WOOD PRODUCTS, PANEL PRODUCTS, FASTENERS, AND ACCESSORIES

A. SUBMITTALS:
1. PRODUCT DATA FOR TREATED WOOD, ENGINEERED WOOD PRODUCTS, FOAM PLASTIC SHEATHING, AND BUILDING WRAP.

B. LUMBER: PROVIDE S4S, 19 PERCENT MAXIMUM MOISTURE CONTENT FOR 2-INCH NOMINAL THICKNESS OR LESS, MARKED WITH GRADE STAMP OF INSPECTION AGENCY OF THE FOLLOWING GRADE:
1. INTERIOR PARTITION FRAMING: STANDARD, STUD, OR NO. 3 GRADE
2. EXPOSED FRAMING: NO. 1 OR NO. 2,
3. MISCELLANEOUS LUMBER FOR NAILERS, BLOCKING, AND SIMILAR CONSTRUCTION: STUD, OR NO. 3 GRADE

C. PANEL PRODUCTS: DOC PS 2. PROVIDE PLYWOOD COMPLYING WITH DOC PS 1 WHERE PLYWOOD IS INDICATED AND AS FOLLOWS:
1. WALL SHEATHING:
a. PLYWOOD: EXTERIOR OR EXPOSURE 1, STRUCTURAL I, FIRE RETARDANT-TREATED
b. ORIENTED STRAND BOARD: EXPOSURE 1, STRUCTURAL I
c. GLASS-MAT GYPSUM: ASTM C 1177/C 1177M
d. EXTRUDED POLYSTYRENE FOAM: ASTM C 578, TYPE IV WITH T&G OR SHIPLAP LONG EDGES
e. POLYISOCYANURATE FOAM: ASTM C 1289, TYPE I, CLASS 2, WITH ALUMINUM FOIL FACINGS. FOAM PLASTIC CORE AND FACINGS SHALL HAVE A FLAME SPREAD OF 25 OR LESS WHEN TESTED INDIVIDUALLY.
2. ROOF SHEATHING, WHERE INDICATED ON DRAWINGS:
a. PLYWOOD: EXTERIOR OR EXPOSURE 1, STRUCTURAL I
b. ORIENTED STRAND BOARD: EXPOSURE 1, STRUCTURAL I
3. PLYWOOD SUBFLOORING: EXTERIOR OR EXPOSURE 1, STRUCTURAL I
4. TELEPHONE AND ELECTRICAL EQUIPMENT BACKING BOARDS: PLYWOOD, EXPOSURE 1, C-D PLUGGED, FIRE RETARDANT TREATED, 1/2" THICK.

D. PRESERVATIVE-TREATED MATERIALS: APWA C2 LUMBER AND APWA C9 PLYWOOD, LABELED BY AN INSPECTION AGENCY APPROVED BY ALSC'S BOARD OF REVIEW. AFTER TREATMENT, KILN-DRY LUMBER TO 19 PERCENT MOISTURE CONTENT AND PLYWOOD TO 15 PERCENT. TREAT INDICATED ITEMS AND THE FOLLOWING:
1. WOOD MEMBERS IN CONNECTION WITH ROOFING, FLASHING, VAPOR BARRIERS, AND WATERPROOFING
2. CONCEALED MEMBERS IN CONTACT WITH MASONRY OR CONCRETE
3. WOOD FRAMING LESS THAN 18" ABOVE GRADE
4. WOOD FLOOR PLATES INSTALLED OVER CONCRETE SLABS DIRECTLY IN CONTACT WITH EARTH.

E. FIRE-RETARDANT TREATED MATERIALS: COMPLY WITH PERFORMANCE REQUIREMENTS IN AWPA C20 FOR LUMBER AND AWPA C27 FOR PLYWOOD LABELED BY TESTING AND INSPECTING AGENCY. USE INTERIOR TYPE A HIGH TEMPERATURE (HT). TREAT INDICATED ITEMS AND THE FOLLOWING:
1. INTERIOR RATED: TELEPHONE AND ELECTRICAL EQUIPMENT BACKING BOARDS
2. EXTERIOR RATED: PLYWOOD SHEATHING AS DETAILED AT ROOF SOFFIT.

F. MISCELLANEOUS PRODUCTS:
1. FASTENERS: SIZE AND TYPE INDICATED, GALVANIZED WHEN EXPOSED TO WEATHER, GROUND CONTACT, OR AREAS OF HIGH HUMIDITY, STAINLESS STEEL WHEN FASTENING PRESERVATIVE-TREATED MATERIALS (CONTRACTOR SHALL CONFIRM COMPATIBILITY OF FASTENER MATERIAL WITH PRESERVATIVE).
2. METAL FRAMING ANCHORS: HOT-DIP GALVANIZED STEEL OF STRUCTURAL CAPACITY, TYPE, AND SIZE INDICATED.
3. BUILDING PAPER: ASPHALT SATURATED ORGANIC FELT COMPLYING WITH ASTM D 226, TYPE 1 (NO. 15 ASPHALT FELT), UNPERFORATED.
4. AIR BARRIERS: AIR-RETARDER SHEETING OR FLUID APPLIED COATING DESIGNED TO PREVENT WATER INSTRUSION FROM EXTERIOR TO INTERIOR BUT TO ALLOW WATER VAPOR TO PASS FROM INTERIOR TO EXTERIOR.
5. SILL-SEALER: GLASS-FIBER INSULATION, 1" THICK, COMPRESSIBLE TO 1/32".
6. ADHESIVE FOR FIELD GLUING PANELS TO FRAMING: APA AFG-01.

G. INSTALLATION:
1. SET ROUGH CARPENTRY TO REQUIRED LEVELS AND LINES WITH MEMBERS PLUMB, TRUE TO LINE, CUT AND FITTED. DISCARD PIECES WITH DEFECTS THAT WOULD LOWER STRENGTH OR RESULT IN UNACCEPTABLE APPEARANCE OF EXPOSED MEMBERS.
2. INSTALL STRUCTURAL MEMBER FULL LENGTH WITHOUT SPLICES UNLESS OTHERWISE SPECIFICALLY DETAILED.
3. COMPLY WITH MEMBER SIZES, SPACING, CONFIGURATION, AND FASTENER SIZE AND SPACING AS INDICATED ON THE STRUCTURAL DRAWINGS, BUT NOT LESS THAN REQUIRED BY APPLICABLE CODES AND AFPA WCD 1 T11.
4. CONSTRUCT DOUBLE JOIST HEADERS AT FLOOR AND CEILING OPENINGS AND UNDER WALL STUD PARTITIONS THAT ARE PARALLEL TO FLOOR JOISTS.
5. FRAME OPENINGS WITH TWO OR MORE STUDS AT EACH JAMB AND SUPPORT HEADERS ON CRIPPLE STUDS.
6. PROVIDE DOUBLE 2x10 HEADERS WITH 1/2" PLYWOOD BETWEEN AND 2x4 BOTTOM PLATE AT ALL DOOR AND WINDOW OPENINGS UNLESS NOTED OTHERWISE.
7. FURNISH CONCEALED BLOCKING AND NAILERS WHERE INDICATED AND AT ALL LOCATIONS WHERE WALL HUNG ITEMS WILL REQUIRE A SUBSTRATE FOR FASTENING OR SUPPORT.
8. INSTALL ROOF SHEATHING PERPENDICULAR TO FRAMING MEMBERS WITH ENDS STAGGERED AND SHEET ENDS OVER FIRM BEARING. PROVIDE PANELS CLIPS BETWEEN ROOF FRAMING MEMBERS AND SOLID EDGE BLOCKING BETWEEN SHEETS.
9. INSTALL WALL SHEATHING PERPENDICULAR TO TO WALL STUDS WITH ENDS OVER FIRM BEARING AND STAGGERED.
10. INSTALL FLOOR SHEATHING PERPENDICULAR TO FLOOR JOISTS WITH ENDS OVER FIRM BEARING. GLUE AND NAIL SHEATHING TO EACH JOIST.

064023 INTERIOR ARCHITECTURAL WOODWORK

A. SUBMITTALS:
1. SAMPLES OF FINISH MATERIALS, CATALOG CUTS OF HARDWARE, AND SHOP DRAWINGS INCLUDING DIMENSIONED PLANS, ELEVATIONS, AND SECTIONS.

B. QUALITY ASSURANCE: ARCHITECTURAL WOODWORK INSTITUTE'S "ARCHITECTURAL WOODWORK QUALITY STANDARDS"

C. MATERIALS:
1. HARDBOARD: AHA A235.4
2. MEDIUM DENSITY FIBERBOARD (MDF): ANSI A208.2, GRADE MD, MADE WITH BINDER CONTAINING NO UREA FORMALDEHYDE.
3. PARTICLEBOARD: ANSI A208.1, GRADE M-2
4. SOFT PLYWOOD: DOC PS 1
5. HARDWOOD PLYWOOD AND FACE VENEERS: HPVA HP-1, MADE WITH ADHESIVE CONTAINING NO UREA FORMALDEHYDE.
6. HIGH PRESSURE DECORATIVE LAMINATE: NEMA LD 3
7. SOLID SURFACE MATERIAL: HOMOGENOUS SOLID SHEETS OF FILLED PLASTIC RESIN COMPLYING WITH ISSFA-2.
8. HARDWARE: COMPLY WITH BHMA A156
a. HINGES: CONCEALED (EUROPEAN-TYPE) BHMA A156.9
b. PULLS: AS SPECIFIED ON DRAWINGS
c. DRAWER SLIDES: SIDE-MOUNTED, ZINC-PLATED FULL EXTENSION STEEL DRAWER SLIDES WITH STEEL BALL BEARINGS. COMPLYING WITH BHMA A 156.9, GRADE 1 AND RATED AS FOLLOWS: BOX DRAWERS: 100lbf; FILES DRAWERS: 200 lbf, PENCIL DRAWERS: 45 lbf.
d. DOOR AND DRAWER LOCKS: BHMA A156.11
e. GROMMETS: MOLDED PLASTIC WITH CAPS; FURNISH IN COLOR AND LOCATIONS AS DIRECTED.
f. HARDWARE FINISH: SATIN STAINLESS STEEL: BHMA 630

D. INTERIOR WOODWORK:
1. COMPLETE FABRICATION BEFORE SHIPPING TO PROJECT SITE TO MAXIMUM EXTENT FEASIBLE. DISASSEMBLE ONLY AS NEEDED FOR SHIPPING AND INSTALLING. WHERE NECESSARY FOR FITTING AT PROJECT SITE, PROVIDE FOR SCRIBING AND TRIMMING.
2. BACKOUT AND GROOVE BACKS OF FLAT MEMBERS, KERF BACKS OF OTHER WIDE, FLAT MEMBERS, EXCEPT WHERE ENDS WILL BE EXPOSED IN FINISHED WORK.

E. INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH: CUSTOM GRADE, SPECIES PER DRAWINGS.

F. WOOD CABINETS FOR TRANSPARENT FINISH:
1. GRADE: PREMIUM
2. AWI TYPE OF CABINET CONSTRUCTION: FLUSH OVERLAY
3. VENEER MATCHING: BALANCE MATCHED
4. VENEER SPECIES AND CUT: PER DRAWINGS, WITH VENEER ON ALL EXPOSED AND SEMIEXPOSED SURFACES.
5. CABINET INTERIORS: BLACK MELAMINE WITH DARK VENEERS, WHITE MELAMINE FOR LIGHT VENEERS (CONFIRM WITH ARCHITECT)
6. SHELVING AND SUPPORTS: HIGH PRESSURE LAMINATE TO MATCH MELAMINE SUPPORTED ON STAINLESS STL. PINS

G. LAMINATE-CLAD CABINETS AND COUNTERTOPS:
1. GRADE: CUSTOM
2. AWI TYPE OF CABINET CONSTRUCTION: FLUSH OVERLAY, UNLESS NOTED OTHERWISE ON DRAWINGS.
3. LAMINATE CLADDING:
a. VERTICAL SURFACES: HGS UNLESS NOTED BELOW
• ELEVATOR CABS: FIRE RATED LAMINATE
• WALL PANELS AND WAINSCOTING: HIGH-WEAR LAMINATE
b. HORIZONTAL SURFACES: HGS UNLESS NOTED BELOW
• RECEPTION COUNTERS AND TRANSACTION TOPS: HIGH-WEAR LAMINATE
• LAB, EXAM RM. AND PROCEDURE COUNTERS: CHEMICAL RESISTANT LAMINATE
c. POSTFORMED SURFACES: HGP
d. EDGES: HGS
4. CABINET INTERIORS: BLACK MELAMINE WITH DARK COLOR LAMINATES, WHITE MELAMINE WITH LIGHT COLOR LAMINATES (CONFIRM WITH ARCHITECT)
5. SHELVING AND SUPPORTS: HIGH PRESSURE LAMINATE TO MATCH MELAMINE SUPPORTED ON STAINLESS STL. PINS

H. FLUSH WOOD PANELING FOR TRANSPARENT FINISH:
1. GRADE: PREMIUM
2. VENEER MATCHING: SLIP AND BALANCE
3. VENEER SPECIES AND CUT: PER DRAWINGS WITH VENEER ON ALL FACES AND PANEL EDGES.
4. PANEL MATCHING: SEQUENCE MATCHED UNIFORM SIZE SETS WITHIN EACH AREA
5. PANEL CONSTRUCTION: FACTORY VENEERED PANEL FACES (NO SHOP VENEERED FACES PERMITTED)

I. SHOP FINISHING OF WOODWORK:
1. FINISH ALL WOODWORK IN THE SHOP TO SAME GRADE AS ITEMS BEING FINISHED
2. APPLY ONE COAT OF SEALER OR PRIMER TO CONCEALED SURFACES OF WOODWORK. APPLY TWO COATS TO BACK OF PANELING.
3. APPLY A VINYL WASH COAT TO WOODWORK MADE FROM CLOSED-GRAIN WOOD BEFORE STAINING AND FINISHING.
4. AFTER STAINING, IF ANY, APPLY PASTE WOOD FILLER TO OPEN-GRAIN WOODS AND WIPE OFF EXCESS. TINT FILLER TO MATCH STAINED WOOD.
5. FINISH WITH AWI SYSTEM [TR-0 SYNTHETIC PENETRATING OIL] [TR-4, CONVERSION VARNISH] [TR-5, CATALYZED VINYL LACQUER] [TR-6, CATALYZED POLYURETHANE

J. INSTALLATION:
1. DO NOT DELIVER OR INSTALL WOODWORK UNTIL BUILDING IS ENCLOSED, WET WORK IS COMPLETED, HVAC IS OPERATING, AND WOODWORK IS CONDITIONED TO PREVAILING CONDITIONS OF SPACE WHERE INSTALLED.
2. INSTALL WOODWORK LEVEL AND PLUMB AND SHIM AS REQUIRED WITH CONCEALED SHIMS TO TOLERANCE OF 1/8"/96" AND TO COMPLY WITH REFERENCED QUALITY STANDARD FOR GRADE SPECIFIED.
3. SCRIBE AND CUT WOODWORK TO FIT ADJOINING WORK, SEAL CUT SURFACES, AND REPAIR DAMAGED FINISH AT CUTS.
4. INSTALL TRIM WITH MINIMUM NUMBER OF JOINTS POSSIBLE USING FULL-LENGTH PIECES TO GREATEST EXTENT POSSIBLE. STAGGER JOINTS IN ADJACENT AND RELATED MEMBERS.
5. ANCHOR PANELING WITH CONCEALED PANEL-HANGER CLIPS AND BY BLIND NAILING ON BACK-UP STRIPS, SPLINE-CONNECTION STRIPS, AND SIMILAR ASSOCIATED TRIM AND FRAMING.

- END DIVISION 6 -

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

BUILDING ENVELOPE MEETING WITH ALL DIVISION 7 SUBCONTRACTORS, THE ARCHITECT, AND OWNER SHALL TAKE PLACE ONCE ALL SUBCONTRACTORS HAVE BEEN SELECTED TO ENSURE ALL PRODUCTS ARE COMPATABLE AND TO ELIMINATE ANY GAP IN SCOPE.

071326 SELF-ADHERING SHEET WATERPROOFING

A. SUBMITTALS: PRODUCT DATA AND PRODUCT TEST REPORTS

B. QUALITY ASSURANCE: MANUFACTURER QUALIFICATIONS: AUTHORIZED, APPROVED, OR LICENSED WATERPROOFING MANUFACTURER.

C. WATERPROOFING MATERIALS: *BASIS OF DESIGN - CCW MIRADRI 860/861 AS MANUFACTURED BY CARLISLE COATINGS & WATERPROOFING OR APPROVED EQUAL. TO BE USED WITH MIRADRAIN DRAINAGE SYSTEM AS DETAILED BY CARLISLE DETAIL 860-2D. THIS SYSTEM SHALL BE USED ALONG THE PLAN NORTH ELEVATION WHERE FINISH GRADE IS ABOVE FINISH FLOOR, SEE CONSTRUCTION DOCUMENTS FOR MORE DETAIL.*
1. RUBBERIZED ASPHALT SHEET: 60-mil (1.5 mm) THICK. SELF-ADHERING SHEET CONSISTING OF 56 mils (1.4 mm) OF RUBBERIZED ASPHALT LAMINATED TO A 4-mil (0.10 mm) THICK POLYETHYLENE FILM WITH RELEASE LINER ON ADHESIVE SIDE.
2. ACCESSORY PRODUCTS: *BASIS OF DESIGN: CCW PRODUCT LINE TO INCLUDE*: SURFACE PRIMER, MASTIC AND SEALANTS, SHEET FLASHING, LIQUID MEMBRANE, SUBSTRATE PATCHING MEMBRANE, ADHESIVES, TAPE, AND METAL TERMINATION BARS RECOMMENDED BY WATERPROOFING MANUFACTURER.
3. PROTECTION COURSE: *BASIS OF DESIGN CCW-PROTECTION BOARD*
4. PERIMETER DRAINAGE SYSTEM: *BASIS OF DESIGN - CCW MIRADRAIN HC.*
D. INSTALLATION:
1. PROVIDE CLEAN, DUST-FREE, AND DRY SUBSTRATES FOR WATERPROOFING APPLICATION.
2. REMOVE FINS, RIDGES, MORTAR, AND OTHER PROJECTIONS AND FILL HONEYCOMB, AGGREGATE POCKETS, HOLES, AND VOIDS.
3. PREPARE, FILL, PRIME, AND TREAT JOINTS AND CRACKS IN SUBSTRATES
4. BRIDGE AND COVER ISOLATION AND EXPANSION JOINTS WITH OVERLAPPING SHEET STRAPS. INVERT AND LOOSELY LAY FIRST SHEET STRIP OVER CENTER OF JOINT. FIRMLY ADHERE SECOND STRIP TO FIRST AND OVERLAP TO SUBSTRATE.
5. PREPARE, PRIME, AND TREAT INSIDE AND OUTSIDE CORNERS, TERMINATION, PROTRUSIONS, AND PENETRATIONS THROUGH WATERPROOFING ACCORDING TO ASTM D 6135.
6. APPLY PRIMER TO SUBSTRATES AT REQUIRED RATE, ALLOW TO DRY, AND INSTALL SELF-ADHERING SHEETS PER MANUFACTURER'S WRITTEN INSTRUCTIONS AND ASTM D 6135 MAINTAINING UNIFORM MINIMUM 21/2" LAP WIDTHS AND END LAPS. OVERLAP AND SEAL SEAMS AND STAGGER END LAPS.
7. REPAIR ANY TEARS AND VOIDS AND SLIT AND FLATTEN FISHMOUTHS AND BLISTERS. PATCH WITH SHEETS EXTENDING 6" BEYOND REPAIRED AREAS IN ALL DIRECTIONS.
8. INSTALL PROTECTION COURSE OVER WATERPROOFING AND SECURE DRAINAGE PANELS OVER PROTECTION COURSE WITHOUT PENETRATING WATERPROOFING. LAP EDGES AND ENDS OF GEOTEXTILE.
9. PROTECT WATERPROOFING SYSTEM FROM DAMAGE DURING CONSTRUCTION.

072100 THERMAL INSULATION

A. SUBMITTALS: PRODUCT DATA FOR EACH TYPE OF INSULATION SPECIFIED

B. SURFACE BURNING CHARACTERISTICS:
1. FLAME SPREAD INDEX: 25 OR LESS
2. SMOKE DEVELOPED INDEX: 50 OR LESS IN EXPOSED AREAS AND PLENUMS; 450 OR LESS WHERE CONCEALED.

C. INSULATION PRODUCTS:
1. EXTRUDED POLYSTYRENE RIGID (XPS) BOARD INSULATION:
a. LOCATIONS: TO BE USED IN BRICK CAVITY WALL ASSEMBLY AND BELOW GRADE. REFER TO SHEET A0.05 FOR EXTERIOR WALL ASSEMBLY INFORMATION
b. *BASIS OF DESIGN PRODUCT:* OWENS CORNING "FOAMULAR" 250 XPS INSULATION OR APPROVED EQUAL
c. CLASSIFICATION: ASTM C 578, TYPE IV
d. FIRE PROPAGATION: MEETS NFPA 285 IN APPROVED WALL ASSEMBLIES
e. WATER ABSORPTION <=0.3% PER ASTM C272
f. R-VALUE: MIN. R7.5 AT WALLS, MIN. R10 AT BUILDING FOUNDATION, AS INDICATED IN CONSTRUCTION DOCUMENTS
2. POLYISOCYANURATE (POLYISO) FOAM RIGID BOARD INSULATION:
a. LOCATION: TO BE USED IN METAL COMPOSITE PANEL WALL ASSEMBLY REFER TO SHEET A0.05 FOR WALL ASSEMBLY INFORMATION
b. PRODUCT: DOW "THERMAX" (CI) EXTERIOR INSULATION OR APPROVED EQUAL
c. CLASSIFICATION:ASTM C1289, TYPE 1, CLASS 2
d. FIRE PROPAGATION: MEETS NFPA 285 IN APPROVED WALL ASSEMBLIES
e. R-VALUE: MIN. R7.5, AS INDICATED IN CONSTRUCTION DOCUMENTS.
3. GLASS FIBER BLANKET INSULATION: MEETS NFPA 285 IN APPROVED ASSEMBLIES
a. TYPE I, UNFACED AT LOCATIONS BELOW FUTURE CEILING HEIGHT
b. TYPE III, CLASS A, FOIL-SCRIM VAPOR RETARDER MEMBRANE FACED EXTENDING FROM FUTURE CEILING HEIGHT TO UNDERSIDE OF DECK.
4. ROCK WOOL:
a. PROVIDE 6LB/CF MINERAL ROCK WOOL AT ALL HOLLOW METAL DOOR FRAMES.
b. PROVIDE 4 LB/CF MINERAL ROCK WOOL AT WINDOW HEAD LOCATIONS IN BRICK CAVITY WALL AND CONT. AT EA. FLOOR LINE WHERE STUD FRAMING IS CONTINUOUS PAST FLOOR SLAB.

D. ACCESSORIES:
1. FOIL/SCRIM AT PLENUMS AND EXPOSED AREAS - FLAME SPREAD 25/ SMOKE DEVELOPED 50

E. INSTALLATION:
1. INSTALL PER MANUFACTURER'S RECOMMENDATION AND AS FOLLOWS:
a. INSTALL INSULATION IN AREAS AND IN THICKNESSES INDICATED OR REQUIRED TO PRODUCE R-VALUES WHERE INDICATED. CUT AND FIT TIGHTLY AROUND OBSTRUCTIONS AND FILL VOIDS WITH INSULATION.

072419 WATER-DRAINAGE EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)

A. SUBMITTALS:
1. PRODUCT DATA, FINISH/COLOR SAMPLES, AND SHOP DRAWINGS INCLUDING INSTALLATION DETAILS AND EIFS BUILDOUTS, CAP FLASHINGS.

B. QUALITY ASSURANCE:
1. INSTALLER QUALIFICATIONS: AN INSTALLER WHO IS CERTIFIED BY AWCI INTERNATIONAL AS QUALIFIED TO INSTALL CLASS PB EIFS USING TRAINED WORKERS.
2. WARRANTY: MFR'S SPECIAL 10-YEAR WARRANTY

C. QUALITY CONTROL: IN ADDITION TO CODE-REQUIRED "SPECIAL INSPECTIONS", MENUFACTURER'S REPRESENTATIVE SHALL VISIT THE SITE TO REVIEW AND APPROVE THE INSTALLATION AFTER THE BASE COAT IS COMPLETED AND BEFORE THE FINISH COAT IS INSTALLED.

D. MATERIALS:
1. MANUFACTURERS: DRYVIT, STO, PAREX

2. EIFS PERFORMANCE: COMPLY WITH ASTM E2568 AND THE FOLLOWING:
a. WEATHERTIGHTNESS: RESISTANT TO UNCONTROLLED WATER PENETRATION FROM EXTERIOR, WITH MEANS TO DRAIN WATER ENTERING EIFS TO THE EXTERIOR.
b. IMPACT PERFORMANCE: ASTM E2568 *[STANDARD: 25-49 INCH-LB] [MEDIUM: 50-89 INCH-LB] [HIGH: 90-150 INCH-LB] [ULTRA HIGH:>150 INCH-LB]*
c. DRAINAGE EFFICIENCY: 90% AVERAGE MIN. WHEN TESTED PER ASTM E2273

3. EIFS MATERIALS:
a. WATER-RESISTIVE BARRIER COATING: COMPLY WITH ASTM E2570/E2570M.
b. FLEXIBLE-MEMBRANE FLASHING: COLD-APPLIED SELF-ADHERING, RUBBERIZED-ASPHALT, AND POLYETHYLENE-FILM COMPOSITE SHEET OR TAPE AND PRIMER; EIFS MFR STANDARD OR PRODUCT APPROVED BY EIFS MFR.
c. INSULATION ADHESIVE: EIFS MFR'S STANDARD FORMULATION DESIGN FOR INDICATED USE; SPECIFICALLY FORMULATED TO BE APPLIED TO BACK SIDE OF INSULATION CREATING OPEN VERTICAL CHANNELS DESIGNED AS INTEGRAL PART OF WATER-DRAINAGE SYSTEM OF EIFS-CLAD DRAINAGE WALL ASSEMBLY, COMPATIBLE WITH SUBSTRATE.
d. MOLDED (EXPANDED) RIGID CELLULAR POLYSTERENE BOARD INSULATION: COMPLY WITH ASTM E2430
• FOAM BUILDOUTS: PROVIDE AS INDICATED ON DRAWINGS
e. REINFORCING MESH: BALANCED, ALKALI-RESISTANT, OPEN-WEAVE, GLASS-FIBER MESH TREATED FOR COMPATIBILITY WITH OTHER EIFS MATERIALS, MADE FROM CONT. MULTIEND STRANDS WITH RETAINED MESH TENSILE STRENGTH OF >120 LBF/IN. PER ASTEM E2098.
f. BASE COAT: EIFS MFR'S STANDARD MIXTURE.
g. WATER-RESISTANT BASE COAT: EIFS MFR'S STANDARD FORMULATION.
h. PRIMER: EIFS MFR'S STANDARD FACTORY-MIXED, ELASTOMERIC-POLYMER PRIMER FOR PREPARING BASE-COAT SURFACE FOR APPLICATION OF FINISH COAT.
i. FINISH COAT: EIFS MFR'S STANDARD ACRYLIC-BASED COATING.
• COLORS: MATCH ARCHITECT'S SAMPLE, AND AS INDICATED IN DRAWINGS
• TEXTURES: MATCH ARCHTIECT'S SAMPLE, AND AS INDICATED IN DRAWINGS
j. TRIM ACCESSORIES: TYPE AS DESIGNATED OR REQ'D TO SUIT CONDITIONS INDICATED AND TO COMPLY WITH EFS MFR'S WRITTEN INSTRUCTIONS; MANUFACTURED FROM UV-STABILIZED PVC; AND COMPLYING WITH ASTM D1784, MFR'S STANDARD CELL CLASS FOR USE INTENDED, AND ASTM C1063.

E. INSTALLATION:
1. COMPLY WITH ASTM C 1397, ASTM E2511, AND EIFS MANUFACTURER'S WRITTEN INSTRUCTIONS FOR INSTALLATION OF EIFS AS APPLICABLE TO EACH TYPE OF SUBSTRATE INDICATED.
a. INSTALL BASE COAT IN 2 APPLICATIONS, WITH A MINIMUM TOTAL THICKNESS AT LEAST 1/16", AND COMPLETELY COVERING REINFORCING MESH SO MESH PATTERN AND COLOR ARE NOT VISIBLE.
b. APPLY FINISH COAT OVER DRY BASE COAT, IN THICKNESS REQUIRED BY EIFS MANUFACTURER TO PRODUCE A UNIFORM COLOR AND TEXTURE, FREE OF VARIATIONS.
2. PREPARE JOINTS AND APPLY SEALANTS TO COMPLY WITH THE REQUIREMENTS OF DIVISION 7 SECTION "JOINT SEALANTS" AND WITH EIMA'S "EIMA GUIDE FOR USE OF SEALANTS WITH EXTERIOR INSULATION AND FINISH SYSTEMS CLASS PB".

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 02.03.23
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

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SHEET TITLE

PROJECT SPECIFICATIONS

SHEET NUMBER

A11.10

072726 FLUID-APPLIED MEMBRANE AIR BARRIERS

A. SUBMITTALS:
1. PRODUCT DATA AND PRODUCT TEST REPORTS
2. SHOP DRAWINGS, INCLUDING DETAILS FOR SUBSTRATE JOINTS AND CRACKS, COUNTERFLASHING STRIPS, PENETRATIONS, INSIDE/OUTSIDE CORNERS, TERMINATIONS AND TIE-INS WITH ADJOINING CONTRUCTION.

B. QUALITY ASSURANCE: INSTALLER QUALIFICATIONS: AUTHORIZED, APPROVED, OR LICENSED BY MANUFACTURER.

C. PRODUCTS: *BASIS OF DESIGN: [MFR, PRODUCT]*
1. HIGH-BUILD, VAPOR PERMEABLE AIR BARRIER: SYNTHETIC POLYMER MEMBRANE WITH AN INSTALLED DRY FILM THICKNESS, ACCORDING TO MFR'S WRITTEN INSTRUCTIONS, OF 35 MILS OR THICKER OVER SMOOTH, VOID-FREE SUBSTRATE.
2. PERFORMANCE CRITERIA:
   a. FLAME SPREAD: <25, ASTM E 84
   b. VAPOR PERMEANCE: NOT LESS THAN 10 PERMS, ASTM E-96, METHOD B
   c. AIR PERMEANCE: <0.02 l/S*M*M AT 75 Pa
   d. FASTENER SEALABILITY: NO WATER LEAKING THROUGH NAIL PENETRATIONS AFTER 24 HOURS, ASTM D 1970
   e. WATER RESISTANCE: 55 cm COL. OF WATER FOR 5 HOURS, NO LEAKING OR WET THROUGH
   f. FIRE PROPAGATION: MEETS REQUIREMENTS OF NFPA 285 IN APPROVED TESTED WALL ASSEMBLIES, [*REF SHEET XX.XX FOR EXTERIOR WALL ASSEMBLY INFORMATION]*.

D. ACCESSORIES: PROVIDE THE FOLLOWING PRODUCT ACCESSORIES OR APPROVED EQUALS FROM SAME MANUFACTURER AS AIR-BARRIER MEMBRANE.
1. PRIMERS, TRANSITION STRIPS, TERMINATION STRIPS, JOINT REINFORCING FABRIC AND STRIPS, JOINT SEALANTS, COUNTERFLASHING STRIPS, FLASHING SHEETS AND METAL TERMINATION BARS, TERMINATION MASTIC, SUBSTRATE PATCHING MATERIALS, ADHESIVES, TAPES, FOAM SEALANTS, LAP SEALANTS, AND OTHER ACCESSORY MATERIALS THAT ARE RECOMMENDED IN WRITING BY AIR-BARRIER MFR TO PRODUCE A COMPLETE AIR-BARRIER ASSEMBLY AND THAT ARE COMPATIBLE WITH PRIMARY AIR-BARRIER MATERIAL AND ADJACENT CONSTRUCTION TO WHICH THEY MAY SEAL.

E. INSTALLATION: AIR BARRIERS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS, THE APPLICABLE ICC-ES EVALUATION REPORT AND THE APPLICABLE CODE.
1. INSTALL TRANSITION STRIPS AT WALL OPENINGS, ROOF TRANSITIONS, BASE FLASHING SO THAT A MIN. OF 3" OF COVERAGE IS ACHIEVED OVER SUBSTRATE.
2. BRIDGE ISOLATION JOINTS, EXPANSION JOINTS, AND DISCONTINUOUS WALL-TO-WALL, DECK-TO-WALL, AND DECK-TO-DECK JOINTS WITH AIR-BARRIER ACCESSORY MATERIAL THAT ACCOMODATES JOINT MOVEMENT ACCORDING TO MFR'S WRITTEN INSTRUCTIONS AND DETAILS.
3. TESTING AND INSPECTION: BY OWNER-ENGAGED AGENCY.

074113 METAL ROOF PANELS

A. SUBMITTALS:
1. PRODUCT DATA
2. SHOP DRAWINGS INCLUDING FABRICATION AND INSTALLATION LAYOUTS, EDGE CONDITIONS, JOINTS, PANEL PROFILES, CORNERS, ANCHORAGE, ATTACHMENT SYSTEM, TRIM, FLASHINGS, CLOSURES, AND ACCESSORIES.
3. COLOR AND FINISH SAMPLES
4. SAMPLE WARRANTY: MANUFACTURER'S STANDARD WRITTEN WARRANTY, WITHOUT MONETARY LIMITATION, SIGNED BY MANUFACTURER AGREEING TO PROMPTLY REPAIR OR REPLACE METAL ROOF PANELS THAT FAIL TO REMAIN WATERTIGHT WITHIN 10 YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

B. QUALITY ASSURANCE: INSTALLER QUALIFICATIONS: INSTALLERS WHO ARE TRAINED AND APPROVED BY MANUFACTURER.

C. PRODUCTS: *BASIS OF DESIGN: [MFR, PRODUCT]*
1. PERFORMANCE REQUIREMENTS:
   a. PROVIDE ROOF ASSEMBLIES THAT COMPLY WITH UL 580 FOR CLASS 90 WIND-UPLIFT RESISTANCE.
2. METAL ROOF PANELS:
   a. ROOF PANEL TYPE: [EXPOSED FASTENER, LAP-SEAM] [CONCEALED FASTENER,LAP-SEAM] [STANDING SEAM] [BATTEN SEAM]
   b. METALLIC COATED STEEL ROOF PANELS: FABRICATED FROM GALVANIZED STRUCTURAL STEEL SHEET ASTM A 653/A 653M, G90 (Z275), OR ALUMINUM-ZINC ALLOY-COATED STRUCTURAL STEEL SHEET. ASTM A 792/A 792M, CLASS AZ50 COATING DESIGNATION, GRADE 40 (CLASS AZM150 COATING DESIGNATION GRADE 275)
      - METAL THICKNESS: [0.0159" (0.40mm)] [0.0209" (0.55mm)] [0.0269" (0.70mm)] [0.0329" (0.85mm)] [0.0428" (1.10mm)]
      - FINISH: MANUFACTURER'S STANDARD FLUOROPOLYMER 2-COAT SYSTEM WITH TOPCOAT CONTAINING NOT LESS THAN 70 PERCENT POLYVINYLIDENE FLUORIDE RESIN BY WEIGHT; COMPLYING WITH AAMA 2604.
   c. ALUMINUM ROOF PANELS: FABRICATED FROM ALUMINUM SHEET, ASTM B 209 (ASTM B 209M) FOR ALCLAD ALLOY 3003, 3004, OR 3105.
      - METAL THICKNESS: [0.032" (0.8mm)] [0.040" (1.0mm)]
      - FINISH: MANUFACTURER'S STANDARD FLUOROPOLYMER 2-COAT SYSTEM WITH TOPCOAT CONTAINING NOT LESS THAN 70 PERCENT POLYVINYLIDENE FLUORIDE RESIN BY WEIGHT; COMPLYING WITH AAMA 2604.

D. ACCESSORIES:
1. PROVIDE COMPONENTS REQUIRED FOR A COMPLETE ROOF PANEL ASSEMBLY INCLUDING TRIM, FASCIAE, CLIPS, SEAM COVERS, FLASHINGS, SEALANTS, GASKETS, FILLERS, CLOSURE STRIPS, AND SIMILAR ITEMS.
2. FLASHING AND TRIM: FORMED FROM 0.0179" (0.045mm) THICK, ZINC-COATED (GALVANIZED) STEEL SHEET OR ALUMINUM-ZINC ALLOY-COATED STEEL SHEET. PROVIDE FLASHING AND TRIM AS REQUIRED TO SEAL AGAINST WEATHER AND TO PROVIDE FINISHED APPEARANCE. FINISH FLASHING AND TRIM WITH SAME FINISH SYSTEM AS ADJACENT METAL ROOF PANELS.
3. UNDERLAYMENT: SELF-ADHERING POLYETHYLENE-FACED, POLYMER-MODIFIED, BITUMINOUS SHEET ASTM D 1970; 40 MILS (1mm) THICK OR ASPHALT SATURATED ORGANIC FELT ASTM D 226, TYPE II (NO. 30)
4. SLIP SHEET: RESIN-SIZED BUILDING PAPER, 5lb/100 sq. ft. (2.4 kg/sq. m)
5. THERMAL SPACERS: WHERE PANELS ATTACH DIRECTLY TO PURLINS, PROVIDE THERMAL SPACERS RECOMMENDED BY PANEL MANUFACTURER.
6. BITUMINOUS COATING: COLD-APPLIED ASPHALT MASTIC, SSPC-PAINT 12, COMPOUNDED FOR 15-MIL (O.4mm) DRY FILM THICKNESS PER COAT.

E. INSTALLATION:
1. INSTALL UNDERLAYMENT ON ROOF SHEATHING UNDER METAL ROOF PANELS, UNLESS OTHERWISE RECOMMENDED BY METAL ROOF PANEL MANUFACTURER AND APPLY SLIP SHEET OVER UNDERLAYMENT.
2. ANCHOR PANELS SECURELY IN PLACE WITH PROVISIONS FOR THERMAL AND STRUCTURAL MOVEMENT. INSTALL WITH CONCEALED FASTENERS UNLESS OTHERWISE INDICATED USING STAINLESS STEEL FOR SURFACES EXPOSED TO THE EXTERIOR AND GALVANIZED FOR SURFACES EXPOSED TO THE INTERIOR.
3. INSTALL MANUFACTURER RECOMMENDED GASKETS, JOINT FILLERS, AND SEALANTS WHERE REQUIRED FOR WEATHERPROOF PERFORMANCE OF ASSEMBLIES.
4. USE BITUMINOUS COATING TO SEPARATE DISSIMILAR METALS AND WHERE ALUMINUM PANELS WILL CONTACT WOOD, FERROUS METAL OR CONCRETE

074213.13 FORMED METAL WALL PANELS

A. SUBMITTALS:
1. PRODUCT DATA, TEST DATA, WARRANTIES
2. SHOP DRAWINGS SHOWING ALL PANEL JOINTS, LAYOUTS, AND ATTACHMENT DETAILS
3. COLOR AND FINISH SAMPLES

B. QUALITY ASSURANCE: INSTALLER QUALIFICATIONS: AUTHORIZED, APPROVED, OR LICENSED BY MANUFACTURER.

C. PRODUCTS: *BASIS OF DESIGN [INSERT ACCEPTABLE MANUFACTURERS AND TYPES]*
1. WALL PANEL TYPE: [EXPOSED FASTENER, LAP-SEAM] [CONCEALED FASTENER, LAP SEAM]
   a. METALLIC COATED STEEL WALL PANELS: FABRICATED FROM GALVANIZED STRUCTURAL STEEL SHEET ASTM A 653/A 653M, G90 (Z275), OR ALUMINUM-ZINC ALLOY-COATED STRUCTURAL STEEL SHEET. ASTM A 792/A 792M, CLASS AZ50 COATING DESIGNATION, GRADE 40 (CLASS AZM150 COATING DESIGNATION GRADE 275); METAL THICKNESS: [0.0159" (0.40mm)] [0.0209" (0.55mm)] [0.0269" (0.70mm)] [0.0329" (0.85mm)] [0.0428" (1.10mm)]
   b. ALUMINUM WALL PANELS: FABRICATED FROM ALUMINUM SHEET, ASTM B 209 (ASTM B 209M) FOR ALCLAD ALLOY 3003, 3004, OR 3105;METAL THICKNESS: [0.032" (0.8mm)] [0.040" (1.0mm)]
   c. FINISH: MANUFACTURER'S STANDARD [EPOXY PRIMER AND SILICONE-MODIFIED, POLYESTER-ENAMEL TOPCOAT] [FLUOROPOLYMER 2-COAT SYSTEM WITH TOPCOAT CONTAINING NOT LESS THAN 70 PERCENT POLYVINYLIDENE FLUORIDE RESIN BY WEIGHT; COMPLYING WITH AAMA 2604]
2. WALL PANEL TYPE: FLUSH-PROFILE METAL LINER PANELS: [SOLID] [PERFORATED] PANELS FORMED WITH VERTICAL PANEL EDGES AND [INTERMEDIATE STIFFENING RIBS SYMMETRICALLY SPACED] [FLAT PAN] BETWEEN PANEL EDGES]
   a. METALLIC COATED STEEL WALL PANELS: FABRICATED FROM GALVANIZED STRUCTURAL STEEL SHEET ASTM A 653/A 653M, G90 (Z275), OR ALUMINUM-ZINC ALLOY-COATED STRUCTURAL STEEL SHEET. ASTM A 792/A 792M, CLASS AZ50 COATING DESIGNATION, GRADE 40 (CLASS AZM150 COATING DESIGNATION GRADE 275); METAL THICKNESS: [0.0159" (0.40mm)] [0.0209" (0.55mm)] [0.0269" (0.70mm)] [0.0329" (0.85mm)] [0.0428" (1.10mm)]
   b. ALUMINUM WALL PANELS: FABRICATED FROM ALUMINUM SHEET, ASTM B 209 (ASTM B 209M) FOR ALCLAD ALLOY 3003, 3004, OR 3105;METAL THICKNESS: [0.032" (0.8mm)] [0.040" (1.0mm)]
   c. FINISH: MANUFACTURER'S STANDARD [EPOXY PRIMER AND SILICONE-MODIFIED, POLYESTER-ENAMEL TOPCOAT] [FLUOROPOLYMER 2-COAT SYSTEM WITH TOPCOAT CONTAINING NOT LESS THAN 70 PERCENT POLYVINYLIDENE FLUORIDE RESIN BY WEIGHT; COMPLYING WITH AAMA 2604]
3. WALL PANEL TYPE: [FACTORY-FORMED AND ASSEMBLED W/ [FOAMED INSULATION] [LAMINATED INSULATION] [HONEYCOMB CORE]
   a. METALLIC COATED FACE SHEETS: FABRICATED FROM GALVANIZED STRUCTURAL STEEL SHEET ASTM A 653/A 653M, G90 (Z275), OR ALUMINUM-ZINC ALLOY-COATED STRUCTURAL STEEL SHEET. ASTM A 792/A 792M, CLASS AZ50 COATING DESIGNATION, GRADE 40 (CLASS AZM150 COATING DESIGNATION GRADE 275); EXTERIOR SHEET THICKNESS: [0.0159" (0.40mm)] [0.0209" (0.55mm)] [0.0269" (0.70mm)] [0.0329" (0.85mm)] [0.0428" (1.10mm)]; INTERIOR SHEET THICKNESS: 0.022" (0.55mm).
   b. ALUMINUM FACE SHEETS: FABRICATED FROM ALUMINUM SHEET, ASTM B 209 (ASTM B 209M) FOR ALCLAD ALLOY 3003, 3004, OR 3105; EXTERIOR SHEET THICKNESS: [0.032" (0.8mm)] [0.040" (1.0mm)]; INTERIOR SHEET THICKNESS: 0.032" (0.8mm) THICK.
   c. FINISH: MANUFACTURER'S STANDARD [EPOXY PRIMER AND SILICONE-MODIFIED, POLYESTER-ENAMEL TOPCOAT] [FLUOROPOLYMER 2-COAT SYSTEM WITH TOPCOAT CONTAINING NOT LESS THAN 70 PERCENT POLYVINYLIDENE FLUORIDE RESIN BY WEIGHT; COMPLYING WITH AAMA 2604]
   d. INSULATION CORE: MODIFIED ISOCYANURATE FOAM USING NON-CFC BLOWING AGENT, WITH MAXIMUM FLAME-SPREAD AND SMOKE-DEVELOPED INDEXES OF 25 AND 450, RESPECTIVELY.

D. ACCESSORIES:
1. PROVIDE COMPONENTS REQUIRED FOR A COMPLETE WALL PANEL ASSEMBLY INCLUDING TRIM, COPINGS, FASCIAE, MULLIONS, CORNER UNITS, CLIPS, SEAM COVERS, FLASHINGS, SEALANTS, GASKETS, FILLERS, CLOSURE STRIPS, AND SIMILAR ITEMS.
2. FLASHING AND TRIM: FORMED FROM 0.0179" (0.045mm) THICK, ZINC-COATED (GALVANIZED) STEEL SHEET OR ALUMINUM-ZINC ALLOY-COATED STEEL SHEET. PROVIDE FLASHING AND TRIM AS REQUIRED TO SEAL AGAINST WEATHER AND TO PROVIDE FINISHED APPEARANCE. FINISH FLASHING AND TRIM WITH SAME FINISH SYSTEM AS ADJACENT METAL ROOF PANELS.
3. BITUMINOUS COATING: COLD-APPLIED ASPHALT MASTIC, SSPC-PAINT 12, COMPOUNDED FOR 15-MIL (O.4mm) DRY FILM THICKNESS PER COAT.

E. INSTALLATION:
1. ANCHOR PANELS SECURELY IN PLACE WITH PROVISIONS FOR THERMAL AND STRUCTURAL MOVEMENT. INSTALL WITH CONCEALED FASTENERS UNLESS OTHERWISE INDICATED USING STAINLESS STEEL FOR SURFACES EXPOSED TO THE EXTERIOR AND GALVANIZED FOR SURFACES EXPOSED TO THE INTERIOR.
2. INSTALL MANUFACTURER RECOMMENDED GASKETS, JOINT FILLERS, AND SEALANTS WHERE REQUIRED FOR WEATHERPROOF PERFORMANCE OF ASSEMBLIES.
3. USE BITUMINOUS COATING TO SEPARATE DISSIMILAR METALS AND WHERE ALUMINUM PANELS WILL CONTACT WOOD, FERROUS METAL OR CONCRETE

074646 FIBER-CEMENT SIDING

A. SUBMITTALS:
1. PRODUCT DATA, INSTALLATION INSTRUCTIONS, TEST DATA, SAMPLE WARRANTY
2. COLOR AND FINISH SAMPLES
3. SAMPLE WARRANTY, INCLUDING SPECIAL WARRANTY, MFR AGREES TO REPAIR OR REPLACE PRODUCTS THAT FAIL IN MATERIAL OR WORKMANSHIP WITHIN PERIOD OF 30 YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

B. QUALITY ASSURANCE: BUILD MOCKUP OF TYPICAL WALL AREA AS SHOWN ON DRAWINGS

C. PRODUCTS: *BASIS OF DESIGN [MFR, TYPE]*
1. FIBER CEMENT SIDING:
   a. GENERAL: ASTM C1186, TYPE A, GRADE II, FIBER-CEMENT BOARD, NONCOMBUSTIBULE WHEN TESTED PER ASTM E136; WITH FLAME-SPREAD INDEX OF 25 OR LESS PER ASTM E84
   b. MANUFACTURERS: CERTAINTEED, GAF, JAMES HARDIE, NICHIHA
   c. LABELING: ACCORDING TO ASTM C1186 BY QUALIFIED TESTING AGENCY.
   d. NOMINAL THICKNESS: NOT LESS THAN 5/16"
   e. HORIZONTAL PLANK SIDING: BOARDS *[5-1/4 inches] [6-1/4 to 6-1/2 inches] [7-1/4 to 7-1/2 inches] [8-1/4 to 8-1/2 inches] [9-1/4 to 9-1/2 inches]* PLAIN EDGE STYLE
      - TEXTURE: *[WOOD GRAIN] OR [SMOOTH]*
   f. PANELS: 48" WIDE SHEETS
   g. FACTORY PRIMING: MFR'S STANDARD ACRYLIC PRIMER
2. FIBER-CEMENT SOFFIT
   a. GENERAL: ASTM C1186, TYPE A, GRADE II, FIBER-CEMENT BOARD, NONCOMBUSTIBULE WHEN TESTED PER ASTM E136; WITH FLAME-SPREAD INDEX OF 25 OR LESS PER ASTM E84
   b. MANUFACTURERS: CERTAINTEED, GAF, JAMES HARDIE, NICHIHA
   c. NOMINAL THICKNESS: NOT LESS THAN 5/16"
   d. PATTERN: *[12 inch] [16 inch] [24 inch]*
      - TEXTURE: *[WOOD GRAIN] OR [SMOOTH]*
   e. FACTORY PRIMING: MFR'S STANDARD ACRYLIC PRIMER

D. ACCESSORIES:
1. SIDING ACCESSORIES, GENERAL: PROVIDE STARTER STRIPS, EDGE TRIM, OUTSIDE AND INSIDE CORNER CAPS, AND OTHER ITEMS AS RECOMMENDED BY SIDING MANUFACTURER FOR BUILDING CONFIGURATION.
2. FLASHING: PROVIDE *[ALUMINUM] [STAINLESS STEEL]* FLASHING COMPLYING WITH DIV 7.
   a. FINISH FOR ALUMINUM FLASHING: FACTORY-PRIME COATING
3. FASTENERS:
   a. FOR FASTENING TO WOOD, USE SIDING NAILS OF SUFFICIENT LENGTH TO PENETRATE MIN. 1" INTO FRAMING.
   b. FOR FASTENING TO METAL, USE RIBBED BUGLE-HEAD SCREWS OF SUFFICIENT LENGTH TO PENETRATE MIN. 1/4" OR THREE SCREW-THREADS INTO SUBSTRATE.
   c. FOR FASTENING FIBER CEMENT, USE HOT-DIP GALVANIZED FASTENERS.
4. INSECT SCREEN FOR SOFFIT VENTS: ALUMINUM 18X16 MESH.
5. CONT. SOFFIT VENTS: ALUM, HAT CHANNEL SHAPE
   a. NET-FREE AREA *[4 SQ.IN./LF] [6 SQ.IN./LF] [8 SQ.IN./LF]*
   b. FINISH:

E. INSTALLATION:
1. GENERAL: COMPLY WITH MFR'S WRITTEN INSTALLATION INSTRUCTIONS APPLICABLE TO PRODUCTS AND APPLICATIONS INDICATED UNLESS MORE STRINGENT REQUIREMENTS APPLY.
   a. INSTALL FASTENERS NO MORE THAN 24"
   b. INSTALL JOINT SEALANTS AS SPECIFIED IN DIVISION 7.

075423 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

A. SUBMITTALS:
1. PRODUCT DATA FOR ALL MATERIALS, AND SHOP DRAWINGS OF TAPERED INSULATION

B. QUALITY ASSURANCE:
1. PROVIDE (30) YEAR MANUFACTURER'S STANDARD WRITTEN WARRANTY, WITHOUT MONETARY LIMITATION, SIGNED BY MANUFACTURER AGREEING TO REPAIR LEAKS DUE TO DEFECTS IN MATERIALS OR WORKMANSHIP AND A (3) YEAR LABOR AND MATERIAL WARRANTY FROM THE ROOFING SUBCONTRACTOR.
2. EXTERIOR FIRE TEST EXPOSURE: ASTM E 108, CLASS B.

C. ROOFING MATERIALS:
1. TPO SHEET: ASTM D 6878, TYPE II, SCRIM OR FABRIC INTERNALLY REINFORCED 80 MILS (1.5 mm) THICK; COLOR: WHITE.
   a. *BASIS OF DESIGN PRODUCT*: FIRESTONE ULTRAPLY TPO OR APPROVED EQUAL.
2. AUXILIARY MATERIALS: RECOMMENDED BY ROOFING SYSTEM MANUFACTURER FOR INTENDED USE AND AS FOLLOWS:
   a. SHEET FLASHING: SAME THICKNESS AND COLOR AS SHEET MEMBRANE.
   b. BONDING ADHESIVE: TYPE AS RECOMMENDED BY MANUFACTURER
   c. MISCELLANEOUS ACCESSORIES: PROVIDE POURABLE SEALERS, PREFORMED CONE AND VENT SHEET FLASHINGS, PREFORMED INSIDE AND OUTSIDE CORNER SHEET FLASHINGS, T-JOINT COVERS, LAP SEALANTS, TERMINATION REGLETS, AND OTHER ACCESSORIES.

D. ROOF INSULATION:
1. POLYISOCYANURATE BOARD INSULATION: ASTM C 1289, TYPE II
   a. MINIMUM R-VALUE: R-25
   b. UTILIZE (2) LAYERS OF 2.3" MINIMUM THICKNESS, STAGGER JOINTS.
2. FABRICATE TAPERED INSULATION WITH SLOPE OF 1/4"/FOOT UNLESS OTHERWISE INDICATED.
3. PROVIDE PREFORMED SADDLES, CRICKETS, TAPERED EDGE STRIOS, AND OTHER INSULATION SHAPES WHERE INDICTED FOR SLOPING TO DRAIN. FABRICATE TO SLOPES INDICATED.
4. COVER BOARD: *WHERE INDICATED ON DRAWINGS.* ASTM C 208, TYPE II, GRADE 2, CELLULOSIC-FIBER INSULATION BOARD, 1/2" THICK.

E. INSTALLATION:
[SELECT MECHANICALLY ATTACHED OR FULLY ADHERED PER PROJECT]
1. MECHANICALLY FASTEN EACH LAYER OF INSULATION TO DECK UTILIZING **FIRESTONE'S "INVISIWELD" SYSTEM ATTACHMENT METHOD** OR APPROVED EQUAL SYSTEM. INSTALL TPO SHEET ACCORDING TO ROOFING MANUFACTURER'S WRITTEN INSTRUCTIONS AND AS FOLLOWS:
   a. MEMBRANE SHALL BE UNROLLED ON THE AREA TO BE COVERED AND FASTENED ALONG THE LEADING EDGE THROUGH THE MEMBRANE, INSULATION, AND INTO THE DECK. ADJACENT ROLLS OF MEMBRANE SHALL OVERLAP THE FASTENED EDGE OF THE INSTALLED MEMBRANE. FASTEN FIELD SHEETS WITH APPROVED FASTENERS FOR FM I-90 DESIGN FOR THE PROJECT DECK. ENSURE THAT THE DECK MATERIALS AND GRADE HAVE BEEN IDENTIFIED AND THAT THE PROPER FASTENER AND PLATE ARE INSTALLED AT THE NECESSARY SPACING TO ACHIEVE THE DESIGN AS SPECIFIED. FOR ROW SPACING IN EXCESS OF 76" SUBMIT VERIFICATION FROM MANUFACTURER THAT THE DECK AND MEMBRANE ASSEMBLY IS IN COMPLIANCE WITH FM I-90.
   b. PERIMETER/CORNER ENHANCEMENT: PERIMETER/CORNER FASTENING ENHANCEMENT SHALL BE INSTALLED AT ALL EXTERIOR ROOF PERIMETERS THAT ARE NOT BORDERED BY A PARAPET WALL OR AN ADJOINING BUILDING A MINIMUM OF 24" HIGHER THAN THE ROOF LEVEL AND IS REQUIRED AT ANY ADJOING ROOF LEVEL 24" OR GREATER ABOVE THE MAIN DECK LEVEL. PROVIDE FASTENERS AT SPACING REQUIRED BY MANUFACTURER TO COMPLY WITH WIND UPLIFT REQUIREMENTS.
   c. LAP SPLICE: MEMBRANE SHALL BE OVERLAPPED AND HOT-AIR WELDED WITHOUT ANY CONTAMINANTS (ADHESIVE, DIRT, DEBRIS, ETC.) IN THE SEAM. THE ENTIRE LAP EDGE SHALL BE PROBED WITH AN APPROVED SEAM PROBING TOOL AFTER THE SEAM HAS COOLED COMPLETELY TO VERIFY SEAM CONSISTENCY. SEAL EXPOSED EDGES OF SHEET TERMINATIONS.
2. FULLY ADHERE EACH LAYER OF INSULATION TO DECK. INSTALL TPO SHEET ACCORDING TO ROOFING MANUFACTURER'S WRITTEN INSTRUCTIONS AND AS FOLLOWS:
   a. ALIGN SHEETS TO MAINTIAN UNIFORM SIDE AND END LAPS OF MINIMUM DIMENSIONS REQUIRED. STAGGER END LAPS. INSTALL LAPS SHINGLED WITH SLOPE OF DECK WHERE POSSIBLE. INSTALL FLASHING CONCURRENTLY WIHT DECK SHEET. HOT AIR WELD TO ENSURE WATERTIGHT SEAM INSTALLATION. THE ENTIRE LAP EDGE SHALL BE PROBED WITH AN APPROVED SEAM PROBING TOOL AFTER THE SEAM HAS COOLED COMPLETELY TO VERIFY SEAM CONSISTENCY. ENSURE LAPS LAY FLAT AND ARE FREE OF VOIDS, FISHMOUTHS OR WRINKLES.
   b. APPLY SURFACE CONDITIONER AT REQUIRED RATE TO SUBSTRATES TO RECEIVE WATERPROOFING. APPLY ONLY AT TEMPERATURES GREATER THAN 25 DEG. F. AND RISING. APPLY AND FIRMLY ADHERE SHEETS TO SUBSTRATE; BUTT ADJOINING SHEETS TIGHTLY. APLLY ONLY WHEN THE MEMBRANE, AIR AND SUBSTRATE TEMPERATURES ARE GREATER THAN 40 DEG. F. AND RISING.
   c. HOT-AIR WELD THREE-WAY OVERLAPS OR T-JOINTS WITH A 4 INCH ROUND OR SQUARE PATCH.
   d. UNLESS TERMINATIONS AND DECK-SHEET WATERPROOFING PERIMETER ARE SEALED WITH FLASHIGNS, SECURE THEM WITH MECHANICALLY ANCHORED METAL TERMINATION BAR. SEAL EDGE OF TERMINATION BAR WITH SEALANT.
3. INSTALL SHEET FLASHINGS AND PREFORMED FLASHING ACCESSORIES AND ADHERE TO SUBSTRATES. PROTECT ROOFING FROM DAMAGE AND WEAR DURING REMAINDER OF CONSTRUCTION PERIOD.

076200 SHEET METAL FLASHING AND TRIM

A. SUBMITTALS: PRODUCT DATA, COLOR SAMPLES, AND SHOP DRAWINGS INDICATING MATERIAL, DIMENSIONS, JOINT LOCATIONS, EDGE CONDITIONS, AND METHODS OF ANCHORAGE.

B. FABRICATION STANDARD: COMPLY WITH SMACNA'S "ARCHITECTURAL SHEET METAL MANUAL". CONFORM TO DIMENSIONS AND PROFILES SHOWN UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED.

C. COORDINATION: COORDINATE INSTALLATION OF SHEET METAL FLASHING AND TRIM WITH INTERFACING AND ADJOINING CONSTRUCTION TO PROVIDE A LEAKPROOF, SECURE, AND NONCORROSIVE INSTALLATION.

D. SHEET METAL:
1. COPPER: ASTM B 370, TEMPER H00 OR H01, COLD ROLLED, NOT LESS THAN 16 OZ/S.F. (0.55 mm THICK).
2. ALUMINUM SHEET: ASTM B 209 (ASTM B 209 M) ALLOY 3003, 3004, 3105, OR 5005, TEMPER SUITABLE FOR FORMING AND STRUCTURAL PERFORMANCE REQUIRED, BUT NOT LESS THAN H14; NOT LESS THAN 0.032 INCH (O.8 mm) THICK, FINISHED WITH MANUFACTURER'S FLUOROPOLYMER 2-COAT SYSTEM WITH TOPCOAT CONTAINING NOT LESS THAN 70% POLYVINYLIDENE FLUORIDE RESIN BY WEIGHT; COMPLYING WITH AAMA 2604.
3. STAINLESS STEEL SHEET: ASTM A 240/A 240M, TYPE 304, WITH NO. 2D FINISH; NOT LESS THAN 0.0156 INCH (0.4 mm) THICK.

E. FLASHING AND TRIM: FABRICATE FLASHING AND TRIM TO COMPLY WITH RECOMMENDATIONS OF SMACNA'S "ARCHITECTURAL SHEET METAL MANUAL" THAT APPLY TO THE DESIGN, DIMENSIONS, METAL, AND OTHER CHARACTERISTICS OF THE ITEM INDICATED OR DETAILED ON THE CONSTRUCTION DRAWINGS. FABRICATE WITH CONCEALED FASTENERS EXCEPT WHERE EXPOSED FASTENERS ARE PERMITTED.

F. ACCESSORIES:
1. SOLDER FOR COPPER: ASTM B 32, GRADE Sn50
2. SOLDER FOR STAINLESS STEEL: ASTM B 32, GRADE Sn60, WITH ACID FLUX OF TYPE RECOMMENDED BY STAINLESS STEEL MFR.
3. BUTYL SEALANT: ASTM C 1311, SOLVENT-RELEASE TYPE, FOR EXPANSION JOINTS WITH LIMITED MOVEMENT.
4. ASPHALT MASTIC: SSPC-PAINT 12, ASBESTOS FREE, SOLVENT TYPE.
5. ROOFING CEMENT: ASTM D 4586, TYPE I, ASBESTOS FREE, ASPHALT BASED
6. SLIP SHEET: RESIN-SIZED PAPER, MINIMUM 3 LB/100 S.F. (0.16 kg/sq. m)

G. INSTALLATION:
1. COMPLY WITH SMACNA'S "ARCHITECTURAL SHEET METAL MANUAL." ALLOW FOR THERMAL EXPANSION; SET TRUE TO LINE AND LEVEL. INSTALL WORK WITH LAPS, JOINTS, AND SEAMS PERMANENTLY WATERTIGHT AND WEATHERPROOF; CONCEAL FASTENERS WHERE POSSIBLE.
2. SECURE FLASHINGS AT ROOF EDGES ACCORDING TO FMG LOSS PREVENTION DATA SHEET 1-49 FOR SPECIFIED WIND ZONE.
3. SEALED JOINTS: FORM NON-EXPANSION, BUT MOVABLE, JOINTS IN METAL TO ACCOMMODATE ELASTOMERIC SEALANT TO COMPLY WITY SMACNA STANDARDS USING BAYONET TYPE OR INTERLOCKING HOOKED SEAMS.
4. FABRICATE NONMOVING SEAMS IN SHEET METAL WITH FLAT-LOCK SEAMS. FOR METAL OTHER THAN ALUMINUM, TIN EDGES TO BE SEAMED, FORM SEAMS AND SOLDER. FOR ALUMINUM, FORM SEAMS AND SEAL WITH EPOXY SEAM SEALER. RIVET JOINTS FOR ADDITIONAL STRENGTH.
5. SEPARATION: SEPARATE NON-COMPATIBLE METALS OR CORROSIVE SUBSTRATES WITH A COATING OF ASPHALT MASTIC OR OTHER PERMANENT SEPARATION

077200 ROOF ACCESSORIES

A. SUBMITTALS: PRODUCT DATA, INSTALLATION DETAILS, WARRANTIES

B. ROOF ACCESSORIES:
1. ROOF CURBS AND EQUIPMENT SUPPORTS: SEE MECHANICAL SPECIFICATIONS FOR MORE INFORMATION, INCLUDE MANUFACTURER'S STANDARD RIGID OR SEMIRIGID INSULATION AND PRESERVATIVE-TREATED WOOD NAILERS AT TOPS. PROVIDE UNITS WITH CANT STRIPS AND BASE PROFILE COORDINATED WITH ROOF INSULATION THICKNESS AND ROOF DECK SLOPE.
2. ROOF HATCHES: INSULATED SINGLE-LEAF, 36" W X 60" D OPENING. FABRICATE FROM METALLIC-COATED STEEL WITH INTEGRAL CURB OF HEIGHT NECESSARY TO EXTEND 8" MIN. ABOVE ROOF SURFACE, DOUBLE WALL CONSTRUCTION WITH 11/2" INSULATION, FORMED CANTS AND CAP FLASHING, WITH WELDED MECHANICAL CORNER JOINTS. PROVIDE DOUBLE-WALL COVER (LID) CONSTRUCTION WITH 1" INSULATION CORE. PROVIDE GASKETING AND CORROSION RESISTANT HARDWARE INCLUDING PINTLE HINGES, HOLD-OPEN DEVICES, INTERIOR PADLOCK HASPS, AND BOTH INTERIOR AND EXTERIOR LATCH HANDLES.

C. INSTALLATION: INSTALL ROOF ACCESSORY ITEMS ACCORDING TO CONSTRUCTION DETAILS OF NRCA'S "ROOFING AND WATERPROOFING MANUAL". COORDINATE WITH INSTALLATION OF ROOF DECK, VAPOR BARRIERS, ROOF INSULATION, ROOFING, AND FLASHING TO ENSURE COMBINED ELEMENTS ARE SECURE, WATERPROOF, AND WEATHERTIGHT.

078413 PENETRATION FIRESTOPPING

A. SUBMITTALS: PRODUCT DATA AND PRODUCT CERTIFICATES SIGNED BY MFR. CERTIFYING THAT PRODUCTS COMPLY WITH REQUIREMENTS.

B. RATINGS: PROVIDE FIRESTOPPING SYSTEM WITH FIRE RESISTANCE RATINGS INDICATED BY REFERENCE TO UL DESIGNATIONS AS LISTED IN ITS "FIRE RESISTANCE DIRECTORY", OR TO DESIGNATION OF ANOTHER TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

C. FLAME SPREAD/SMOKE DEVELOPED RATINGS: FOR EXPOSED FIRESTOPPING, PROVIDE PRODUCTS WITH FLAME SPREAD INDEXES OF LESS THAN 25 AND SMOKE-DEVELOPED INDEXES OF LESS THAN 450, AS DETERMINED ACCORDING TO ASTM E 84.

D. FIRESTOP SYSTEMS: USE SYSTEMS AS DESIGNATED ON THE CONSTRUCTION DRAWINGS, OR IF NOT DESIGNATED, ANY SYSTEM THAT IS CLASSIFIED BY UL AND ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION FOR THE APPLICATION MAY BE USED.

E. INSTALLATION: INSTALL FIRESTOPPING SYSTEMS TO COMPLY WITH REQUIREMENTS LISTED IN TESTING AGENCY'S DIRECTORY FOR INDICATED FIRE-RESISTANCE RATING.

F. IDENTIFICATION: IDENTIFY THROUGH-PENETRATION FIRESTOP SYSTEMS WITH PERMANENT LABELS ATTACHED TO SURFACES ADJACENT TO FIRESTOP SYSTEMS SO THAT LABELS WILL BE VISIBLE TO ANYONE SEEKING TO REMOVE PENETRATING ITEMS OR FIRESTOP SYSTEMS. LABELS SHALL INCLUDE THE FOLLOWING:
1. THE WORDS "WARNING - THROUGH PENETRATION FIRESTOP SYSTEM - DO NOT DISTURB"
2. CLASSIFICATION/LISTING DESIGNATION OF APPLICABLE TESTING AND INSPECTING AGENCY.
3. THROUGH-PENETRATION FIRESTOP SYSTEM MANUFACTURER'S NAME AND PRODUCT NAME.

079200 JOINT SEALANTS

A. SUBMITTALS: PRODUCT DATA, COLOR SAMPLES, AND SCHEDULE OF LOCATIONS FOR EACH TYPE OF SEALANT SUBMITTED.

B. SEALANT COLORS/MOCKUP: MULTIPLE SEALANT COLORS WILL BE REQUIRED TO COORDINATE WITH COLORS OF MATERIALS BEING SEALED, SHALL BE SELECTED FROM MANUFACTURER'S FULL RANGE OF AVAILABLE COLORS, INCLUDING PREMIUM COLORS, AND SHALL BE VERIFIED FROM A 12" LONG FIELD APPLIED SAMPLE OF EACH COLOR PRIOR TO COMPLETE INSTALLATION.

C. ENVIRONMENTAL LIMITATIONS: DO NOT PROCEED WITH INSTALLATION OF JOINT SEALANTS WHEN AMBIENT AND SUBSTRATE TEMPERATURE CONDITIONS ARE OUTSIDE LIMITS PERMITTED BY JOINT SEALANT MANUFACTURER OR ARE BELOW 40 deg F (4.4 deg C).

D. COMPATIBILITY: PROVIDE JOINT SEALANTS, JOINT FILLERS, AND OTHER RELATED MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND WITH JOINT SUBSTRATES UNDER SERVICE AND APPLICATION CONDITIONS.

E. JOINT SEALANTS:
1. BUILDING EXPANSION JOINTS: SINGLE COMPONENT, NEUTRAL-CURING SILICONE SEALANT, ASTM C 920, TYPE S; GRADE NS; CLASS 25; USES T, M, AND O, WITH THE ADDITIONAL CAPABILITY TO WITHSTAND 50% MOVEMENT IN BOTH EXTENSION AND COMPRESSION FOR A TOTAL OF 100% MOVEMENT.
2. EXTERIOR TRAFFIC BEARING JOINTS WHERE SLOPE PRECLUDES POURABLE SEALANT: SINGLE COMPONENT, NONSAG URETHANE SEALANT, ASTM C920, TYPE S; GRADE NS; CLASS 25; USES T, NT, M, G, A, AND O.
3. EXTERIOR TRAFFIC BEARING JOINTS WHERE SLOPE PERMITS USE OF POURABLE SEALANT: SINGLE COMPONENT, POURABLE URETHANE SEALANT, ASTM C 920, TYPE S; GRADE P; CLASS 25; USES T, M, G, A, AND O.
4. INTERIOR JOINTS IN CERAMIC TILE AND OTHER HARD SURFACES IN KITCHENS, TOILET ROOMS, AND AROUND PLUMBING FIXTURES: SINGLE COMPONENT, MILDEW-RESISTANT SILICONE SEALANT, ASTM C 920, TYPE S; GRADE NS, CLASS 25; USES NT, G, A, AND O; FORMULATED WITH FUNGICIDE.
5. INTERIOR JOINTS AROUND PERIMETERS OF DOORS AND FRAMES: LATEX SEALANT, SINGLE COMPONENT, NONSAG, MILDEW-RESISTANT, PAINTABLE, ACRYLIC EMULSION SEALANT COMPLYING WITH ASTM C 834.
6. ACOUSTICAL SEALANT FOR EXPOSED INTERIOR JOINTS: NONSAG, PAINTABLE, NONSTAINING, LATEX SEALANT COMPLYING WITH ASTM C 834.
7. ACOUSTICAL SEALANT FOR CONCEALED JOINTS: NONDRYING, NONHARDENING, NONSKINNING, NONSTAINING, GUNNABLE, SYNTHETIC-RUBBER SELANT RECOMMENDED FOR SEALING INTERIOR CONCEALED JOINTS TO REDUCE TRANSMISSION OF AIRBORNE SOUND.

F. JOINT SEALANT BACKING: CYLINDRICAL CLOSED CELL PVC ROD COMPLYING WITH ASTM C330; SIZE 30% TO 50% LARGER THAN JOINT WIDTH. ALL OPEN CELL BACKINGS SUCH AS "DENVER FOAM" ARE PROHIBITED.

G. BOND-BREAKER TAPE: POLYETHYLENE TAPE OR OTHER PLASTIC TAPE RECOMMENDED BY SEALANT MFR. FOR PREVENTING SEALANT FROM ADHERING TO RIGID, INFLEXIBLE JOINT-FILLER MATERIALS OR JOINT SURFACES AT BACK OF JOINT.

H. INSTALLATION: COMPLY WITH ASTM C 1193; ASTM C 919 FOR ACOUSTICAL JOINTS; AND AS FOLLOWS:
1. REMOVE ALL LOOSE MATERIAL, CLEAN AND PRIME JOINTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, AND PROTECT ADJACENT SURFACES.
2. INSTALL BOND-BREAKER TAPE WHERE JOINT BACKINGS ARE NOT USED.
3. INSTALL SEALANT TOOLED CONCAVE, FREE OF AIR POCKETS, FOREIGN EMBEDDED MATTER, RIDGES, AND SAGS, AND PROTECT UNTIL FULLY CURED. SEALANT WITH DUST AND DEBRIS EMBEDDED IN SURFACE SHALL BE CAUSE FOR REJECTION.

- END DIVISION 7 -

DIVISION 8 - DOOR AND WINDOWS

081113 HOLLOW METAL DOORS AND FRAMES

A. SUBMITTALS:
1. PRODUCT DATA
2. SHOP DRAWINGS INCLUDING ELEVATIONS OF EACH DOOR AND FRAME TYPE, DOOR AND FRAME DETAILS FOR EACH TYPE.
3. PRODUCT SCHEDULE INDICATING OPENING AND FRAME SIZES CORRESPONDING TO THOSE USED IN CONSTRUCTION DOCUMENTS.

B. STEEL DOORS:
1. INTERIOR DOORS (STANDARD-DUTY): WHERE INDICATED ON SCHEDULE
   a. COMPLY WITH SDI A250.8, LEVEL 1; SDI A250.4, LEVEL C
   b. TYPE: AS INDICATED IN DOOR AND FRAME SCHEDULE
   c. THICKNESS: 1 3/4"
   d. FACE: UNCOATED STEEL SHEET, MIN. 0.032" THICK
   e. EDGE CONSTRUCTION: MODEL 1, FULL FLUSH
2. INTERIOR DOORS (HEAVY-DUTY): WHERE INDICATED ON SCHEDULE
   a. COMPLY WITH SDI A250.8, LEVEL 2; SDI A250.4, LEVEL B
   b. TYPE: AS INDICATED IN DOOR AND FRAME SCHEDULE
   c. THICKNESS: 1 3/4"
   d. FACE: UNCOATED STEEL SHEET, MIN. 0.042" THICK
   e. EDGE CONSTRUCTION: MODEL 1, FULL FLUSH
3. EXTERIOR DOORS (EXTRA-HEAVY-DUTY): WHERE INDICATED ON SCHEDULE
   a. COMPLY WITH SDI A250.8, LEVEL 3; SDI A250.4, LEVEL A
   b. TYPE: AS INDICATED IN DOOR AND FRAME SCHEDULE
   c. THICKNESS: 1 3/4"
   d. FACE: GALVANIZED STEEL SHEET, MIN. 0.053" THICK, W/ MIN. A60 COATING
   e. EDGE CONSTRUCTION: MODEL 1, FULL FLUSH
   f. TOP EDGE CLOSURE: CLOSE TOP EDGES OF DOORS WITH SAME MATERIAL, SEAL JOINTS AGAINST WATER PENETRATION
   g. BOTTOM EDGES: END CLOSURES OR CHANNELS OF SAME MATERIAL, PROVIDE WEEP-HOLE OPENINGS IN BOTTOM OF EXT. DOORS.
   h. CORE: POLYISOCYANURATE
   i. FIRE RATED CORE: MFR'S STANDARD VERTICAL STEEL STIFFENER W/ INSULATION CORE FOR FIRE-RATED DOORS

C. STEEL FRAMES:
1. INTERIOR FRAMES:
   a. FULLY WELDED, COMPLY WITH SDI A250.8, LEVEL 2; SDI A250.4, LEVEL B
   b. UNCOATED STEEL SHEET, THICKNESS PER DOOR SCHEDULE
2. EXTERIOR FRAMES:
   a. FULLY WELDED, COMPLY WITH SDI A250.8, LEVEL 3, SDI A250.4, LEVEL A
   b. GALVANIZED STEEL SHEET, W/ MIN. A60 COATING; THICKNESS PER DOOR SCHEDULE

D. MATERIALS:
1. COLD-ROLLED STEEL SHEETS: ASTM A 1008/A 1008M, COMMERCIAL STEEL (CS), TYPE B; SUITABLE FOR EXPOSED APPLICATIONS.
2. HOT-ROLLED STEEL SHEETS: ASTM A1011/A 1011M, COMMERCIAL STEEL (CS), TYPE B; FREE OF SCALE, PITTING, OR SURFACE DEFECTS; PICKLED AND OILED.
3. GALVANIZED STEEL SHEETS: ASTM A 653/A 653M, COMMERCIAL STEEL (CS), TYPE B
4. INSERTS, BOLTS, & FASTENERS: HOT-DIP GALVANIZED ACCORDING TO ASTM A 153/A 153M
5. POWER-ACTUATED FASTERNERS IN CONCRETE: FASTENER SYSTEM OF TYPE SUITABLE FOR APPLICATION INDICATED, FABRICATED FROM CORROSION-RESISTANT MATERIALS, WITH CLIPS OR OTHER ACCESSORY FOR ATTACHING HOLLOW-METAL FRAMES.
6. MINERAL FIBER INSULATION: ASTM C 665, TYPE I; CONSISTING OF FIBERS MANUFACTURED FROM SLAG OR ROCK WOOL; WITH MAX. FLAME-SPREAD OF 25 AND SMOKE-DEV. INDEX OF 50; PASSING ASTM E 136 FOR COMBUSTION CHARACTERISTICS.

E. ACCESSORIES:
1. GLAZING STOPS: NONREMOVABLE ON OUTSIDE OF EXTERIOR DOORS AND/OR SECURE SIDE OF INTERIOR DOORS; SCREW-APPLIED, REMOVABLE GLAZING STOPS ON INSIDE.
2. DOOR SILENCERS: GRAY RUBBER PUSH-IN TYPE; THREE ON STRIKE JAMB OF SINGLE DOORS; TWO ON HEAD OF OF DOUBLE DOORS.
3. PLASTER GUARDS: PROVIDE AT MASONRY INSTALLATIONS.
4. SUPPORTS AND ANCHORS: MIN. .042" THICK GALVANIZED STEEL SHEET
5. PRIMER: MANUFACTURER'S STANDARD FACTORY APPLIED COAT OF RUST-INHIBITIVE PRIMER COMPLYING WITH ANSI A250.10.

F. INSTALLATION:
1. FRAMES: COMPLY WITH SDI A250.11 AND INSTALL FIRE-RATED FRAMES PER NFPA 80.
2. DOORS: FIT AND ADJUST HOLLOW-METAL DOORS TO COMPLY WITH THE FOLLOWING:
   a. NON-FIRE RATED STEEL DOORS: COMPLY WITH SDI A250.8.
   b. FIRE-RATED DOORS: INSTALL WITH CLEARANCES ACCORDING TO NFPA 80.
   c. SMOKE CONTROL DOORS: INSTALL ACCORDING TO NFPA 105

081416 FLUSH WOOD DOORS

A. SUBMITTALS:
1. PRODUCT DATA
2. SAMPLES FOR FACTORY FINISHED DOORS
3. SHOP DRAWINGS: INDICATE LOCATION, SIZE AND HAND OF EACH DOOR; ELEVATION OF EACH KIND OF DOOR; CONSTRUCTION DETAILS AND THE FOLLOWING:
   a. DIMENSIONS AND LOCATIONS OF BLOCKING
   b. DIMENSIONS AND LOCATIONS OF MORTISES AND HOLES FOR HARDWARE
   c. DIMENSIONS AND LOCATIONS OF CUTOUTS
   d. UNDERCUTS
   e. REQUIREMENTS FOR VENEER MATCHING
   f. DOORS TO BE FACTORY FINISHED AND FINISH REQUIREMENTS
   g. FIRE-PROTECTION RATINGS FOR FIRE-RATED DOORS

B. QUALITY ASSURANCE: AWI QUALITY CERTIFICATION PROGRAM CERTIFICATES

C. DOORS: SIZES AND TYPE AS INDICATED IN DRAWINGS, COMPLY WITH WDMA I.S.1-A
1. GRADE: PREMIUM, WITH GRADE AA FACES
2. SPECIES: AS INDICATED IN DRAWINGS
3. VENEER MATCHING: BOOK AND RUNNING
4. PAIR MATCHING AND SET MATCHING
5. CORE: STRUCTURAL COMPOSITE LUMBER
6. CONSTRUCTION:
   a. INTERIOR VENEER: FIVE OR SEVEN PLY
   b. INTERIOR PLASTIC LAMINATE: THREE-PLY
   c. FIRE-RATED DOORS: CORE TO PROVIDE FIRE RATING INDICATED WITH FACES AND GRADE TO MATCH NON-RATED DOORS.

D. FABRICATION AND FINISHING:
   a. FACTORY FIT DOORS TO SUIT FRAME OPENINGS TO COMPLY WITH REFERENCED STANDARD. COMPLY WITH NFPA 80 FOR FIRE-RESISTANCE RATED DOORS.
   b. FACTORY MACHINE DOORS FOR HARDWARE THAT IS NOT SURFACE APPLIED.
   c. CUT AND TRIM OPENINGS TO COMPLY WITH REFERENCED STANDARDS.
   d. LITE KITS: [MATCHING WOOD STOPS] [STEEL STOPS]
   e. FACTORY FINISH DOORS FOR TRANSPARENT FINISH WITH STAIN AND MANUFACTURER'S STANDARD FINISH COMPARABLE TO AWI, SYSTEM TR-4, CONVERSION VARNISH OR AWI SYSTEM TR-6, CATALYZED POLYURETHANE.

E. INSTALLATION: COMPLY WITH WDMA'S "HOW TO STORE, HANDLE, FINISH, INSTALL, AND MAINTAIN WOOD DOORS" ALIGNED AND FITTED IN FRAMES WITH UNIFORM CLEARANCES AND BEVELS.
1. INSTALL FIRE RATED DOORS PER NFPA 80.

083113 ACCESS DOORS AND FRAMES

A. SUBMITTALS: PRODUCT DATA
B. PRODUCTS: PRIME-PAINTED FLUSH, UNINSULATED ACCESS DOORS FOR WALLS AND CEILINGS WITH TRIMLESS FRAME AND SCREWDRIVER OPERATED LOCK FLUSH WITH FINISHED SURFACE. FIRE-RATED, SELF-LATCHING. AUTOMATIC CLOSING AT FIRE-RATED WALLS OR CEILINGS
C. INSTALLATION: INSTALL FLUSH TO FINISHED DRYWALL SURFACE WITH FRAME TAPED AND SANDED FLUSH WITH WALL OR CEILING SURFACE AND FINISH TO MATCH ADJACENT SURFACE.

083323 OVERHEAD COILING DOORS

A. SUBMITTALS: PRODUCT DATA, SHOP DRAWINGS, FINISH SAMPLES, AND SAMPLE WARRANTY

B. COILING DOORS: DESIGN AND REINFORCE OVERHEAD COILING DOORS TO WITHSTAND CODE-PRESCRIBED WIND LOAD PRESSURE BASED ON EXPOSURE.
1. SLATS: [GALVANIZED STEEL] [ALUMINUM], [CURVED PROFILE] [FLAT PROFILE] [FLAT PROFILE, INSULATED]
2. OPERATION: [MANUAL] [CHAIN HOIST] [CRANK HOIST] [ELECTRICAL]
3. TRACKS, SUPPORTS, AND HANGERS: MANUFACTURER'S STANDARD
4. WEATHERSEALS: REPLACEABLE AT TOP AND BOTTOM OF EXTERIOR DOORS

C. FIRE-RATED DOORS: PROVIDE ASSEMBLIES THAT COMPLY WITH NFPA 80 THAT ARE IDENTICAL TO DOOR AND FRAME ASSEMBLIES TESTED FOR FIRE-TEST RESPONSE CHARACTERISTICS PER UL10B AND THAT ARE LABELED AND LISTED FOR RATINGS INDICATED BY A TESTING AND INSPECTION AGENCY ACCEPTABLE TO AUTHOTITIES HAVING JURISDICTION.

083613 SECTIONAL DOORS

A. SUBMITTALS: PRODUCT DATA, SHOP DRAWINGS, FINISH SAMPLES, SAMPLE WARRANTY

B. SECTIONAL DOORS: DESIGN AND REINFORCE OVERHEAD COILING DOORS TO WITHSTAND CODE-PRESCRIBED WIND LOAD PRESSURE BASED ON EXPOSURE.
1. PANELS: GALVANIZED STEEL, GROOVED EXTERIOR FACE SHEETS [0.064"] [0.040"] [0.028"] THICK, POLYSTYRENE OR POLYURETHANE BOARD INSULATION WITH FLAME SPREAD/SMOKE DEVELOPED OF 75 AND 450, GALVANIZED STEEL INSIDE FACES.
2. FINISH: [PRIMED FOR FIELD PAINTING] [BAKED ENAMEL] [POWDER COAT]
3. GLAZED PANEL INSERTS: [6mm CLEAR FLOAT GLASS] [3mm CLEAR, UV-RESISTANT POLYCARBONATE PLASTIC]
4. OPERATION: [MANUAL] [CHAIN HOIST] [CRANK HOIST] [ELECTRICAL]
5. TRACKS, SUPPORTS, AND HARDWARE: MANUFACTURER'S [STANDARD] [VERTICAL] [HIGH-LIFT] TRACKS.
6. LOCKS: SPRING-LOADED DEAD BOLT OPERABLE FROM INSIDE BY HANDLE AND OUTSIDE BY KEY IN CYLINDER.
7. RADIO CONTROL: OPENS, CLOSES, AND STOPS DOOR; ONE PER OPERATOR

C. INSTALLATION:
1. INSTALL DOOR, TRACK, AND OPERATING EQUIPMENT COMPLETE WITH NECESSARY HARDWARE, JAMB, AND HEAD MOLD STRIPS, ANCHORS, INSERTS, HANGERS, AND EQUIPMENT SUPPORTS.
2. FASTEN VERTICAL TRACK ASSEMBLY TO FRAMING AT MINIMUM 24" O.C. HANG HORIZONTAL TRACK FROM STRUCTURAL OVERHEAD FRAMING WITH ANGLE OR CHANNEL HANGERS. PROVIDE BRACING AND REINFORCING AS REQUIRED FOR RIGID INSTALLATION OF TRACK AND DOOR.
3. LUBRICATE BEARINGS AND SLIDING PARTS; ADJUST TO OPERATE SMOOTHLY AND TO FIT WEATHERTIGHT FOR ENTIRE PERIMETER.

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.:	19050.04A
Date:	02.03.23
Issued For:	PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI — DAVID ALAN WILLIAMS — NUMBER A-5548 — REGISTERED ARCHITECT

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

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SHEET TITLE

PROJECT SPECIFICATIONS

SHEET NUMBER

A11.11

084113 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

A. SUBMITTALS:
1. INSTALLER QUALIFICATIONS, FABRICATOR QUALIFICATIONS, SOURCE LIMITATIONS
2. PRODUCT DATA FOR EACH SYSTEM SPECIFIED, INCLUDING ACCESSORIES,SEALANTS, AND PRODUCTS TO BE SUPPLIED FOR A COMPLETE INSTALLATION.
3. SAMPLES: FULL RANGE OF MANUFUCTURERS STANDARD COLOR, FINISH AND OTHER OPTIONS REQUIRED FOR SELECTION.
4. SHOP DRAWINGS STAMPED AND SIGNED BY LICENSED ENGINEER: INCLUDING DETAILS AT JOINTS AND PERIMETER CONDITIONS,FLASHINGS, CONNECTION AND INTERFACE WITH WORK BY OTHERS, EXPANSION AND CONTRACTION JOINT, ANY FIELD WELDING REQUIREMENTS, HARDWARE SCHEDULE.
5. CALCULATIONS STAMPED AND SIGNED BY LICENSED ENGINEER: DESIGN LOADS, SYSTEM DIMENSIONS, TOLERANCES, DETAILS AT JOINTS, PERIMETER CONDITIONS, FLASHING, CONNECTIONS TO WORK BY OTHERS, EXPANSION AND CONTRACTION JOINT LOCATIONS, AND ANY FIELD WELDING. FOR ENTRANCES, INCLUDE HARDWARE SCHEDULE.
6. SAMPLE WARRANTIES
7. MOCK-UP: ON SITE, INCLUDING HEAD, JAMB AND SILL CONDITIONS AND INTERFACE WITH OTHER WORK.

B. DELEGATED DESIGN: DESIGN GLAZED ALUMINUM STOREFRONTS AND ENTRANCES, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.

C. QUALITY ASSURANCE:
1. FABRICATOR: COMPANY SPECIALIZING IN MANUFACTURING ALUMINUM GLAZING SYSTEMS WITH MINIMUM THREE YEARS DOCUMENTED EXPERIENCE
2. INSTALLER: COMPANY SPECIALIZING IN INSTALLING ALUMINUM GLAZING SYSTEMS WITH MINIMUM THREE YEARS DOCUMENTED EXPERIENCE
3. MANUFACTURER'S WARRANTY: 2 YEARS

D. MATERIALS:
1. ALUMINUM SHEET: ASTM B 209 (ASTM B 209M), ALLOY AND TEMPER RECOMMENDED BY MANUFACTURER FOR TYPE OF USE AND FINISH INDICATED.
2. ALUMINUM EXTRUSIONS: ASTM B 221 (ASTM B221M), ALLOY AND TEMPER RECOMMENDED BY MANUFACTURER FOR TYPE OF USE AND FINISH INDICATED.

E. ALUMINUM FRAMED STOREFRONTS: AT INTERIOR LOCATIONS, PROVIDE MANUFACTURER'S STANDARD NON-THERMALLY BROKEN STOREFRONT SYSTEM MATCHING THE EXTERIOR SYSTEM. AT EXTERIOR LOCATIONS, PROVIDE MANUFACTURER'S STANDARD THERMALLY BROKEN, EXTRUDED ALUMINUM STOREFRONT SYSTEM CONSISTING OF FRAMING MEMBERS OF THICKNESS REQUIRED AND REINFORCED AS REQUIRED TO SUPPORT IMPOSED LOADS AND TO FIT THE DIMENSIONS AND DEPTHS INDICATED ON THE CONSTRUCTION DOCUMENTS AND COMPLYING WITH THE FOLLOWING:
1. STRUCTURAL PERFORMANCE: PROVIDE SYSTEMS, INCLUDING ANCHORAGE, CAPABLE OF WITHSTANDING THE FOLLOWING LOADS:
   a. MAIN FRAMING MEMBER DEFLECTION: LIMITED TO 1/175 OF CLEAR SPAN OR 3/4" WHICHEVER IS SMALLER.
   b. STRUCTURAL TESTING: SYSTEMS WHEN TESTED ACCORDING TO ASTM E 330 AT 150 PERCENT OF INWARD AND OUTWARD WIND-LOAD DESIGN PRESSURE DO NOT EVIDENCE MATERIAL FAILURES, STRUCTURAL DISTRESS, DEFLECTION FAILURES, OR PERMANENT DEFORMATION OF MAIN FRAMING MEMBERS ECEEDING 0.2 PERCENT OF CLEAR SPAN.
2. AIR INFILTRATION: LIMITED TO 0.06 CFM/SQ. FT. (0.03 L/s PER SQ. IN.) OF SYSTEM SURFACE AREA WHEN TESTED ACCORDING TO ASTM E 283 AT A STATIC-AIR-PRESSURE DIFFERENCE OF 1.57 lbf/sq. ft. (75 Pa)
3. WATER PENETRATION: SYSTEMS DO NOT EVIDENCE WATER LEAKAGE WHEN TESTED ACCORDING TO ASTM E 331 AT MINIMUM DIFFERENTIAL PRESSURE OF 20 PERCENT OF POSITIVE WIND-LOAD DESIGN PRESSURE, BUT NOT LESS THAN 6.24 lbf/sq. ft. (300 Pa).
4. AVERAGE U-FACTOR: NOT MORE THAN 0.69 Btu/sq. ft. x h x deg. f (3.92 W/sq. m x K) PER AAMA 1503.
5. DOORS: 1-3/4" THICK GLAZED DOORS WITH MINIMUM 0.125" THICK EXTRUDED TUBULAR RAIL AND STILE MEMBERS. MECHANICALLY FASTENED CORNERS WITH REINFORCED BRACKETS THAT ARE DEEP PENETRATION AND FILLET WELDED OR THAT INCORPORATE CONCEALED TIE-RODS, SNAP-ON EXTRUDED ALUMINUM GLAZING STOPS, AND PREFORMED GASKETS.
   a. INTERIOR DOORS: GLAZE WITH 1/4" CLEAR TEMPERED GLASS. PROVIDE ANSI/BHMA A156.16 SILENCERS. THREE ON STRIKE JAMB OF SINGLE DOOR FRAMES AND TWO ON HEAD OF DOUBLE DOOR FRAMES.
   b. EXTERIOR DOORS: GLAZE WITH INSULATED TEMPERED GLASS UNITS MATCHING STOREFRONT GLASS OR CLEAR INSULATED GLASS PER CONSTRUCTION DRAWINGS. PROVIDE COMPRESSION WEATHERSTRIPPING AT FIXED STOPS. AT OTHER LOCATIONS, PROVIDE SLIDING WEATHERSTRIPPING RETAINED IN ADJUSTABLE STRIP MORTISED INTO DOOR EDGE.
   c. HARDWARE: PER DOOR SCHEDULE
6. FASTENERS AND ACCESSORIES: COMPATIBLE WITH ADJACENT MATERIALS, CORROSION-RESISTANT. NONSTAINING, AND NONBLEEDING. USE CONCEALED FASTENERS EXCEPT FOR APPLICATION OF DOOR HARDWARE.
7. FABRICATION: FABRICATE FRAMING IN PROFILES INDICATED. PROVIDE SUBFRAMES AND REINFORCING AS REQUIRED FOR A COMPLETE SYSTEM. FACTORY ASSEMBLE COMPONENTS TO GREATEST EXTENT POSSIBLE. DISASSEMBLE COMPONENTS ONLY AS NECESSARY FOR SHIPMENT AND INSTALLATION.
   a. DOORS FRAMING: REINFORCE TO SUPPORT IMPOSED LOADS. FACTORY ASSEMBLE DOOR AND FRAME UNITS AND FACTORY INSTALL HARDWARE TO GREATEST EXTENT POSSIBLE. REINFORCE DOOR AND FRAME UNITS FOR HARDWARE INDICATED. CUT, DRILL, AND TAP FOR FACTORY-INSTALLED HARDWARE BEFORE FINISHING COMPONENTS.
8. ALUMINUM FINISH: COMPLY WITH NAAMM'S "METAL FINISHES MANUAL FOR ARCHITECTURAL AND METAL PRODUCTS"
   a. *[CLEAR ANODIC, ARCHITECTURAL CLASS I: AA-M12C22A41, COMPLYING WITH AAMA 611] [COLOR ANODIC, ARCHITECTURAL CLASS I: AA-M12C22A42/A44, COMPLYING WITH AAMA 611] [FLUROPOLYMER, 2-COAT COATING SYSTEM, COMPLYING WITH AAMA 2604] [FLUOROPOLYMER, 3-COAT SYSTEM, COMPLYING WITH AAMA 2605]*
   b. COLOR: CUSTOM COLOR TO MATCH ARCHITECT'S SAMPLE

F. INSTALLATION:
1. ISOLATE METAL SURFACES IN CONTACT WITH INCOMPATIBLE MATERIALS, INCLUDING WOOD, BY PAINTING CONTACT SURFACES WITH BITUMINUOUS COATING OR PRIMER, OR BY APPLYING SEALANT TAPE RECOMMENDED BY MANUFACTURER.
2. INSTALL FRAMING COMPONENTS TO PROVIDE A WEATHERPROOF SYSTEM AND TRUE IN ALIGNMENT WITH ESTABLISHED LINES AND GRADES TO THE FOLLOWING TOLERANCES:
   a. VARIATION FROM PLANE: LIMIT TO 1/8" IN 12 FEET; 1/4" OVER TOTAL LENGTH
   b. ALIGNMENT: FOR SURFACES ABUTTING LINE, LIMIT OFFSET TO 1/16". FOR SURFACES MEETING AT CORNERS, LIMIT OFFSET TO 1/32".
   c. DIAGONAL MEASUREMENTS: LIMIT DIFFERENCE BETWEEN DIAGONAL MEASUREMENTS TO 1/8"
   d. PERIMETER JOINTS: 1/2" MAXIMUM.
3. INSTALL DOORS WITHOUT WARP OR RACK. ADJUST DOORS AND HARDWARE TO PROVIDE TIGHT FIT AT CONTACT POINTS AND SMOOTH OPERATION.

084126 ALL GLASS ENTRANCE AND STOREFRONTS

A. SUBMITTALS:
1. PRODUCT DATA
2. SHOP DRAWINGS INCLUDING PLLANS, ELEVATIONS, SECTIONS AND DETAILS OF FITTINGS AND GLAZING, DOOR HARDWARE LOCATIONS.
3. HARDWARE SCHEDULE AND HARDWARE CATALOG CUTS
4. FINISH SAMPLES

B. GLASS: COMPLY WITH ASTM C1048, KINDFT (FULLY TEMPERED), CONDITION A (UNCOATED SURFACES), TYPE I (TRANSPARENT), TESTED FOR SURFACE AND EDGE COMPRESSION PER ASTM C1048 AND FOR IMPACT STRENGTH PER 16 CFR 1201 FOR CATEGORY II MATERIALS.
1. COLOR: CLEAR
2. THICKNESS:
   a. HEIGHTS TO 9'-0": 1/2" THICK
   b. HEIGHTS GREATER THAN 9'-0": 3/4" THICK
3. EXPOSED EDGES: MACHINE GROUND AND FLAT POLISHED
4. BUTT EDGES: FLAT GROUND
5. CORNER EDGES: LAP-JOINT CORNERS WITH EXPOSED EDGES POLISHED

C. RAILS AND FITTINGS: EXTRUDED ALUMINUM OF 6063-T5 ALLOY AND TEMPER AND DRY GLAZED. DRY-GLAZED RAIL MAY BE A PRESSURE ASSEMBLY UTILIZING A FIXED EPDM GASKET, OR MECHANICAL RAIL ASSEMBLIES UTILIZING TORQUED FASTENERS AND GASKETS TO AFFIX GLASS TO THE RAIL. DRY-GLAZED RAILS SHALL HAVE PRECISION-FIT END CAPS IN THE FINISH TO MATCH THE RAIL.
1. *CLEAR ANODIC, ARCHITECTURAL CLASS I: AA-M12C22A41, COMPLYING WITH AAMA 611*
2. *COLOR ANODIC, ARCHITECTURAL CLASS I: AA-M12C22A42/A44, COMPLYING WITH AAMA 611 "BLACK"*
3. *COLOR ANODIC, ARCHITECTURAL CLASS I: AA-M12C22A42/A44, COMPLYING WITH AAMA 611 "DARK BRONZE"*
4. *FLUROPOLYMER, 2-COAT COATING SYSTEM, COMPLYING WITH AAMA 605.2 "COLOR TO BE SELECTED"*
5. *STAINLESS STEEL CLAD USING ALLOY 304 FINISHED AS FOLLOWS: POLISHED OR BRUSHED*
6. *BRASS/BRONZE CLAD FINISHED AS FOLLOWS: POLISHED OR SATIN*

D. HARDWARE: PER HARDWARE SCHEDULE

E. BUTT-GLAZING SEALANTS:
1. SINGLE-COMPONENT, NONSAG, ACID-CURING, SILICONE JOINT SEALANT: ASTM C920, TYPE S, GRADE NS, CLAS 25, FOR USES NT, G, AND A.

F. DOOR STYLES:
1. *CONTINUOUS HORIZONTAL TOP AND BOTTOM RAILS*
2. *CONTINUOUS HORIZONTAL BOTOM RAIL WITH TOP CORNER FITTING ON PIVOT SIDE*
3. *CORNER FITTINGS TOP AND BOTTOM ON PIVOT CORNERS*
4. *CORNER FITTINGS TOP AND BOTTOM ON PIVOT CORNERS PLUS A LOCK FITTING ON ACTIVE SIDE OF DOOR AT THE BOTTOM CORNER.*

G. INSTALLATION:
1. DOORS AND SIDELIGHTS SHALL BE INSTALLED BY QUALIFIED INSTALLERS IN ACCORDANCE WITH INDUSTRY STANDARDS TO BE LEVEL, SQUARE AND PLUMB. DOORS SHALL BE ADJUSTED FOR SMOOTH OPERATION THROUGHOUT THE ENTIRE OPERATING RANGE AND SHALL CLOSE TO BE FLUSH WITH ADJACENT GLASS SIDELIGHTS WHEN PRESENT.

084413 GLAZED ALUMINUM CURTAIN WALLS

A. SUBMITTALS:
1. INSTALLER QUALIFICATIONS, FABRICATOR QUALIFICATIONS, SOURCE LIMITATIONS
2. PRODUCT DATA FOR EACH SYSTEM SPECIFIED, INCLUDING ACCESSORIES,SEALANTS, AND PRODUCTS TO BE SUPPLIED FOR A COMPLETE INSTALLATION.
3. SAMPLES: FULL RANGE OF MANUFUCTURERS STANDARD COLOR, FINISH AND OTHER OPTIONS REQUIRED FOR SELECTION.
4. SHOP DRAWINGS STAMPED AND SIGNED BY LICENSED ENGINEER: INCLUDING DETAILS AT JOINTS AND PERIMETER CONDITIONS,FLASHINGS, CONNECTION AND INTERFACE WITH WORK BY OTHERS, EXPANSION AND CONTRACTION JOINT, ANY FIELD WELDING REQUIREMENTS, HARDWARE SCHEDULE.
5. CALCULATIONS STAMPED AND SIGNED BY LICENSED ENGINEER: DESIGN LOADS, SYSTEM DIMENSIONS, TOLERANCES, DETAILS AT JOINTS, PERIMETER CONDITIONS, FLASHING, CONNECTIONS TO WORK BY OTHERS, EXPANSION AND CONTRACTION JOINT LOCATIONS, AND ANY FIELD WELDING. FOR ENTRANCES, INCLUDE HARDWARE SCHEDULE.
6. SAMPLE WARRANTIES
7. MOCK-UP: ON SITE, INCLUDING HEAD, JAMB AND SILL CONDITIONS AND INTERFACE WITH OTHER WORK.

B. DELEGATED DESIGN : ENGAGE A QUALIFIED PROFESSIONAL ENGINEER TO DESIGN GLAZED ALUMINUM CURTAIN WALLS TO COMPLY WITH PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA, INCLUDING ANALYSIS DATA. SUBMIT SIGNED AND SEALED DRAWINGS BY THE QUALIFIED PROFESSIONAL ENGINEER.

C. QUALITY ASSURANCE:
1. FABRICATOR: COMPANY SPECIALIZING IN MANUFACTURING ALUMINUM GLAZING SYSTEMS WITH MINIMUM THREE YEARS DOCUMENTED EXPERIENCE
2. INSTALLER: COMPANY SPECIALIZING IN INSTALLING ALUMINUM GLAZING SYSTEMS WITH MINIMUM THREE YEARS DOCUMENTED EXPERIENCE
3. MANUFACTURER'S WARRANTY: 2 YEARS

D. MATERIALS:
1. ALUMINUM SHEET: ASTM B 209 (ASTM B 209M), ALLOY AND TEMPER RECOMMENDED BY MANUFACTURER FOR TYPE OF USE AND FINISH INDICATED.
2. ALUMINUM EXTRUSIONS: ASTM B 221 (ASTM B221M), ALLOY AND TEMPER RECOMMENDED BY MANUFACTURER FOR TYPE OF USE AND FINISH INDICATED.

E. ALUMINUM FRAMED STOREFRONTS: AT INTERIOR LOCATIONS, PROVIDE MANUFACTURER'S STANDARD NON-THERMALLY BROKEN STOREFRONT SYSTEM MATCHING THE EXTERIOR SYSTEM. AT EXTERIOR LOCATIONS, PROVIDE MANUFACTURER'S STANDARD THERMALLY BROKEN, EXTRUDED ALUMINUM STOREFRONT SYSTEM CONSISTING OF FRAMING MEMBERS OF THICKNESS REQUIRED AND REINFORCED AS REQUIRED TO SUPPORT IMPOSED LOADS AND TO FIT THE DIMENSIONS AND DEPTHS INDICATED ON THE CONSTRUCTION DOCUMENTS AND COMPLYING WITH THE FOLLOWING:
1. STRUCTURAL PERFORMANCE: PROVIDE SYSTEMS, INCLUDING ANCHORAGE, CAPABLE OF WITHSTANDING THE FOLLOWING LOADS:
   a. MAIN FRAMING MEMBER DEFLECTION: LIMITED TO 1/175 OF CLEAR SPAN OR 3/4" WHICHEVER IS SMALLER.
   b. STRUCTURAL TESTING: SYSTEMS WHEN TESTED ACCORDING TO ASTM E 330 AT 150 PERCENT OF INWARD AND OUTWARD WIND-LOAD DESIGN PRESSURE DO NOT EVIDENCE MATERIAL FAILURES, STRUCTURAL DISTRESS, DEFLECTION FAILURES, OR PERMANENT DEFORMATION OF MAIN FRAMING MEMBERS ECEEDING 0.2 PERCENT OF CLEAR SPAN.
2. AIR INFILTRATION: LIMITED TO 0.06 CFM/SQ. FT. (0.03 L/s PER SQ. IN.) OF SYSTEM SURFACE AREA WHEN TESTED ACCORDING TO ASTM E 283 AT A STATIC-AIR-PRESSURE DIFFERENCE OF 1.57 lbf/sq. ft. (75 Pa)
3. WATER PENETRATION: SYSTEMS DO NOT EVIDENCE WATER LEAKAGE WHEN TESTED ACCORDING TO ASTM E 331 AT MINIMUM DIFFERENTIAL PRESSURE OF 20 PERCENT OF POSITIVE WIND-LOAD DESIGN PRESSURE, BUT NOT LESS THAN 6.24 lbf/sq. ft. (300 Pa).
4. AVERAGE U-FACTOR: NOT MORE THAN 0.69 Btu/sq. ft. x h x deg. f (3.92 W/sq. m x K) PER AAMA 1503.
5. DOORS: 1-3/4" THICK GLAZED DOORS WITH MINIMUM 0.125" THICK EXTRUDED TUBULAR RAIL AND STILE MEMBERS. MECHANICALLY FASTENED CORNERS WITH REINFORCED BRACKETS THAT ARE DEEP PENETRATION AND FILLET WELDED OR THAT INCORPORATE CONCEALED TIE-RODS, SNAP-ON EXTRUDED ALUMINUM GLAZING STOPS, AND PREFORMED GASKETS.
   a. INTERIOR DOORS: GLAZE WITH 1/4" CLEAR TEMPERED GLASS. PROVIDE ANSI/BHMA A156.16 SILENCERS. THREE ON STRIKE JAMB OF SINGLE DOOR FRAMES AND TWO ON HEAD OF DOUBLE DOOR FRAMES.
   b. EXTERIOR DOORS: GLAZE WITH INSULATED TEMPERED GLASS UNITS MATCHING STOREFRONT GLASS OR CLEAR INSULATED GLASS PER CONSTRUCTION DRAWINGS. PROVIDE COMPRESSION WEATHERSTRIPPING AT FIXED STOPS. AT OTHER LOCATIONS, PROVIDE SLIDING WEATHERSTRIPPING RETAINED IN ADJUSTABLE STRIP MORTISED INTO DOOR EDGE.
   c. HARDWARE: PER DOOR SCHEDULE
6. FASTENERS AND ACCESSORIES: COMPATIBLE WITH ADJACENT MATERIALS, CORROSION-RESISTANT. NONSTAINING, AND NONBLEEDING. USE CONCEALED FASTENERS EXCEPT FOR APPLICATION OF DOOR HARDWARE.
7. FABRICATION: FABRICATE FRAMING IN PROFILES INDICATED. PROVIDE SUBFRAMES AND REINFORCING AS REQUIRED FOR A COMPLETE SYSTEM. FACTORY ASSEMBLE COMPONENTS TO GREATEST EXTENT POSSIBLE. DISASSEMBLE COMPONENTS ONLY AS NECESSARY FOR SHIPMENT AND INSTALLATION.
   a. DOORS FRAMING: REINFORCE TO SUPPORT IMPOSED LOADS. FACTORY ASSEMBLE DOOR AND FRAME UNITS AND FACTORY INSTALL HARDWARE TO GREATEST EXTENT POSSIBLE. REINFORCE DOOR AND FRAME UNITS FOR HARDWARE INDICATED. CUT, DRILL, AND TAP FOR FACTORY-INSTALLED HARDWARE BEFORE FINISHING COMPONENTS.
8. ALUMINUM FINISH: COMPLY WITH NAAMM'S "METAL FINISHES MANUAL FOR ARCHITECTURAL AND METAL PRODUCTS"
   a. *[CLEAR ANODIC, ARCHITECTURAL CLASS I: AA-M12C22A41, COMPLYING WITH AAMA 611] [COLOR ANODIC, ARCHITECTURAL CLASS I: AA-M12C22A42/A44, COMPLYING WITH AAMA 611] [FLUROPOLYMER, 2-COAT COATING SYSTEM, COMPLYING WITH AAMA 2604] [FLUOROPOLYMER, 3-COAT SYSTEM, COMPLYING WITH AAMA 2605]*
   b. COLOR: CUSTOM COLOR TO MATCH ARCHITECT'S SAMPLE

F. INSTALLATION:
1. ISOLATE METAL SURFACES IN CONTACT WITH INCOMPATIBLE MATERIALS, INCLUDING WOOD, BY PAINTING CONTACT SURFACES WITH BITUMINUOUS COATING OR PRIMER, OR BY APPLYING SEALANT TAPE RECOMMENDED BY MANUFACTURER.
2. INSTALL FRAMING COMPONENTS TO PROVIDE A WEATHERPROOF SYSTEM AND TRUE IN ALIGNMENT WITH ESTABLISHED LINES AND GRADES TO THE FOLLOWING TOLERANCES:
   a. VARIATION FROM PLANE: LIMIT TO 1/8" IN 12 FEET; 1/4" OVER TOTAL LENGTH
   b. ALIGNMENT: FOR SURFACES ABUTTING LINE, LIMIT OFFSET TO 1/16". FOR SURFACES MEETING AT CORNERS, LIMIT OFFSET TO 1/32".
   c. DIAGONAL MEASUREMENTS: LIMIT DIFFERENCE BETWEEN DIAGONAL MEASUREMENTS TO 1/8"
   d. PERIMETER JOINTS: 1/2" MAXIMUM.
3. INSTALL DOORS WITHOUT WARP OR RACK. ADJUST DOORS AND HARDWARE TO PROVIDE TIGHT FIT AT CONTACT POINTS AND SMOOTH OPERATION.

087100 DOOR HARDWARE

A. SUBMITTALS: PRODUCT DATA AND HARDWARE SCHEDULE INDICATING HARDWARE ITEM, FINISH, AND QUANTITY LOCATED ON EACH DOOR WITH DOOR AND HARDWARE SET NUMBERING CORRESPONDING TO THOSE USED IN CONSTRUCTION DOCUMENTS.

B. HARDWARE: FURNISH PRODUCTS AS SPECIFIED IN THE HARDWARE SETS CONTAINED IN THE CONSTRUCTION DOCUMENTS AND AS FOLLOWS:
1. HINGES:
   a. QUANTITY: 3 HINGES FOR DOORS 90" OR LESS IN HEIGHT; 4 HINGES FOR DOORS MORE THAN 90" IN HEIGHT.
   b. BEARING: BALL BEARING HINGES AT ALL LOCATIONS.
   c. MATERIAL: STAINLESS STEEL OR BRASS/BRONZE HINGES WITH STAINLESS STEEL PINS FOR EXTERIOR.
   d. PINS: NONREMOVABLE PINS FOR EXTERIOR AND PUBLIC INTERIOR EXPOSURE; NON-RISING ELSEWHERE.
2. LOCKSETS AND LATCHSETS:
   a. BORED LOCKS AND LATCHES: BHMA A156.2, SERIES 4000, GRADE 1
   b. EXIT DEVICES: BHMA A156.3, GRADE 1
   c. AUXILIARY LOCKS: BHMA A156.5, GRADE 1
   d. INTERCONNECTED LOCKS AND LATCHES: BHMA A156.12, SERIES 5000, GRADE 1
   e. MORTISE LOCKS AND LATCHES: BHMA A156.13, SERIES 1000, GRADE 1
   f. TRIM: LEVER HANDLE STYLE PER CONSTRUCTION DOCUMENTS OR IF NOT SPECIFIED, MATCH BUILDING STANDARD. IF NOT SPECIFIED AND NO STANDARD EXISTS, MATCH SCHLAGE "OMEGA"; TRIM ON EXIT DEVICES SHALL MATCH LOCKSETS.
   g. KEYING: PROVIDE CONSTRUCTION KEYING AND COORDINATE FINAL KEYING WITH OWNER'S MASTER-KEY SYSTEM. FURNISH KEY CONTROL SYSTEM, INCLUDING CABINET.
3. CLOSERS:
   a. LOCATION: MOUNT CLOSERS ON INTERIOR (ROOM SIDE) OF DOOR OPENING. PROVIDE REGULAR-ARM, PARALLEL-ARM, OR TOP-JAMB-MOUNTED CLOSERS AS NECESSARY.
   b. OPTIONS: FURNISH ADJUSTABLE DELAYED OPENING (ADA ACCESSIBLE) FEATURE ON ALL CLOSERS.
4. STOPS: FURNISH AND INSTALL WALL OR FLOOR STOPS AS APPROPRIATE FOR ALL DOORS WHETHER INDICATED OR NOT.
5. WEATHERSTRIPPING: AT ALL EXTERIOR DOORS AND AS SCHEDULED, PROVIDE WEATHERSTRIPPING ON HEAD AND JAMBS AND DRIP-SWEEP AT SILL.
6. SMOKE GASKETING: PROVIDE SMOKE GASKETING AT ALL FIRE-RATED DOORS.
7. THRESHOLDS: PROVIDE THRESHOLDS AT ALL EXTERIOR DOORS AND AS SCHEDULED.

C. INSTALLATION: MOUNT HARDWARE IN LOCATIONS RECOMMENDED BY THE DOOR AND HARDWARE INSTITUTE, UNLESS OTHERWISE INDICATED.

08800 GLAZING

A. SUBMITTALS: PRODUCT DATA AND (2) 12" SQUARE SAMPLES OF EACH TYPE OF GLASS SPECIFIED.

B. QUALITY STANDARDS:
1. FIRE RESISTANCE-RATED ASSEMBLIES: PRODUCTS IDENTICAL TO THOSE TESTED PER NFPA 252 FOR DOORS AND NFPA 257 FOR WINDOW ASSEMBLIES; BOTH LABELED AND LISTED BY UL OR ANOTHER TESTING AND INSPECTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
2. SAFETY GLASS: CATEGORY II MATERIALS COMPLYING WITH TESTING REQUIREMENTS IN 16 CFR 1201 AND ANSI Z97.1.
3. GLAZING PUBLICATIONS: WHERE APPLICABLE, COMPLY WITH WITH THE PUBLISHED RECOMMENDATIONS OF THE FOLLOWING:
   a. GANA PUBLICATIONS: "GLAZING MANUAL" AND "LAMINATED GLASS DESIGN GUIDE".
   b. AAMA PUBLICATIONS: AAMA GDSG-1, "GLASS DESIGN FOR SLOPED GLAZING", AND AAMA TIR-A7. "SLOPED GLAZING GUIDELINES".
   c. SIGMA PUBLICATIONS: SIGMA TM-3000, "VERTICAL GLAZING GUIDELINES" AND SIGMA TB-3001, "SLOPED GLAZING GUIDELINES".

C. GLASS
1. FLOAT GLASS: ASTM C 1036, TYPE I, QUALITY q3
2. HEAT-TREATED FLOAT GLASS: ASTM C 1048, TYPE I, QUALITY q3, HEAT STRENGTHENED OR FULLY TEMPERED WHERE INDICATED AND WHERE REQUIRED BY CODE OR INSTALLATION CONDITIONS.
3. COATED GLASS: ASTM C 1048. CONDITION C, TYPE I, QUALITY q3, HEAT STRENGTHENED OR FULLY TEMPERED WHERE INDICATED AND WHERE REQUIRES BY CODE OR INSTALLATION CONDITIONS.
4. WIRED GLASS: TYPE II, CLASS I, QUALITY q8, FORM 1 POLISHED, WITH m2 SQUARE MESH, .25" THICK.
5. PATTERNED GLASS: ASTM C 1036, TYPE II, CLASS 1 , FORM 3, QUALITY q8, FINISH F1, PATTERN PER CONSTRUCTION DRAWINGS.
6. TEMPERED PATTERNED GLASS: ASTM C 1048. TYPE II, CLASS 1, FORM 3, QUALITY q8, FINISH F1, PATTERN PER CONSTRUCTION DRAWINGS.
7. MIRROR GLASS: ASTM C 1036, TYPE I, CLASS 1, QUALITY q1, SILVER COATED PER FS DDM411C, 6.0mm THICK, WITH EDGES FLAT POLISHED.

D. FABRICATED GLASS PRODUCTS:
1. SEALED INSULATING-GLASS UNITS: PREASSEMBLED UNITS COMPLYING WITH ASTM E 774 FOR CLASS CBA UNITS WITH TWO SHEETS OF GLASS SEPARATED BY A 1/2-INCH DEHYDRATED SPACE FILLED WITH AIR.
   a. VISION GLASS: PPG SOLARBAN 70XL SOLAR CONTROL LOW-E GLASS OR APPROVED EQUAL
      • 1/4" CLEAR, 1/2" AIR SPACE, 1/4" CLEAR - PROVIDE LOW-E COATING ON 2ND SURFACE.
      • VISIBILE LIGHT TRANSMITTANCE: 64%
      • SOLAR HEAT GAIN COEFFICIENT: 0.27
   b. SPANDREL GLASS: TO MATCH VISION GLASS WITH OPACIFIER APPLIED TO FOURTH SURFACE, COLOR TO BE SELECTED FROM MFR'S FULL RANGE.
   c. WARRANTY: 10 YEAR WARRANTY TO INCLUDE REPLACEMENT OF SEALED UNITS EXHIBITING SEAL FAILURE, INTERPANE DUSTING OR MISTING.

E. INSTALLATION:
1. COMPLY WITH COMBINED RECOMMENDATIONS OF MANUFACTURERS OF GLASS, SEALANTS, GASKETS, AND OTHER GLAZING MATERIALS, UNLESS MORE STRINGENT REQUIREMENTS ARE CONTAINED IN GANA'S "GLAZING MANUAL".
2. SET GLASS LITES IN EACH SERIES WITH UNIFORM PATTERN, DRAW, BOW, AND SIMILAR CHARACTERISTICS.
3. AFTER GLASS INSTALLATION IS COMPLETE, REMOVE GLAZING MATERIALS AND LABELS FROM FINISHED SURFACES, AND THOROUGHLY CLEAN GLASS AND ADJACENT FRAMING AND SURFACES. REPEAT AS NECESSARY PRIOR TO FINAL WALK-THROUGH.

- END DIVISION 8 -

DIVISION 9 - FINISHES

092216 NON-STRUCTURAL METAL FRAMING

A. SUBMITTALS: PRODUCT DATA FOR EACH TYPE

B. STEEL FRAMING MEMBERS: COMPLY WITH ASTM C754 IN DEPTHS AND GAGES AS INDICATED IN THE CONSTRUCTION DRAWINGS AND AS FOLLOWS:
1. STEEL SHEET COMPONENTS: COMPLY WITH ASTM C645 REQUIREMENTS FOR METAL UNLESS OTHERWISE INDICATED.
2. PROTECTIVE COATING: ASTM A 653/A 653M G60 (Z180), HOT-DIP GALVANIZED UNLESS OTHERWISE INDICATED.

C. SLIP-TYPE HEAD JOINTS: WHERE INDICATED PROVIDE:
1. DOUBLE-TRACK SYSTEM: ASTM C 645 TOP OUTER TRACKS, INSIDE TRACK WTIH 2-INCH DEEP FLANGES IN THICKNESS NOT LESS THAN INDICATED FOR STUDS AND FASTENED TO STUDS, AND OUTER TRACK SIZED TO FRICTION-FIT OVER INNER TRACK.

D. FIRESTOP TRACKS: TOP TRACK MANUFACTURED TO ALLOW PARTITION HEADS TO EXPAND AND CONTRACT W/ MOVEMENT OF STRUCTURE WHILE MAINTAINING CONTINUITY OF FIRE-RESISTANCE-RATED ASSEMBLY INDICATED

E. FLAT STRAP AND BACKING PLATE: STEEL SHEET FOR BLOCKING AND BRACING IN LENGTH AND WIDTH INDICATED. MIN. BASE-METAL THICKNESS: 0.0296"

F. COLD-ROLLED BRIDGING: STEEL, 0.0538" MIN. BASE METAL THICKNESS W/ MIN. 1/2" WIDE FLANGES.
1. DEPTH: 1 1/2" U.N.O.
2. CLIP ANGLE: NOT LESS THAN 1-1/2" BY 1-1/2", 0.068" THICK, GALVANIZED STEEL

G. SUSPENSION SYSTEMS:
1. TIE WIRE: ASTM A 641/A 641M, CLASS 1 ZINC COATING, SOFT TEMPE, 0.062" DIAMETER OR DOUBLE STRAND OF .048" DIAMTER WIRE.
2. WIRE HANGERS: ASTM A 641/A 641M, CLASS 1 ZINC COATING, SOFT TEMPER, 0.016" DIAMETER.
3. CARRYING CHANNELS (MAIN RUNNERS): COLD-ROLLED, COMMERCIAL-STEEL SHET W/ BASE-METAL THICKNESS OF 0.0538" AND MIN. 1/2" WIDE FLANGES, DEPTH 2-1/2" U.N.O.
4. FURRING CHANNELS: USE ONE OF THE FOLLOWING
   a. COLD-ROLLED CHANNELS: 0.0538" UNCOATED-STEEL THICKNESS, W/ MIN. 1/2" WIDE FLANGES, 3/4" DEEP.
   b. STEEL STUDS AND TRACKS: ASTM C 645, MIN. BASE-METAL THICKNESS: 0.0329"
   c. HAT-SHAPED, RIGID FURRING CHANNELS: ASTM C 645, 7/8" DEEP, MIN. BASE-METAL THICKNESS: 0.0329"

096513 RESILIENT BASE AND ACCESSORIES

A. SUBMITTALS: PRODUCT DATA AND THREE (3) SAMPLES OF EACH PRODUCT

B. ATTIC STOCK: FURNISH 20' OF EACH COLOR AND TYPE OF WALL BASE PACKAGED WITH PROTECTIVE COVERING AND LABELED FOR STORAGE.

C. RESILIENT WALL BASE: ASTM F 1861, TYPE TS (RUBBER, VULCANIZED THERMOSET), GROUP I (SOLID, HOMOGENEOUS)
1. COLORS,STYLE, AND SIZES AS INDICATED IN DRAWINGS.
2. THICKNESS: 0.125 INCHES
3. LENGTH: COILS IN MANUFACTURER'S STANDARD LENGTH
4. INSIDE AND OUTSIDE CORNERS: PREFORMED

D. VINYL MOLDING ACCESSORY:
1. LOCATIONS: TRANSITIONS FROM CONCRETE TO CARPET AND WHERE INDICATED IN DRAWINGS
2. COLOR, PROFILE, AND DIMENSIONS: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE.

E. WALL BASE AND ACCESSORY INSTALLATION:
1. CONFIRM THAT SOLID BACKING IS PROVIDED BEHIND ALL WALL BASE. AREAS WHERE GYPSUM BOARD IS HELD MORE THAN 1/2" ABOVE SLAB SHALL BE FILLED IN PRIOR TO BASE INSTALLATION.
2. INSTALL WALL BASE WITH MANUFACTURER'S RECOMMENDED ADHESIVE IN MAXIMUM LENGTHS POSSIBLE. APPLY TO WALLS, COLUMNS, PILASTERS, CASEWORK, AND OTHER PERMANENT FIXTURES.
3. INSTALL TRANSITION STRIPS WHERE FLOORING MATERIALS MEET OR WHERE EDGE OF TILE IS EXPOSED AS INDICATED IN THE FINISH SCHEDULE.

097720 FIBERGLASS REINFORCED PLASTIC PANELS (FRP)

A. INSTALL FRP PANELS TO 8'-0" HIGH AND INCLUDING TRIM AND ACCESSORIES HIGH ON ALL WALLS BEHIND JANITIOR SINKS AND MOP BASINS (COLOR TO BE SELECTED).

B. BULLET RESISTANT FIBER-GLASS REINFORCED STRUCTURAL POLYESTER LAMINATE PANELS TO BE INSTALLED BENEATH SECURITY COUNTER, FULL LENGTH OF SECURITY ROOM UP TO 2'-8" AFF. INSTALL PER MANUFACTURER'S RECOMMENDATION.
1. PRODUCTS: FG-300 BY INSULGARD OR APPROVED EQUAL
   a. FIBERGLASS COMPOSITE PANEL WITH WOVEN ROVING BALLISTIC GRADE FIBERGLASS AND RESIN FORMED IN RIGID PANEL.
   b. RATING: UL 752 LEVEL 3, NIJ TYPE IIIA
   c. THICKNESS: 1/2"
2. INSTALLATION:
   a. BUTT JOINTS ARE BALLISTICALLY WEAK, REINFORCE USING A 4" WIDE STRIP OF SAME MATERIAL AS A BATTEN, FULL LENGTH OF JOINT.
   b. REST FULL LOAD OF PANEL TO REST SECURELY AGAINST SLAB.

099123 PAINTING

A. SUBMITTALS: PRODUCT DATA AND THREE (3) DRAW-DOWN SAMPLES OF EACH COLOR AND SHEEN SPECIFIED.

B. PRODUCTS: PROVIDE MANUFACTURER'S BEST QUALITY PAINTS OF COLOR AND SHEEN AS INDICATED IN THE CONSTRUCTION DOCUMENTS THAT ARE FORMULATED AND RECOMMENDED BY MANUFACTURER FOR APPLICATION INDICATED. PROVIDE MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND WITH SUBSTRATES.

C. APPLICATION:
1. EQUIPMENT: APPLY COATINGS BY BRUSH, ROLLER, SPRAY, OR OTHER APPLICATORS ACCORDING TO COATING MANUFACTURER'S WRITTEN INSTRUCTIONS. WHEN SPRAYED, EXTERIOR COATINGS SHALL BE BACK-ROLLED FOLLOWING SPRAY APPLICATION. USE ROLLERS FOR FINISH COAT ON INTERIOR WALLS AND CEILINGS.
2. PIGMENTED (OPAQUE) FINISHES: COMPLETELY COVER SURFACES TO PROVIDE A SMOOTH, OPAQUE SURFACE OF UNIFORM APPEARANCE. PROVIDE A FINISH FREE OF CLOUDINESS, SPOTTING, HOLIDAYS, LAPS, BRUSH MARKS, RUNS, SAGS, ROPINESS, OR OTHER SURFACE IMPERFECTIONS.
3. TRANSPARENT (CLEAR) FINISHES: USE MULTIPLE COATS TO PRODUCE A GLASS-SMOOTH SURFACE FILM OF EVEN LUSTER. PROVIDE A FINISH FREE OF LAPS, RUNS, CLOUDINESS, COLOR IRREGULARITY, BRUSH MARKS, ORANGE PEEL, NAIL HOLES OR OTHER SURFACE IMPERFECTIONS.

D. PAINT SYSTEMS - EXTERIOR: PROVIDE THE FOLLOWING PAINT SYSTEMS FOR THE EXTERIOR SUBSTRATE INDICATED:
1. TILT-UP CONCRETE WALL PANELS: TEXTURED CEMENT-BASED ACRYLIC COATING (SHERWIN WILLIAMS ULTRACRETE, OR EQUAL); TWO COATS OVER PRIMER. PAINTING OVER SEALANT JOINTS IS PROHIBITED.
2. CONCRETE, STUCCO, OR MASONRY: SEMIGLOSS ACRYLIC ENAMEL: TWO COATS OVER PRIMER
3. CONCRETE MASONRY UNITS: SEMIGLOSS ACRYLIC ENAMEL: TWO COATS OVER BLOCK FILLER
4. EXTERIOR GYSPUM SOFFIT BOARD: SEMIGLOSS ACRYLIC ENAMEL: TWO COATS OVER PRIMER
5. SMOOTH WOOD AND WOOD TRIM: SEMIGLOSS ALKYD ENAMEL: TWO COATS OVER PRIMER
6. FERROUS METAL: SEMIGLOSS ALKYD ENAMEL: TWO COATS OVER RUST-INHIBITIVE PRIMER
7. ZINC-COATED METAL: SEMIGLOSS ALKYD ENAMEL: TWO COATS OVER GALVANIZED METAL PRIMER.
8. ALUMINUM: SEMIGLOSS ALKYD ENAMEL: TWO COATS OVER PRIMER

A. PAINT SYSTEMS - INTERIOR: PROVIDE THE FOLLOWING PAINT SYSTEMS FOR THE INTERIOR SUBSTRATE INDICATED
1. CONCRETE AND MASONRY: ACRYLIC ENAMEL; SHEEN AS INDICATED: TWO COATS OVER PRIMER
2. CONCRETE MASONRY UNITS: ACRYLIC ENAMEL; SHEEN AS INDICATED: TWO COATS OVER BLOCK FILLER
3. GYPSUM BOARD: ACRYLIC ENAMEL; SHEEN AS INDICATED: TWO COATS OVER PRIMER
4. WOODWORK: SEMI-GLOSS ALKYD ENAMEL: TWO COATS OVER PRIMER
5. STAINED WOODWORK: ALKYD-BASED, SATIN VARNISH: TWO COATS OVER SEALER AND WOOD STAIN
6. NATURAL FINISH WOODWORK: ALKYD-BASED, SATIN VARNISH: TWO COATS OVER SEALER
7. FERROUS METAL: SEMIGLOSS ACRYLIC ENAMEL: TWO COATS OVER FERROUS METAL PRIMER
8. ZINC COATED METAL: ACRYLIC ENAMEL; SHEEN AS INDICATED: TWO COATS OVER GALVANIZED METAL PRIMER

- END DIVISION 9 -

DIVISION 10 - SPECIALTIES

102113 TOILET COMPARTMENTS

A. SUBMITTALS: SHOP DRAWINGS INCLUDING DIMENSIONED PLANS, ELEVATIONS, CONNECTION DETAILS, AND DETAILS OF WALL SUPPORTS, PRODUCT DATA, AND COLOR CHARTS
B. PANEL, PILASTER, AND DOOR MATERIALS (TYPE AS INDICATED ON DRAWINGS):
1. **SOLID-PLASTIC, POLYMER RESIN: HIGH-DENSITY POLYETHYLENE WITH HOMOGENOUS COLOR, NOT LESS THAN 1" THICK, WITH SEAMLESS CONSTRUCTION AND EASED EDGES.**
2. **COLOR TBD BY OWNER AND ARCHITECT**
C. PILASTER SHOES AND SLEEVES (CAPS): STAINLESS STEEL, NOT LESS THAN 3" HIGH)
D. BRACKETS: STIRRUP, CHROME-PLATED, NONFERROUS, CAST ZINC ALLOY (ZAMAC), STAINLESS STEEL, OR CLEAR ANODIZED ALUMINUM.
E. FABRICATION: MOUNTING AND BRACING TYPE AS INDICATED ON CONSTRUCTION DOCUMENTS
1. DOORS: 24" WIDE IN-SWINGING DOORS FOR STANDARD COMPARTMENTS; 36" WIDE OUT-SWINGING DOORS WITH MINIMUM 32" WIDE CLEAR OPENING FOR HANDICAP ACCESSIBLE COMPARTMENTS, UNLESS NOTED OTHERWISE.
2. DOOR HARDWARE: CAST ZINC ALLOY (ZAMAC), STAINLESS STEEL, OR CLEAR ANODIZED ALUMINUM COMPLYING WITH AMERICANS WITH DISABILITIES ACT FOR HANDICAP ACCESSIBLE COMPARTMENTS.
   a. HINGES: SELF-CLOSING, ADJUSTABLE TO HOLD DOOR OPEN AT ANY ANGLE UP TO 90 DEGREES.
   b. LATCHES AND KEEPERS: RECESSED UNIT DESIGNED FOR EMERGENCY ACCESS AND WITH COMBINATION RUBBER-FACED DOOR STRIKE AND KEEPER.
   c. COAT HOOK: COMBINATION HOOK AND RUBBER-TIPPED BUMPER, SIZED TO PREVENT DOOR FROM HITTING COMPARTMENT-MOUNTED ACCESSORIES.
   d. DOOR BUMPER: RUBBER-TIPPED BUMPERS AT OUT-SWINGING DOORS
   e. DOOR PULL: PROVIDE AT OUT-SWINGING DOORS.
F. INSTALLATION: INSTALL UNITS RIGID, STRAIGHT, LEVEL, AND PLUMB WITH NOT MORE THAN 1/2" BETWEEN PILASTERS AND PANELS AND NOT MORE THAN 1" BETWEEN PANELS AND WALLS. PROVIDE BRACKETS, PILASTER SHOES, BRACING, AND OTHER COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION. USE THEFT-RESISTANT EXPOSED FASTENERS FINISHED TO MATCH HARDWARE. USE SLEEVE NUTS FOR THROUGH-BOLT APPLICATIONS.
1. ALIGN BRACKETS FOR PILASTERS WITH BRACKETS AT WALLS.
2. SET HINGES ON IN-SWINGING DOORS TO HOLD OPEN APPROXIMATELY 30 DEGREES FROM CLOSED POSITION WHEN UNLATCHED. SET HINGES ON OUT-SWINGING DOORS TO RETURN TO FULLY CLOSED POSITION.

101423 SIGNAGE

REFERENCE CONSTRUCTION DRAWINGS FOR TYPE, SIZE, AND LOCATIONS FOR SIGNAGE.

102239 OPERABLE PARTITIONS:

REFERENCE CONSTRUCTION DOCUMENTS FOR TYPE, SIZE, FINISH, AND LOCATION OF ANY OPERABLE PARTITIONS.

102800 TOILET AND BATH ACCESSORIES

REFERENCE CONSTRUCTION DRAWINGS FOR TYPE, QUANTITY, AND LOCATIONS OF TOILET AND BATH ACCESSORIES.

104416 FIRE EXTINGUISHERS AND CABINETS:

REFERENCE CONSTRUCTION DRAWINGS FOR TYPE, SIZE AND LOCATIONS OF FIRE EXTINGUISHERS AND CABINETS.

- END DIVISION 10 -

DIVISION 13 - SPECIAL CONSTRUCTION

133419 METAL BUILDING SYSTEMS

A. SUBMITTALS: DESIGN DRAWINGS AND STRUCTURAL CALCULATIONS SIGNED AND SEALED BY A PROFESSINAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED, AND COLOR SAMPLES FOR ROOF AND WALLS PANELS AND TRIM.

B. STRUCTURAL PERFORMANCE: PROVIDE MANUFACTURER'S STANDARD RIGID FRAME BUILDING SYSTEM TO MEET THE PROPOSED CONFIGURATION CAPABLE OF WITHSTANDING STRUCTURAL AND OTHER LOADS, THERMALLY INDUCED MOVEMENT, AND EXPOSURE TO WEATHER WITHOUT FAILURE OR INFILTRATION OF WATER INTO BUILDING INTERIOR.
1. ENGINEER METAL BUILDING SYSTEMS ACCORDING TO PROCEDURES IN MBMA'S "LOW RISE BUILDING SYSTEMS MANUAL" INCLUDING DESIGN LOADS UNLESS MORE SPECIFIC LOADS ARE INDICATED.
2. SUBMIT DESIGN CERTIFICATION, SIGNED AND SEALED BY A QUALIFIED PROFESSIONAL ENGINEER. INDICATE NAME AND LOCATION OF BUILDING PROJECT, NAME OF MANUFACTURER, ORDER NUMBER, NAME OF CONTRACTOR, GOVERNING BUILDING CODE AND STANDARDS INCLUDING YEAR OF EDITION, DESIGN LOADS AND LOAD COMBINATIONS, BUILDING USE CATEGORY, AND LOAD IMPORTANCE FACTORS.
3. WIND-UPLIFT RESISTANCE OF ROOF PANEL ASSEMBLIES: UL 580, CLASS 90
4. DRIFT: WHEN RIGID MATERIALS SUCH AS BRICK, CMU, OR CONCRETE ARE INDICTAED FOR THE BUILDING SKIN, DRIFT SHALL BE LIMITED AS NECESSARY TO PREVENT CRACKING OF MORTAR JOINTS OR CONCRETE.
5. COMPLY WITH AISC S335, "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN, PLASTIC DESIGN", OR AISC S342 LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"; AND AISI SG-671 "SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS OR AISI SG-911 "LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATION FOR STRUCTURAL MEMBERS".

C. STRUCTURAL FRAMING MATERIALS:
1. STRUCTURAL STEEL SHAPES: ASTM A 36/A 36M OR ASTM A 529/A 529M.
2. STEEL PLATE, BAR, OR STRIP: ASTM A 529/A 529M, ASTM A 570/A 570M, OR ASTM A 572/A 572M; 50,000-psi MINIMUM YIELD STRENGTH.
3. STEEL TUBING OR PIPE: ASTM A 500, GRADE B; OR ASTM A 53, GRADE B
4. STRUCTURAL STEEL SHEET: HOT ROLLED, ASTM A 1011/A 1011M. STRUCTURAL STEEL GRADE 50 (340) OR GRADE 55 (380); OR COLD ROLLED, ASTM 1008/A 1008M, STRUCTURAL STEEL.
5. ZINC-COATED (GALVANIZED) STEEL SHEET: ASTM 653/A 653M, STRUCTURAL QUALITY, GRADE 50, WITH G60 (Z180) COATING.
6. STEEL JOISTS AND GIRDERS: COMPLY WITH SJI'S "STANDARD SPECIFICATIONS, LOAD TABLES, AND WEIGHT TABLES FOR STEEL JOISTS AND JOIST GIRDERS," WITH STEEL ANGLE TOP AND BOTTOM CHORD MEMBERS.

D. ROOF AND WALL PANELS:
1. METAL PANELS: STEEL SHEET, ZINC COATED BY THE HOT-DIP PROCESS, COMPLYING WITH ASTM A 653/A 653M, G90 (Z275), STRUCTURAL QUALITY, AND PREPAINTED BY THE COIL COATING PROCESS TO COMPLY WITH ASTM A 755/A 775M.
2. RIBBED ROOF PANELS: 0.0179 INCH THICK METAL PANELS FACTORY FORMED TO PROVIDE 24-INCH COVERAGE; WITH 3-INCH HIGH RAISED TRAPEZOIDAL MAJOR RIBS AT PANEL EDGES, AND INTERMEDIATE STIFFENING RIBS SYMMETRICALLY SPACED BETWEEN MAJOR RIBS. DOUBLE-FOLDED MECHANICALLY SEAMED PANELS. GALVALUME FINISH.
3. LAP-SEAM WALL PANELS: 0,179 INCH THICK METAL PANELS FACTORY FORMED TO PROVIDE 36-INCH COVERAGE WITH RAISED TRAPEZOIDAL MAJOR RIBS AT 12" O.C., AND INTERMEDIATE STIFFENING RIBS SYMMETRICALLY SPACED BETWEEN MAJOR RIBS. DESIGN PANELS FOR MECHANICAL ATTACHMENT TO STRUCTURE WITH EXPOSED FASTENERS, LAPPING MAJOR RIBS AT PANEL EDGES. FINISH SHALL BE FLUOROPLOYMER 2-COAT SYSTEM CONSISTING OF SPECIALLY FORMULATED INHIBITIVE PRIMER AND FLUOROPOLYMER COLOR TOPCOAT CONTAINING NOT LESS THAN 70% POLYVINYLIDENE FLUORIDE RESIN BY WEIGHT WITH A TOTAL DRY FILM THICKNESS OF 1 MIL.
4. PANEL ACCESSORIES: PROVIDE FLASHING, BASE TRIM, TRIM AROUND DOORS AND WINDOWS, GUTTERS AND DOWNSPOUTS FABRICATED FROM SAME MATERIALS AND FINISH AS WALL AND ROOF PANELS AND AS REQUIRED TO SEAL AGAINST WEATHER AND TO PROVIDE A FINISHED APPEARANCE. INCLUDE CLIPS, SEALANTS, GASKETS, AND SIMILAR ITEMS AS NECESSARY FOR A COMPLETE INSTALLATION.
5. VINYL-FACE GLASS-FIBER BLANKET INSULATION: THERMAL INSULATION COMPLYING WITH ASTM C 991, TYPE II, 0.5-lb/cu. ft. DENSITY, WITH A FLAME SPREAD INDEX OF 25 OR LESS, AND 2-INCH WIDE CONTINUOUS, VAPOR-TIGHT EDGE TABS.

E. ERECTION
1. SET STRUCTURAL FRAMING IN LOCATIONS AND TO ELEVATIONS INDICATED ACCORDING TO AISC SPECIFICATIONS REFERENCED IN THIS SECTION.
2. PROVIDE SUPPLEMENTAL SUPPORT AND FRAMING AT ENTIRE PERIMETER OF OPENINGS INCLUDING DOORS, WINDOWS, LOUVERS, VENTILATORS, ROOFTOP MECHANICAL EQUIPMENT, AND OTHER PENETRATIONS OF ROOF AND WALLS.

F. INSULATION INSTALLATION:
1. INSTALL INSULATION CONCURRENTLY WITH ROOF AND WALL PANEL INSTALLATION BY EXTENDING OVER FRAMING PERPENDICULAR TO TOP FLANGE OF SECONDARY FRAMING MEMBERS AND HOLDING IN PLACE BY PANELS FASTENED TO SECONDARY FRAMING.
2. INSTALL INSULATION WITH VAPOR-RETARDER TO INSIDE OF BUILDING. TAPE JOINTS AND SEAL EACH CONTINUOUS AREA OF INSULATION TO SURROUNDING CONSTRUCTION TO ENSURE AIRTIGHT CONSTRUCTION.

G. ROOF PANEL INSTALLATION: PROVIDE ROOF PANELS FULL LENGTH FROM EAVE TO RIDGE WHEN POSSIBLE.
1. FASTEN STANDING SEAM ROOF PANELS TO PURLINS WITH CONCEALED CLIPS AT EACH STANDING SEAM JOINT. INSTALL CLIPS OVER TOP OF INSULATION. CRIMP STANDING SEAMS WITH MANUFACTURER-APPROVED MOTORIZED SEAMER TOOL. AT END SPLICES, LAP PANELS 6 INCHES, SEAL WITH BUTYL SEALANT, AND FASTEN TOGETHER WITH INTERLOCKING CLAMPING PLATES.
2. USE STAINLESS STEEL FASTENERS FOR EXTERIOR AND GALVANIZED FASTENERS FOR INTERIOR.

H. WALL PANEL INSTALLATION: PROVIDE PANELS FULL HEIGHT OF BUILDING WHEN POSSIBLE.
1. ARRANGE AND NEST SIDE-LAP JOINTS SO PREVAILING WINDS BLOW OVER, NOT INTO, LAPPED JOINTS.
2. WHEN TWO ROWS OF PANELS ARE REQUIRED, LAP PANELS 4" MINIMUM AND LOCATE PANEL SPLICES OVER STRUCTURAL SUPPORTS.
3. WALL PANELS SHALL OVERLAP BASE MATERIAL A MIMIMUM 11/2" AND SHALL HAVE A CONCEALED PREFORMED GASKET MATCHING THE PROFILE OF THE WALL PANEL TO CLOSE THE FLUTES AT THE BOTTOM ABOVE THE BASE TRIM.
4. APPLY ELASTOMERIC SEALANT CONTINUOUSLY BETWEEN METAL BASE CHANNEL AND CONCRETE, AND ELSEWHERE AS NECESSARY FOR WATERPROOFING.
5. APPLY A CONTINUOUS RIBBON OF SEALANT TAPE TO WEATHER-SIDE OF FASTENINGS ON LAP SEAMS.
6. INSTALL SCREWS IN PREDRILLED HOLES WITH POWER TOOLS HAVING CONTROLLED TORQUE TO COMPRESS NEOPRENE WASHER WITHOUT DAMAGE TO WASHER, SCREW THREADS, OR PANELS.
7. USE STAINLESS STEEL FASTENERS FOR EXTERIOR AND GALVANIZED FASTENERS FOR INTERIOR.

DIVISION 15 - MECHANICAL

SEE MECHANICAL PLANS AND SPECIFICATIONS

DIVISION 16 - ELECTRICAL

SEE ELECTRICAL PLANS AND SPECIFICATIONS

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.:	19050.04A
Date:	02.03.23
Issued For:	PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
DAVID ALAN WILLIAMS
NUMBER A-5548
REGISTERED ARCHITECT

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

FINKLE + WILLIAMS
ARCHITECTURE
8787 RENNER BLVD., SUITE 100
LENEXA, KANSAS 66219
913 .498.1550
www.finklewilliams.com

SHEET TITLE

PROJECT SPECIFICATIONS

SHEET NUMBER

A11.12

Governing Building Code: 2018 IBC

Design Specifications:
- ASCE 7-16
- ACI 318-14
- TMS 402/602-16
- AISC 360-16
- AISI S100-16

Roof Loads:
- Dead Load: 20 psf
- Live Load: 20 psf

Wind Loads:
- Occupancy: II
- Velocity: 109 mph
- Exposure: C
- Iw: 1.0

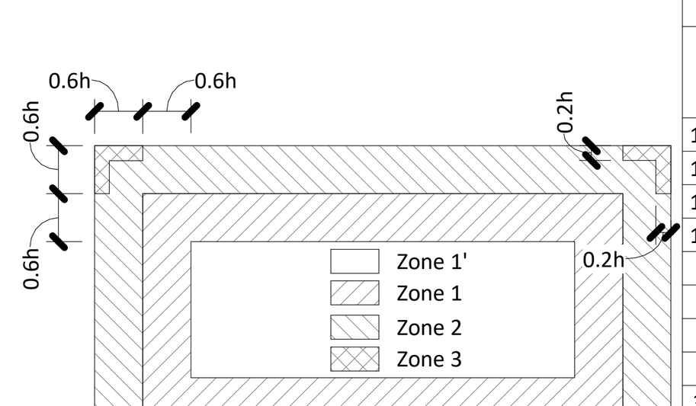
Snow Loads:
- Pg: 20 psf
- Pf: 14 psf
- Ce: 1.0
- Is: 1.0
- Ct: 1.0

Drift Load: Per Plan

Seismic Loads:
- ie: 1.0
- Ss: 0.099 g
- S1: 0.068 g
- Site Class: D
- Sds: 0.106 g
- Sd1: 0.109 g
- Seismic Design Category: B
- Seismic Force- Resisting System: O.R.M.S.W.
- Design Base Shear: Cs*W kips
- Cs: 0.0528
- R: 2
- Analysis Procedure Used: E.L.F.P.

Design Loading Notes:

1. Dead load shown includes collateral load of 3 psf. and solar of 5psf.
2. See components and cladding table for design wind pressures.
3. See net uplift diagram for roof framing due to wind pressures.



COMPONENTS & CLADDING WIND PRESSURES

Zone	Effective Wind Area (sq ft)	Max. +VE Pressure (psf)	Max. -VE Pressure (psf)
1 - Roof Interior	10	16.0	-41.3
1 - Roof Interior	20	16.0	-36.6
1 - Roof Interior	50	16.0	-35.0
1 - Roof Interior	≥ 100	16.0	-32.3
2 - Roof Edge	10	23.7	-54.5
2 - Roof Edge	20	22.7	-51.0
2 - Roof Edge	50	21.3	-46.4
2 - Roof Edge	≥ 100	20.2	-42.9
3 - Roof Corner	10	23.7	-54.4
3 - Roof Corner	20	22.7	-51.0
3 - Roof Corner	50	21.3	-46.4
3 - Roof Corner	≥ 100	20.2	-42.9
4 - Wall Interior	10	23.7	-25.7
4 - Wall Interior	20	22.7	-24.7
4 - Wall Interior	50	21.3	-23.3
4 - Wall Interior	≥ 100	20.2	-22.2
4 - Wall Interior	≥ 500	17.8	-19.8
5 - Wall Edge	10	23.7	-31.6
5 - Wall Edge	20	22.7	-29.5
5 - Wall Edge	50	21.3	-26.8
5 - Wall Edge	≥ 100	20.2	-24.7
5 - Wall Edge	≥ 500	17.8	-19.8

(Pressures shown are strength level.)

Components & Cladding Wind Zone Diagram

1. The components & cladding (C&C) wind pressures shown assume a mean roof height of 10'-0" above finished floor elevation. All components shall be designed to resist the provided pressures, which shall be clearly defined on all shop drawings. Refer to wind zone diagram for zone locations. Plus and minus signs signify pressures acting toward and away from surfaces, respectively.

2. The components & cladding wind zone diagram is generalized to show all possible conditions. The diagram shape may not match the specific layout for this project.

3. 2a = 6'-0"

4. Internal Pressure Coefficient = ±0.18

General:
1. The structural systems shown on these documents have been designed for the final, in place usage of the structure based on the intended occupancy and code requirements. While general constructability has been considered, the structural systems have not been designed to accommodate specific construction means and methods that might be utilized by the Contractor.

2. The Contractor shall field verify all existing dimensions prior to fabrication.

3. The Contractor shall notify the Engineer of any observed discrepancies in dimensions, detailing, or other items as shown on the plans or specified prior to proceeding with work relating to said discrepancies.

4. The Contractor shall not alter or modify work shown on the structural drawings without receiving written approval from the Engineer.

5. The Contractor shall be responsible for supplying shop drawings for structural steel, metal deck, reinforcing steel, concrete masonry units and accessories, plan and elevation views of concrete masonry wall elevations including control joint and expansion joint locations, mortar and grout, and concrete mix designs. Shop drawings must be reviewed for conformance with the means, methods, techniques, sequences, and operations of construction, and safety precautions and programs incidental thereto, all of which are the sole responsibility of the Contractor, and shall be stamped "approved" by the Contractor prior to submittal. Shop drawings submitted without the Contractor's stamped approval will be returned "rejected". All shop drawings shall be reviewed by the Structural Engineer prior to construction.

6. See architectural, mechanical, and electrical drawings for other pertinent information related to the structural work and coordinate as required. These structural drawings are intended to be included in a complete set of construction documents, including but not limited to, architectural drawings, civil drawings, and mechanical/electrical/plumbing drawings. Contractor shall verify coordination of these drawings with contents of above drawing sets specified and only proceed with bidding and construction after such has taken place.

7. The building and the independent structural components shown in these documents are not structurally stable until all connections, framing, shear walls, diaphragms, permanent bracing, metal decking, interior and exterior concrete slabs on grade, and exterior or interior load-bearing walls are complete and have achieved their design strength. Contractor is solely responsible for maintaining structural stability during erection and construction. Temporary bracing systems shall remain in place until all structural work is complete.

8. The Contractor is responsible for verifying all existing dimensions and conditions of the existing building and reporting discrepancies from the assumed conditions shown on the structural drawings to the Engineer of record prior to fabrication and erection of any member.

9. The Contractor shall coordinate the roof drainage system with the Architect as required to ensure that no more than 3 1/2" of water can accumulate before entering an overflow drainage system.

Structural Engineer Site Observations:

1. The contract structural drawings & specifications represent the finished structure, and, except where specifically shown, do not indicate the method or means of construction. The Contractor shall supervise and direct the work and shall be solely responsible for all construction means, methods, procedures, techniques, and sequence.

2. The Engineer shall not have control nor charge of and shall not be responsible for, construction means, methods, techniques, sequences, or procedures, for safety precautions & programs in connection with the work, for the acts or omission of the Contractor, subcontractor, or any other persons performing any of the work, or for the failure of any of them to carry out the work in accordance with the contract documents.

3. Periodic site observation by field representatives of BSE Structural Engineers LLC. is solely for the purpose of determining if the work of the Contractor is proceeding in general accordance with the structural contract documents. This limited site observation should not be construed as exhaustive or continuous to check the quality or quantity of work, but rather periodic in an effort to guard the Client against defects or deficiencies in the work of the Contractor.

Slab On Grade:

1. Welded wire fabric shall be supplied in sheets only. Rolls will not be permitted. (As required on construction documents.)

2. Welded wire fabric shall be supported on chairs or blocks prior to concrete placement. Mesh shall not be hooked and pulled up during concrete placement. (As required on construction documents.)

3. Welded wire fabric shall have end and edge laps of one full mesh plus 2" between cross wires. Wire all laps securely together.

4. Welded wire fabric shall conform to ASTM A1064.

5. Floor finish requirements: Slab-on-grade shall be finished to overall floor flatness, overall floor levelness, local floor flatness, and local floor levelness requirements as defined by the Owner. Coordinate requirements as required with G.C. prior to slab-on-grade placement. Floor finish requirements to be determined in accordance with ASTM E 1155.

Foundations:

1. Foundations for this project have been designed in accordance with requirements set forth in a geotechnical report prepared by Terracon Consultants, Inc., July 27, 2016, Terracon Project No. 02165149. Continuous and individual footings have been designed for an assumed allowable soil bearing value of **1500 psf**, respectively. The Contractor shall refer to the Geotechnical Report for all requirements and recommendations pertinent to this project.

2. Anchor rods shall conform to ASTM F1554 Gr. 36 (U.N.O.) and shall be located by means of a template. Provide a nut above and below template to assure proper vertical alignment.

3. All foundations shall be square and level.

4. Grout shall be dry and stiff to prevent shrinkage, with a minimum compressive strength of 4000 psi. Grout below column base plates and precast panels as required. Thoroughly compact grout beneath base plates.

Concrete and Reinforcing Steel:

1. Concrete mix designs shall meet the following requirements:

Location	Minimum Compressive Strength (psi)	Max. Aggregate Size	Max. Water/Cement Ratio	Slump (in.)	Air Entrainment (%)
Interior Slabs	4000	3/4"	0.50	4 ± 1	0
Interior Foundations	3000	1"	0.50	4 ± 1	0
Perimeter Foundations	3000	1"	0.50	4 ± 1	6 ± 1
Elevated Conc. Slab	4000	3/4"	0.48	4 ± 1	0

2. Fly ash shall not be used unless approved in writing by the Engineer. Fly ash, if approved, shall conform to ASTM C618 and ACI 232.2R-96. Fly ash shall be limited to types C & F and shall not exceed 15% of the total cement mass.

3. The use of admixtures to increase the slump shall not be used unless approved in writing by the Engineer.

4. All concrete is reinforced unless specifically called out as unreinforced. Reinforce all concrete not otherwise shown with same steel as in similar sections or areas.

5. Construction joints in grade beams shall be at midspan unless noted otherwise. Reinforcing steel shall be continuous through construction joints unless noted otherwise.

6. No aluminum items shall be embedded in any concrete or placed in contact with concrete.

7. Reinforcing bars #4 and larger (except ties and stirrups) shall meet ASTM A615 with Supplementary Requirements (S1), Grade 60. Smaller bars shall be Grade 40.

8. Concrete coverage of reinforcement shall have the following clear distances unless noted otherwise on the drawings:

Cast against earth: 3"

Formed concrete exposed to earth or weather: 2"

Not exposed to earth or weather: 1" Slabs, 1 1/2" Beams and columns

9. Embedded and all reinforcing bars marked continuous shall be embedded to develop the full tensile capacity of the bar. Laps shall be Class B tension laps unless specified otherwise on the drawings. Unless shown otherwise, splice top bars near midspan and splice bottom bars over supports.

10. Supply corner bars 4'-0" long (min. 2'-0" in each direction) in outside face of wall at corners of all walls and grade beams, matching size and spacing of horizontal bars. Where there are no vertical bars in outside face of wall, supply three (3) - #4 vertical support bars for corner bars.

11. All bars are to be supported in forms and spaced with wire bar supports per ACI "Manual of Standard Practice for Detailing Concrete Structures" (latest edition). Bars shall be securely wired per the latest edition of CRSI's "Recommended Practice for Placing Reinforcing Bars." Accessories for exposed concrete shall be plastic or shall have plastic-tipped feet.

12. Concrete placed during cold weather shall conform to the requirements of the most recent version of ACI 306R. Cold weather is defined as a period when, for more than 3 successive days, the mean daily temperature drops below 40°F.

13. Concrete placed during hot weather shall conform to the requirements of the most recent version of ACI 305R. Hot weather is defined as that combination of air temperature, concrete temperature, relative humidity and wind speed that will cause a rate of evaporation of 0.2 lb/sq.ft./hr. or more as defined by Figure 2.1.5 of ACI 305R.

14. Do not add water to concrete during delivery, at Project Site, or during placement, unless approved by the Engineer.

15. Provide 3/4" chamfer on all exposed corners unless noted otherwise on architectural or structural construction documents.

16. All cold joints shall be roughened and cleaned unless noted otherwise.

17. Vertical control joints in walls shall be placed at 30'-0" maximum spacing unless noted otherwise. Locate joints beside piers monolithic with walls, near corners, and in concealed locations where possible. Construction joints may be placed in lieu of control joints at contractors discretion. Coordinate location of control joints with Architect.

Post-Installed Anchors:

1. Post-Installed anchors shall only be used where specified in the construction documents or approved by the engineer.

2. The Contractor shall obtain written approval from the Engineer prior to installing post-installed anchors for misplaced-placed anchors.

3. Care shall be taken with placing post-installed anchors to avoid damaging existing reinforcement.

4. The holes shall be drilled and cleaned in accordance with the manufacturer's specifications.

5. Post-installed anchors shall meet ACI 318 Appendix D criteria. The following are acceptable post-installed anchors:

All adhesive anchoring systems referred to in these drawings shall be one of the following:
a. Hilti HIT HY 200
b. Powers AC100+ Gold
c. Simpson Strong-Tie SET-3G
d. Or Approved Equivalent

All screw anchors referred to in these drawings shall be one of the following:
a. Hilti KH-EZ
b. Powers Wedge Bolt+
c. Simpson Strong-Tie Titan HD
d. Or Approved Equivalent

Masonry:

1. Mortar shall be Type S for all masonry work and must achieve a minimum compressive strength of 1800 psi at the 28-day test. Masonry units shall have a minimum strength of f'm = 1900 psi.

2. Masonry grout shall be a coarse-type grout and must achieve a minimum compressive strength of 2000 psi at the 28-day test. Slump shall range from 8" minimum to 10" maximum. Grout materials and proportions shall conform to ASTM C476.

3. All masonry shall be reinforced with horizontal 9 gauge truss type reinforcement at 16" o.c. vertical or as shown on the drawings.

4. Vertical reinforcing shall be installed as noted on the drawings. Reinforcing bars shall be lapped as specified on the design drawings. If no lap length is shown, contact the Engineer.

5. Vertical control joints in masonry shall be 3/8" wide, full height of wall at locations shown on the Architectural drawings. Joints shall be spaced at a maximum of 25'-0" apart and coordinated with the Architect. All horizontal joint reinforcing shall be discontinuous at masonry control joints. Refer to typical details for additional information

6. Lintels over openings shall be installed as indicated on the drawings. If no lintels are indicated, notify the Engineer.

7. Provide at least (1) vertical rebar at each end of each wall, side of control joints, jambs, corner, and intersection of all reinforced masonry walls. Size of rebar to match the size of typical vertical reinforcing shown.

8. Provide (1) corner bar at each horizontal bond beam. Size of rebar to match typical bond beam reinforcing shown.

9. Submit shop drawings including plan and elevation views of reinforced masonry walls including bond beams, control joints, expansion joints, and lintels.

10. All steel beams bearing on masonry shall have (3) cores minimum grouted full directly below the bearing locations unless noted otherwise.

11. All bond beam reinforcing shall continue through control joints.

12. All cells containing reinforcement, bolts, or other metal anchors shall be grouted solid. Any cells below grade shall be grouted solid whether reinforced or not.

Structural Steel:

1. All structural steel shall conform to the following (U.N.O.):

Structural Steel Wide Flanges:	ASTM A992
Miscellaneous Steel:	ASTM A36
Structural Tubing:	ASTM A500, Grade B (Fy = 46 ksi)
Steel Pipe:	ASTM A53, Type E or S, Grade B

2. Bolts shall be as follows (U.N.O.):

Connection Bolts:	ASTM A325
Anchor Rods:	ASTM F1554, Grade 36
Shear Studs:	ASTM A108, Grade 1015 through 1020

3. Welding shall conform to the latest publication of applicable codes set forth by the American Welding Society. Welding electrodes shall be E70XX.

4. All exterior steel exposed to weather shall be hot-dipped galvanized and/or painted per Architect unless noted other wise.

5. All openings in the roof shall be framed with a 4 x 4 x 1/4 angle minimum, unless noted otherwise. Mechanical units shall be supported with structural steel frames as required. If framing is not shown for mechanical units, notify the Engineer.

Light Gauge Metal Framing:

1. All light gauge structural studs, track and accessories shall be designed in accordance with the latest edition of the American Iron and Steel Institute (AISI) "Specification for the Design of Cold-Formed Steel Structural Members," and shall be of type, size, gauge and spacing shown on the drawings.

2. All 16 gauge and heavier studs and joists shall be formed from corrosion-resistant steel corresponding to the requirements of ASTM A446, with a minimum yield strength of 50 ksi. All 18 gauge and lighter studs, joists, track and accessories shall be formed from corrosion-resistant steel corresponding to the requirements of ASTM A446, with a minimum yield strength of 33 ksi.

3. Prior to fabrication of framing, the Contractor shall submit fabrication and erection drawings to the Architect/Engineer for approval.

4. Prefabricated panels shall be square, with components attached in a manner to prevent racking and minimize distortion while lifting. The Contractor shall provide temporary bracing where required.

5. All framing components shall be cut squarely for attachment to perpendicular members, or as required, for angular fit against abutting members. Splicing of axial loaded members is not permitted.

6. Axially loaded studs shall be installed in a manner which will assure that their ends are positioned against the inside of the track web prior to fastening. Studs shall be securely fastened to both flanges of the top and bottom track.

7. Fastening of components shall be with self-drilling screws or welding. Wire tying of components shall not be permitted. Screws shall be of sufficient size to ensure the strength of connection. All connections shall be made with a minimum of (2) #10 screws or 1/8" fillet weld two inches long. All welds shall be touched up with a zinc-rich paint.

8. Tracks shall be securely anchored to the supporting structure as shown on the drawings. Abutting lengths of tracks shall be securely anchored to a common structural element, butt-welded or spliced together.

9. Wall stud bridging shall be attached in a manner to prevent stud rotation. Bridging rows shall be spaced according to manufacturer's specifications or recommendations. 4'-0" maximum spacing between rows of bridging.

10. Provision for structure vertical movement shall be provided where indicated on the drawings.

11. Minimum thickness values of framing specified in gauge values on drawings are as follows:

Minimum Design Thickness (in.)	Design Thickness (in.)	Inside Corner Radius (in.)	Gauge No. (Reference Only)
18	0.0188	0.0843	25
27	0.0283	0.0796	22
30	0.0312	0.0781	20 - Drywall
33	0.0346	0.0764	20 - Structural
43	0.0451	0.0712	18
54	0.0566	0.0849	16
68	0.0713	0.1069	14
97	0.1017	0.1525	12

NOTE: Minimum Thickness represents 95% of the design thickness and is the minimum acceptable thickness delivered to the job site based on Section A3.4 of the 1996 AISI Specification.

Special Inspector:

1. The following items require special inspection in accordance with the building code.
a. Reinforced masonry construction - level 1 inspection
b. Concrete & masonry grout design mix
c. Placing of concrete & reinforcing steel
d. Bolts & anchors embedded in concrete & masonry
e. Concrete formwork
f. Structural steel fabrication
g. Structural steel bolting & welding
h. Inspection of roof & deck attachment
I. Post installed anchors in masonry & concrete
J. In-situ soils, excavations, filling & compaction

2. The Contractor shall request special inspection of the items listed above prior to those items becoming inaccessible & unobservable due to progression of the work.

3. The Special Inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the building official, for inspection of the particular type of construction or operation requiring special inspection.

4. The Special Inspector shall observe the work assigned for conformance with the approved design drawings and specifications.

5. The Special Inspector shall furnish inspection reports to the Building Official, the Engineer and Architect of record, and other designated persons. All discrepancies shall be brought to the immediate attention of the Contractor for correction, then if uncorrected, to the proper design authority and to the Building Official.

6. The Special Inspector shall submit a final signed report stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and the applicable workmanship provisions of the governing building codes.

Earthwork:

1. The Inspector must verify that the preparation of the natural ground and the placement of engineered fill is performed in accordance with the GEOTECHNICAL engineer's recommendations as stated in the GEOTECHNICAL report.

2. The Inspector must monitor the placement of all fill to determine whether the type of material, moisture content, and degree of compaction are within the recommended limits contained in the GEOTECHNICAL report. Proceed with subsequent earthwork only after test results for previously completed work comply with recommended limits contained in the GEOTECHNICAL report.

3. All Subgrade supporting footings and slabs must be inspected immediately prior to the placement of reinforced concrete.

4. Paved and building slab areas shall be tested at Subgrade and at each compacted fill and backfill layer, at least once for every 2000 sq. ft. or less of paved or building slab areas, but in no case fewer than 3 tests.

5. Foundation wall backfill shall be tested at each compacted initial and final backfill layer, at least once for each 100 ft. or less of wall length, but no fewer than 2 tests.

6. Trench backfill shall be tested at each compacted initial and final backfill layer, at least once for each 150 ft. or less of trench length, but no fewer than 2 tests.

7. Test compaction of soils-in-place in accordance with ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.

8. Test Reporting: Test results must be reported to BSE and the general contractor in writing within 24 hours after testing, via fax. Reports must contain the project name, the date of the test and the location of the test.

Concrete:

1. Strength test cylinders shall be prepared for each day's pour of each concrete mix and at a minimum frequency of every 50 cu. yd. on all concrete placed. Conform to ASTM C39.

2. Four (4) test cylinders are to be made and cured on site for the first 24 hours. Test one of the specimens at 7 days and two at 28 days. Hold the fourth specimen in reserve for later testing if needed.

3. Slump, air content and temperature tests shall be conducted at a minimum when strength specimens are made and at any other times as specified by the Engineer.

4. Perform slump tests on a representative concrete sample at the point of discharge. Perform additional tests when concrete consistency seems to have changed. The maximum allowable field slump is 5 inches. Conform to ASTM C143.

5. Perform air content tests on all concrete specified to be air-entrained. Conform to ASTM C231.

6. Perform a temperature test every hour when air temperature is 40°F and below, or when air temperature is 80°F and above. Conform to ASTM C 1064.

7. Prior to the closing of forms or the delivery of concrete to the job site, the inspector shall verify that the reinforcing steel is in conformance with the city-approved plans, specifications and shop drawings. The inspector shall confirm that the reinforcing steel is of the correct size and grade and ensure that the proper spacing, clearances, splice lengths and embedded items have been provided. All reinforcing steel shall be in place prior to the placement of concrete and be secured against displacement.

8. The Inspector shall verify that the bolt size, location and embedment length of all anchor bolts are in conformance with the city-approved plans, specifications and shop drawings.

9. Anchor rods 3/4"Ø or smaller may be floated in place following concrete placement, provided that anchor bolts are worked easily by hand into the fresh concrete to allow for full contact with the shank of the bolt. Bolts shall be placed by means of a template and shall be worked into concrete in vertical alignment.

10. Test Reporting: Test results must be reported to BSE and the General Contractor in writing within 24 hours after testing, via fax or email. Reports of compressive strength tests must contain the project name, the date of concrete placement, the location of concrete placement within the structure and the concrete mix design being used.

Structural Steel:

1. Bolts: Bolts that are not identified as being slip-critical nor in direct tension need not be inspected other than to verify that the plies of connected elements are brought into snug-tight condition in properly-aligned holes.

2. Field Welding: Inspection is required for single-pass fillet welds, multi-pass fillet welds, complete- and partial-penetration groove welds, floor and roof deck welding, and stairs and railing systems. Prior to the start of the work, materials, qualifications of welding procedures and welder qualifications shall be verified. Provide continuous or periodic inspection of the structural welding as indicated in Table 1704.3 of the referenced IBC. Inspections may occur periodically, as defined below. A visual inspection to ensure proper type, size, length and quality of all field welds is required prior to work being concealed by other materials.

3. Periodic inspection: "Periodic" is defined as generally once a week at a minimum, and more often as needed to observe work requiring inspections, as outlined above, prior to being covered by subsequent construction.

4. Shear connector stud welds will be inspected and tested according to AWS D1.1 for stud welding. Shear connector stud welds shall be visually inspected. Bend tests shall be performed if visual inspections reveal less than a 360-degree flash or welding repairs to any shear connector stud.

5. Structural steel bar joists and metal buildings fabricated on the premises of a facility/plant not certified by a nationally recognized organization, shall have in-plant special inspections. AISC, ICBO, CWB and SJI are certified fabricators.

6. Test Reporting: Test results must be reported to BSE and the General Contractor in writing within 24 hours of testing, via fax or email. Reports must contain the project name, the date of the test and the location of the test.

Masonry:

1. Mortar properties, grout, brick, concrete masonry unit and prism tests and evaluations are to be performed during construction for each 5,000 sq. ft. of wall area or portion thereof.

2. Mortar properties are to be tested per ASTM C 780.

3. Grout will be sampled and tested for compressive strength per ASTM C 1019.

4. Brick tests for each type and grade of brick indicated are to be performed according to ASTM C 67.

5. Concrete masonry unit tests for each type of concrete masonry unit indicated are to be performed per ASTM C 140.

6. Masonry prisms are to be tested per ASTM C 1314. Prepare one (1) set of prisms for testing at 7 days and one (1) set for testing at 28 days.

7. Special inspection of masonry construction is required during preparation and taking of any required prisms or test specimens, placing of all masonry units, placement of reinforcement and inspection of grout space immediately prior to closing cleanouts, and during all grouting operations.

8. Test Reporting: Test results must be reported to BS and the general contractor in writing within 24 hours of testing, via fax. Reports must contain the project name, the date of the test and the location of the test.

Required Verification and Inspection of Steel Construction Other Than Structural Steel Per IBC Table 1705.2.2

Type	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard
1. Material verification of cold-formed steel deck:			
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	-	X	Applicable ASTM material standards
b. Manufacturer's certified test reports.	-	X	
2. Inspection of welding and attachment:			
a. Cold-formed steel deck:			
1. Floor and roof deck welds and other means of attachment.	-	X	AWS D1.3
b. Reinforcing steel:			
1. Verification of edibility of reinforcing steel other than ASTM A 706.	-	X	AWS D1.4 ACI 318: Section 3.5.2
2. Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement.	X X	- -	
3. Shear reinforcement.	-	X	
4. Other reinforcing steel.			

a. Where applicable, see also Section 1705.11 Special inspections for seismic resistance.

Required Special Inspections of Open-Web Steel Joists and Joist Girders Per IBC Table 1705.2.3

Type	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard
1. Installation of open web steel joist and joist girders:			
a. End Connections - welding or bolted.	-	X	SJI Specifications listed in Section 2207.1.
b. Bridging - horizontal or diagonal.	-		
1. Standard bridging.	-	X	SJI Specifications listed in Section 2207.1.
2. Bridging that differs from the SJI specifications listed in Section 2207.1.	-	X	

a. Where applicable, see also Section 1705.12, Special inspections for seismic resistance.

Required Special Inspections and Tests of Concrete Construction Per IBC Table 1705.3

Type	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard
1. Inspect reinforcement, including prestressing tendons, and verify placement.	-	X	ACI 318 Chp. 20, 25.2, 25.3, 26.6.1.-26.6.3.
2. Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706 b. Inspect single-pass fillet welds, maximum 5/16"; and c. Inspect all other welds.	- - X	X X -	AWS D1.4 ACI 318: 26.6.4
3. Inspect anchors cast in concrete.	-	X	ACI 318: 17.8.2
4. Inspect anchors post-installed in hardened concrete members a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical anchor and adhesive anchors not defined in 4.a.	X -	- X	ACI 318: 17.8.2.4 ACI 318: 17.8.2.
5. Verify use of required design mix.	-	X	ACI 318: Chp. 19, 26.4.3, 26.4.4
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C172 ASTM C31 ACI 318: 26.4, 26.12
7. Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.5
8. Verify maintenance of specified curing temperatures and techniques.	-	X	ACI 318: 26.5.3-26.5.5
9. Inspect prestressed concrete for: a. Application of prestressing forces; and b. Grouting of bonded prestressing tendons.	X X	- -	ACI 318: 26.10
10. Inspect erection of precast concrete members.	-	X	ACI 318: Chp. 26.8
11. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	X	ACI 318: 26.11.2
12. Inspect framework for shape, location and dimensions of the concrete member being formed.	-	X	ACI 318: 26.11.1.2(B)

a. Where applicable, see also Section 1705.12, Special inspections for seismic resistance.
b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.

Required Special Inspections and Tests of Soils Per IBC Table 1705.6

Type	Continuous Special Inspection	Periodic Special Inspection
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X
2. Verify excavations are extended to proper depth and have reached proper material.	-	X
3. Perform classification and testing of compacted fill materials.	-	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	X

Required Special Inspections and Tests of Driven Deep Foundation Elements Per IBC Table 1705.7

Type	Continuous Special Inspection	Periodic Special Inspection
1. Verify element materials, sizes and lengths comply with the requirements.	X	-
2. Determine capacities of test elements and conduct additional load tests, as required.	X	-
3. Inspect driving operations and maintain complete and accurate records for each element.	X	-
4. Verify placement locations and plumbness, confirm type size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	X	-
5. For steel elements, perform additional special inspections in accordance with Section 1705.2.	-	-
6. For concrete elements and concrete-filled elements, perform tests and additional special inspections in accordance with Section 1705.3.	-	-
7. For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge.	-	-

Required Special Inspections and Tests of Cast-In-Place Deep Foundation Elements Per IBC Table 1705.8

Type	Continuous Special Inspection	Periodic Special Inspection
1. Inspect drilling operations and maintain complete and accurate records for each element.	X	-
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	-
3. For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3.	-	-

Required Quality Control Inspections (GCI) & Quality Assurance Inspections (QAI) of Steel Construction Per AISC 360, Specification Chapter M & N

Type	Frequency of Inspections	Referenced Standard
1. The fabricator's QCI shall inspect the following as a minimum, as applicable: a. Shop welding, high strength bolting and details in accordance with AISC 360, Section N5. b. Shop cut and finished surfaces in accordance with AISC 360, section M2. c. Shop heating for straightening, cambering and curving in accordance with AISC 360, Section M2.1. d. Tolerances for shop fabrication in accordance with the Code of Standard Practice, Section 6.	Per AISC Per AISC Per AISC Per AISC	AISC 360 Chp. M & N TABLE N5.4-1 TABLE N5.4-2 TABLE N5.4-3 TABLE N5.6-1 TABLE N5.6-2 TABLE N5.6-3 TABLE N6.1 Code of Standard Practice Sec. 6
2. The erector's QCI shall inspect the following as a minimum, as applicable: a. Field welding, high strength bolting and details in accordance with AISC 360, Section N5. b. Steel deck and headed steel stud anchor placement and attachment in accordance with AISC 360, Section N6. c. Field cut surfaces in accordance with AISC 360, Section M2.2. d. Field heating for straightening in accordance with AISC 360, Section M2.1. e. Tolerances for field erection in accordance with the Code of Standard Practice, Section 7.13.	Per AISC Per AISC Per AISC Per AISC Per AISC	AISC 360 Chp. M&N TABLE N5.4-1 TABLE N5.4-2 TABLE N5.4-3 TABLE N5.6-1 TABLE N5.6-2 TABLE N5.6-3 TABLE N6.1 Code of Standard Practice Sec. 6
3. QAI shall be performed by others. All required inspection and non-destructive testing, as applicable, shall be in accordance with AISC 360	Per AISC & IBC	AISC 360 Chp. M&N

ABBREVIATIONS LIST

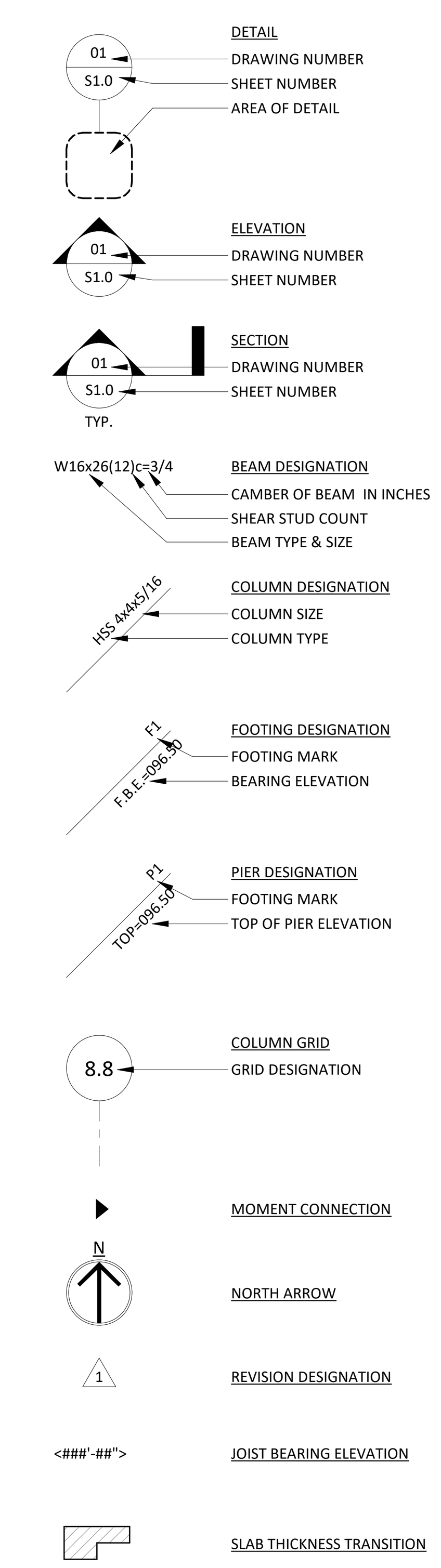
&	AND
@	AT
°	DEGREES
=	EQUALS
'	FEET
>	GREATER THAN
≥	GREATER THAN OR EQUAL TO
"	INCHES
<	LESS THAN
≤	LESS THAN OR EQUAL TO
-	MINUS, NEGATIVE
+	PLUS
±	PLUS OR MINUS
A.F.F	ABOVE FINISHED FLOOR
ALT.	ALTERNATE
ARCH.	ARCHITECT
BLDG.	BUILDING
BM.	BEAM
B.O.S.	BOTTOM OF STEEL
BOTT.	BOTTOM
C.J.	CONTROL/CONSTRUCTION JOINT
CL	CENTER LINE
C.M.U.	CONCRETE MASONRY UNIT
CLG.	CEILING
CLR.	CLEAR
COL.	COLUMN
CONC.	CONCRETE
CONT.	CONTINUOUS
COORD.	COORDINATE
CTR.	CENTER
DIA.	DIAMETER
DN.	DOWN
DWG.	DRAWING
E.J.	EXPANSION JOINT
E.O.R.	ENGINEER OF RECORD
EA.	EACH
EL.	ELEVATION
ELEV.	ELEVATION
ENG.	ENGINEER
EQ.	EQUAL
EQUIP.	EQUIPMENT
ETC.	ET CETERA
EXIST.	EXISTING
EXT.	EXTERIOR
F.A.	FACE
F.B.E.	FOOTING BEARING ELEVATION
F.F.E.	FINISHED FLOOR ELEVATION
F.S.	FAR SIDE
FT.	FOOT/FEET
FTG.	FOOTING/FOUNDATION
G.C.	GENERAL CONTRACTOR
GALV.	GALVANIZED
GYP.	GYPSUM
HORIZ.	HORIZONTAL
IN	INCHES
J.B.E.	JOIST BEARING ELEVATION
JT.	JOINT
KSI	KIPS PER SQUARE INCH
K	KIPS
L.F.	LINEAR FEET
LB.	POUND
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
M.B.M.	METAL BUILDING MANUFACTURER
M.E.P.	MECHANICAL ELECTRICAL PLUMBING
MAX.	MAXIMUM
MIN.	MINIMUM
MISC.	MISCELLANEOUS
N.A.	NOT APPLICABLE
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
Ø	DIAMETER
P.E.M.B.	PRE-ENGINEERED METAL BUILDING
PL.	PLATE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
R	RADIUS
REINF.	REINFORCED
REQ'D.	REQUIRED
SF	SQUARE FEET
SIM.	SIMILAR
SPA.	SPACING
SPEC.	SPECIFICATION
SQ.	SQUARE
T.O.C.	TOP OF CONCRETE
T.O.F.	TOP OF FOOTING
T.O.S.	TOP OF STEEL
T.O.W.	TOP OF WALL
THRU.	THROUGH
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
W.W.F.	WELDED WIRE FABRIC
WT.	WEIGHT
W/	WITH
W/O	WITHOUT

SHEET LIST

MATERIALS LEGEND

ALUMINUM
CONCRETE
EARTH
GRAVEL
GROUT
GYPSUM
INSULATION - RIGID
MASONRY - BRICK
MASONRY - CMU
PLYWOOD
STEEL
TILT / PRE-CAST

SYMBOLS LEGEND



paragon star

PARAGON STAR SOUTH - RESTROOM

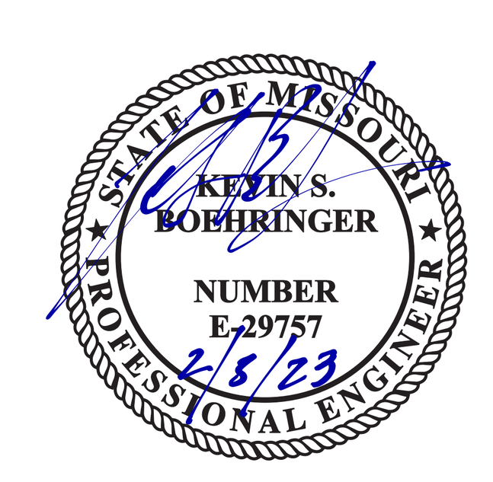
PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 02.03.2023
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION



PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND3 STUDIO
FOUNDATIONS	BSE ENGINEERS
STRUCTURAL	BSE ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL-ANDERSON

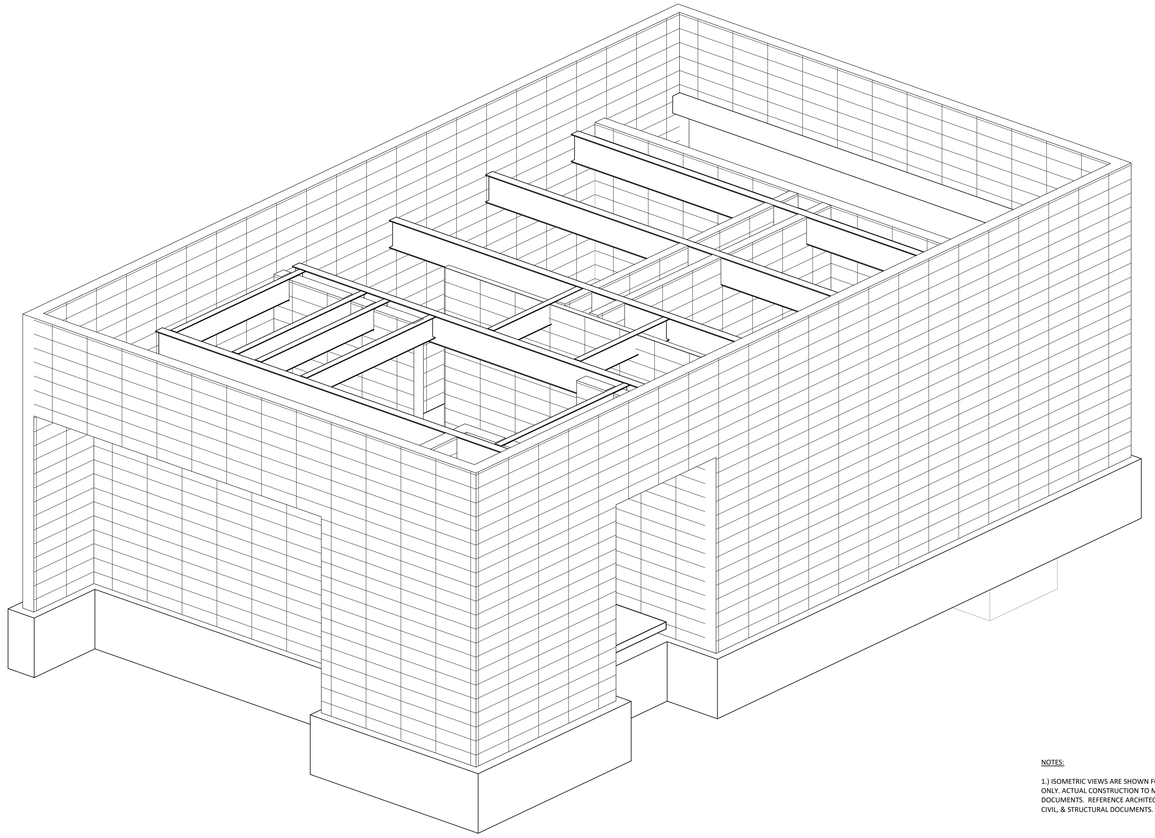
BSE STRUCTURAL ENGINEERS
BSE Structural Engineers LLC
11320 West 79th Street
Lenexa, Kansas 66214
Phone 913.492.7400
www.BSEstructural.com
Project Number: 21-037

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

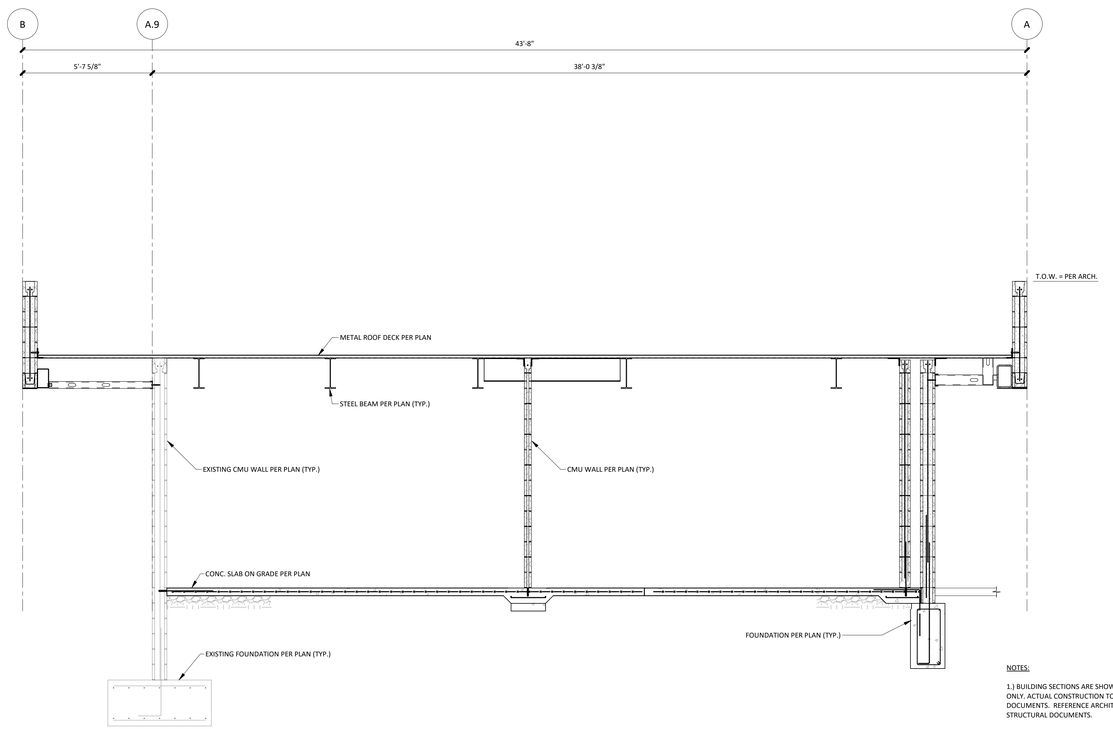
S0.0



NOTES:

1.) ISOMETRIC VIEWS ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. ACTUAL CONSTRUCTION TO MATCH CONSTRUCTION DOCUMENTS. REFERENCE ARCHITECTURAL, MECHANICAL, CIVIL, & STRUCTURAL DOCUMENTS.

ISOMETRIC | 01
S0.1



NOTES:

1.) BUILDING SECTIONS ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. ACTUAL CONSTRUCTION TO MATCH CONSTRUCTION DOCUMENTS. REFERENCE ARCHITECTURAL, MECHANICAL, CIVIL, & STRUCTURAL DOCUMENTS.

BUILDING SECTION | 02
3/8" = 1'-0" | S0.1

2/2/2023 2:29:28 PM | PARAGON STAR SOUTH - RESTROOM

paragon star

PARAGON STAR SOUTH - RESTROOM

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 02.03.2023
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
KEVIN S. BOEHRINGER
NUMBER E-29757
PROFESSIONAL ENGINEER
2/5/23

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND3 STUDIO
FOUNDATIONS	BSE ENGINEERS
STRUCTURAL	BSE ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL-ANDERSON

BSE STRUCTURAL ENGINEERS

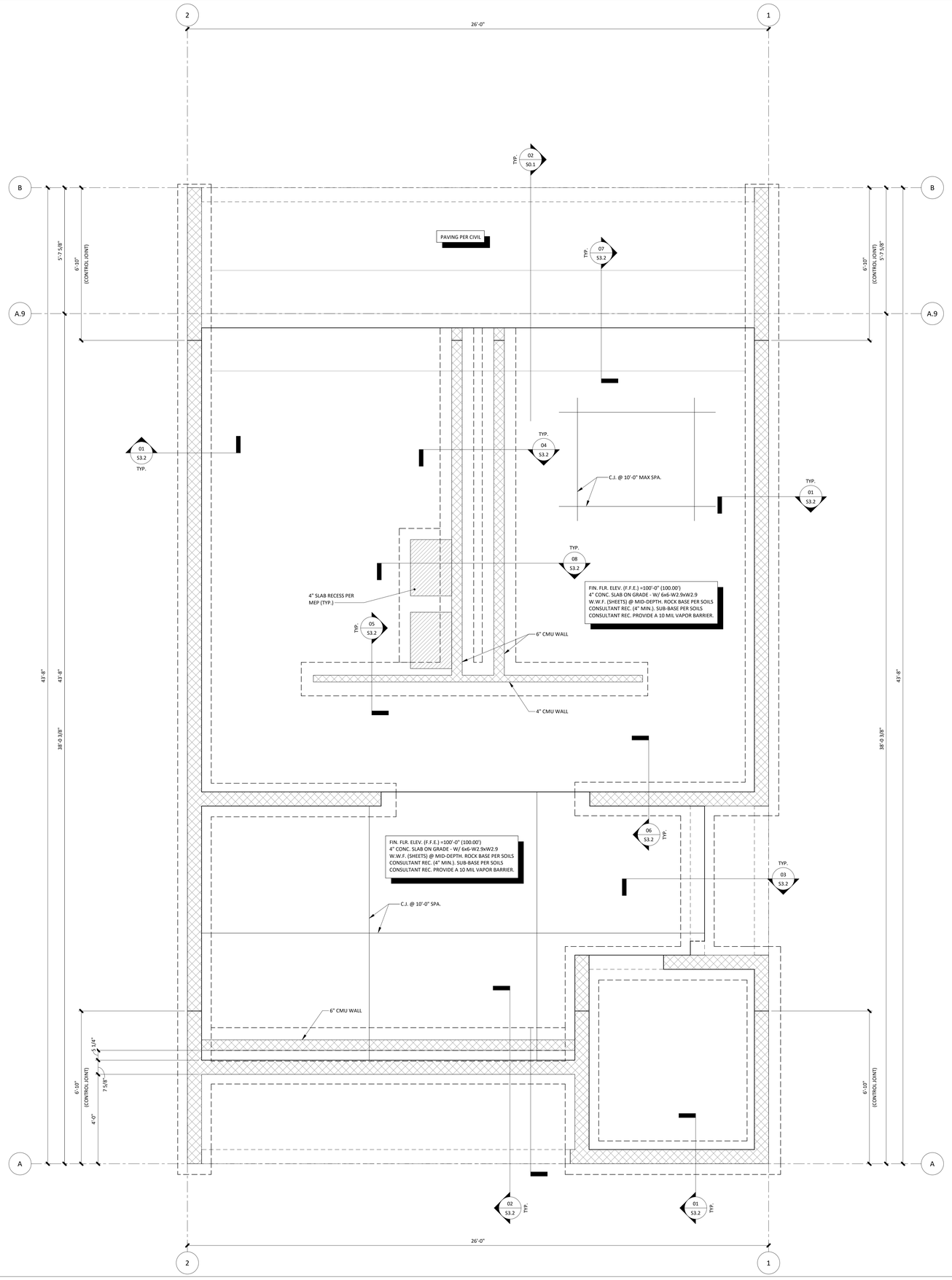
BSE Structural Engineers LLC
11320 West 79th Street
Lenexa, Kansas 66214
Phone 913.492.7400
www.BSEstructural.com
Project Number: 21-037

SHEET TITLE

ISOMETRIC

SHEET NUMBER

S0.1



NOTES:

1.) SEE DRAWING S0.0 FOR GENERAL NOTES, SYMBOLS LEGEND, MATERIALS LEGEND, & ABBREVIATION LIST.

2.) REFFERENCE DRAWING S3.1 FOR TYPICAL FOUNDATION DETAILS INCLUDING ANCHOR ROD DETAILS, FOOTING STEP DETAILS, CONTROL JOINT & CONSTRUCTION JOINT DETAILS, REINF. LAP LENGTH TABLE, ETC.

3.) SEE DRAWING S0.1 FOR ISOMETRIC VIEW & FULL BUILDING SECTIONS.

4.) MASONRY CMU WALLS ARE 8" U.N.O.

FOUNDATION PLAN | 01
1/2" = 1'-0" | S1.1

N

paragon star

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REGISTRATION

STATE OF MISSOURI
KEVIN S. BOEHRINGER
NUMBER E-29757
PROFESSIONAL ENGINEER
2/5/23

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND3 STUDIO
FOUNDATIONS	BSE ENGINEERS
STRUCTURAL	BSE ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL-ANDERSON

BSE STRUCTURAL ENGINEERS

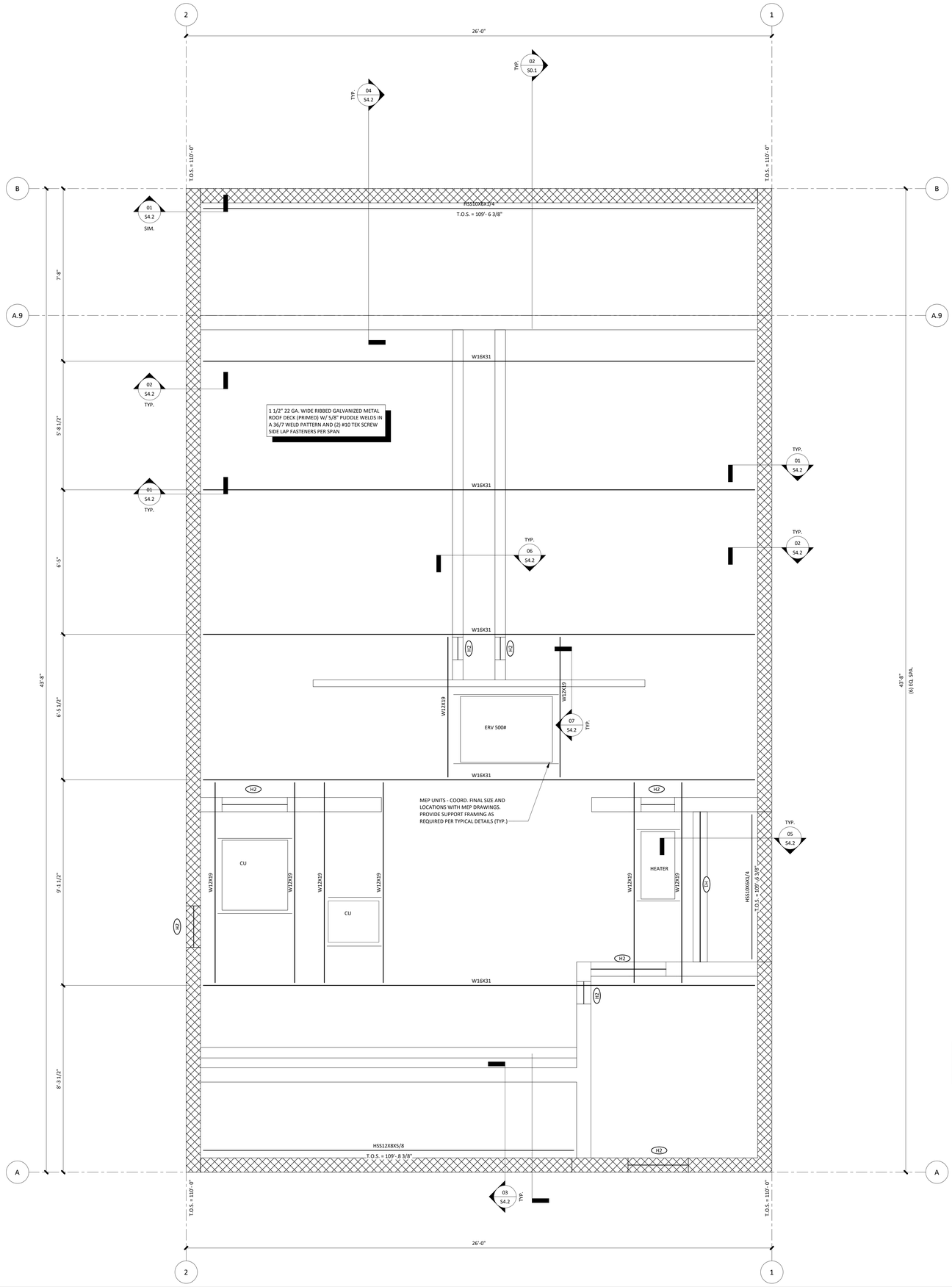
BSE Structural Engineers LLC
11320 West 79th Street
Lenexa, Kansas 66214
Phone: 913.492.7400
www.BSEstructural.com
Project Number: 21-037

SHEET TITLE

FOUNDATION PLAN

SHEET NUMBER

S1.1



HEADER/BEARING STUD SCHEDULE				
MARK	DEPTH	BOTT. REINF.	TOP REINF.	# OF BRG. CELLS
H1	16"	(2) #5	(1) #5	1
H2	8"	(2) #5	N/A	1

NOTES:

1.) SEE DRAWING S0.0 FOR GENERAL NOTES, SYMBOLS LEGEND, MATERIALS LEGEND, & ABBREVIATION LIST.

2.) REFERENCE DRAWING S4.1 FOR TYPICAL FRAMING DETAILS.

3.) SEE DRAWING S0.1 FOR ISOMETRIC VIEW & FULL BUILDING SECTIONS.

4.) REFERENCE ARCHITECTURAL DRAWINGS TO VERIFY SIZE & LOCATIONS OF ALL ROOF & WALL OPENINGS.

5.) MASONRY CMU WALLS ARE 8" U.N.O.

6.) REFERENCE DRAWING S4.1 FOR TYPICAL MASONRY LINTEL DETAILS.

7.) ALL EXTERIOR LINTELS SUPPORTING STONE OR BRICK SHALL BE GALVANIZED U.N.O. ON ARCHITECTURAL DRAWINGS.

ROOF FRAMING PLAN | 01
1/2" = 1'-0" | S2.1

N

2/2/2023 2:29:29 PM | PARAGON STAR SOUTH - RESTROOM

paragon star

PARAGON STAR SOUTH - RESTROOM

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 02.03.2023
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
KEVIN S. BOEHRINGER
NUMBER E-29757
PROFESSIONAL ENGINEER
2/5/23

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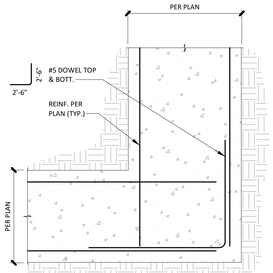
Project Number: 21-037

SHEET TITLE

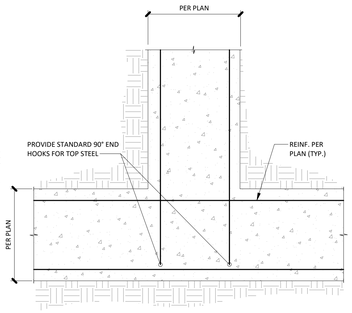
ROOF FRAMING PLAN

SHEET NUMBER

S2.1



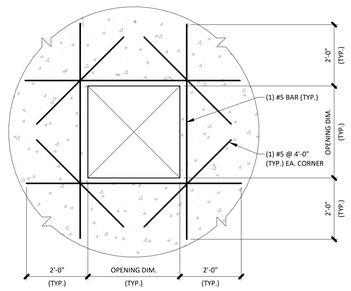
NOTE:
GRADE BEAMS SHALL BE POURED MONOLITHICALLY AROUND CORNERS.



NOTE:
GRADE BEAMS SHALL BE POURED MONOLITHICALLY AT INTERSECTIONS.

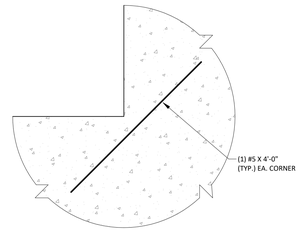
TYP. GRADE BEAM DETAILS | 01

3/4" = 1'-0" | S3.1



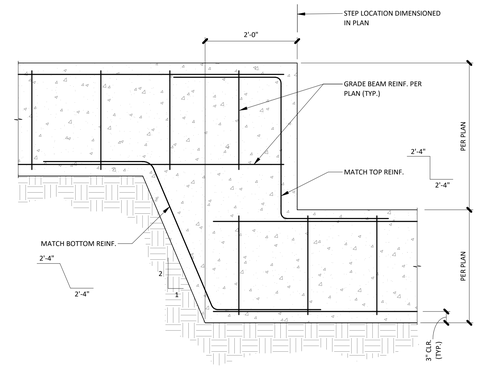
TYP. SLAB OPENING DETAIL | 02

1/2" = 1'-0" | S3.1



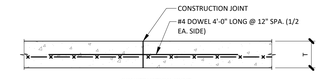
TYP. RE-ENTRANT CORNER REINF. DETAIL | 03

3/4" = 1'-0" | S3.1



TYP. FOOTING STEP DETAIL | 04

3/4" = 1'-0" | S3.1



TYP. CONTROL & CONST. JOINT DETAIL | 05

3/4" = 1'-0" | S3.1

STANDARD HOOK TABLE	
BAR SIZE	HOOK
#4	8 in.
#5	10 in.
#6	12 in.
#7	14 in.
#8	16 in.

STANDARD 90° HOOK TABLE | 06

12" = 1'-0" | S3.1

MAN DOORS

WINDOWS AND LARGE DOORS

TYP. SLAB REINF. @ DOOR DETAIL | 07

3/4" = 1'-0" | S3.1

VERT. PENETRATION

HORIZ. PENETRATION

TYPICAL GRADE BEAM PENETRATION DETAILS | 08

3/4" = 1'-0" | S3.1

NOTE:

1.) CENTER BAR IN GRADE BEAM ALLOWED TO BE MOVED TO PROVIDE 2" CLEAR BY PIPING. ADD #5 ON OPPOSITE SIDE OF PIPING EXTENDING 3'-0" EACH SIDE OF PIPE.

2.) COORDINATE LOCATION OF PIPING WITH M.E.P. ACCEPTABLE TO TURN PIPE IN THE MIDDLE THIRD OF GRADE BEAM AND EXIT THROUGH THE SIDE OF THE GRADE BEAM. ADDITIONAL #5 BAR SHOWN ONLY REQUIRED WHEN PIPING PASSES THROUGH TOP OR BOTTOM OF GRADE BEAM.

COMPRESSION DEVELOPMENT AND LAP SPLICE LENGTHS GRADE 60 REINFORCEMENT, NORMAL WEIGHT CONCRETE						
BAR SIZE	CONCRETE COMPRESSIVE STRENGTH					
	3000 PSI		4000 PSI		5000 PSI	
	DEV	SPLICE	DEV	SPLICE	DEV	SPLICE
#3	9	12	8	12	7	12
#4	11	15	10	15	9	15
#5	14	19	12	19	12	19
#6	17	23	15	23	14	23
#7	20	27	17	27	16	27
#8	22	30	19	30	18	30
#9	25	34	22	34	21	34
#10	28	39	25	39	23	39
#11	31	43	27	43	26	43

NOTES:
1.) TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL WEIGHT CONCRETE.
2.) COMPRESSION DEVELOPMENT LENGTHS AND COMPRESSION SPLICE LENGTHS ARE BASED ON ACI 318, SECTIONS 12.3 AND 12.16, RESPECTIVELY.
3.) ALL VALUES ARE SHOWN IN INCHES
4.) COMPRESSION SPLICE PERMISSIBLE ONLY WHERE SPECIFICALLY NOTED
5.) TABLE IS NOT APPLICABLE FOR EPOXY-COATED REINFORCEMENT.
6.) "SIDE LAP" ALL LAP SPLICES TO MAINTAIN SPECIFIED CONCRETE COVER.
7.) WHEN BARS OF A DIFFERENT SIZE ARE LAP SPLICED, THE SPLICE LENGTH SHALL BE THE LARGER OF THE DEVELOPMENT LENGTH OF THE LARGER BAR, OR THE SPLICE LENGTH OF THE SMALLER BAR.

COMPRESSION DEVEL. & LAP SPLICE TABLE | 09

1/2" = 1'-0" | S3.1

TENSION LAP SPLICE LENGTHS (in) GRADE 60 UNCOATED BARS f'c=3000 psi						
BAR SIZE	LAP CLASS	TOP BARS		OTHER BARS		
		CASE 1	CASE 2	CASE 1	CASE 2	
#3	A	22	32	17	25	
	B	28	42	22	32	
#4	A	29	43	22	33	
	B	37	56	29	43	
#5	A	36	54	28	41	
	B	47	70	36	54	
#6	A	43	64	33	50	
	B	56	84	43	64	
#7	A	63	94	48	72	
	B	81	122	63	94	
#8	A	72	107	55	82	
	B	93	139	72	107	
#9	A	81	121	62	93	
	B	105	157	81	121	
#10	A	91	136	70	105	
	B	118	177	91	136	
#11	A	101	151	78	116	
	B	131	196	101	151	

NOTES:

1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL-WEIGHT CONCRETE.
2. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS ARE BASED ON ACI 318, SECTIONS 12.2.2 AND 12.15, RESPECTIVELY.
3. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS. LENGTHS ARE IN INCHES.
4. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND THE CENTER-TO-CENTER SPACING OF THE BARS ARE DEFINED AS:

   BEAMS OR COLUMNS:
   CASE 1: COVER AT LEAST (1) BAR DIAMETER AND C.-C. SPACING AT LEAST (2) BAR DIAMETERS

   CASE 2: COVER LESS THAN (1) BAR DIAMETER AND C.-C. SPACING LESS THAN (2) BAR DIAMETERS

   ALL OTHERS:
   CASE 1: COVER AT LEAST (1) BAR DIAMETER AND C.-C. SPACING AT LEAST (3) BAR DIAMETERS

   CASE 2: COVER LESS THAN (1) BAR DIAMETER AND C.-C. SPACING LESS THAN (3) BAR DIAMETERS

5. LAP CLASS A VALUES ARE THE REQUIRED TENSION DEVELOPMENT LENGTHS, ld; LAP SPLICE LENGTHS ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS; CLASS A - 1.0ld AND CLASS B = 1.3ld (ACI 318, SECTION 12.15.1)
6. LAP CLASS B SHALL BE USED FOR ALL CASES UNLESS APPROVED BY E.O.R
7. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
8.) LENGTHS SHOWN ARE FOR UNCOATED BARS. LENGTHS SHOWN SHALL BE MULTIPLIED BY 1.2 FOR ALL EXPOXY COATED BARS (ACI 318 SECTION 12.2.4)
9.) WHEN BARS OF DIFFERENT SIZES ARE LAP SPLICED, THE SPLICE LENGTH FOR THE LARGER BAR SHALL BE USED.

LAP SPLICE LENGTHS f'c=3000 psi | 10

1/2" = 1'-0" | S3.1

TENSION LAP SPLICE LENGTHS (in) GRADE 60 UNCOATED BARS f'c=4000 psi						
BAR SIZE	LAP CLASS	TOP BARS		OTHER BARS		
		CASE 1	CASE 2	CASE 1	CASE 2	
#3	A	19	28	15	22	
	B	24	36	19	28	
#4	A	25	37	19	29	
	B	32	48	25	37	
#5	A	31	47	24	36	
	B	40	60	31	47	
#6	A	37	56	29	43	
	B	48	72	37	56	
#7	A	54	81	42	63	
	B	70	106	54	81	
#8	A	62	93	48	72	
	B	80	121	62	93	
#9	A	70	105	54	81	
	B	91	136	70	105	
#10	A	79	118	61	91	
	B	102	153	79	118	
#11	A	87	131	67	101	
	B	113	170	87	131	

NOTES:

1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL-WEIGHT CONCRETE.
2. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS ARE BASED ON ACI 318, SECTIONS 12.2.2 AND 12.15, RESPECTIVELY.
3. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS. LENGTHS ARE IN INCHES.
4. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND THE CENTER-TO-CENTER SPACING OF THE BARS ARE DEFINED AS:

   BEAMS OR COLUMNS:
   CASE 1: COVER AT LEAST (1) BAR DIAMETER AND C.-C. SPACING AT LEAST (2) BAR DIAMETERS

   CASE 2: COVER LESS THAN (1) BAR DIAMETER AND C.-C. SPACING LESS THAN (2) BAR DIAMETERS

   ALL OTHERS:
   CASE 1: COVER AT LEAST (1) BAR DIAMETER AND C.-C. SPACING AT LEAST (3) BAR DIAMETERS

   CASE 2: COVER LESS THAN (1) BAR DIAMETER AND C.-C. SPACING LESS THAN (3) BAR DIAMETERS

5. LAP CLASS A VALUES ARE THE REQUIRED TENSION DEVELOPMENT LENGTHS, ld; LAP SPLICE LENGTHS ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS; CLASS A - 1.0ld AND CLASS B = 1.3ld (ACI 318, SECTION 12.15.1)
6. LAP CLASS B SHALL BE USED FOR ALL CASES UNLESS APPROVED BY E.O.R
7. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
8.) LENGTHS SHOWN ARE FOR UNCOATED BARS. LENGTHS SHOWN SHALL BE MULTIPLIED BY 1.2 FOR ALL EXPOXY COATED BARS (ACI 318 SECTION 12.2.4)
9.) WHEN BARS OF DIFFERENT SIZES ARE LAP SPLICED, THE SPLICE LENGTH FOR THE LARGER BAR SHALL BE USED.

LAP SPLICE LENGTHS f'c=4000 psi | 11

1/2" = 1'-0" | S3.1

paragon star

PARAGON STAR SOUTH - RESTROOM

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 02.03.2023
Issued For: PERMIT SET

REVISIONS

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KEVIN S. BOEHRINGER
NUMBER E-29757
2/3/23
PROFESSIONAL ENGINEER

PROJECT TEAM

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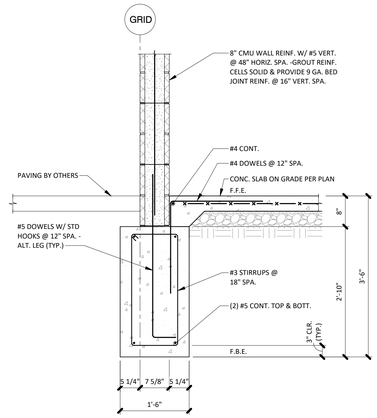
Project Number: 21-037

SHEET TITLE

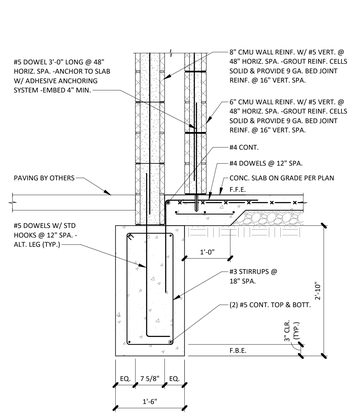
TYPICAL FOUNDATION DETAILS

SHEET NUMBER

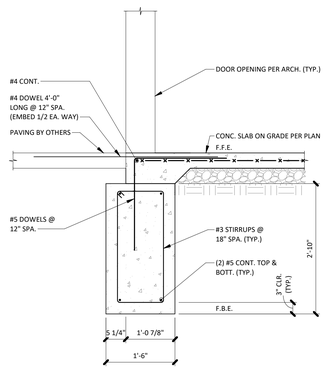
S3.1



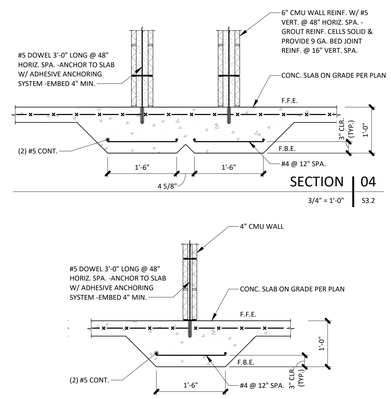
SECTION 01
3/4" = 1'-0" | S3.2



SECTION 02
3/4" = 1'-0" | S3.2

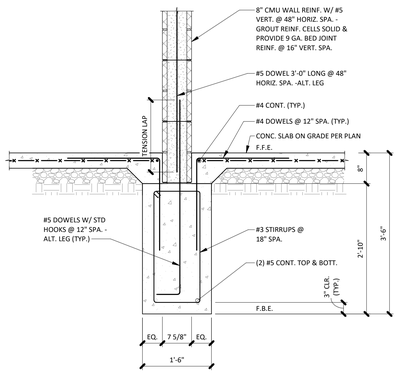


SECTION 03
3/4" = 1'-0" | S3.2

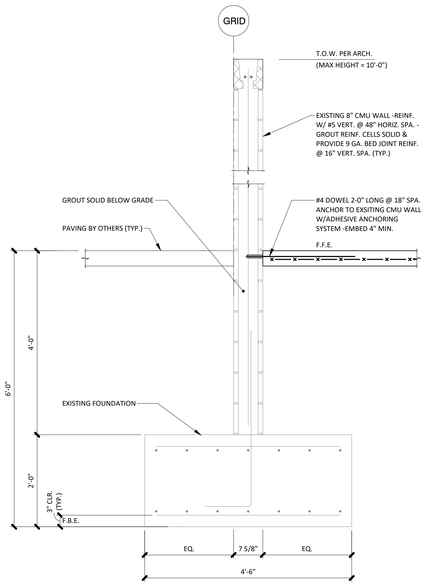


SECTION 04
3/4" = 1'-0" | S3.2

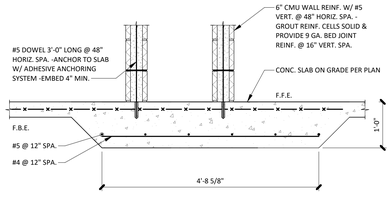
SECTION 05
3/4" = 1'-0" | S3.2



SECTION 06
3/4" = 1'-0" | S3.2



SECTION 07
3/4" = 1'-0" | S3.2



SECTION 08
3/4" = 1'-0" | S3.2

2/2/2023 2:28:30 PM | PARAGON STAR SOUTH - RESTROOM

paragon star

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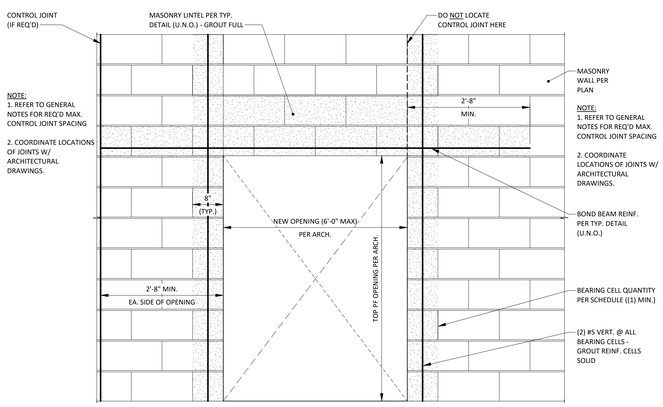
Project Number: 21-037

SHEET TITLE

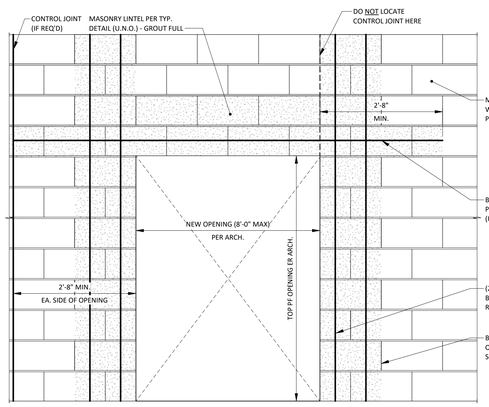
FOUNDATION DETAILS

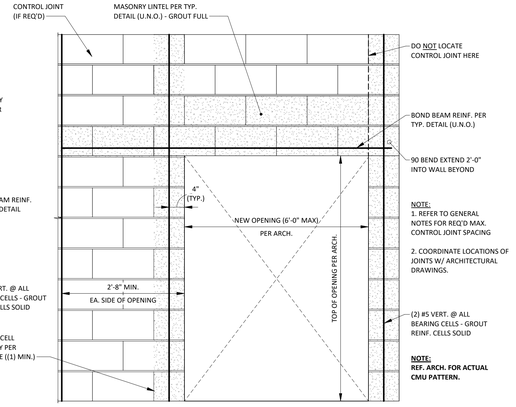
SHEET NUMBER

S3.2

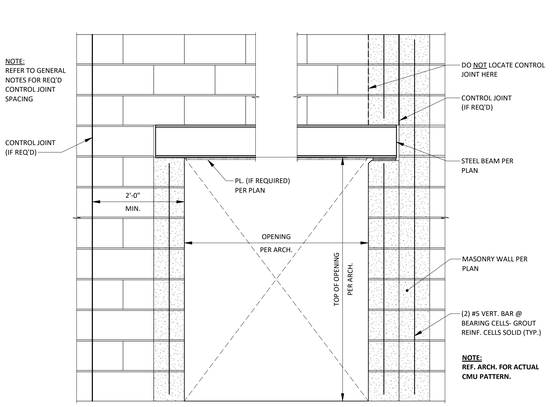


TYP. MASONRY WALL LINTEL DETAIL - BOND BEAM | 01
3/4" = 1'-0" | S4.1

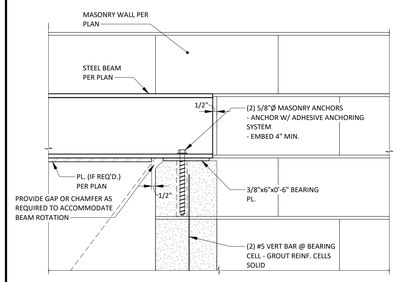




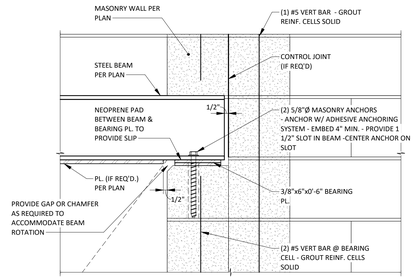
TYP. MASONRY WALL LINTEL DETAIL - BOND BEAM | 01
3/4" = 1'-0" | S4.1



TYP. MASONRY LINTEL DETAIL - STEEL BEAM | 02
3/4" = 1'-0" | S4.1



TYP. BEAM CONNECTION | 03
1 1/2" = 1'-0" | S4.1



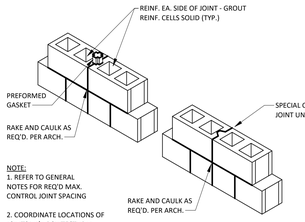
TYP. BEAM CONNECTION @ CONTROL JOINT | 04
1 1/2" = 1'-0" | S4.1

TYPICAL SPLICE LENGTHS FOR MASONRY BLOCK - STRENGTH DESIGN												
BLOCK WIDTH	BARS CENTERED - CASE A						BARS CENTERED - CASE B					
	VERTICAL BAR SIZE						VERTICAL BAR SIZE					
	#3	#4	#5	#6	#7	#8	#9	#3	#4	#5	#6	#7	#8	#9
6" BLOCK	14"	18"	28"	53"	-	-	-	-	-	-	-	-	-	-
8" BLOCK	14"	18"	22"	38"	52"	72"	*	15"	25"	39"	54"	63"	-	-
10" BLOCK	14"	18"	22"	35"	40"	61"	*	15"	25"	39"	54"	63"	72"	*
12" BLOCK	14"	18"	22"	35"	40"	61"	*	14"	22"	35"	54"	63"	72"	*

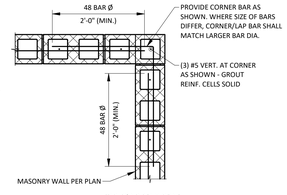
SYMBOLS:
- - REINFORCING CONFIGURATION NOT PERMISSIBLE
- * MECHANICAL TENSION SPLICE REQ'D

NOTES:
1) MECH. TENSION SPLICE CAN BE FOR ANY BAR SIZE IF NOT NOTED.
2) FOR USE WITH f'M=2,000 psi & fy = 60,000 psi

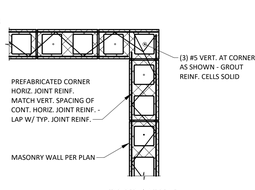
MASONRY SPLICE TABLE | 05
3/4" = 1'-0" | S4.1

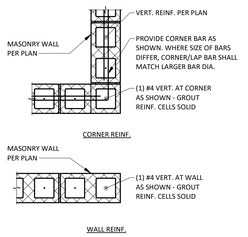


MASONARY JOINT DETAILS | 06
3/4" = 1'-0" | S4.1

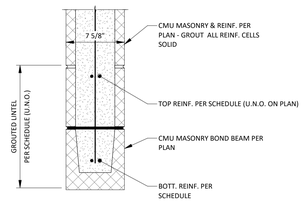


CORNER HORIZ. JOINT REINF. | 07
3/4" = 1'-0" | S4.1





CORNER & WALL VERT. REINF. | 08
3/4" = 1'-0" | S4.1



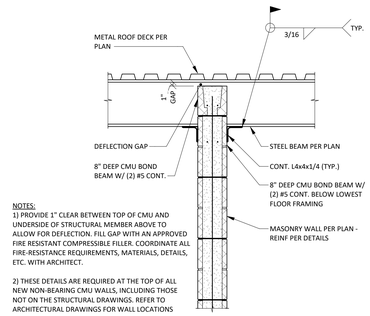
NOTE:
1.) FOR OPENING WIDTHS EXCEEDING WIDTHS SHOWN & NOT SHOWN ELSE WHERE ON DRAWINGS, CONTACT E.O.R. PRIOR TO CONSTRUCTION.

2.) BOND BEAM SIZES & REINFORCEMENT SHOWN IN PROJECT SPECIFIC DETAILS GOVERN OVER TYP. DETAILS.

3.) EXTEND ALL BARS AND GROUTING BEYOND JAMBS PER TYP. DETAILS

4.) REFER TO TYP. DETAILS FOR ADD'L. INFORMATION.

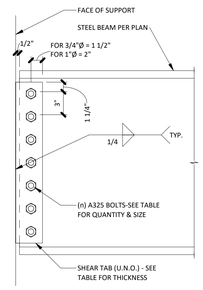
TYP. BOND BEAM DETAIL1 | 09
1 1/2" = 1'-0" | S4.1



NOTES:
1) PROVIDE 1" CLEAR BETWEEN TOP OF CMU AND UNDERSIDE OF STRUCTURAL MEMBER ABOVE TO ALLOW FOR DEFLECTION. FILL GAP WITH AN APPROVED FIRE RESISTANT COMPRESSIBLE FILLER. COORDINATE ALL FIRE-RESISTANCE REQUIREMENTS, MATERIALS, DETAILS, ETC. WITH ARCHITECT.

2) THESE DETAILS ARE REQUIRED AT THE TOP OF ALL NEW NON-BEARING CMU WALLS, INCLUDING THOSE NOT ON THE STRUCTURAL DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR WALL LOCATIONS

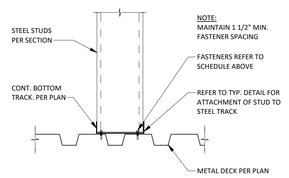
TYP. CMU WALL TO UNDERSIDE OF BEAM CONNECTION | 10
3/4" = 1'-0" | S4.1



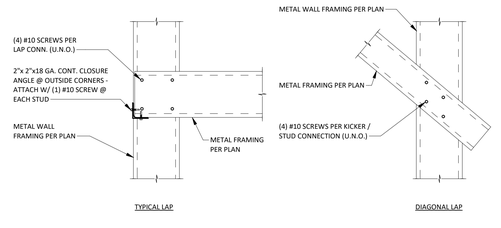
BEAM DEPTH	# OF (n) A325 BOLTS	BOLT Ø	SHEAR TAB THICKNESS
12"	3	3/4"	3/8"
14"	3	3/4"	3/8"
16"	4	3/4"	3/8"
18"	5	3/4"	3/8"
21"	6	1"	7/16"
24"	7	1"	7/16"
27"	8	1"	7/16"
30"	9	1"	7/16"
34"	10	1"	7/16"
36"	11	1"	7/16"

TYP. SHEAR TAB CONNECTION DETAIL | 11
1 1/2" = 1'-0" | S4.1

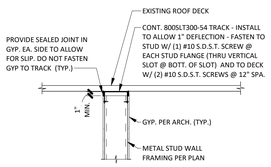
LOCATION	NUMBER OF FASTENERS REQUIRED
TYPICAL FRAMING	(2) #10 SCREWS @ EACH STUD
JAMB STUDS	(4) #10 SCREWS @ EACH JAMB



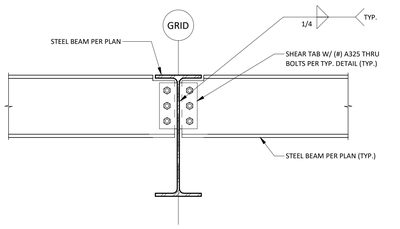
BASE DETAIL @ METAL DECK | 12
1 1/2" = 1'-0" | S4.1



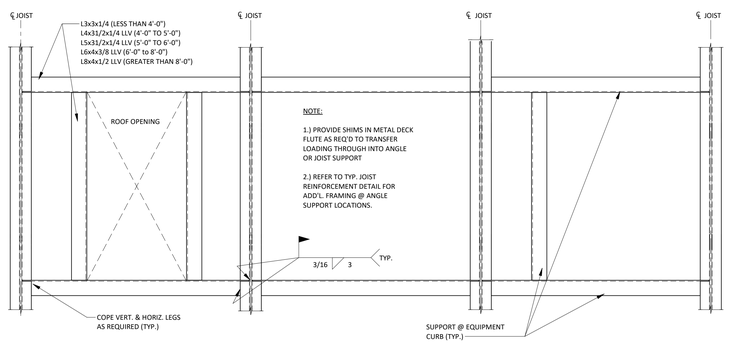
LAP CONNECTIONS | 13
1 1/2" = 1'-0" | S4.1



TYP. SLOTTED TRACK TO DECK DETAIL | 14
3/4" = 1'-0" | S4.1



TYP. BEAM TO BEAM CONNECTION | 15
1" = 1'-0" | S4.1



TYP. ROOF OPENING & EQUIP. SUPPORT FRAMING DETAIL | 16
3/4" = 1'-0" | S4.1

paragon star

PARAGON STAR SOUTH - RESTROOM

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.:	19050.04A
Date:	02.03.2023
Issued For:	PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
KEVIN S. BOEHRINGER
NUMBER E-29757
2/5/23
PROFESSIONAL ENGINEER

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND3 STUDIO
FOUNDATIONS	BSE ENGINEERS
STRUCTURAL	BSE ENGINEERS
PLUMBING	HENDERSON ENGINEERS
MECHANICAL	HENDERSON ENGINEERS
ELECTRICAL	HENDERSON ENGINEERS
FIRE PROTECTION	HENDERSON ENGINEERS
CONTRACTOR	FOGEL-ANDERSON

BSE STRUCTURAL ENGINEERS

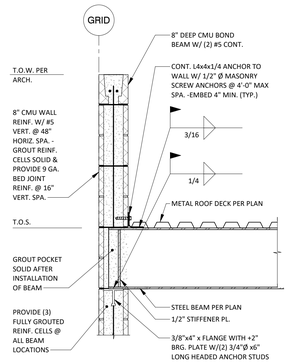
BSE Structural Engineers LLC
11320 West 79th Street
Lenexa, Kansas 66214
Phone 913.492.7400
www.BSEstructural.com
Project Number: 21-037

SHEET TITLE

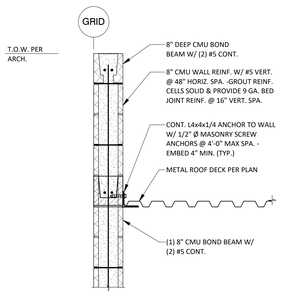
TYPICAL FRAMING DETAILS

SHEET NUMBER

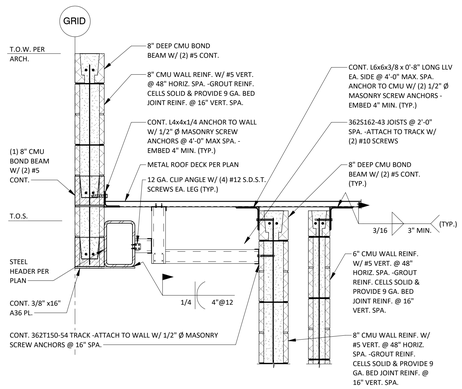
S4.1



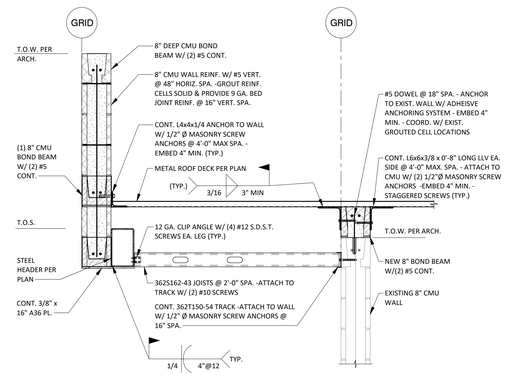
SECTION | 01
3/4" = 1'-0" | S4.2



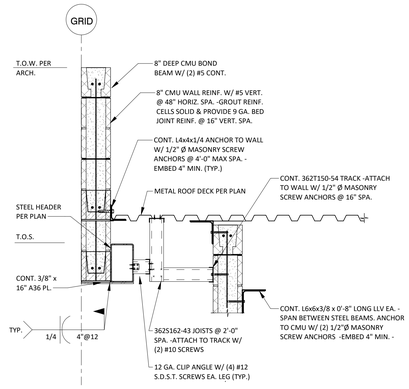
SECTION | 02
3/4" = 1'-0" | S4.2



SECTION | 03
3/4" = 1'-0" | S4.2



SECTION | 04
3/4" = 1'-0" | S4.2



SECTION | 05
3/4" = 1'-0" | S4.2

SECTION | 06
3/4" = 1'-0" | S4.2

SECTION | 07
3/4" = 1'-0" | S4.2

2/2/2023 2:29:32 PM | PARAGON STAR SOUTH - RESTROOM

paragon star

PARAGON STAR SOUTH - RESTROOM

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101 NW VIEW HIGH DR.
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KEVIN S. BOEHRINGER
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PROFESSIONAL ENGINEER
2/5/23

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CIVIL	GBA
LANDSCAPE	LAND3 STUDIO
FOUNDATIONS	BSE ENGINEERS
STRUCTURAL	BSE ENGINEERS
PLUMBING	HENDERSON ENGINEERS
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ELECTRICAL	HENDERSON ENGINEERS
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Project Number: 21-037

SHEET TITLE

FRAMING DETAILS

SHEET NUMBER

S4.2

ELECTRICAL SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED.

V3.00

STANDARD MOUNTING HEIGHTS

AUDIBLE APPLIANCES (CENTERLINE)	84"
ALARMS	48"
ANNUNCIATOR PANELS (DISPLAY)	60"
CONTROLS (TOP OF DEVICE)	48"
EXIT SIGNS (WALL MOUNTED)	80"
FIRE ALARM ANNUNCIATOR PANEL (DISPLAY)	60"
FIRE ALARM BELL (EXTERIOR) (CENTERLINE)	120"
FIRE ALARM CONTROL PANEL/UNIT (DISPLAY)	60"
INTERCOM (AFEA ONLY)	36"
INTERCOMS (TOP OF DEVICE)	48"
PULL STATIONS (TOP OF DEVICE)	48"
PHOTOCELLS	144"
RECEPTACLES	16"
RECEPTACLES (EXTERIOR)	24"
RECEPTACLES (GARAGES)	24"
RECEPTACLES (POOLS)	27"
RECEPTACLES (ABOVE COUNTER) +6" ABOVE BACKSPLASH/COUNTER, 40" MAX	
RECEPTACLES IN EQUIPMENT ROOMS	44"
REMOTE INDICATING LIGHT (EQUIPMENT ROOMS)	48"
REMOTE INDICATING LIGHT (FINISHED AREAS)	CEILING
SAFETY SWITCHES (TOP OF DEVICE)	48"
STARTERS (TOP OF DEVICE)	48"
SWITCHES (TOP OF DEVICE)	44"
TELEPHONE, DATA OUTLETS	SAME AS ADJACENT DEVICE, UNO
TELEPHONE TERMINAL BOARD (BOTTOM)	6"
TELEVISION OUTLETS	REFER TO ARCH DRAWINGS
VISIBLE APPLIANCES (CENTERLINE)	84"

INSTALL OUTLET BOXES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE, OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS, ARE AFF OR AFG TO BOTTOM OF OUTLET BOX, UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ABBREVIATIONS

AF	AMPERE FUSE SIZE
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AS	AMPERE SWITCH SIZE
AT	AMPERE TRIP SETTING
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
BAS	BUILDING AUTOMATION SYSTEM
BKR	BREAKER
C	CONDUIT
CAT	CATEGORY
CATV	CABLE TELEVISION SYSTEM
CCTV	CLOSED CIRCUIT TELEVISION
CD	CANDELA
CKT	CIRCUIT
CODE	APPLICABLE CODE ADOPTED BY JURISDICTION
CT	CURRENT TRANSFORMER
CTR	CENTER
CVD	CUMULATIVE VOLTAGE DROP
D/DEMO	DEMOLITION
DPDT	DOUBLE-POLE, DOUBLE-THROW
DPST	DOUBLE-POLE, SINGLE-THROW
E/ETR/EX	EXISTING TO REMAIN
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
ELV	ELECTRONIC LOW-VOLTAGE
EWC	ELECTRIC WATER COOLER
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FCA	FAULT CURRENT AMPS AVAILABLE
FCU	FAN COIL UNIT
FF	FINISHED FLOOR
FLA	FULL LOAD AMPS
FLR	FLOOR
GC	GENERAL CONTRACTOR
GEC	GROUNDING ELECTRODE CONDUCTOR
GES	GROUNDING ELECTRODE SYSTEM
GFR	GROUND FAULT RELAY
G	GROUND
IG	ISOLATED GROUND
ISC	SHORT CIRCUIT CURRENT
JB/J-BOX	JUNCTION BOX
LF	LINEAR FEET
LRA	LOCKED ROTOR AMPS
LTG/LTS	LIGHTING/LIGHTS
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MLV	MAGNETIC LOW-VOLTAGE
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
N/A	NOT APPLICABLE
NF	NON-FUSED
NL	NIGHT LIGHT (24HR ON)
NRTL	NATIONALLY RECOGNIZED TESTING LABORATORY (CSA, ETL, NSF, UL)
NTS	NOT TO SCALE
OS	OCCUPANCY SENSOR
P	POLE
PART	PARTIAL CIRCUIT
PH/Ø	PHASE
PNL	PANEL
PNLBD	PANELBOARD
PROVIDE	FURNISH AND INSTALL
PT	POTENTIAL TRANSFORMER
QTY	QUANTITY
R/REL	RELOCATE
RCPT	RECEPTACLE
RLA	RUNNING LOAD AMPS
RTU	ROOFTOP UNIT
SCCR	SHORT-CIRCUIT CURRENT RATING
SD	SMOKE DUCT DETECTOR
SF	SQUARE FEET
SPDT	SINGLE-POLE, DOUBLE-THROW
SPST	SINGLE-POLE, SINGLE-THROW
SSBJ	SUPPLY-SIDE BONDING JUMPER
ST	SHUNT TRIP
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TBD	TO BE DETERMINED
TGB	TELECOMMUNICATIONS GROUND BUS BAR
TL	TWISTLOCK
TMGB	TELECOMMUNICATIONS MAIN GROUND BUS BAR
TX/XFMR	TRANSFORMER
TYP	TYPICAL
U/F	UNDERFLOOR
U/G	UNDERGROUND
U/S	UNDERSLAB
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
VD	VOLTAGE DROP
VFD	VARIABLE FREQUENCY DRIVE
VS	VACANCY SENSOR
W	WIRE
W/	WITH
WP	WEATHER PROOF
WR	WEATHER RESISTANT
WT	WATERTIGHT
XP	EXPLOSION PROOF

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING
DEMOLISH
NEW
FUTURE
ARTICLE 700 OR LIFE SAFETY
ARTICLE 701 OR CRITICAL / EQUIPMENT BRANCH
ARTICLE 702 OR OPTIONAL

ANNOTATION

- MECHANICAL OR FIRE PROTECTION PLAN NOTE CALLOUT
- PLUMBING PLAN NOTE CALLOUT
- ELECTRICAL OR FIRE ALARM PLAN NOTE CALLOUT
- TECHNOLOGY PLAN CALLOUT
- PLUMBING EQUIPMENT DESIGNATION. (CONTRACTOR FURNISHED AND INSTALLED). REFER TO PLUMBING FIXTURE OR EQUIPMENT SCHEDULES
- EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)
- CU / 1 — MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- CONNECTION POINT OF NEW WORK TO EXISTING
- 1 / E1 — DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- SECTION CUT DESIGNATION
- DEDICATED EQUIPMENT ACCESS TILE
- ACCESS PANEL

CIRCUITING & WIRING

- 7 5 3 / OR P1-3,5,7 / [R#] P1 — HOMERUN TO PANELBOARD. INFORMATION AT ARROWS ARE CIRCUIT NUMBERS AND PANELBOARD FOR TERMINATION. REFER TO PANELBOARD SCHEDULES FOR BRANCH CIRCUIT CONDUCTOR SIZES.
- INDICATES RELAY NUMBER
- CIRCUIT CONTINUATION OR PARTIAL CIRCUIT
- CONDUIT CONCEALED
- CONDUIT CONCEALED (EMERGENCY)
- CONDUIT IN/UNDER FLOOR/GROUND CONSTRUCTION
- EXPOSED CONDUIT
- EXPOSED CONDUIT (EMERGENCY)
- FLEXIBLE CONDUIT
- LOW VOLTAGE CABLE (NOT ROUTED IN CONDUIT)
- CONDUIT TURNING DOWN
- CONDUIT TURNING UP
- CONNECTION POINT OR EQUIPMENT TERMINATION
- EQUIPMENT TERMINATION

CONDUCTOR TICK MARK LEGEND

WHERE TICK MARKS ARE SHOWN, THE FOLLOWING SHALL GOVERN:

- SWITCHED HOT (PHASE) CONDUCTORS (SHOWN TRAILING NEUTRAL)
- NEUTRAL (GROUNDED) CONDUCTOR
- UNSWITCHED HOT (PHASE) CONDUCTORS (SHOWN LEADING NEUTRAL)
- NOTE: HASH MARKS INDICATE QUANTITY OF CONDUCTORS
- EQUIPMENT GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION OR BARE)
- ISOLATED GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION WITH YELLOW TRACER)

LIGHTING

- A a — LIGHT FIXTURE
  - a = LOWER CASE LETTER IS SWITCH IDENTIFIER
  - A = UPPER CASE LETTER INDICATES LIGHT FIXTURE TYPE
  - = WALL MOUNT
  - = ARROW INDICATED AIMING DIRECTION
- LIGHT FIXTURE CIRCUITED AS A NIGHT LIGHT (NL)
- EMERGENCY LIGHT FIXTURE WITH EMERGENCY LIGHTING BATTERY PACK OR CONNECTED TO EMERGENCY SOURCE
- NIGHT LIGHT/EMERGENCY LIGHT FIXTURE WITH EMERGENCY BATTERY PACK OR CONNECTED TO EMERGENCY SOURCE
- LIGHT FIXTURE WITH DUAL BALLASTS CIRCUITED SEPARATELY (SHADING IMPLIES EMERGENCY LIGHT FIXTURE)
- [#] LIGHTING TRACK (# INDICATES RELAY NUMBER)
- MIRROR LIGHTS
- EXTERIOR PARKING LOT LIGHT FIXTURE
- EXTERIOR PEDESTRIAN POST TOP LIGHT FIXTURE
- EXTERIOR LIT BOLLARD LIGHT
- EXIT SIGN - CEILING / WALL MOUNTED, ARROWS AS INDICATED, FACE HATCHED
- EMERGENCY LIGHTING UNIT EQUIPMENT WITH BATTERY PACK - CEILING/WALL MOUNTED
- AFEA (AREA FOR EVACUATION ASSISTANCE) SIGN - CEILING/WALL MOUNTED, ARROWS AS INDICATED

REFER TO LIGHT FIXTURE SCHEDULE FOR MORE INFORMATION

POWER EQUIPMENT & DEVICES

- ELECTRICAL PANELBOARD (SURFACE OR FLUSH MOUNT)
- ELECTRICAL CABINET (SURFACE OR FLUSH MOUNT), TYPE AS NOTED
- PLYWOOD TERMINAL BOARD FOR TELEPHONE SYSTEM, UNO. SIZE AS NOTED
- SWITCHBOARD OR MOTOR CONTROL CENTER ON HOUSEKEEPING PAD
- ELECTRICAL DISTRIBUTION PANELBOARD
- TRANSFORMER
- 200/3/150/3R — DISCONNECT SWITCH - "200/3/150/3R" DENOTES AMPERES/POLE/FUSE/NEMA ENCLOSURE RATING, NF= NON-FUSED, CB= CIRCUIT BREAKER (200/3/CB), NO VALUE (200/3/150) FOR NEMA ENCLOSURE MEANS STANDARD NEMA 1 RATING
- 30/3/15/1/3R — COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER "30/3/15/1/3R" DENOTES AMPERES/POLE/FUSE/NEMA STARTER SIZE/NEMA ENCLOSURE RATING. NF= NON-FUSED, CB= CIRCUIT BREAKER (30/3/CB/1), NO VALUE (200/3/150/1) FOR NEMA ENCLOSURE MEANS STANDARD NEMA 1 ENCLOSURE RATING
- 2 — MAGNETIC MOTOR STARTER, NEMA SIZE AS NOTED. 3-POLE, UNO
- VFD — VARIABLE FREQUENCY DRIVE
- INDICATING LIGHT
- EMERGENCY POWER OFF BUTTON
- STOP-START PUSH BUTTON CONTROL STATION
- HAND-OFF-AUTO PUSH BUTTON CONTROL STATION
- MUSHROOM-TYPE PUSH BUTTON
- OVERHEAD PADDLE FAN

NURSE CALL (HOSPITAL)

- B — CODE BLUE PUSHBUTTON STATION
- BR — BED RECEPTACLE
- DS — DUTY STATION
- E — STAFF EMERGENCY ASSIST STATION
- EP — PATIENT EMERGENCY PULL CORD STATION
- IC — INTERCOM
- K — NURSE CALL KEY SWITCH
- N1 — NURSE CALL BEDSIDE STATION - SINGLE PATIENT
- N2 — NURSE CALL BEDSIDE STATION - DOUBLE PATIENT
- NA — NURSE CALL VISUAL ANNUNCIATOR PANEL
- SS — STAFF STATION (NORMAL, EMERGENCY & CODE BLUE)
- NM — NURSE CALL MASTER STATION
- B — DOME LIGHT - CEILING MOUNTED, B = BUZZER
- B — DOME LIGHT - WALL MOUNTED, B = BUZZER
- Z,B — ZONE DOME LIGHT, B = BUZZER

BOXES, LIGHTING CONTROL & WIRING DEVICES

- $# — SWITCH LETTER DESIGNATIONS AS FOLLOWS:
  - BLANK = SINGLE
  - 2 = TWO POLE
  - 3 = THREE-WAY
  - 4 = FOUR-WAY
  - D = DIMMER
  - F = FAN SPEED CONTROL
  - FH = FRACTIONAL HORSEPOWER MANUAL CONTROLLER
  - IH = INTEGRAL HORSEPOWER MANUAL CONTROLLER
  - K = KEYED
  - LV# = LOW VOLTAGE / DIGITAL
  - M = MANUAL MOTOR STARTER DISCONNECT
  - OS# = OCCUPANCY SENSOR
  - P = SPST PILOT LIGHT
  - WP = WEATHER PROOF
  - # = REFER TO LIGHTING CONTROL DEVICE SCHEDULE
- ALC — AUTOMATIC LOAD CONTROL RELAY
- BTS — BRANCH CIRCUIT TRANSFER SWITCH
- CEILING / WALL MOUNTED OCCUPANCY SENSOR (# INDICATES TYPE PER SCHEDULE)
  - CORNER 90 DEGREE SENSING
  - ONE-DIRECTION SENSING, CEILING/WALL MOUNT
  - CEILING MOUNT, TWO DIRECTION SENSING
  - CEILING MOUNT, FOUR DIRECTION SENSING
- C# — CONTACTOR (SIZE, COIL VOLTAGE AND NUMBER OF POLES AS INDICATED)
- CL## — TRACK-MOUNTED CURRENT LIMITER (## INDICATES AMPERAGE)
- D# — DAYLIGHT SENSOR (# INDICATES TYPE PER SCHEDULE)
- LC — LIGHTING CONTROLS PROCESSOR AND/OR EQUIPMENT
- P# — POWER PACK (# INDICATES TYPE PER SCHEDULE)
- PS# — PHOTOELECTRIC SWITCH
- R## — ROOM CONTROLLER (# INDICATES TYPE PER SCHEDULE)
- TS# — TIME SWITCH
- SIMPLEX RECEPTACLE - NEMA 5-20R, UNO
- DUPLEX RECEPTACLE - NEMA 5-20R, UNO
- DOUBLE DUPLEX RECEPTACLE - NEMA 5-20R, UNO
- SPECIAL RECEPTACLE - NEMA TYPE AS NOTED
- TWIST-LOCK TYPE RECEPTACLE
- G — BLANK FACE GFCI FEED THROUGH DEVICE
- OR GFCI — GFCI TYPE RECEPTACLE*
- OR IG — ISOLATED GROUND TYPE RECEPTACLE*
- OR EM — EMERGENCY RECEPTACLE*
- RECEPTACLE INSTALLED ABOVE COUNTER OR BACKSPLASH*
- RECEPTACLE INSTALLED IN CEILING*
- RECEPTACLE INSTALLED IN FLOOR*
- RECEPTACLE INSTALLED VIA DROP CORD*
- # — RECEPTACLE LETTER DESIGNATIONS AS FOLLOWS:
  - C = AUTOMATICALLY CONTROLLED
  - CH = CLOCK HANGER TYPE
  - G=RCPT PROTECTED BY GFCI CIRCUIT BREAKER OR UPSTREAM GFCI DEVICE
  - H = HORIZONTALLY MOUNTED
  - S = MANUALLY CONTROLLED
  - SP / TVSS = SURGE PROTECTION
  - TR = TAMPER RESISTANT
  - TV = TELEVISION
  - USB = USB/DUPLEX
  - WP = WEATHER PROOF COVER
  - WR = WEATHER RESISTANT
- MULTI-OUTLET ASSEMBLY
- TELEPHONE OUTLET
- DATA OUTLET
- MULTI-SERVICE OUTLET; TELEPHONE AND DATA
  - ABOVE COUNTER, TYP
  - WALL, TYP
  - FLOOR, TYP
- A — MULTI-SERVICE POWER POLE WITH TELEPHONE, DATA AND POWER OUTLETS A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
- A — MULTI-SERVICE FLOOR BOX WITH TELEPHONE, DATA AND POWER OUTLETS A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
- A — POKE THROUGH, A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
- THERMOSTAT
- CEILING/FLOOR MOUNT JUNCTION/OUTLET BOX
- WALL MOUNT JUNCTION/OUTLET BOX

* SYMBOL DEMONSTRATED WITH DUPLEX RECEPTACLE, WHEN USED IN COMBINATION WITH OTHER DEVICES MEANING IS SIMILAR FOR THOSE DEVICE TYPES.

REFER TO LIGHTING CONTROL DEVICE SCHEDULE FOR MORE INFORMATION.

ELECTRICAL ONE-LINE & RISER DIAGRAM

- ###A 3P — SWITCH (RATING AS INDICATED)
- ###A 3P — DRAWOUT CIRCUIT BREAKER (RATINGS AS INDICATED)
- ###AS 3P ###AF FRS — FUSED SWITCH (RATING, POLES AND FUSE TYPE AS INDICATED)
- ###AS 3P ###AF FRS NEMA # — COMBINATION FUSED SWITCH/STARTER AND STARTER SIZE
- ###AS 3P FRS NEMA # — CIRCUIT BREAKER (RATINGS AS INDICATED)
- ###A 3P NEMA # — COMBINATION CIRCUIT BREAKER/STARTER AND STARTER SIZE
- PANELBOARD, SINGLE OR MULTI-SECTION (REFER TO SCHEDULES)
- ISOLATED POWER PANELBOARD W/ INTEGRAL TRANSFORMER (REFER TO SCHEDULES)
- TX## — TRANSFORMER (TYPE AND RATINGS AS INDICATED)
- TX## — SHIELDED TRANSFORMER (TYPE AND RATINGS AS INDICATED)
- ATS# / ###A / ATS# (W/BYPASS) — AUTOMATIC TRANSFER SWITCH (RATINGS AS INDICATED)
- ATS# (W/BYPASS) / ###A — AUTOMATIC TRANSFER SWITCH WITH BYPASS (RATINGS AS INDICATED)
- ##KW GENERATOR / 480Y/277V, 3Ø, 4W / ###A, 3P / M/G — GENERATOR (RATINGS AS INDICATED)
  - NON-SEPARATELY DERIVED SOURCE OR SEPARATELY DERIVED SOURCE
- MDP SWITCHBOARD ELEC ROOM / ### AMPS 480Y/277V 3Ø 4W — SWITCHGEAR, SWITCHBOARD AND/OR DISTRIBUTION PANELBOARD (TYPE, RATING, DEVICES AND ACCESSORIES AS INDICATED)
- DIGITAL VM AM — COMBINATION DIGITAL VOLT METER/AMMETER
- ### — CIRCUIT IDENTIFICATION (REFER TO CIRCUIT SCHEDULE)
- GFR — GROUND FAULT RELAY
- PFR — PHASE FAILURE RELAY
- KK# — KIRK-KEY INTERLOCK (# INDICATES KEY PAIR)
- ST — SHUNT TRIP
- AM — AMMETER (RANGE AS SPECIFIED OR REQUIRED)
- VM — VOLTMETER (RANGE AS SPECIFIED OR REQUIRED)
- UTILITY METER M — UTILITY METER (AS REQUIRED BY UTILITY)
- AS — AMMETER SWITCH
- VS — VOLTMETER SWITCH
- WH D 15 — WATT-HOUR METER, "D" DENOTES DEMAND REGISTER, "15" DENOTES MINUTES OF DEMAND INTERVAL
- CURRENT TRANSFORMER RATING AS SPECIFIED OR REQUIRED
- POTENTIAL TRANSFORMER RATING AS SPECIFIED OR REQUIRED
- SPD — SURGE-PROTECTIVE DEVICE
- GROUND CONNECTION
- GROUND CONNECTION WITH TEST WELL
- GROUND ROD
- LIGHTNING ARRESTER
- CAPACITOR
- CONTACT (OPEN OR CLOSED)
- HEATER
- HP — MOTOR
- ## — BLOCK LOAD KW OR KVA
- F# FP# — FAULT POINT REFERENCED IN SHORT CIRCUIT CURRENT AND VOLTAGE DROP SPREADSHEET

CALL OUTS

- ENLARGED PLAN CALLOUT
- NOT IN SCOPE

APPLICABLE ELECTRICAL CODES:

NOTE: PROJECT IS DESIGNED IN COMPLIANCE WITH THE FOLLOWING CODES. THIS IS NOT AN EXHAUSTIVE LIST. PROJECT SHALL COMPLY WITH ALL APPLICABLE CODES, STANDARDS AND LOCAL REQUIREMENTS. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE, (NFPA 70
BUILDING CODE: 2018 INTERNATIONAL BUILDING CODE
ENERGY CODE: 2018 INTERNATIONAL ENERGY CONSERVATION CODE

COMMISSIONING / FUNCTIONAL TESTING:

CONTRACTOR'S BID SHALL INCLUDE PROVISIONS TO PROVIDE ALL SERVICES RELATED TO THE CODE REQUIRED BUILDING SYSTEMS COMMISSIONING INCLUDING A COMMISSIONING PLAN, FUNCTIONAL TESTING, AND RELATED DOCUMENTATION, REPORTS AND OWNER TRAINING. THIS INCLUDES RETAINING THE SERVICES OF A 3RD PARTY REGISTERED DESIGN PROFESSIONAL OR APPROVED AGENCY. REFER TO THE LATEST ADOPTED EDITION OF THE APPLICABLE ENERGY CODE FOR MORE INFORMATION. CONTRACTOR SHALL COMPLETE ALL RELATED COMMISSIONING REQUIREMENTS PRIOR TO FINAL INSPECTIONS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS, CODE AND MANUFACTURER'S INSTRUCTIONS.

SPECIAL SYSTEMS SUPPLEMENTAL SPECIFICATIONS:

1. PROVIDE NECESSARY BOXES, CONDUIT AND MAKE FINAL CONNECTIONS TO TEMPERATURE CONTROL DEVICES PER MANUFACTURER'S RECOMMENDATIONS. THIS INCLUDES BUT IS NOT LIMITED TO: MAIN CONTROL PANELS, THERMOSTATS, HUMIDISTATS, AC SOLENOIDS, HEAT RECLAIM WIRING, AHU CONTROL WIRING, DUCT FURNACE CONTROL WIRING, TIMERS, AND SIMILAR CONTROLS. PROVIDE CONDUIT FOR ALL WIRING WITHIN WALLS. PROVIDE CONTROL AND INTERLOCK WIRING WHEN NOT PROVIDED BY OTHER TRADES. COORDINATE REQUIREMENTS WITH EQUIPMENT SUPPLIERS AND OTHER TRADES PRIOR TO ROUGH-IN.
2. PROVIDE LINE VOLTAGE WIRING AND MAKE FINAL CONNECTIONS TO ALL DUCT-MOUNTED SMOKE DETECTORS, FIRE/SMOKE AND SMOKE DAMPERS WHERE APPLICABLE. COORDINATE REQUIREMENTS WITH OTHER TRADES PRIOR TO INSTALLATION.
3. DEVICES MOUNTED ON ACOUSTICAL TILE CEILINGS SHALL BE CENTERED ON THE TILE, UNO.
4. PROVIDE BOX AND 3/4" CONDUIT FROM EACH THERMOSTAT LOCATION TO MECHANICAL EQUIPMENT, (FLUSH MOUNT BOX WHEREVER PRACTICABLE). COORDINATE LOCATION OF ALL THERMOSTAT BOXES WITH MECHANICAL/CONTROLS CONTRACTOR AND OWNER PRIOR TO ROUGH-IN.
5. PROVIDE BOXES AND CONDUITS FOR THE FIRE PROTECTION SYSTEM LOW VOLTAGE WIRING AS REQUIRED. THIS INCLUDES EXPOSED WIRING LESS THAN 96" AFF. AT A MINIMUM, PROVIDE 3/4" CONDUIT, UNLESS NOTED OTHERWISE. COORDINATE REQUIREMENTS AND LOCATIONS WITH SYSTEM INSTALLER AND FIRE ALARM SPECIFICATIONS.
6. AT A MINIMUM, PROVIDE EXTRA DEEP, DOUBLE GANG COMMUNICATION OUTLET BOXES, (FLUSH MOUNTED WHEREVER PRACTICABLE), WITH SINGLE-GANG PLASTER RING AND 1" CONDUIT STUBBED-UP CONCEALED TO ACCESSIBLE CEILING SPACE, UNLESS NOTED OTHERWISE. PROVIDE SURFACE MOUNTED DATA BOXES WITHIN CABINETRY, AND SELECT OTHER LOCATIONS AS INDICATED ON THE DRAWINGS. COORDINATE TELEPHONE/DATA BOX AND CONDUIT LOCATIONS AND SIZES WITH OWNER AND OTHER TRADES PRIOR TO ROUGH-IN.
7. PROVIDE NYLON BUSHINGS FOR ALL COMMUNICATIONS AND LOW VOLTAGE WIRING CONDUITS AND SLEEVES, UNLESS NOTED OTHERWISE.
8. ALL COMMUNICATIONS AND LOW VOLTAGE WIRING CONDUIT SHALL BE INSTALLED WITH AN ACCESSIBLE PULLBOX BETWEEN EVERY 180 DEGREE CHANGE IN DIRECTION AND AT 100' INTERVALS OF CONTINUOUS RUNS.
9. MINIMUM BEND RADIUS FOR COMMUNICATIONS CONDUIT IS 6 TIMES THE INSIDE DIAMETER FOR CONDUITS 2" IN DIAMETER AND SMALLER AND 10 TIMES THE INSIDE DIAMETER FOR CONDUITS GREATER THAN 2" IN DIAMETER, UNLESS NOTED OTHERWISE.
10. LOW VOLTAGE COMMUNICATION, ENERGY MANAGEMENT, SOUND SYSTEM, SECURITY AND RELATED WIRING IS TO BE PERFORMED BY OTHERS UNDER A SEPARATE CONTRACT, UNLESS NOTED OTHERWISE. PROVIDE BOXES AND CONDUIT IN FINISHED AND RATED FLOORS/WALLS/CEILINGS TO ACCESSIBLE LOCATIONS FOR ALL LOW VOLTAGE WIRING. PROVIDE ALL LINE VOLTAGE CIRCUITRY (120V AND HIGHER) TO OWNER FURNISHED EQUIPMENT AND LOW VOLTAGE STEP-DOWN TRANSFORMERS AS REQUIRED. COORDINATE ELECTRICAL REQUIREMENTS AND LOCATIONS WITH SYSTEM INSTALLER AND OWNER.
11. ALL LOW VOLTAGE CLASS 2 OR 3 WIRING NOT IN CONDUIT SHALL BE PLENUM RATED WHERE APPLICABLE.
12. LOW VOLTAGE CABLE SHEATH LABELS AND RELATED MANUFACTURER INFO SHALL REMAIN APPARENT IN ALL EXPOSED APPLICATIONS. PROTECT ALL EXPOSED CABLING FROM PAINTING AND OVERSPRAY (INCLUDES CABLE NOT ROUTED IN CONDUIT AND THAT IS IN CABLE TRAY).
13. CABLES SHALL BE ROUTED THROUGH THE BUILDING CABLE TRAY/RACEWAY SYSTEM, UNLESS NOTED OTHERWISE. EXPOSED CABLING SHALL NOT BE ROUTED IN AREAS EXPOSED TO STRUCTURE UNLESS SPECIFICALLY PERMITTED BY THE OWNER. IN AREAS WHERE EXPOSED CABLES ARE ALLOWED, IT SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER IN ACCORDANCE WITH THE OWNER'S REQUIREMENTS. WHERE REQUIRED, PROVIDE CONDUIT TO ROUTE LOW VOLTAGE CABLING TO THE CABLE TRAY OR NEAREST ACCESSIBLE CEILING SPACE.
14. CONDUITS FOR COMMUNICATIONS OUTLETS SERVING ELEVATOR EQUIPMENT ROOMS, FACP, AND SIMILAR CRITICAL EQUIPMENT AS DESIGNATED BY THE OWNER SHALL BE CONTINUOUS ("HOMERUN") FROM OUTLET TO SERVING COMMUNICATIONS ROOM.

LIGHTING GENERAL NOTES:

1. THE EMERGENCY LIGHTING SYSTEM HAS BEEN DESIGNED TO PROVIDE AN INITIAL FLOOR ILLUMINANCE LEVEL OF 1 FC AVERAGE, 0.1 FC MINIMUM AND NO MORE THAN A 40:1 MAX/MIN RATIO ALONG THE EMERGENCY EGRESS PATHS. WHERE APPLICABLE, ADJUST AIMING OF EMERGENCY LIGHTS AS REQUIRED TO PROVIDE PROPER ILLUMINATION AT FLOOR AVOIDING OBSTACLES AND SHADOWS AFTER STORE SET-UP IS COMPLETE.
2. WALL MOUNTED EXITS SIGNS SHALL BE MOUNTED 12" ABOVE DOOR FRAME AND CENTERED ABOVE DOOR OPENING, UNLESS NOTED OTHERWISE. CEILING/PENDANT MOUNTED EXIT SIGNS SHALL BE SUSPENDED TO 12'-0 AFF IN AREAS OPEN TO STRUCTURE, AT BOTTOM OF BAR JOISTS IN BACKROOM AREAS AND ON FINISHED CEILING WHERE APPLICABLE, UNLESS NOTED OTHERWISE. EXIT SIGNS SHALL BE READILY VISIBLE FROM DIRECTION OF EGRESS TRAVEL. COORDINATE FINAL EXIT SIGN LOCATIONS WITH AHJ AND OWNER.
3. SUSPEND BACK OF HOUSE, RECEIVING AND STOCKROOM AREA LIGHT FIXTURES AS HIGH AS PRACTICABLE IN ORDER TO AVOID DAMAGE DURING STOCKING, UNLESS NOTED OTHERWISE. SUSPEND JUST BELOW REFRIGERATION PIPING, DUCTWORK AND SIMILAR OBSTRUCTIONS WHERE NECESSARY TO AVOID SHADOWS. COORDINATE REQUIREMENTS WITH OWNER AND OTHER DISCIPLINES PRIOR TO INSTALLATION.
4. PROVIDE LABEL AT EACH MANUAL LIGHT SWITCH INDICATING THE LIGHT FIXTURE(S) THAT THE SWITCH CONTROLS AND THE RESPECTIVE "PNLBD-CKT#" DESIGNATION. A SINGLE LIGHT SWITCH FOR A SMALL ROOM DOES NOT NEED TO INDICATE THE SPACE CONTROLLED SINCE IT IS INTUITIVELY OBVIOUS. COORDINATE LABEL REQUIREMENTS WITH THE OWNER PRIOR TO INSTALLATION. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.
5. ALL REMOTELY LOCATED LIGHT FIXTURE POWER SUPPLIES SHALL BE LOCATED IN AN ACCESSIBLE LOCATION WITH PROPER VENTILATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. CONCEAL DEVICES AND RELATED WIRING FROM CUSTOMER/PUBLIC VIEW. PROVIDE ENCOSURE IF REQUIRED. COORDINATE LOCATION AND ENCLOSURE TYPE WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.

ELECTRICAL SUPPLEMENTAL SPECIFICATIONS:

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS. AS APPLICABLE, REVIEW THE LANDLORD CRITERIA, GENERAL NOTES, OTHER TRADE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMITTING BID.
2. ALL WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES AS WELL AS APPLICABLE INDUSTRY STANDARDS. ALL EQUIPMENT SHALL BEAR LABELS FOR THE USE INTENDED BY AN AHJ ACCEPTED NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL), SUCH AS UL OR ETL. THE FINAL ELECTRICAL INSTALLATION OF THE FACILITY OCCUPIED BY OWNER SHALL BE FREE FROM ELECTRICAL DEFECTS TO THE SATISFACTION OF THE AHJ, OWNER, ARCHITECT AND ENGINEER.
3. COORDINATE FINAL LOCATION AND INSTALLATION REQUIREMENTS OF ALL LIGHT FIXTURES, ELECTRICAL EQUIPMENT AND ELECTRICAL DEVICES WITH ARCHITECTURAL DRAWINGS, EXISTING CONDITIONS AND OTHER TRADES PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY DEVICES, CORDS, PLUGS, DISCONNECTS AND FINAL CONNECTIONS TO ELECTRICAL EQUIPMENT FOR PROPER OPERATION IN ACCORDANCE WITH CODE, OWNER AND MANUFACTURER REQUIREMENTS.
4. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC/SCHEMATIC IN NATURE AND REPRESENT THE GENERAL SCOPE OF WORK. IT IS NOT WITHIN THE SCOPE OF THE ELECTRICAL DRAWINGS TO SHOW ALL NECESSARY RACEWAY ROUTING, BENDS, OFFSETS, PULL BOXES AND OBSTRUCTIONS. CONTRACTOR SHALL COORDINATE THE FINAL LOCATION OF EQUIPMENT AND WIRING DEVICES WITH OTHER TRADES PRIOR TO INSTALLATION AND INSTALL ALL WORK TO CONFORM TO THE OWNER REQUIREMENTS.
5. ALL CONDUCTOR AND CONDUIT LENGTHS SHOWN IN THESE DESIGN DOCUMENTS ARE INTENDED SOLELY FOR USE IN THE DESIGN CALCULATIONS BY THE DESIGN PROFESSIONAL, UNLESS NOTED OTHERWISE. LENGTHS SHOWN SHALL NOT BE USED TO ASSIST IN THE BIDDING TAKEOFF PROCESS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MATERIAL QUANTITIES REQUIRED TO BID AND CONSTRUCT THE COMPLETE PROJECT.
6. PROVIDE PROPER FIRE PROOFING AND SEALANT FOR PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. THE FIRE STOPPING METHOD, MATERIAL AND ITS APPLICATION SHALL BE NRTL LISTED, CODE COMPLIANT AND APPROVED BY AHJ.
7. ALL APPLICABLE SWITCHES, RECEPTACLES, OUTLETS, AND CONTROLS SHALL BE PLACED AT HEIGHTS THAT ARE IN ACCORDANCE WITH ADA ACCESSIBILITY GUIDELINES.
8. WIRING DEVICES ADJACENT TO EACH OTHER SHALL BE INSTALLED UNDER A SINGLE COVER PLATE, UNO.
9. WIRING DEVICES SHOWN BACK-TO-BACK ON A COMMON WALL SHALL BE OFFSET A MINIMUM OF 12" HORIZONTALLY TO REDUCE SOUND TRANSMISSION BETWEEN ROOMS, UNO.
10. ALL WP OUTLET BOX HOODS SHALL BE "EXTRA-DUTY" AND "WHILE-IN-USE COVER" TYPE. OUTLET BOX HOODS SHALL BE LOW PROFILE WHEREVER PRACTICABLE, UNLESS NOTED OTHERWISE. THE USE OF LARGE BUBBLE COVERS SHALL BE AVOIDED ON THE EXTERIOR OF THE BUILDING OR BEHIND EQUIPMENT IN ORDER TO PREVENT DAMAGE TO THE COVER AND TO ALLOW THE EQUIPMENT TO BE LOCATED CLOSE TO THE WALL.
11. ALL 120V RECEPTACLES 50A OR LESS, 208V AND 240V RECEPTACLES 100A OR LESS, SHALL BE GFCI PROTECTED IN LOCATIONS REQUIRED BY CODE; THIS INCLUDES BATHROOMS, KITCHENS/FOOD PREP AREAS, EXTERIOR LOCATIONS AND RECEPTACLES WITHIN 6 FEET OF A SINK. GFCI RECEPTACLES SHALL BE READILY ACCESSIBLE AND SHALL NOT BE LOCATED BEHIND STATIONARY EQUIPMENT. GFCI PROTECTION MAY BE VIA A GFCI CIRCUIT BREAKER OR GFCI RECEPTACLE, UNLESS NOTED OTHERWISE. WHERE NECESSARY, GFCI PROTECTION MAY BE ACHIEVED VIA A BLANK FACE GFCI DEVICE LOCATED IN A READILY ACCESSIBLE LOCATION NEAR RECEPTACLE BEING PROTECTED. FOR DOWNSTREAM WIRING DEVICES LOCATED ON THE SAME BRANCH CIRCUIT, THE GFCI PROTECTION MAY BE PROVIDED FOR BY A SINGLE UPSTREAM DEVICE IF ALL PROTECTED DEVICES ARE LABELED PER CODE.
12. PROVIDE TAMPER-RESISTANT (TR) TYPE RECEPTACLES AT ALL CODE REQUIRED LOCATIONS AND AT LOCATIONS WHERE RECEPTACLES ARE MOUNTED LESS THAN 5'-6" AFF AND ARE EASILY ACCESSIBLE BY CHILDREN, UNLESS NOTED OTHERWISE.
13. FLEXIBLE CONDUIT IS ONLY PERMITTED WHERE SPECIFICALLY ALLOWED IN THE CONSTRUCTION DOCUMENTS, WHERE CONCEALED FROM VIEW OR EXPOSED FINAL CONNECTIONS TO LIGHT FIXTURES AND EQUIPMENT IN LENGTHS OF 6'-0" OR LESS.
14. ALL EMPTY CONDUIT/RACEWAY SHALL BE INSTALLED WITH PULL STRINGS. TERMINATE CONDUIT STUB-UP WITH A NYLON BUSHING.
15. EXPOSED CONDUIT/RACEWAY SHALL BE PAINTED TO MATCH ADJACENT SURFACE, UNLESS NOTED OTHERWISE. COORDINATE REQUIREMENTS WITH ARCHITECT AND OWNER PRIOR TO INSTALLATION.
16. CONDUITS/RACEWAYS SHALL BE CONCEALED FROM VIEW WHEREVER PRACTICABLE, UNLESS NOTED OTHERWISE. ROUTE CONDUITS SERVING ROOFTOP EQUIPMENT CONCEALED INSIDE EQUIPMENT CURB AND MINIMIZE ROOF PENETRATIONS AND EXTERIOR CONDUIT RUNS WHERE PRACTICABLE. SUPPORT RACEWAY FROM STRUCTURE, NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING RACEWAY. DO NOT ROUTE CONDUITS ACROSS SKYLIGHTS, ACCESS PANELS, HATCHED TILES, HVAC DIFFUSERS, OR EQUIPMENT WORKING CLEARANCE SPACE. ROUTE ALL EXPOSED NON-FLEXIBLE CONDUITS TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN STRUT OR CABLE/PIPE TRAY WHERE PRACTICABLE. INSTALL CONDUITS PLUMB/ LEVEL WHERE EXPOSED TO VIEW. COORDINATE RACEWAY ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN.
17. WHERE PRACTICABLE, ALL UNDER-FLOOR/UNDER-GROUND CONDUITS/RACEWAY SHALL BE INSTALLED A MINIMUM OF 24" BELOW BOTTOM OF SLAB/PAVING/GRADE, UNLESS NOTED OTHERWISE. NOTE: THE DESIGN INTENT FOR INSTALLING ELECTRICAL CIRCUITRY AT THIS DEPTH IS TO PROTECT THE ELECTRICAL CIRCUITRY FROM DAMAGE DUE TO FUTURE WORK.
18. PROVIDE LABEL AT EACH RECEPTACLE COVER PLATE WITH THE RESPECTIVE "PNLBD-CKT#" DESIGNATION. COORDINATE LABEL REQUIREMENTS WITH THE OWNER PRIOR TO INSTALLATION. REFER TO THE SPECIFICATIONS FOR MORE INFORMATION.
19. MULTIWIRE BRANCH CIRCUITS ARE NOT ALLOWED, UNLESS NOTED OTHERWISE.
20. PROVIDE INSULATED EQUIPMENT GROUNDING CONDUCTOR FOR ALL CIRCUITS, UNLESS NOTED OTHERWISE.

LIGHTING SUPPLEMENTAL SPECIFICATIONS:

1. REFER TO THE ARCHITECTURAL DRAWINGS FOR LIGHT FIXTURE LOCATIONS, MOUNTING HEIGHTS, TRACK LENGTHS AND ADDITIONAL MOUNTING INFORMATION. CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT COORDINATION AND CONFLICT ISSUES ARE RESOLVED PRIOR TO INSTALLATION OF LIGHT FIXTURES. CONTACT ARCHITECT/ENGINEER IMMEDIATELY IF THERE ARE DISCREPANCIES.
2. THROUGH WIRING OF RECESSED LIGHT FIXTURES, IN SUSPENDED CEILINGS, IS NOT PERMITTED. CONNECT EACH LIGHT FIXTURE BY A WHIP TO A JUNCTION BOX. PROVIDE CABLE WHIPS OF SUFFICIENT LENGTHS TO ALLOW FOR RELOCATING EACH LIGHT FIXTURE WITHIN A 5'-0" RADIUS OF ITS INDICATED LOCATION. CABLE WHIPS SHALL NOT EXCEED 6'-0" OF UNSUPPORTED LENGTHS.
3. ALL EMERGENCY LIGHTS AND EXIT SIGNS WITH INTEGRAL BATTERY BACK-UP SHALL BE CONNECTED TO A SEPARATE UNSWITCHED CONDUCTOR BYPASSING ALL OTHER CONTROLS AND CONTACTORS, UNLESS NOTED OTHERWISE. EXIT SIGNS SHALL NOT BE SWITCHED. REFER TO MANUFACTURER'S WRITTEN INSTRUCTIONS FOR PROPER INSTALLATION AND TESTING. ALLOW BATTERY TO CHARGE FOR A MINIMUM OF 48 HOURS BEFORE LIGHT LEVEL TESTING. IN ORDER TO PREVENT BATTERY DAMAGE, DO NOT TURN OFF POWER FOR EXTENDED PERIODS OF TIME AFTER EMERGENCY LIGHT HAS BEEN POWERED.
4. PROVIDE A NEUTRAL CONDUCTOR TO ALL WALL MOUNTED LINE VOLTAGE LIGHT SWITCHES, UNLESS NOTED OTHERWISE. IF NEUTRAL TERMINATION IS NOT REQUIRED FOR THE DEVICE THEN CAP CONDUCTOR AND TAG AS "NEUTRAL FOR FUTURE USE".
5. COORDINATE ALL OCCUPANCY/VACANCY SENSOR SETTINGS WITH OWNER AND ADJUST AS NECESSARY FOR PROPER OPERATION. SETTINGS MUST COMPLY WITH AHJ AND LOCAL ENERGY CODE REQUIREMENTS.
6. DO NOT INSTALL OCCUPANCY/VACANCY SENSORS WITHIN 48" OF AIR DIFFUSER OR SIMILAR OBSTRUCTION THAT MAY ADVERSLY AFFECT THE SENSOR PERFORMANCE. COORDINATE FINAL SENSOR LOCATIONS WITH OTHER TRADES AND INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.:	19050.04A
Date:	1.13.23
Issued For:	PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI — ANDREA C. MULVANY — NUMBER PE-2013039892 — PROFESSIONAL ENGINEER

01/27/2023
ANDREA C. MULVANY
LICENSE # PE-2013039892

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

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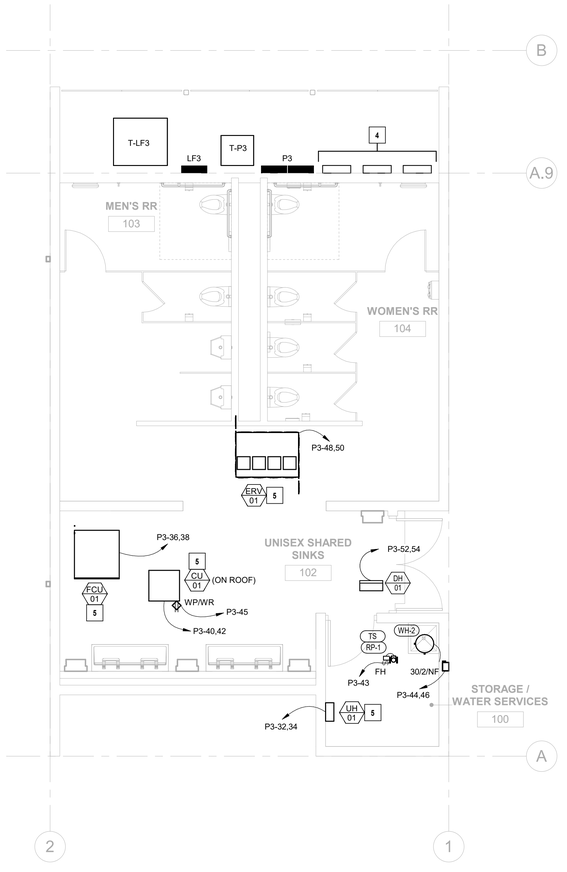
EXPIRES 12/31/2023

SHEET TITLE
ELECTRICAL GENERAL NOTES AND LEGEND

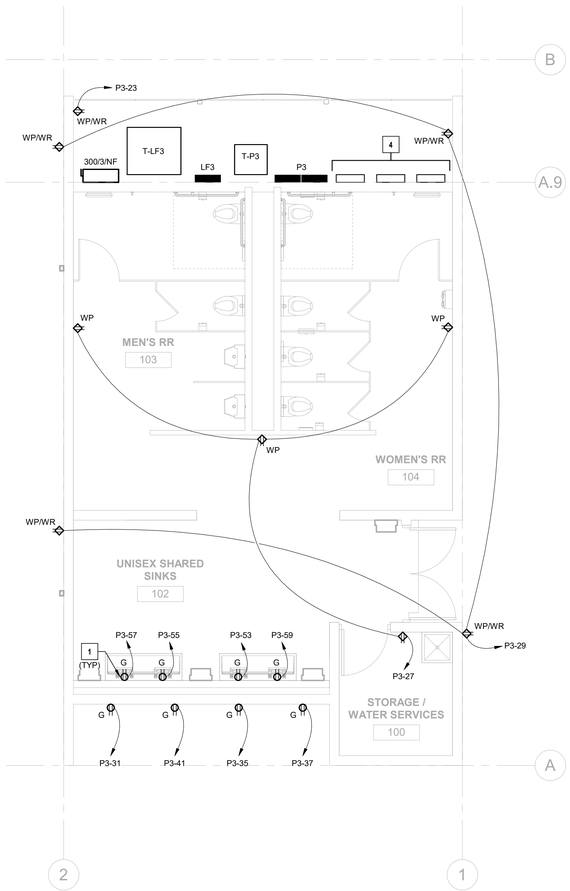
SHEET NUMBER
E0.00

ELECTRICAL PLAN NOTES:

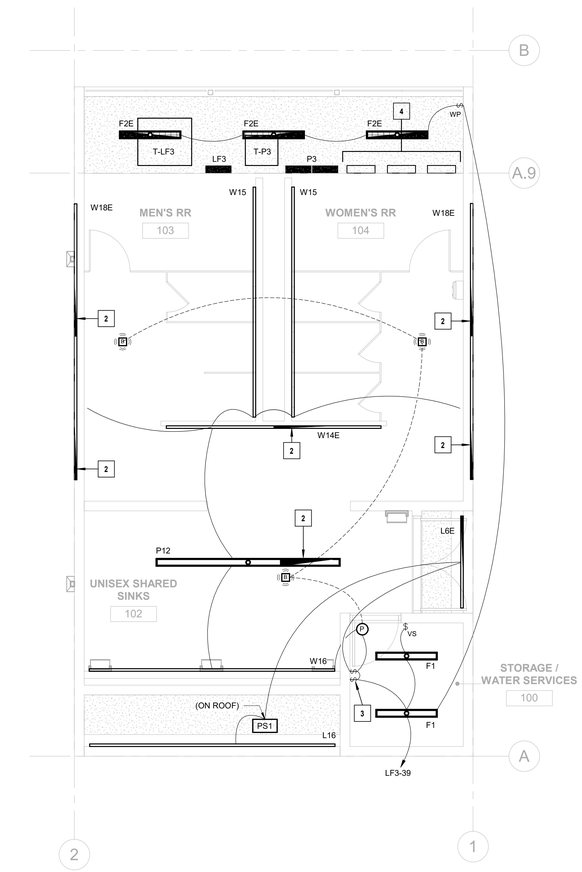
1. RECEPTACLE BELOW LAVATORY FOR PLUG-IN FAUCET ADAPTER. COORDINATE WITH INSTALLATION REQUIREMENTS OF SELECTED FIXTURE FOR EXACT DEVICE LOCATION.
2. PROVIDE EMERGENCY BATTERY FOR THIS 4-FOOT SECTION OF FIXTURE. REFER TO LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
3. PROVIDE LINE VOLTAGE SWITCHES FOR MANUAL CONTROL OF RESTROOM AND EXTERIOR LIGHTING. PROVIDE LABEL TO INDICATE AREA CONTROLLED.
4. INSTALL SPORTS LIGHTING CONTROL PANELS. CONTROL PANELS FURNISHED BY SPORTS LIGHTING MANUFACTURER.
5. PROVIDE CONNECTION TO FACTORY MOUNTED DISCONNECT SWITCH. COORDINATE WITH DIVISION 23 PRIOR TO ROUGH-IN.



3 EQUIPMENT CONNECTION PLAN
1/4" = 1'-0"



2 POWER PLAN
1/4" = 1'-0"



1 LIGHTING PLAN
1/4" = 1'-0"

ANDREA C. MULVANY

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
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ANDREA C MULVANY
NUMBER PE-2013039592
PROFESSIONAL ENGINEER

01/27/2023

ANDREA C. MULVANY
LICENSE # PE-2013039892

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

HENDERSON ENGINEERS
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
TEL 816.663.8700 FAX 816.663.8701
WWW.HENDERSONENGINEERS.COM
1850004412
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2023

SHEET TITLE

ELECTRICAL PLANS - SOUTH RESTROOM

SHEET NUMBER

E1.01

PANELBOARD: LF3 (NEW)

BUS AMPS: 400A
MAIN SIZE/TYPE: 400A MCB
VOLTS/PHASE: 480Y/277V, 3PH, 4W
SECTION: 1

FED FROM: MSB
AIC RATING: FCA +10% MINIMUM FULLY RATED
SERVES: RESTROOM
MOUNTING: SURFACE
LOCATION: CONC 2

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS
NEMA 3R

	CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	B	C	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	B	C	DESCRIPTION	CKT NO.	
	1		3,813									3,813				2	
GR	3	POLE A6 (FIELD 10)		3,813		6	30	3	3	30	8		3,813		POLE A8 (FIELD 9)	4	GR
	5				3,813									3,813		6	
	7		3,813									3,813				8	
GR	9	POLE A5 (FIELD 10)		3,813		8	30	3	3	30	6		3,813		POLE A7 (FIELD 10)	10	GR
	11				3,813									3,813		12	
	13		3,813									3,813				14	
	15	POLE A9 (FIELD 9)		3,813		10	30	3	3	30	8		3,813		POLE A14 (FIELD 8)	16	GR
	17				3,813									3,813	NORTH LTS	18	
	19		3,813									3,813				20	
	21	POLE A10 (FIELD 9)		3,813		10	30	3	3	30	8		3,813		POLE A14 (FIELD 10)	22	
	23				3,813									3,813	SOUTH LTS	24	
	25		3,813									3,813				26	
	27	POLE A13 (FIELD 7)		3,813		10	30	3	3	30	10		3,813		POLE A13 (FIELD 9)	28	
	29	NORTH LTS			3,813									3,813	SOUTH LTS	30	
	31		4,562									3,813				32	
	33	POLE P16 (FIELD 6)		4,562		10	30	3	3	30	10		3,813		POLE A11 (FIELD 7)	34	GR
	35				4,562									3,813		36	
	37	POLE SIGNS ACCESSORY	1,200			10	20	1	2	20	10	1,200			PARKING LOT LTG - SOUTH	38	
EM	39	RESTROOM LIGHTING		500		12	20	1					1,200			40	
	41	SPARE					20	1	1						EQUIPPED SPACE	42	
	43		4,320									2,160				44	
	45	FIELD 7-10 (2) MED. DISPL.		5,808		6	60	3	3	30	8		2,904		FIELD 5-6 MED. DISPLAY	46	
	47				4,320									2,160		48	
	49		10,800													50	
	51	T-P3 / P3		10,490		OL	50	3	3	60	6				SPD	52	
	53				10,220											54	
		SUBTOTAL	39,947	40,425	38,167							26,238	26,982	25,038	SUBTOTAL		

TOTAL PHASE A - VA	66,185	LOAD		CONN. VA	DF	LOAD		CONN. VA	DF			
AMPS	239	COOLING	(C)	7,200	0	REFRIG	(F)		1.00			
TOTAL PHASE B - VA	67,407	HEATING	(H)	10,200	1.00	SIGN/DISP	(D)		1.25			
AMPS	243	LIGHTING	(L)	143,615	1.25	KITCHEN	(K)		1.00			
TOTAL PHASE C - VA	63,205	RECEPTACLES	(R)	11,300	1.0/.5	EXISTING	(E)		1.00			
AMPS	228	MOTORS	(M)	2,260	1.00	LRG MOTOR			1.25	TOTAL DEMAND		
TOTAL PNLBD - VA	196,797	SUPP HEAT	(U)		1.00	SHOW WND (W)			1.25	231,051 VA		
AMPS	237	MISC EQUIP	(Z)	28,422	1.00	LTG TRACK			1.00	278 A		

PANELBOARD NOTES
GR - PROVIDE GROUND SIZE IN ACCORDANCE WITH NEC 250.122(B)
OL - REFER TO ONELINE
EM - EMERG LTG HANDLE CLAMP LOCK-ON

PANELBOARD LF3 IS PROVIDED IN BID PACKAGE #1. CIRCUIT LF3-39 IS THE ONLY CIRCUIT ASSOCIATED WITH THIS BID PACKAGE.

PANELBOARD: P3 (BP1)

BUS AMPS: 225A
MAIN SIZE/TYPE: 100A MCB
VOLTS/PHASE: 208Y/120V, 3PH, 4W
SECTION: 1

FED FROM: T-P3
AIC RATING: 10000 FULLY RATED
SERVES: RESTROOM
MOUNTING: SURFACE
LOCATION: CONC 2

LINE-SIDE LUGS: MECHANICAL
EQUIPMENT GROUND BUS
NEMA 3R

	CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	B	C	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	B	C	DESCRIPTION	CKT NO.	
	1	SPARE					20	1	1	20					SPARE	2	
GR	3	RCPT - POLE P16/A11		180		8	20	1	1	20					SPARE	4	
GR	5	RCPT - POLE A7			180	3	20	1	1	20					SPARE	6	
GR	7	RCPT - POLE A8	180			4	20	1	1	20					SPARE	8	
GR	9	RCPT - POLE A9		180		6	20	1	1	20					SPARE	10	
GR	11	RCPT - POLE A10			180	10	20	1	1	20					SPARE	12	
GR	13	RCPT - POLE A13	180			10	20	1	1	20	12	1,000			PWR - S GATE	14	
GR	15	RCPT - POLE A14		180		4	20	1	1	20					SPARE	16	
GR	17	RCPT - POLE A5			180	3	20	1	1	20					SPARE	18	
GR	19	RCPT - POLE A6	180			2	20	1	1	20					SPARE	20	
	21	SPARE					20	1	1	20	12		500		PWR - LTG CTRLS	22	LCK
	23	RCPT - P3			180	12	20	1	1	20	12			750	PWR - SIGNAGE	24	LCK
	25	SPARE	1,080			12	20	1	1	20					SPARE	26	
	27	RCPT - GENERAL		720		12	20	1	1	20					SPARE	28	
	29	*RCPT - EXTERIOR*			720	*12*	20	1	1	20					SPARE	30	
GF	31	*VENDING RCPT 1*	500			*12*	20	1	2	*40*	*8*	2,500			*UH-1*	32	
	33	SPARE					20	1					2,500			34	
GF	35	*VENDING RCPT 2*			500	*12*	20	1	2	*15*	*12*			300	*FCU-1*	36	
GF	37	*VENDING RCPT 3*	500			*12*	20	1				300				38	
	39	SPARE					20	1	2	*45*	*8*		3,300		*CU-1*	40	
GF	41	*VENDING RCPT 4*			500	*12*	20	1						3,300		42	
	SECTION: 2																
	43	*RP-1*	200			12	*15*	1	2	*30*	*10*	2,250			*WH-2*	44	
	45	*RTU-ROOFTOP MAINT*		180		12	*20*	1					2,250			46	
	47	SPARE					20	1	2	*15*	*12*			1,030	*ERV-1*	48	
	49	SPARE					20	1				1,030				50	
	51	SPARE					20	1	2	*40*	*8*		2,600		*DH-01*	52	
GF	53	*RCPT - UNISEX LAV PWR 2*			1,200	*12*	20	1						2,600		54	
GF	55	*RCPT - UNISEX LAV PWR 3*	1,200			*12*	20	1	1	20					SPARE	56	
GF	57	*RCPT - UNISEX LAV PWR 4*		1,200		*12*	20	1	1	20					SPARE	58	
GF	59	*RCPT - UNISEX LAV PWR 1*			1,200	*12*	20	1	1	20					SPARE	60	
	61	SPARE					20	1	1	20					SPARE	62	
	63	SPARE					20	1	1	20					SPARE	64	
	65	SPARE					20	1	1	20					SPARE	66	
		SUBTOTAL	4,020	2,640	4,840							7,080	11,150	7,980	SUBTOTAL		

TOTAL PHASE A - VA	11,100	LOAD		CONN. VA	DF	LOAD		CONN. VA	DF			
AMPS	93	COOLING	(C)	7,200	0	REFRIG	(F)		1.00			
TOTAL PHASE B - VA	13,790	HEATING	(H)	10,200	1.00	SIGN/DISP	(D)		1.25			
AMPS	115	LIGHTING	(L)		1.25	KITCHEN	(K)		1.00			
TOTAL PHASE C - VA	12,820	RECEPTACLES	(R)	11,300	1.0/.5	EXISTING	(E)		1.00			
AMPS	107	MOTORS	(M)	2,260	1.00	LRG MOTOR			1.25	TOTAL DEMAND		
TOTAL PNLBD - VA	37,710	SUPP HEAT	(U)		1.00	SHOW WND (W)			1.25	29,860 VA		
AMPS	105	MISC EQUIP	(Z)	6,750	1.00	LTG TRACK			1.00	83 A		

PANELBOARD NOTES
LCK - HANDLE PADLOCKABLE-OFF DEVICE
GR - PROVIDE GROUND SIZE IN ACCORDANCE WITH NEC 250.122(B)
FEED THRU CONNECTION: #4/0

PANELBOARD P3 IS PROVIDED IN BID PACKAGE #1. SOME CIRCUITS INDICATED ARE ASSOCIATED WITH BID PACKAGE #1. REFER TO PLANS ON SHEET E1.01 FOR WHICH CIRCUITS ARE ASSOCIATED WITH THIS BID PACKAGE.

LIGHTING CONTROL DEVICE SCHEDULE

LINE-VOLTAGE WALL SWITCH OCCUPANCY SENSORS

SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION	COVERAGE (W X D)	VOLTAGE	NOTES
$VS	LEGRAND PW-100	ACUITY, COOPER HUBBELL, LEVITON LUTRON	WALL MOUNT PASSIVE INFRARED OCCUPANCY SENSOR. INTEGRAL MANUAL OVERRIDE SWITCH. SINGLE RELAY. LINE-VOLTAGE. LOAD: 120V=800W, 277V=1200W.	MAJOR 30' x 35' MINOR 15' x 20'	120/ 277	

LINE-VOLTAGE PHOTOELECTRIC SWITCHES

SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION	VOLTAGE	NOTES
PS1	TORK BUTTON TYPE	INTERMATIC	EXTERIOR LINE-VOLTAGE PHOTOELECTRIC SWITCH. FACE SENSOR NORTH AND ORIENT VERTICALLY. 0-15 FC. 30 SECOND DELAY.	120	

STAND-ALONE LOW-VOLTAGE LIGHTING CONTROL SYSTEMS

STAND-ALONE LOW-VOLTAGE OCCUPANCY SENSORS

SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION	COVERAGE (W X D)	VOLTAGE	NOTES
B	LEGRAND UT-300-1	COOPER, HUBBELL LEVITON	CEILING MOUNT ULTRASONIC OCCUPANCY SENSOR. 360 DEGREE COVERAGE. LOW-VOLTAGE. ISOLATED RELAY.	24' x 24'	24	

STAND-ALONE LOW-VOLTAGE POWER PACKS

SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION	VOLTAGE	NOTES
P	LEGRAND BZ-250	ACUITY, COOPER HUBBELL, LEVITON	POWER PACK FOR LOW-VOLTAGE OCCUPANCY SENSORS. 20A LOAD. (1) RELAY. MANUAL- AND AUTO-ON MODES. HOLD-ON AND -OFF INPUTS. LOAD: 16A AT 120V OR 277V. OUTPUT: 225mA AT 24V. PLENUM RATED.	120/ 277	

GENERAL NOTES:
A. OCCUPANCY SENSOR LAYOUT DESIGNED FROM BASIS-OF-DESIGN COVERAGE PATTERNS. IF SUBMITTING ALTERNATE PER 'EQUIVALENT MANUFACTURER' COLUMN, ADJUST SENSOR QUANTITIES AND LOCATIONS PER MANUFACTURER-SPECIFIC SPACING CRITERIA.
B. PROVIDE SHOP DRAWINGS FOR ENGINEER AND ARCHITECT REVIEW THAT INCLUDE PRODUCT CUTSHEETS AND PROJECT-SPECIFIC LAYOUTS. LAYOUTS MUST INCLUDE SENSOR LOCATIONS, HEIGHTS, ORIENTATION, AND COVERAGE AREAS. SHOW COORDINATION WITH ALL OTHER CEILING DEVICES INCLUDING BUT NOT LIMITED TO HVAC SUPPLY AND RETURN GRILLES, SPRINKLERS, LIGHT FIXTURES, AND OTHER OWNER-PROVIDED CEILING MOUNTED DEVICES SUCH AS SPEAKERS, SECURITY CAMERAS, PROJECTORS, ETC. (S)ENSORS MAY BE ADVERSELY AFFECTED IF LOCATED TOO CLOSE TO OTHER CEILING MOUNTED DEVICES). ALSO PROVIDE SCHEMATICS AND SCHEDULES WHEN APPLICABLE.
C. LIGHTING CONTROLS PRICING SHALL BE COMPLETELY SEPARATE OF ANY LIGHT FIXTURE PRICING.
D. VERIFY COLOR(S) FOR ALL WALL AND CEILING MOUNTED DEVICES WITH THE ARCHITECT.
E. ALL WALL SWITCH AND CEILING SENSORS SHALL HAVE AN ADJUSTABLE TIME DELAY RANGE OF 0-30 MIN, UNO. CONFIRM SENSOR SETTINGS WITH SEQUENCE OF OPERATIONS AND OWNER PRIOR TO SYSTEM COMMISSIONING.
F. PROVIDE COPIES OF OPERATION AND MAINTENANCE INSTRUCTIONS FOR ALL DEVICES TO OWNER.
G. PROVIDE A NEUTRAL CONDUCTOR TO ALL WALL SWITCH LOCATIONS PER NEC REQUIREMENTS.
H. DO NOT SHARE NEUTRAL CONDUCTOR ON LOAD SIDE OF DIMMERS.

VERSION 4.04

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER MODEL	APPROVED ALTERNATES	LAMPING	DIMMING TYPE	VOLTAGE	INPUT WATTS	INPUT VA	DESCRIPTION	NOTES
D1 (D1E)	HEW 4DR-TL-L15-8/35-(EM/7W)-DIM-UNV-OW-OF-CS-WET/CC-N	SIGNIFY PRESCOLITE GOTHAM	INTEGRAL LED 80 CRI 3500K 1500 LUMENS	N/A	UNV	14	14	4" DOWNLIGHT WITH WIDE ANGLE DISTRIBUTION, FLUSH LENS, SEMI-SPECULAR REFLECTOR FINISH, UL LISTED FOR WET LOCATIONS. (D1E) - PROVIDE EMERGENCY BATTERY OPTION CAPABLE OF DELIVERING 750 LUMENS FOR 90 MINUTES	
F1	HEW 75R-4-L50-835-VBY-2-DRV-UNV	SIGNIFY HUBBELL LITHONIA COOPER	INTEGRAL LED 80 CRI 3500K 5000 LUMENS	N/A	UNV	33	33	4' STRIP WITH ROUND FROSTED LENS. PROVIDE WITH CHAIN HANGER KIT FROM MANUFACTURER.	
F2 (F2E)	HEW 96-4-L62/835-PCFR-EM/6WC-DRV-UNV	SIGNIFY HUBBELL LITHONIA COOPER	INTEGRAL LED 80 CRI 3500K 6,200 LUMENS	N/A	UNV	48	48	FULLY GASKETED 4' STRIP WITH UV RESISTENT FROSTED LENS. SURFACE MOUNTED. WET LISTED. (F2E) - PROVIDE EMERGENCY BATTERY OPTION CAPABLE OF DELIVERING 800 LUMENS FOR 90 MINUTES	
L# (LiE)	HEW MX2R-TR-#-L4/835-F-(EM/10WLP)-WET/CC-DIM-UNV	AXIS PINNACLE MERCURY	INTEGRAL LED 80 CRI 3500K 400 LUMENS	N/A	UNV	3.4/FT	3.4/FT	2" WIDE LINEAR RECESSED LIGHT FIXTURE. PROVIDE CONTINUOUS LENGTH PER FIXTURE INDICATED BY "#" IN FIXTURE DESIGNATION ON PLAN. WET LISTED. (LiE) - PROVIDE EMERGENCY BATTERY FOR EACH 4' SECTIONS OF FIXTURE AS SHOWN ON PLAN CAPABLE OF DELIVERING 900 LUMENS FOR 90 MINUTES. STANDARD FINISH COLOR TBD BY ARCH.	
P12 (P12E)	HEW MX2S-12'-L4/835-F-(EM/10WLP)-DIM-UNV	AXIS PINNACLE MERCURY	INTEGRAL LED 80 CRI 3500K 400 LUMENS	N/A	UNV	3.4/FT	3.4/FT	2" WIDE X 4' TALL X 12' LONG LINEAR FIXTURE WITH EXTRUDED ALUMINUM HOUSING AND FLUSH ACRYLIC LENS. MOUNTED SUSPENDED FROM CEILING AS HIGH AS POSSIBLE WHILE THE LIGHT SOURCE REMAINS BELOW THE DUCTWORK. (P12E) - PROVIDE EMERGENCY BATTERY FOR EACH 4' SECTIONS OF FIXTURE AS SHOWN ON PLAN CAPABLE OF DELIVERING 900 LUMENS FOR 90 MINUTES. STANDARD FINISH COLOR TBD BY ARCH.	
W# (WiE)	HEW MX2WUD-##'00-L4/835U/L4/835D-F-F-(EM/10WLP)-DIM-UNV	AXIS PINNACLE MERCURY	INTEGRAL LED 80 CRI 3500K 800 LUMENS/FT 400 DWN/400 UP	N/A	UNV	7/FT	7/FT	2" DEEP X 4" TALL CONTIUNUOUS LINEAR WALL MOUNT FIXTURE WITH EXTRUDED ALUMINUM HOUSING AND FLUSH ACRYLIC LENS. PROVIDE CONTINUOUS LENGTH PER FIXTURE INDICATED BY "#" IN FIXTURE DESIGNATION ON PLAN. (WiE) - PROVIDE EMERGENCY BATTERY FOR EACH 4' SECTIONS OF FIXTURE AS SHOWN ON PLAN CAPABLE OF DELIVERING 900 LUMENS FOR 90 MINUTES. STANDARD FINISH COLOR TBD BY ARCH.	

GENERAL NOTES:
A. REFER TO LIGHT FIXTURE SCHEDULE GENERAL NOTES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

LIGHT FIXTURE SCHEDULE GENERAL NOTES:

1. ALL LIGHT FIXTURES AND RELATED COMPONENTS SHALL BE PROVIDED BY THE CONTRACTOR, UNLESS NOTED OTHERWISE.

LIGHT FIXTURE SCHEDULE SUPPLEMENTAL SPECIFICATIONS:

1. ANY PROPRIETARY, SOLE-SOURCED LIGHT FIXTURE LISTED IN THE LIGHT FIXTURE SCHEDULE SHALL BE UNIT PRICED ONLY. NO PACKAGING OR LOT PRICING OF THESE LIGHT FIXTURES SHALL BE ALLOWED. UNIT PRICES SHALL BE CLEARLY IDENTIFIED ON THE BID FORM.
2. PACKAGING OF LIGHT FIXTURES WILL NOT BE CONSIDERED OR APPROVED. REPRESENTATIVE AGENTS SHALL BE ALLOWED TO OFFER MINI-LOT PRICING (MLP) FOR LIGHT FIXTURES AS ALLOWED IN ELECTRICAL SPECIFICATIONS.
3. LIGHTING CONTROLS PRICING, INCLUDING BUT NOT LIMITED TO THOSE REFERENCED IN ELECTRICAL SPECIFICATIONS, SHALL BE COMPLETELY SEPARATE OF ANY LIGHT FIXTURE PRICING. ANY LIGHTING CONTROLS PRICING THAT IS SUBMITTED WITH LIGHT FIXTURE PRICING (UNIT OR MINI-LOT) WILL BE IMMEDIATELY REJECTED IN ITS ENTIRETY.
4. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND CATALOG NUMBERS ONLY. FIRST READ THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS IN CONJUNCTION WITH THE CATALOG NUMBER TO DETERMINE THE MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.
5. FOR SUBSTITUTIONS: PROVIDE PHOTOMETRIC CALCULATIONS AND OTHER NECESSARY INFORMATION FOR ENGINEER REVIEW. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. COORDINATE LIGHT FIXTURE MOUNTING HARDWARE AND TRIMS NEEDED TO SUIT CEILING CONDITIONS. LIGHT FIXTURES NEAR OR IN CONTACT WITH INSULATION SHALL COMPLY WITH CODE. MAINTAIN 3" MINIMUM WORKING CLEARANCE BETWEEN NON-IC RATED LIGHT FIXTURE HOUSINGS AND INSULATION ON ALL ADJACENT DUCTWORK, PIPING, WALLS, AND CEILINGS.

ELECTRICAL UTILITY CONTACT NOTE:

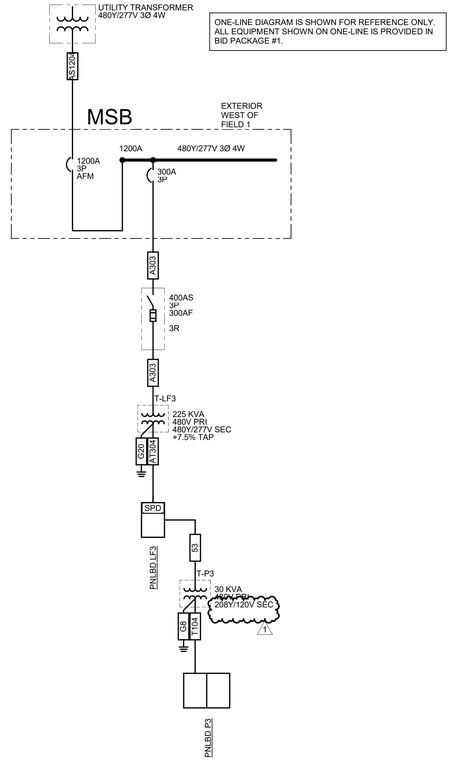
UTILITY COMPANY: **EVERGY**
UTILITY CONTACT: **JENNY CASEY**
PHONE: **(816) 347-4334**
EMAIL: **JENNY.CASEY@EVERGY.COM**

BUILDING ELECTRICAL SERVICE LOAD SUMMARY		
BUILDING OCCUPANCY TYPE:	M	SERVICE DESCRIPTION:
BUILDING SQUARE FOOTAGE:	1,196	480Y/277V, 3PH

LOAD DESCRIPTION	Connected KVA	Demand FACTOR	Demand KVA
HVAC - SUMMER	14.40	100%	0.00
HVAC - WINTER	41.43	100%	41.43
LIGHTING (PER NEC-220)	3.59	125%	4.49
RECEPTACLES	37.98	100%:50%	23.99
KITCHEN EQUIPMENT	0.00	100%	0.00
MOTOR LOADS	5.42	100%	5.42
LARGEST MOTOR LOAD	0.00	125%	0.00
SUPPLEMENTAL ELECTRIC HEAT	22.60	100%	22.60
MISCELLANEOUS EQUIPMENT	120.77	100%	120.77
DISPLAY CASE/SIGNAGE	2.40	125%	3.00
SHOW WINDOW / TRACK LIGHTING	0.00	PER NEC	0.00
EXTERIOR LIGHTING	550.35	125%	687.94
TOTAL LOAD	798.94	KVA	909.63
TOTAL AMPACITY	960.97	AMPS	1094.11
SERVICE AMPACITY	1200	AMPS	1200.00
SPARE CAPACITY		AMPS	106

FEEDER SIZES ARE BASED ON COPPER (CU) THHN/THWN-2 INSULATION, UNLESS NOTED OTHERWISE. CONDUIT SIZES SHOWN ARE APPROPRIATE FOR SCHEDULE 40 PVC, EMT, GRS, IMC AND RMC; ADJUST SIZE AS NEEDED FOR OTHER RACEWAY TYPES. NUMBER DESIGNATIONS PRECEDED BY "A" INDICATE THAT THE SIZE IS BASED ON ALUMINUM (AL) WIRE. AL CONDUCTOR SIZES ARE BASED ON XHHW-2 INSULATION, UNLESS NOTED OTHERWISE. AL WIRE MAY BE SUBSTITUTED FOR CU FEEDERS AS ALLOWED BY CODE, SPECIFICATIONS AND OWNER, UNLESS NOTED OTHERWISE. AT CONTRACTOR'S OPTION, CU WIRE MAY BE SUBSTITUTED FOR AL, UNLESS NOTED OTHERWISE. ALL CONDUCTOR SIZES ARE BASED ON 75 DEG C RATED TERMINATIONS, UNLESS NOTED OTHERWISE. FOR ANY OTHER CONDITIONS MODIFY SIZES PER CODE. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

FEEDER TAG	FEEDER DESCRIPTION
53	(3)#8, (1)#10 G, 3/4" C
A303	(3)-500 kcmil, (1)#2 G, 3" C
AS1204	(4) 3" C, EACH W/ (4)-500 kcmil
AT304	(4)-500 kcmil, (1)#10 SSBJ, 3" C
G8	#8 COPPER GROUND, 3/4" C
G20	#2/0 COPPER GROUND, 3/4" C
T104	(4)#3, (1)#8 SSBJ, 1-1/4" C



ONE-LINE DIAGRAM IS SHOWN FOR REFERENCE ONLY. ALL EQUIPMENT SHOWN ON ONE-LINE IS PROVIDED IN BID PACKAGE #1.

② PARTIAL ELECTRICAL ONELINE
NTS

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 1.13.23
Issued For: PERMIT SET

REVISIONS

No.	Date	Description
1	DATE 1	REVISION 1

REGISTRATION

STATE OF MISSOURI
ANDREA C MULVANY
NUMBER PE-2013039892
PROFESSIONAL ENGINEER

01/27/2023

ANDREA C. MULVANY
LICENSE # PE-2013039892

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

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MO. CORPORATE NO: E-656D
EXPIRES 12/31/2023

SHEET TITLE

ONE-LINE DIAGRAM AND SCHEDULES

SHEET NUMBER

E2.01

Division 26: GENERAL ELECTRICAL REQUIREMENTS

1 GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

All requirements under Division 01 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence. Become thoroughly familiar with all its contents as to requirements that affect this division, section, or both. Work required under this division includes all material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate the function of each system as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and any portion of work described in one shall be provided as if described in both. In the event of discrepancies, notify the Engineer and request clarification prior to proceeding with the Work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the systems without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

B. DEFINITIONS

Division: References contained in this specification follow the numbering system defined in the Construction Specifications Institute (CSI) MasterFormat 2004 Edition. Specification Divisions 01 through 13 provided with this project may reference the CSI MasterFormat 1995 Edition. The corresponding division references between the 2004 Edition and 1995 Edition are as follows:

2004 Edition	1995 Edition
Division 21 – Fire Suppression	Division 15
Division 22 – Plumbing	Division 15
Division 23 – HVAC	Division 15
Division 26 – Electrical	Division 16
Division 27 – Communications	Division 16
Division 28 – Electronic Safety and Security	Division 16

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations."

Install: "to perform all operations at the project site including, but not limited to, the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install."

Furnished by Owner (or Owner-Furnished) or Furnished by Others: "an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.

Engineer: Where referenced in this Division, "Engineer" is the Engineer of Record and the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and/or Supplementary Conditions. When used in this division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

AHJ : The local code and/or inspection agency (Authority) Having Jurisdiction over the Work.

NRTL : Nationally Recognized Testing Laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project. Nationally recognized testing laboratories and standards listed are used only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the specified criteria.

Homerun: That portion of an electrical circuit originating at a junction box, termination box, receptacle, or switch with termination at an electrical panelboard. Note: Where MC cable is utilized for receptacle and/or lighting branch circuiting loads, the originating point of the homerun shall be at the first load in the circuit or at a junction box located in an accessible ceiling space as close as possible to the first load.

Substitution: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include Value Engineering proposals.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for convenience: changes proposed by contractor or owner that are not required in order to meet other project requirements but may offer advantage to contractor or owner.

When 'furnish', 'install', 'perform', or 'provide' is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the Engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

C. PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MATERIAL AND WORKMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, of best quality normally used for the purpose in good commercial practice, and free from defects. Model numbers listed in the specifications or shown on the drawings are not necessarily intended to designate the required trim, written descriptions of the trim govern model numbers.

Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size, and capacity. All workmanship shall be of the finest possible by experienced mechanics of the proper trade. In general, provide the following quality grade(s) for all materials and equipment.

Commercial specification grade

Provide all hoists, scaffolds, staging, runways, tools, machinery, and equipment required for the performance of the electrical work. Store and maintain material and equipment in clean condition, and protected from weather, moisture, and physical damage.

Furnish only material and equipment that are listed, labeled, certified, or all three, by an NRTL whenever any listing or labeling exists for the types of material and equipment specified.

At a minimum, general work practices for electrical construction shall be in accordance with NECA 1 (latest edition), "Standard Practices for Good Workmanship in Electrical Construction".

E. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

F. COORDINATION

Coordinate all work with other divisions and trades so that various components of the systems are installed at the proper time, fit the available space, and allow proper service access to those items requiring maintenance. Components which are installed without regard to the above shall be relocated at no additional cost to the Owner.

All roof penetrations, floor chasing and/or core drilling shall require the specific approval of the Landlord and Owner. All work in common areas, shafts or other Landlord owned spaces must be reviewed and approved by the Landlord and Owner prior to commencement of the work. Contractor shall minimize any disruption and disturbances to other tenants. All work within other tenant spaces must be coordinated with and approved by the Landlord and Owner.

Unless otherwise indicated, the General Contractor shall provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the General Contractor with information where chases and openings are required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor shall be held responsible for errors that could have been avoided by proper checking and inspection.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the specifications or shown on the drawings are not intended to designate the required trim.

Make all offsets required to clear equipment, beams, and other structural members, and to facilitate concealing raceways in the manner anticipated in the design. Provide materials with trim that will fit properly the types of ceiling, wall, or floor finishes actually installed.

Coordinate all work with Architectural phasing drawings to properly stage transitions of work to provide power to existing, new and temporary loads. Monitor loads on distribution system to ensure shifting of loads does not overload electrical equipment.]

G. ORDINANCES AND CODES

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ, including any amendments and standards as set forth by the following:

1. National Fire Protection Association (NFPA)
2. Underwriters Laboratories (UL)
3. Occupational Safety and Health Administration (OSHA)
4. American National Standards Institute (ANSI)
5. American Society of Testing Materials (ASTM)
6. Rules and regulations of public utilities and municipal departments affected by connection of services.
7. Other national standards and codes where applicable.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence. Where conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner. Provide all safety lights, guards, and warning signs required for the performance of the work and for the safety of the public.

Electrical equipment shall be located so that the code required minimum working clearance and dedicated electrical space are maintained. Existing equipment not meeting current code required clearance requirements may remain if allowed by the AHJ, Engineer and Owner.

H. PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material damaged by construction activities shall be rejected, and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises broom clean of foreign material created during work performed under this contract. Conduit, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Protect adjacent materials indicated to remain. For work specific to this Division, install and maintain dust and noise barriers to keep dirt, dust, and noise from being transmitted to adjacent areas. Remove protection and barriers after demolition operations are complete.

Plug or cap open ends of conduits while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

I. SUBSTITUTIONS

Materials, products, equipment, and systems described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by the proposed substitution. The base bid shall include only the products from manufacturers specifically named in the drawings and specifications. To request a substitution, request the Substitution Request Form from the Architect or Engineer. Complete and send the Substitution Request From for each material, product, equipment, or system that is proposed to be substituted. The burden of proof of the merit of the proposed substitution is upon the proposer.

Unless stated otherwise in writing to the Engineer by the Contractor, Contractor warrants to the Engineer, Architect, and Owner the following:

1. Proposed substitution has been fully investigated and determined to meet or exceed the specified Work in all respects unless stated otherwise in the substitution request.
2. Proposed substitution is consistent with the Contract Documents and will produce indicated results, including functional clearances, maintenance service, and sourcing of replacement parts.

Proposed substitution has received necessary approvals of authorities having jurisdiction.

Same warranty will be furnished for proposed substitution as for specified Work.

If accepted substitution fails to perform as required, Contractor shall replace substitute material or system with that originally specified and bear costs incurred thereby.

Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

No substitutions will be considered unless the Substitution Request Form is completed and attached with the appropriate substitution documentation. No substitution will be considered prior to receipt of bids unless written request for approval to bid has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of bids.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided in the contract documents.

Provide factory generated point-by-point calculations for all exterior light fixtures (photometric files supplied so the engineer can generate a point-by-point do not suffice for the point-by-point calculations). Provide interior point-by-point calculations at the discretion of the engineer.

J. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittals in sufficient detail so as to demonstrate compliance with these Contract Documents and the design concept. Prior to transmitting submittals, verify that the equipment submitted is mutually compatible with and suitable for the intended use, will fit the available space, and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location or configuration, submit a shop drawing showing the proposed layout.

Transmit submittals as early as required to support the project schedule. Allow two weeks for Engineer review time, plus to/from mailing time via the Architect, plus a duplication of this time for resubmittals, if required. Only resubmit those sections requested for resubmittal.

Submittals shall contain the project name, applicable specification section, submittal data, equipment identifications acronym as used on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples, and other submittals required by this division. Highlight, mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

Submittals and shop drawings shall not contain firm name, logo, the seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph "Electronic Drawing Files" for procedures to be used.

Separate submittals according to individual specification sections. Illegible submittals will be rejected and returned without review. Catalog data shall be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification acronym or number as used on the drawings and include performance curves, capacities, sizes, weights, materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. Mark out inapplicable items. Shop drawings will be returned without review if the above mentioned requirements are not met.

Provide the quantity of submittals required by Division 01. If not indicated and hard-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for this project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall notify the Architect and Engineer that the submittals have been posted. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name, and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the designated representatives of the Architect and Engineer. Contractor shall allow for the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the submittal.

The checking and subsequent acceptance of submittals by the Engineer and/or Architect shall not relieve the Contractor from responsibility for deviations from the drawings and specifications, errors in dimensions, details, sizes of equipment, or quantities, omissions of components or fittings, coordination of electrical requirements, and not coordinating items with actual building conditions and adjacent work. Contractor shall request and secure written acceptance from the Engineer and Architect prior to implementing any deviation.

K. ELECTRONIC DRAWING FILES

In preparation of shop drawings or record drawings, Contractor may, at his option, obtain electronic drawing files in AutoCAD or DXF format on CD-ROM disk, DVD disk, flash drive, or direct download, as desired, from the Engineer for a shipping and handling fee of $200 for a drawing set up to 12 sheets and $15 per sheet for each additional sheet. Contact the Architect for written authorization and Engineer for the necessary agreement form and to specify shipping method and drawing format. In addition to payment, the written authorization from the Architect and release agreement form from the Engineer must be received before electronic drawing files will be sent.

L. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to three identical sets of the approved shop drawings. Insert one set into each copy of the manual described below.

See Division 01 and General Conditions for additional information.

M. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index and tabs separating equipment types to the Architect at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and mailing envelopes are not considered approved binders. Final approval of systems installed under this contract shall be withheld until this equipment brochure is received and deemed complete by the Architect and Engineer. Instruct workmen to save required literature shipped with the equipment itself for inclusion in this brochure.

Include Record Drawings as described above.

Refer to Division 01 for acceptance of electronic manuals for this project. For electronic manuals, refer to paragraph "Submittals" for requirements.

N. TRAINING

At a time mutually agreed upon between the Owner and Contractor, provide the services of a factory trained and authorized representative to train Owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include, but not be limited to, an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the Architect stating that the Owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The Contractor and the Owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule training with Owner with at least 7 days advance notice.

O. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in these construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects occurring within the warranty period(s) as stated in the General Conditions and Division 01.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly, upon written notice from the Engineer or Owner.

Also warrant the following additional items:

1. All raceways are free from obstructions, holes, crushing, or breaks of any nature.
2. All raceway seals are effective.
3. The entire electrical system is free from all short circuits and unwanted open circuits and grounds.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the one year period and any actions the Owner must take in order to maintain warranty status. Each warranty instrument shall be addressed to the Owner and state the commencement date and term.

2 GENERAL MATERIALS AND INSTALLATION

A. ROUGH-IN

Coordinate without delay all roughing-in with other divisions. Conceal all conduit and raceways except in unfinished areas and where otherwise indicated on the drawings.

B. CONCRETE BASES

Provide concrete bases (e.g., housekeeping pads) for equipment where indicated on the drawings and as specified herein. Concrete bases shall have chamfered edges. Size of base shall be a minimum of 4 inches greater than the footprint of the equipment that it is supporting and shall have a minimum height of 3-1/2 inches.

Construct equipment bases of a minimum 28-day, 4000-psi concrete conforming to American Concrete Institute Standard Building Code for Reinforced Concrete (ACI 318) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 Type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Unless otherwise specified or shown on the structural drawings, reinforce equipment bases with No. 4 reinforcing bars conforming to ASTM A615 or 6x6 – W2.9 x W2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24 inches on center with a minimum of two bars each direction.

Provide galvanized anchor bolts for equipment placed on concrete bases or on concrete slabs. Anchor bolts size, number, and placement shall be as recommended by the manufacturer of the equipment.

Submittals shall contain the project name, applicable specification section, submittal data, equipment identifications acronym as used on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples, and other submittals required by this division. Highlight, mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

Submittals and shop drawings shall not contain firm name, logo, the seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph "Electronic Drawing Files" for procedures to be used.

Separate submittals according to individual specification sections. Illegible submittals will be rejected and returned without review. Catalog data shall be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification acronym or number as used on the drawings and include performance curves, capacities, sizes, weights, materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. Mark out inapplicable items. Shop drawings will be returned without review if the above mentioned requirements are not met.

Provide the quantity of submittals required by Division 01. If not indicated and hard-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for this project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall notify the Architect and Engineer that the submittals have been posted. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name, and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the designated representatives of the Architect and Engineer. Contractor shall allow for the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the submittal.

The checking and subsequent acceptance of submittals by the Engineer and/or Architect shall not relieve the Contractor from responsibility for deviations from the drawings and specifications, errors in dimensions, details, sizes of equipment, or quantities, omissions of components or fittings, coordination of electrical requirements, and not coordinating items with actual building conditions and adjacent work. Contractor shall request and secure written acceptance from the Engineer and Architect prior to implementing any deviation.

K. ELECTRONIC DRAWING FILES

In preparation of shop drawings or record drawings, Contractor may, at his option, obtain electronic drawing files in AutoCAD or DXF format on CD-ROM disk, DVD disk, flash drive, or direct download, as desired, from the Engineer for a shipping and handling fee of $200 for a drawing set up to 12 sheets and $15 per sheet for each additional sheet. Contact the Architect for written authorization and Engineer for the necessary agreement form and to specify shipping method and drawing format. In addition to payment, the written authorization from the Architect and release agreement form from the Engineer must be received before electronic drawing files will be sent.

L. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to three identical sets of the approved shop drawings. Insert one set into each copy of the manual described below.

See Division 01 and General Conditions for additional information.

M. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index and tabs separating equipment types to the Architect at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and mailing envelopes are not considered approved binders. Final approval of systems installed under this contract shall be withheld until this equipment brochure is received and deemed complete by the Architect and Engineer. Instruct workmen to save required literature shipped with the equipment itself for inclusion in this brochure.

Include Record Drawings as described above.

Refer to Division 01 for acceptance of electronic manuals for this project. For electronic manuals, refer to paragraph "Submittals" for requirements.

N. TRAINING

At a time mutually agreed upon between the Owner and Contractor, provide the services of a factory trained and authorized representative to train Owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include, but not be limited to, an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the Architect stating that the Owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The Contractor and the Owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule training with Owner with at least 7 days advance notice.

O. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in these construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects occurring within the warranty period(s) as stated in the General Conditions and Division 01.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly, upon written notice from the Engineer or Owner.

Also warrant the following additional items:

1. All raceways are free from obstructions, holes, crushing, or breaks of any nature.
2. All raceway seals are effective.
3. The entire electrical system is free from all short circuits and unwanted open circuits and grounds.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the one year period and any actions the Owner must take in order to maintain warranty status. Each warranty instrument shall be addressed to the Owner and state the commencement date and term.

2 GENERAL MATERIALS AND INSTALLATION

A. ROUGH-IN

Coordinate without delay all roughing-in with other divisions. Conceal all conduit and raceways except in unfinished areas and where otherwise indicated on the drawings.

B. CONCRETE BASES

Provide concrete bases (e.g., housekeeping pads) for equipment where indicated on the drawings and as specified herein. Concrete bases shall have chamfered edges. Size of base shall be a minimum of 4 inches greater than the footprint of the equipment that it is supporting and shall have a minimum height of 3-1/2 inches.

Construct equipment bases of a minimum 28-day, 4000-psi concrete conforming to American Concrete Institute Standard Building Code for Reinforced Concrete (ACI 318) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 Type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Unless otherwise specified or shown on the structural drawings, reinforce equipment bases with No. 4 reinforcing bars conforming to ASTM A615 or 6x6 – W2.9 x W2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24 inches on center with a minimum of two bars each direction.

Provide galvanized anchor bolts for equipment placed on concrete bases or on concrete slabs. Anchor bolts size, number, and placement shall be as recommended by the manufacturer of the equipment.

Division 26: BASIC ELECTRICAL MATERIALS AND METHODS

1 RACEWAYS

A. METALLIC CONDUIT AND TUBING

Electrical Metallic Tubing, Couplings, and Fittings (EMT): ANSI C80.3, UL 797. Only steel products allowed. Reduced wall EMT is not allowed.

Flexible Metal Conduit (FMC): Zinc-coated steel or aluminum, UL 1. Reduced-wall FMC is not allowed.

Intermediate Metal Conduit (IMC): Hot-dip Galvanized Rigid Steel Conduit, ANSI C80.6, UL 1242.

Liquidtight Flexible Metal Conduit (LFMC): Flexible steel conduit with PVC jacket, UL 360; fittings: NEMA FB 1.

Rigid Metal Conduit (RMC):

1. Hot-dip Galvanized Rigid Steel Conduit (GRS): ANSI C80.1, UL 6.
2. Rigid Aluminum Conduit (RAC): ANSI C80.5, UL 6A.

Plastic-Coated IMC, RMC, and Fittings: NEMA RN 1, NRTL listed. Coating thickness of 0.04 inches minimum.

IMC and RMC Fittings: NEMA FB 1; compatible with conduit type and material, NRTL listed.

Manufacturers: AFC Cable, Alflex, Anamet Electrical, Electri-Flex, Indalex, Manhattan/CDT/Cole-Flex, O-Z/Gedney, Republic Raceway, Tyco International, Western Tube and Conduit, or Wheatland Tube.

B. NON-METALLIC CONDUIT AND TUBING

Rigid Nonmetallic Conduit (RNC): Schedule 40 PVC, 90 deg C rated, NEMA TC-2, UL 651

Fittings: NEMA TC 3, TC 6; UL 651, compatible with conduit/tubing type and material, NRTL listed.

Manufacturers: AFC Cable, American International, Anamet Electrical, Amco, Cantex, Certainteed, Condux International, Elecsys, Electri-Flex, Lamson and Sessions, Manhattan/CDT/Cole-Flex, Prime Conduit, Raco, Spiralduct, Superflex Ltd, or Thomas and Betts.

2 RACEWAY INSTALLATION

A. GENERAL RACEWAY INSTALLATION REQUIREMENTS

Install raceways parallel and perpendicular to building lines.

Install raceways to requirements of structure, to requirements of all other work on the project, and to clear all openings, depressions, pipes, ducts, reinforcing steel, and other immovable obstacles.

Install raceways set in forms for concrete structure in such a manner that installation will not affect the strength of the structure.

Except where approved in writing by the Engineer, install no raceway in a slab-on-grade. Locate raceway below granular fill below slabs-on-grade.

Install raceways a minimum of 24" below bottom of slab/paving/grade where practicable.

Install raceways continuous between connections to outlets, boxes, and cabinets with a minimum possible number of bends and not more than the equivalent of four 90-degree bends between connections. Use manufactured elbows for all 45- and 90-degree bends, unless approved by the Engineer in advance. Make other bends smooth, even and without flattening raceway or flaking galvanizing or enamel. Radii of bends shall be as long as possible and never shorter than the corresponding trade elbow.

Conceal raceways from view unless noted or approved otherwise.

Route raceways serving rooftop equipment inside equipment curb and minimize roof penetrations and exterior raceway runs. Support raceway from structure, do not support from the roof decking. Maintain 2" spacing between the raceway and roof deck to prevent roofing screws from penetrating raceway. Do not route raceways across skylights or other roof penetrations.

Route all exposed non-flexible raceways tight to structure, parallel to building lines in strut or cable tray where practicable. Install raceways plumb/level where exposed to view.

Use long radius elbows for all underground installations, where necessary, or where otherwise indicated.

Securely fasten raceways in place with approved straps, hangers, and steel supports as required. Attach raceway supports to the building structure. Hang single raceways for feeders with malleable split ring hangers with rod and turnbuckle suspension from inserts spaced not over 10 feet apart in construction above. Clamp groups of horizontal feeder raceways to steel channels that are suspended from inserts spaced not over 10 feet apart in construction above. Securely clamp vertical feeder raceways to structural steel members attached to structure. Install cable clamps for support of vertical feeders where required. Add raceway supports within 12 inches of all bends, on both sides of the bends. Do not support raceways from suspended ceiling components.

Ream raceway ends, thoroughly clean raceways before installation, and keep clean after installation. Plug or cover openings and boxes as required to keep raceways clean during construction and fish all raceways clear of obstructions before pulling conductor wires. Provide raceways of ample size for pulling of wire, not smaller than code requirements and not less than 1/2-inch in size, unless indicated otherwise on Drawings. Homeruns containing more than one branch circuit shall not be less than 3/4-inch in size.

Protect all raceway installations against damage during construction. Repair all raceways damaged or moved out of line after roughing-in to meet Engineer's approval without additional cost to the Owner.

Align and install true and plumb all raceway terminations at panelboards, switchboards, motor control equipment, and junction boxes.

Install approved expansion/deflection fittings where raceways pass through (if embedded) or across (if exposed) expansion joints, and when using RNC or RAC in exposed environments in accordance with NFPA 70 and expansion/contraction properties of RNC or RAC.

Install a pull wire in each empty raceway that is left for installation of conductors or cables under other divisions or contracts. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 24 inches of slack at each end of pull wire.

Terminate all conduit stub-ups with nylon bushings.

Make all joints and connections in a manner that will ensure mechanical strength and electrical continuity.

Coordinate raceway routing and installation with other trades prior to rough-in and installation.

B. ABOVE GROUND RACEWAY USE:

Install all circular raceways concealed above suspended ceilings or concealed in walls or floors wherever possible except where otherwise indicated. Provide GRS for all conduits exposed to weather or other hazardous conditions.

Unless noted otherwise, all other raceway may be EMT where approved by local code. Use compression type fittings for EMT, with all fittings NRTL listed for the environment in which they are used. Unless noted otherwise, set-screw type fittings are not allowed.

C. UNDERGROUND RACEWAY USE:

Provide GRS installed below grade with a corrosion-resistant bonded-plastic or approved mastic coating. This shall include the 90-degree elbow below grade and the entire vertical transition to above grade.

RNC conduit may be used underground where permitted by local code and where not specifically restricted by these documents. When used, provide plastic-coated GRS, as specified above, for all bends greater than 30 degrees, including the 90-degree elbows below grade and the entire vertical risers for transitions from below to above grade or above slab.

All site electrical conduits shall be 1" minimum, unless noted otherwise.

D. EQUIPMENT CONNECTIONS

Use FMC for final connection to each motor, transformer, and any device that would otherwise transmit motion, vibration, or noise. Use LFMC where exposed to liquids, vapors, or sunlight. Provide all FMC and LFMC with an insulated bonding conductor.

Use only metal raceways for all power wiring from the output of variable frequency drives to their respective motors.

E. BUSHINGS AND LOCKNUTS

Rigidly terminate conduits entering sheet metal enclosures to the enclosure with a bushing and locknut on the inside and a locknut or an approved hub on the outside. Conduit shall enter the enclosure squarely.

Provide bushings and locknuts made of galvanized malleable iron with sharp, clean-cut threads.

Where EMT enters a box, provide approved EMT compression connectors.

Use insulated, grounding, or combination bushings wherever connection is subject to vibration and/or moisture, or when required by NFPA 70.

Provide nylon bushings for all communications and low voltage wiring conduits and sleeves, unless noted otherwise.

3 CONDUCTORS AND CABLES

A. GENERAL CONDUCTOR AND CABLE REQUIREMENTS

Annealed (soft) copper complying with ICEA S-95-658/NEMA WC70 and UL standards 44 or 83 as applicable.

Conductor Insulation Types: 90-degree C-rated, Type THHN/THWN-2 or XHHW-2 complying with ICEA S-95-658/NEMA WC70.

Sizes of conductors and cables indicated or specified are in American Wire Gage (AWG - Brown and Sharpe).

All feeder and branch circuit conductors No. 8 AWG and larger: Stranded.

All conductors, No. 10 AWG and smaller: Solid copper.

All Branch Circuit Wiring: Not smaller than No. 12 AWG. If no conductor size is indicated on the Drawings for a branch circuit, provide conductors and conduit sized per NFPA and based on the indicated branch circuit overcurrent protective device (OCPD) rating and number of poles. Where no circuit size (i.e., conductors and OCPD) is indicated on the drawings for a branch circuit, provide three No. 12 AWG conductors, in 3/4-inch raceway, and a 20A circuit breaker.

Control Wiring: Stranded copper conductors, 600V insulation, of the proper type, size, and number as required to accomplish specified function. Minimum size: No. 14 AWG, unless noted otherwise.

Flexible Cords and Cables: Stranded copper conductors for all, unless noted otherwise.

Special Purpose Conductors And Cables, Such As Low Voltage Control And Shielded Instrument Wiring: As recommended by the system equipment manufacturer unless indicated otherwise.

Copper Conductor Manufacturers: Advance Wire and Cable, AFC Cable, Alan Wire, Alflex, American Insulated Wire, Encore Wire, Northern Cables, Okonite, or Southwire.

Connections: Apply a zinc based anti-oxidizing compound to connections. Do not use terminals on wiring devices to feed through to the next device.

B. CONDUCTORS AND CABLES INSTALLATION

Install all wiring in approved raceway and enclosures, except where specified or indicated for low-voltage wiring, where specified or indicated for direct-buried cables, or where type MC cable is indicated or specified as acceptable.

Install all conductors and cables in raceways continuous without taps or splices. Splice or tap only in approved boxes and enclosures with approved solderless connectors, or crimp connectors and terminal blocks for control wiring, and keep to the minimum required. Insulate all splices, taps, and joints as required by codes.

All materials used to terminate, splice, or tap conductors: designed for, properly sized for, and NRTL listed for the specific application and conductors involved, and installed in strict accordance with the manufacturer's recommendations, using the manufacturer's recommended tools.

Where wiring is indicated as installed, but the connection is indicated "FUTURE" or "BY OTHER DIVISION, TRADES, OR CONTRACTS", leave a minimum 3-foot "Pigtail" at the box, tape the ends of the conductors, and cover the box.

In general, the direction of branch circuit "home run" routing is indicated on the drawings, complete with circuit numbers and panelboard designation. Continue all such "home run" wiring to the designated panelboard, as though "circuit runs" were indicated in their entirety.

Common or shared neutrals are not allowed unless shown on the drawings to be used or specifically noted to be allowed.

Where multi-wire branch circuits (i.e., shared neutral) are allowed, they shall be provided with a means that will simultaneously disconnect all ungrounded conductors at the point the branch circuit originates. Multi-pole breakers or 3 single-pole breakers with a handle tie are two examples.

When multiple home runs are combined into a single raceway such that the number of conductors exceeds four (conductor count is made up of any combination of phase and neutral conductors), the following restrictions apply, which are in addition to those in NFPA 70:

Normal or Non-Essential circuits:

1. Maximum of 16 conductors in a single raceway. For up to eight conductors in a raceway, minimum raceway size: 3/4-inch. For greater than eight conductors, minimum raceway size: 1-inch. Do not install any other type of circuit in this raceway.
2. Minimum wire size for all conductors in this raceway: No. 10 AWG.
3. Only 15A and 20A branch circuit homeruns may be combined into one raceway.

GFCI circuits:

1. Do not use multi-conductor circuits, with a shared neutral, for any GFCI circuit breaker or receptacle circuit.

For branch circuits fed from GFCI circuit breakers, limit the one-way conductor length to 100 feet between the panelboard and the most remote receptacle or load on the GFCI circuit.

Properly identify all terminal blocks and wire terminals for control wiring with vinyl stick-on markers or equivalent. Provide Engineer with a list of proposed identifying numbers for review prior to installing markers.

Provide an equipment-grounding conductor or bonding jumper, as applicable, in all feeders and branch circuits, sized in accordance with NFPA 70 Tables 250.66 or 250.122, as applicable, unless indicated as larger on the drawings.

Wiring shall have insulation of the proper color to match color code system in the table below unless there is a color system currently in use by the facility, utility, or enforced by local amendments, in which case the colors are to match the requirements set forth by the AHJ, utility or facility management. In larger sizes where properly colored insulation is not available, use vinyl plastic electrical tape of the appropriate color around each conductor at all termination points, junctions, and pull boxes.

System Voltage:

240V and under, including 208Y/120, 120/208 systems:

1. Phase A: Black.
2. Phase B: Red.
3. Phase C: Blue.
4. Neutral: White.
5. Equipment Ground: Green.
6. Isolated Ground: Green with yellow stripe.

480V and 480Y/277V;

1. Phase A: Brown
2. Phase B: Orange
3. Phase C: Yellow
4. Neutral: Gray
5. Equipment ground: Green

C. MC CABLE

Metal-clad cable (MC Cable): 600V, unjacketed; UL Standard 83, 1569, and 1685; NFPA 70 Article 330; aluminum or galvanized steel interlocked armor; THHN- or XHHW-insulated conductors; color code: ICEA Method 1, with green insulated grounding conductor; listed for use in UL 1, 2, and 3 hour through-penetration firestop systems. MC Cable manufacturers: AFC Cable Systems, Encore Wire Corporation, Kaf-Tech, or Southwire.

D. APPLICATIONS OF MC CABLE

In lieu of flexible conduit and wiring from light fixtures located in accessible ceilings to junction boxes attached to building structure directly above the ceiling. Provide cable whips of sufficient lengths to allow for relocating each light fixture within a 5 foot radius of its installed location, but not exceeding 6 feet in unsupported lengths.

For vertical drops in stud walls.

In lieu of EMT, only for 15A and 20A branch circuits (with up to four (4) conductors, not including ground conductor), and only in dry concealed locations above grade, except where specifically not permitted by NFPA 70 owner, AHJ, or noted in list below.

E. PROHIBITED USE OF MC CABLE UNLESS NOTED ABOVE

Examples of those uses include, but are not limited to the following:

1. Homeruns to panelboards (refer to Section 26: Definitions).
2. Where exposed to view.
3. Where exposed to damage.
4. Hazardous locations.
5. Wet locations.
6. When restricted otherwise.
7. When specifically disallowed by the local AHJ.
8. Circuits supplied by an emergency or standby power source.

F. MC CABLE INSTALLATION

Secure and support cable per NFPA 70 Article 330. Secure cable within 12 inches of every box or fitting. Securing and supporting intervals shall not exceed six feet. Maintain consistent spacing to avoid derating due to bundling per NFPA 70 Section 310.15. Utilize steel cable hangers, Arlington SMC series or equivalent, to support wherever possible so cables can be routed in a neat and workmanship like manner.

4 JUNCTION BOXES, PULL BOXES, CABINETS, AND WIREWAYS

Provide junction boxes, pull boxes, cabinets, and wireways wherever necessary for proper installation of various electrical systems according to NFPA 70 and where indicated on the drawings. Size as required for the specific function or as required by NFPA 70, whichever is larger. Construction shall be of a NEMA design suitable for the environment installed.

Junction boxes installed behind wall cases and in or on other store fixtures, except where otherwise specified, shall be 4 inches square or larger with galvanized covers.

Horizontally mount junction boxes under center fixtures (and cases), handy boxes or 4-inch square boxes with tops of boxes not more than 3-1/2 inches above the floor. Size junction boxes to adequately contain all required conductors and splices.

5 OUTLET BOXES

All outlets including light fixture, switch, receptacle, and similar outlets: galvanized steel knockout boxes, suitable in design to the purpose they serve and the space they occupy. Size as required for the specific function or as required by NFPA 70, whichever is larger. Set all outlet boxes in walls, columns, floors, or ceilings so they are flush with the finished surface, accurately set, and rigidly secured in position. Provide plaster rings, extension rings and/or masonry rings as required for flush mounting. Provide approved cast outlet boxes with hubs and weatherproof covers in all areas subject to damp, wet, or harsh conditions.

Manufacturers: Appleton, Cooper, Erikson Electrical, Hoffman, Killark Electric, O-Z/Gedney, Raco, Robroy Industries, Scott Fetzer, Spring City Electrical, Thomas and Betts, Walker Systems, or Woodhead.

6 OUTLET LOCATIONS

Coordinate locations of outlet boxes. Outlets are only approximately located on the small scale drawings. Use great care in the actual location by consulting the various large scale detailed drawings used by other division trades, and by securing definite locations from the Architect.

7 MOUNTING HEIGHTS

Unless noted otherwise, install wiring devices vertically aligned at height indicated on construction drawings.

8 RECEPTACLES

Unless indicated otherwise, install vertically with the ground slot mounted at the top.

Where installed horizontally, install with the neutral slot mounted at the top.

Above counter: mount vertically aligned.

Mechanical and electrical equipment rooms and janitors closets: mount vertically aligned.

Garages: mount vertically aligned.

Weatherproof exterior receptacles: horizontally aligned.

GFCI receptacles: Same as general receptacles.

Clock Receptacles: 84 inches above finished floor.

Concrete Block Walls: As long as ADA requirements are maintained, dimensions above may be adjusted slightly as required to compensate for variable joint dimensions such that bottom or top of boxes, as applicable, are at block joints.

9 SWITCHES

General: All switches shall be mounted at the same height throughout the project unless noted otherwise.

Above Counters: Same as for receptacles.

Concrete Block Walls: As long as ADA requirements are maintained, dimensions above may be adjusted slightly as required to compensate for variable joint dimensions, such that bottom or top of boxes, as applicable, are at block joints.

Walls with Wainscoting: 6 inches minimum above wainscoting, but not exceeding 48 inches above finished floor.

10 MULTI-OUTLET ASSEMBLIES

As indicated on the drawings.

11 TELEPHONE/DATA OUTLET BOXES

General: Match mounting height of adjacent wiring device listed above.

Wall-mounted Telephone (Public): One at 48 inches above finished floor and one at 36 inches above finished floor.

For other than wiring devices, refer to paragraphs, articles, sections, divisions, or drawings to obtain mounting heights for specific equipment or systems.

12 WIRING DEVICES

The catalog numbers listed for wiring devices are generally for 20A rated devices. Where 15A rated devices are indicated on the drawings or required for circuit rating limitations, provide wiring devices equivalent to those specified for 20A, but rated for 15A.

All receptacles located outdoors or in damp or wet locations: Listed as 'Weather Resistant', designated by a 'WR' on the faceplate.

Minor changes relative to the location of electrical equipment may be made to comply with structural and building requirements as determined in the course of construction. Provide all wiring devices of the same manufacturer and not mixed on the project, to the maximum extent possible. Provide color of toggles and receptacles as requested by the Architect.

Wiring Devices: Unless noted otherwise, devices shall be commercial grade, decorator style, and rated for 20A. Wiring device manufacturers: Cooper, Hubbell, Legrand, or Leviton.]

Automatically Controlled receptacles: Where indicated on drawings, provide device type from other applicable category, along with marking for controlled receptacles as required by the current version of the NEC. In the case where the NEC is not applicable to the project, the device shall still be provided with this marking. In that case, the NEC is providing the standard for the marking and this specification is requiring it to be marked above and beyond the application of the code.

Floor Boxes: UL 514A listed for scrub water exclusion. For slab on grade - Watertight, Class 1, and fully adjustable cast iron box. For slab above grade - Concrete-tight, fully adjustable, stamped galvanized steel box. Floor box shape, quantity of gangs, type and quantity of devices, finish, and flange type per drawings. Floor box manufacturers: Hubbell, Legrand, Thomas and Betts, or Walker.

Coordinate final devices and coverplates within Floor Boxes and Poke-Thrus with Architect and Owner prior to ordering.

Switch Installations in Door/Side Light Frames: Despard type switch, Pass and Seymour ACD201-i or approved equal.

Switch and Pilot Installations: One Despard type switch and one Despard type flush 1/25 Watt neon pilot light, both installed in a single-gang box with cover plate. Pass and Seymour ACD201-IV switch and 1475 pilot light, or approved equals.

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paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.:	19050.04A
Date:	1.13.23
Issued For:	PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
ANDREA C. MULVANY
NUMBER PE-2013039892
PROFESSIONAL ENGINEER

Andrea Mulvany

01/27/2023

ANDREA C. MULVANY
LICENSE # PE-2013039892

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

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EXPIRES 12/31/2023

SHEET TITLE

ELECTRICAL SPECIFICATIONS

SHEET NUMBER

E4.01

ANDREA C. MULVANY

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MECHANICAL SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED. V3.0

STANDARD MOUNTING HEIGHT

THERMOSTATS (USER ADJUSTABLE)	46"
CONTROLS	46"

INSTALL DEVICES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS ARE AFF OR AFG TO TOP OF THE DEVICE UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ANNOTATION

- 1 — MECHANICAL PLAN NOTE CALLOUT
- CU 1 — MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- CONNECTION POINT OF NEW WORK TO EXISTING
- 1 / M1 — DETAIL REFERENCE. UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- 1 / M1 — SECTION CUT DESIGNATION
- DEDICATED EQUIPMENT ACCESS TILE
- ACCESS PANEL

ABBREVIATIONS

A/C	AIR CONDITIONING
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
AWG	AMERICAN WIRE GAUGE
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BB	BACKBONE
BD	BACKDRAFT DAMPER
BD	BLOWDOWN
BFC	BELOW FINISHED CEILING
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BFP	BOILER FEED PUMP
BHP	BRAKE HORSEPOWER
BI	BINARY INPUT
BO	BINARY OUTPUT
BOD	BOTTOM OF DUCT
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CLG	COOLING
CP	CONDENSATE PUMP
CPT	CONTROL POWER TRANSFORMER
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CRU	COMPUTER ROOM UNIT
CT	COOLING TOWER
CV	CONTROL VALVE
CWP	CONDENSER WATER PUMP
CU	CONDENSING UNIT
CHWP	CHILLED WATER PUMP
DB	DECIBELS
DBA	DECIBEL AVERAGE
DDC	DIRECT DIGITAL CONTROL
DI	DIGITAL INPUT
DISC	DISCONNECT
DN	DOWN
DS	DUCT SILENCER
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ED	EXHAUST DUCT
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
EFF	EFFICIENCY
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
FCU	FAN COIL UNIT
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FF	FINISHED FLOOR
FPI	FINS PER INCH
FPM	FEET PER MINUTE
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HTG	HEATING
HWP	HEATING WATER PUMP
IN WC	INCHES OF WATER COLUMN
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB
LP	LOW PRESSURE
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MD	MOTORIZED DAMPER
MFR	MANUFACTURER
MIN	MINIMUM
N/A	NOT APPLICABLE
N/C	NORMALLY CLOSED
N/O	NORMALLY OPEN
NOM	NOMINAL
NC	NOISE CRITERIA
NF	NON-FUSED
NIC	NOT IN CONTRACT
OA	OUTSIDE AIR
PICV	PRESSURE INDEP. CONTROL VALVE
PROVIDE	FURNISH AND INSTALL
QTY	QUANTITY
RA	RETURN AIR
RC	ROOM CRITERIA
RD	RETURN DUCT
REA	RELIEF AIR
RF	RETURN FAN
RFR	REFRIGERANT
RH	RELATIVE HUMIDITY
RH	ROOF HOOD
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SCP	STEAM CONDENSATE PUMP
SD	SMOKE DUCT DETECTOR
SD	SUPPLY DUCT
SF	SUPPLY FAN
SH	SENSIBLE HEAT CAPACITY
SOW	SCOPE OF WORK
SP	STATIC PRESSURE
ST	STEAM TRAP
STM	STEAM
TBD	TO BE DETERMINED
TC/C	TEMPERATURE CONTROLS CONTRACTOR
TCP	TEMPERATURE CONTROL PANEL
TF	TRANSFER FAN
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TH	TOTAL HEAT CAPACITY
TSP	TOTAL STATIC PRESSURE
TT	TEMPERATURE TRANSMITTAL
TYP	TYPICAL
U/F	UNDERFLOOR
U/G	UNDERGROUND
U/S	UNDERSLAB
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
VAV	VARIABLE AIR VOLUME
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VRV	VARIABLE REFRIGERANT VOLUME
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WPD	WATER PRESSURE DROP
XP	EXPLOSION PROOF

HVAC DUCTWORK AND ACCESSORIES

- DUCTWORK/EQUIPMENT TO BE REMOVED OR RELOCATED
- EXISTING DUCTWORK/EQUIPMENT TO REMAIN
- LINEAR SLOT DIFFUSER
- INSULATED FLEXIBLE DUCT (MAX. 5'-0" LONG)
- BRANCH DUCT WITH 45° RECTANGLE-ROUND BRANCH FITTING AND MANUAL VOLUME DAMPER
- ELBOW WITH TURNING VANES
- BRANCH DUCT WITH BELL-MOUTH FITTING & MANUAL VOLUME CONTROL DAMPER
- DUCT UP
- DUCT DOWN
- EA — EXHAUST AIR
- GEA — EXHAUST AIR - GREASE
- OA — OUTSIDE AIR
- REA — RELIEF AIR
- EA — RETURN AIR
- XEA — SPECIAL EXHAUST
- SA — SUPPLY AIR
- EQUIPMENT WITH FLEXIBLE DUCT CONNECTION
- 10" (NECK SIZE) CSD-1 (TYPE) 300 CFM (CFM OF SUPPLY DIFFUSER OR REGISTER)
- 24x24 (NECK SIZE) CEG-1 (TYPE) 800 CFM (CFM OF EXHAUST GRILLE)
- EQUIPMENT ACCESS TILE (IN ACT CEILINGS)
- ACCESS PANEL (IN GYPSUM)
- MANUAL VOLUME DAMPER
- SQUARE TO ROUND TRANSITION
- RD — DUCT MOUNTED SMOKE DETECTOR (SD=SUPPLY/RD=RETURN)
- XX" Ø — ROUND DUCT TAG INDICATING DIAMETER
- XX" x XX" — RECTANGULAR DUCT TAG INDICATING INTERNAL DUCT DIMENSIONS.
- XX" / XX" — FLAT OVAL DUCT TAG INDICATING INTERNAL DUCT DIMENSIONS
- # — RISER DESIGNATION
- FD — FIRE DAMPER
- FSD — FIRE SMOKE DAMPER
- SD — SMOKE DAMPER
- VD — VOLUME DAMPER
- MD — MOTORIZED DAMPER
- BD — BACKDRAFT DAMPER

ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE DIMENSIONS. REFER TO DUCTWORK SPECIFICATIONS FOR DUCTWORK INSULATION AND LINER INFORMATION.

HVAC CONTROL DEVICES

- H — HUMIDISTAT
- T — THERMOSTAT
- CO — CARBON MONOXIDE SENSOR
- CO2 — CARBON DIOXIDE SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR
- FS — FLOW SWITCH
- HS — HUMIDITY SENSOR
- PS — PULL STATION
- RT — REMOTE TESTING STATION WITH INDICATING LIGHT
- SP — STATIC PRESSURE
- TS — TEMPERATURE SENSOR

PIPING SYMBOLS

- DIRECTION OF FLOW
- CONTROL VALVE
- THREE-WAY CONTROL VALVE
- SHUTOFF VALVE
- CHECK VALVE
- BALANCING VALVE WITH PRESSURE PORTS
- TRIPLE DUTY VALVE WITH PRESSURE PORTS
- STRAINER
- STRAINER WITH BLOWOFF
- RELIEF / SAFETY VALVE
- SOLENOID VALVE
- PRESSURE REDUCING VALVE
- GAS PRESSURE REGULATOR
- THERMOSTATIC MIXING VALVE
- PA — PIPE ANCHOR
- EXPANSION JOINT
- PIPE GUIDE
- PIPING SUPPORT
- F & T TRAP
- BUCKET TRAP
- THERMOSTATIC TRAP
- BACKFLOW PREVENTER
- PRESSURE GAUGE
- THERMOMETER
- PRESSURE AND TEMPERATURE TEST PLUG
- UNION
- FLANGE CONNECTION
- VACUUM RELIEF VALVE
- AV — AUTOMATIC AIR VENT
- MV — MANUAL AIR VENT
- PRESSURE / VACUUM SWITCH
- CLEANOUT
- CAP
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- ELBOW UP WITH SHUT-OFF VALVE (SOV)
- ELBOW DOWN WITH SHUT-OFF VALVE (SOV)
- TEE UP WITH SHUT-OFF VALVE (SOV)
- TEE DOWN WITH SHUT-OFF VALVE (SOV)
- REDUCER
- RECIRCULATION PUMP
- P-TRAP
- GAS COCK
- TOP BEAM CLAMP
- TRAPEZE HANGER
- FLEXIBLE CONNECTION

PIPING LINETYPES

- EXISTING PIPING TO BE REMOVED OR RELOCATED
- EXISTING PIPING TO REMAIN
- CD — CONDENSATE DRAIN (CD)
- ACD — AUXILIARY CONDENSATE DRAIN (ACD)
- NPW — NON-POTABLE WATER (NPW)
- G — NATURAL GAS (G)
- G — NATURAL GAS ON ROOF (G)
- MPG — MEDIUM PRESSURE NATURAL GAS (MPG)
- MPG — MEDIUM PRESSURE NATURAL GAS ON ROOF (MGP)
- FOS — FUEL OIL SUPPLY (FOS)
- FOR — FUEL OIL RETURN (FOR)
- FOV — FUEL OIL VENT (FOV)
- LPG — LIQUEFIED PETROLEUM GAS (LPG)
- BFW — BOILER FEED WATER (BFW)
- HPS — HIGH PRESSURE STEAM SUPPLY (HPS)
- HPC — HIGH PRESSURE STEAM CONDENSATE (HPC)
- LPS — LOW PRESSURE STEAM SUPPLY (LPS)
- LPC — LOW PRESSURE STEAM CONDENSATE (LPC)
- CPD — CONDENSATE PUMP DISCHARGE (CPD)
- HWS — HEATING HOT WATER SUPPLY (HWS)
- HWR — HEATING HOT WATER RETURN (HWR)
- CHWS — CHILLED WATER SUPPLY (CHWS)
- CHWR — CHILLED WATER RETURN (CHWR)
- HCS — HOT / CHILLED WATER SUPPLY (HCS)
- HCR — HOT / CHILLED WATER RETURN (HCR)
- CWS — CONDENSER WATER SUPPLY (CWS)
- CWR — CONDENSER WATER RETURN (CWR)
- RL — REFRIGERANT LIQUID (RL)
- RD — REFRIGERANT DISCHARGE (HOT GAS) (RD)
- RS — REFRIGERANT SUCTION (RS)
- RDB — REFRIGERANT DISCHARGE BYPASS (RDB)
- RV — REFRIGERANT VENT (RV)

HATCHING LEGEND

- ENLARGED PLAN
- NOT IN SCOPE (NIS)

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	NEW
DEMOLISH	FUTURE

GENERAL NEW NOTES:

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER AND/OR OWNER OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
2. PROVIDE SEISMIC RESTRAINTS AS NEEDED FOR THE MECHANICAL SYSTEMS IN THE PROJECT BASED ON THE SEISMIC ANALYSIS REQUIRED BY THE SPECIFICATIONS.
3. COORDINATE THE INSTALLATION OF THE MECHANICAL SYSTEMS WITH OTHER TRADES TO ENSURE A NEAT AND ORDERLY INSTALLATION. INSTALL DUCTWORK AND PIPING AS TIGHT TO STRUCTURE AS POSSIBLE. COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS. COORDINATE INSTALLATION OF DUCTWORK AND PIPING TO AVOID CONFLICTS WITH ELECTRICAL PANELS, LIGHTING FIXTURES, ETC. ANY MODIFICATIONS REQUIRED DUE TO LACK OF COORDINATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AT NO EXTRA COST TO THE OWNER.
4. PROVIDE TEMPORARY BARRIERS TO CONTAIN DUST AND DEBRIS RESULTING FROM THE PERFORMANCE OF THE WORK TO THE AREA WHERE WORK IS BEING PERFORMED.
5. ALL MECHANICAL EQUIPMENT SHOWN ON THE MECHANICAL PLANS SHALL BE PROVIDED BY DIVISION 23 UNLESS OTHERWISE NOTED.
6. NEW MECHANICAL EQUIPMENT, DUCTWORK AND PIPING ARE SHOWN AT APPROXIMATE LOCATIONS. FIELD MEASURE FINAL DUCTWORK AND PIPING LOCATIONS PRIOR TO FABRICATION AND MAKE ADJUSTMENTS AS REQUIRED TO FIT THE DUCTWORK AND PIPING WITHIN THE AVAILABLE SPACE. VERIFY THAT FINAL EQUIPMENT LOCATIONS MEET MANUFACTURER'S RECOMMENDATIONS REGARDING SERVICE CLEARANCE AND PROPER AIRFLOW CLEARANCE AROUND EQUIPMENT.
7. REFER TO ARCHITECTURAL DRAWINGS FOR RELATED CONSTRUCTION DETAILS AS APPLICABLE TO THE HVAC SYSTEM. VERIFY CHASES AND PENETRATIONS SHOWN ON ARCHITECTURAL DRAWINGS THAT ARE INTENDED FOR DUCTWORK AND PIPING MEET REQUIREMENTS.
8. INDOOR AIR QUALITY MEASURES: PROTECT INSIDE OF (INSTALLED AND DELIVERED) DUCTWORK AND HVAC UNITS FROM EXPOSURE TO DUST, DIRT, PAINT AND MOISTURE. REPLACE INSULATION THAT HAS BECOME WET AT ANY TIME DURING CONSTRUCTION, DRYING THE INSULATION IS NOT ACCEPTABLE SEAL ANY TEARS OR JOINTS OF INTERNAL FIBERGLASS INSULATION. REMOVE DEBRIS FROM CEILING/RETURN AIR PLENUM INCLUDING DUST. AN INDEPENDENT, PROFESSIONAL DUCT CLEANING COMPANY SHALL VACUUM CLEAN ANY DUCTWORK CONNECTED TO HVAC UNITS THAT WERE OPERATED DURING THE CONSTRUCTION PERIOD AFTER NEW FILTERS ARE INSTALLED AND PRIOR TO TURNING SYSTEM OVER TO THE OWNER. THE INTERNAL SURFACES AND ASSOCIATED COILS OF ANY HVAC UNITS THAT WERE OPERATED SHALL ALSO BE CLEANED.
9. INSTALL DUCTWORK AND PIPING PARALLEL TO BUILDING COLUMN LINES UNLESS OTHERWISE SHOWN OR NOTED.
10. OVERHEAD HANGERS AND SUPPORTS FOR EQUIPMENT, DUCTWORK AND PIPING SHALL BE FASTENED TO BUILDING JOISTS OR BEAMS. DO NOT ATTACH HANGERS AND SUPPORTS TO THE ABOVE FLOOR SLAB OR ROOF EXCEPT WHERE CONCRETE INSERTS IN CONCRETE SLABS ARE ALLOWED BY THE SPECIFICATIONS.
11. COORDINATE LOCATION OF EQUIPMENT SUPPORTS WITH LOCATION OF EQUIPMENT ACCESS PANELS/DOORS TO ENABLE SERVICE OF EQUIPMENT AND/OR FILTER REPLACEMENT.
12. SEAL PENETRATIONS THROUGH THE BUILDING COMPONENTS IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. FIREPROOF PENETRATIONS THROUGH FIRE RATED COMPONENTS IN ACCORDANCE WITH U.L. REQUIREMENTS.
13. FOR HYDRONIC, STEAM AND STEAM CONDENSATE PIPING TO EQUIPMENT, MINIMUM ACCEPTABLE SIZE FOR STEEL AND COPPER PIPE IS 3/4 INCH. USE THIS CRITERIA WHERE PIPE SIZES ARE NOT SHOWN ON PLAN.
14. DRAIN, FLUSH, AND REFILL ALL PIPING SYSTEMS NECESSARY TO PERFORM THE WORK. REFERENCE SPECIFICATIONS FOR FLUSHING PERFORMANCE REQUIREMENTS AND SUBMIT FLUSHING PLAN TO ENGINEER FOR REVIEW. PROVIDE CHEMICAL TREATMENT FOR ALL PIPING SYSTEMS AFTER FLUSHING AND REFILLING THE SYSTEM.
15. COORDINATE THE EXACT MOUNTING SIZE AND FRAME TYPE OF DIFFUSERS, REGISTERS AND GRILLES WITH THE SUPPLIER TO MEET THE CEILING, WALL AND DUCT INSTALLATION REQUIREMENTS.
16. ADJUST LOCATION OF CEILING DIFFUSERS, REGISTERS AND GRILLES AS REQUIRED TO ACCOMMODATE FINAL CEILING GRID AND LIGHTING LOCATIONS.
17. PAINT PORTIONS OF DUCTWORK AND INSULATION THAT ARE EXPOSED TO VIEW BY THE INSTALLATION OF DIFFUSERS, REGISTERS, AND GRILLES IN CEILINGS OR WALLS FLAT BLACK. PORTIONS INCLUDE BOTH THE INTERIOR OF UNLINED DUCTWORK AND THE EXTERIOR OF DUCTWORK AND INSULATION.
18. LOCATE AND SET THERMOSTATS AND HUMIDISTATS AT LOCATIONS SHOWN ON PLANS. VERIFY EXACT LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION. INSTALL DEVICES WITH TOP OF DEVICE AT MAXIMUM 48" AFF TO MEET ADA REQUIREMENTS UNLESS NOTED OTHERWISE ON PLANS. PROVIDE INSULATED BACKING FOR THERMOSTATS MOUNTED ON EXTERIOR BUILDING WALLS. INSTALL WIRING IN CONDUIT PROVIDED BY DIVISION 26. AT A MINIMUM, PROVIDE CONDUIT IN THE WALL FROM THE JUNCTION BOX TO 6" ABOVE THE CEILING.
19. COORDINATE THE LOCATION AND ELEVATION OF WALL-MOUNTED DEVICES WITH PRESENTATION BOARDS, DISPLAY CABINETS, SHELVES OR OTHER COMPONENTS SHOWN ON THE ARCHITECTURAL DRAWINGS THAT ARE TO BE INSTALLED UNDER OTHER DIVISIONS. CONTRACTOR WILL NOT BE REIMBURSED FOR RELOCATION OF WALL-MOUNTED DEVICES CAUSED BY A LACK OF COORDINATION.
20. PROVIDE A MANUAL BALANCING DAMPER IN EACH DUCT TAKEOFF FROM SUPPLY, RETURN, OUTDOOR AND EXHAUST AIR DUCTS.
21. PROVIDE A PREFABRICATED 45 DEGREE, HIGH EFFICIENCY, RECTANGULARROUND BRANCH DUCT TAKEOFF FITTING FOR BRANCH DUCT CONNECTIONS AND TAKE-OFFS TO INDIVIDUAL DIFFUSERS, REGISTERS AND GRILLES. PROVIDE WITH INTEGRAL MANUAL BALANCING DAMPER AND LOCKING QUADRANT WHERE INDICATED ON PLANS.
22. BRANCH DUCTWORK TO AIR OUTLETS SHALL BE SAME SIZE AS OUTLET NECK SIZE UNLESS OTHERWISE NOTED.
23. REFER TO SPECIFICATIONS FOR DUCTWORK AND PIPING INSULATION REQUIREMENTS. DUCT SIZES ON MECHANICAL PLANS INDICATE CLEAR INSIDE AIRFLOW DIMENSIONS, INCREASE SHEET METAL SIZES ACCORDINGLY TO ACCOUNT FOR THICKNESS OF DUCT LINER.
24. FLEXIBLE DUCTWORK SHALL NOT EXCEED 5'-0" IN LENGTH AND SHALL BE INSTALLED AND SUPPORTED TO AVOID SHARP BENDS AND SAGGING. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
25. RIGIDLY SUSPEND UNIT HEATER FROM STRUCTURE WITH SUPPORTING ANGLES AND ALL-THREAD HANGING RODS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
26. PROVIDE WALL MOUNTED LOUVERS AND DAMPERS WITH SUITABLE MOUNTING FRAME TO MATCH WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL DRAWINGS.
27. PROVIDE A NEW SET OF AIR FILTERS IN UNITS PRIOR TO TESTING, ADJUSTING AND BALANCING AND BEFORE TURNING SYSTEM(S) OVER TO OWNER.

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.:	19050.04A
Date:	1.13.23
Issued For:	PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
BRADLEY E. CHAMBON
NUMBER PE-026603
PROFESSIONAL ENGINEER

01/27/2023

BRADLEY E. CHAMBON
LICENSE # 026603

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

HENDERSON ENGINEERS
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EXPIRES 12/31/2023

SHEET TITLE

MECHANICAL GENERAL NOTES AND LEGEND

SHEET NUMBER

M0.00

ENERGY RECOVERY VENTILATION UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	SUPPLY FAN				EXHAUST FAN				SUMMER EXHAUST		SUMMER SUPPLY				WINTER EXHAUST		WINTER SUPPLY				ELECTRICAL				NOTES
											EAT		OA		LAT		EAT		OAT		LAT						
			CFM	ESP (IN)	BHP	VFD (Y/N)	EF AIRFLOW	ESP (IN)	EF BHP	EF VFD (Y/N)	(°F DB)	(°F WB)	(°F DB)	(°F WB)	(°F DB)	(°F WB)	(°F DB)	(°F WB)	(°F DB)	(°F WB)	(°F DB)	(°F WB)	(°F DB)	(°F WB)	V/PH	MCA	MOCP	DISC TYPE	
ERV 01	RENEWAIR	HE1.5	600	0.5	1	No	550	0.05	1	No	75.0	62.4	105.0	75.3	85.7	68.9	70.0	51.2	17.0	16.0	59.0	49	208/12	9.9	15	FUSED	A-E

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. PROVIDE 2" MERV 8, PLEATED THROWAWAY AIR FILTERS IN EACH AIRSTREAM.
B. PROVIDE FACTORY MOUNTED DISCONNECT INSTALLED ON SERVICE SIDE OF UNIT.
C. STARTER(S) PROVIDED BY DIVISION 26 CONTRACTOR.
D. PROVIDE DEFROST CONTROL.

CONDENSING UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	REFR TYPE	NOMINAL COOLING CAPACITY (MBH)	NOMINAL HEATING CAPACTIY (MBH)	MIN EFF	V/PH	MCA	MOCP	DISC TYPE	NOTES
						(SEER)					
CU 01	MITSUBISHI	NTXSKH15A112AA	410A	14000	18000	18.3	208/1	17	31	NF	A-J

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. PROVIDE LOW AMBIENT CONTROL TO 0° F.
B. EQUIPMENT SIZED FOR 105° F AMBIENT TEMPERATURE.
C. COORDINATE WITH THE MANUFACTURER THE HORIZONTAL AND VERTICAL REFRIGERANT PIPE ROUTING TO DETERMINE PIPE SIZES FOR THE REFRIGERANT PIPING. MANUFACTURER SHALL PROVIDE DETAILED REFRIGERANT PIPING DIAGRAMS INCLUDING DIMENSIONAL DATA FOR ALL REFRIGERANT PIPING DEVICES. THE MANUFACTURER SHALL SIZE AND LOCATE THE ASSOCIATED REFRIGERANT TRAPS BASED ON THE ACTUAL ROUTING AND PROVIDE OTHER APPURTENANCES TO PROVIDE A FULLY FUNCTIONAL AND OPERATIONAL SYSTEM. COORDINATE WITH THE MANUFACTURER LOCATIONS FOR ALL REFRIGERANT PIPING DEVICES TO MAINTAIN SERVICEABILITY AND ACCESSIBILITY.
D. PROVIDE LIQUID LINE FILTER DRYER AND SIGHT GLASS.
E. PROVIDE FACTORY MOUNTED DISCONNECT INSTALLED ON SERVICE SIDE OF UNIT.
F. STARTERS FOR ALL MOTORS SHALL BE PROVIDED INTEGRAL WITH UNIT.
G. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.
H. PROVIDE CONDENSER COIL HAIL GUARDS.
J. COORDINATE NUMBER OF CIRCUITS PROVIDED WITH NUMBER OF CONNECTIONS ON DX COIL SERVED.

UNIT HEATER SCHEDULE (ELECTRIC)

MARK	MANUFACTURER	MODEL	MIN OUT (MBH)	NOM (KW)	CFM	V/PH	DISC TYPE	NOTES
UH 01	QMARK	MUH	17.0	5.0	350	208/1	NF	A-D

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY.
REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED.
THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. MOUNT 1 FEET ABOVE FINISHED FLOOR WITHOUT OBSTRUCTING AIRFLOW.
B. PROVIDE WITH UNIT MOUNTED THERMOSTAT.
C. PROVIDE NECESSARY MOUNTING BRACKET AND ACCESSORIES FOR WALL MOUNTING.
D. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH INSTALLED ON SERVICE SIDE OF UNIT.

VRF FAN COIL UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	TYPE	SUPPLY FAN			COOLING COIL						TOTAL HTG CAP (MBH)	MIN O/A (CFM)	ELECTRICAL				NOTES
									EAT		LAT								
				NOMINAL CFM	ESP (IN)	MOTOR OUTPUT (BHP)	TH (MBH)	SH (MBH)	(°F DB)	(°F WB)	(°F DB)	(°F WB)			V/PH	MCA	MOCP	DISC TYPE	
FCU 01	MITSUBISHI	TPEADA0151AA70A	CEILING-EXPOSED	600	0.6	1.50	20.1	14.9	86	69 °F	55	54 °F	R410A	4.8	600	208/1	0	0	NF	A-J

NOTES:

A. ASSOCIATED CONDENSING UNIT SHALL BE BY THE SAME MANUFACTURER.
B. FOR COOLING, EQUIPMENT SIZED FOR 105°F AMBIENT TEMPERATURE. FOR HEATING, EQUIPMENT SIZED FOR 0°F AMBIENT TEMPERATURE.
C. PROVIDE PRE-MANUFACTURED OR FIELD FABRICATED FILTER RACK WITH 2" MERV 8, PLEATED THROWAWAY FILTERS.
D. PROVIDE FACTORY MOUNTED STARTER AND DISCONNECT SWITCH INSTALLED ON SERVICE SIDE OF UNIT.
E. SUSPEND UNIT FROM STRUCTURE IN HORIZONTAL POSITION WITH ALL -THREAD ROD AND SPRING VIBRATION ISOLATION (2" MINIMUM DEFLECTION).
F. EQUIPMENT SHALL BE SIZED FOR WORST CASE OF HEATING OR COOLING CAPACITY NEEDS FOR ALL ASSOCIATED VRF SYSTEMS WITHOUT DIVERSITY FACTORS APPLIED.
G. EQUIPMENT MUST MEET DESIGN LEAVING AIR TEMPERATURE IN HEATING MODE AT RATED AIRFLOW. HEATING CAPACITY SHALL INCLUDE ALL APPLICABLE DERATES FOR PIPING, AMBIENT TEMPERATURE, CONNECTED LOAD AND DEFROST.
H. PROVIDE AUXILIARY DRAIN PAN WITH FLOOD DETECTOR SWITCH TO SHUT OFF UNIT WHEN WATER IS PRESENT IN DRAIN PAN.
I. PROVIDE UNIT WITH INTEGRAL CONDENSATE PUMP.
J. PROVIDE UNIT WITH SPACE TEMPERATURE CONTROL DEVICES CONSISTENT WITH THE FOLLOWING CONTROL METHODS:
1 - THERMOSTAT OR ROOM CONTROLLER FOR LOCAL OVERRIDE OF CENTRALIZED CONTROLLER WITH INTEGRAL TEMPERATURE SENSOR.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	SERVICE	MODEL	CONSTRUCTION TYPE	FACE TYPE	MOUNTING LOCATION	FACE SIZE (IN)	MAX NC	MAX PRESS DROP (IN W.C.)	NOTES
DEG1	PRICE	EXHAUST	SDG	ALUMINUM	LOUVERED	DUCT	10x6	20	0.08	A-E
DSR2	PRICE	SUPPLY	SDG	ALUMINUM	LOUVERED	DUCT	14x6	20	0.08	A-E
WEG1	PRICE	EXHAUST	610	ALUMINUM	LOUVERED	WALL	6x6	20	0.08	A-E

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. FRONT BLADES PARALLEL TO LONG DIMENSION.
B. DOUBLE DEFLECTION BARS SHALL BE ADJUSTABLE.
C. PROVIDE OPPOSED BLADE DAMPER ADJUSTABLE FROM FACE OF DEVICE.
D. PROVIDE DIFFUSERS, LINEAR SLOTS, AND GRILLES WITH NO EXPOSED MOUNTING SCREWS.

LOUVER SCHEDULE

MARK	SERVICE	MANUFACTURER	MODEL	WIDTH (IN)	LENGTH (IN)	CFM	MIN FREE AREA (SF)	MAX VEL (FPM)	MAX APD (IN W.C.)	NOTES
LV 02	OUTSIDE AIR	GREENHECK	EDJ-401	32"	12"	600	0.65	500	0.08	A-D
LV 01	EXHAUST	GREENHECK	EDJ-401	22"	12"	550	0.60	700	0.08	A-D

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY.
REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED.
THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. PROVIDE 1/4" MESH ALUMINUM BIRD SCREEN.
B. PROVIDE STANDARD MILL FINISH.
C. FRAME TYPE SHALL MATCH WALL CONSTRUCTION, COORDINATE WITH ARCHITECT.
D. PROVIDE WITH INTEGRAL [LOW-LEAKAGE] BACKDRAFT DAMPER.

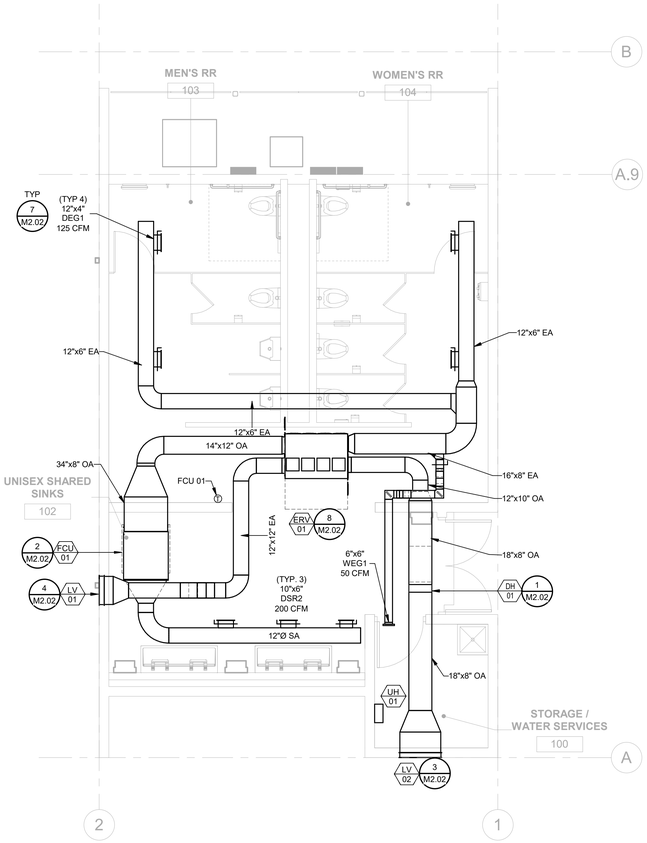
ELECTRIC DUCT HEATER SCHEDULE

MARK	MANUFACTURER	MODEL	MIN OUT (MBH)	NOM INPUT (KW)	SIZE (W" x H")	CFM	MAX TEMP RISE (°F)	V/PH	NOTES
DH 01	PRICE	EC	11.0	3.2	12 x 10	600	17	208/1	A-F

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. SUPPORT UNIT FROM STRUCTURE WITH ALL-THREAD HANGING RODS.
B. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH INSTALLED ON SERVICE SIDE OF UNIT.
C. PROVIDE AIRFLOW PROVING SWITCH AND THERMAL OVERLOAD PROTECTION.
D. PROVIDE MAGNETIC CONTACTORS.
E. PROVIDE STEP CONTROLLERS DESIGNED TO STAGE THE HEATER OUTPUT FROM 0 TO 100 PERCENT CAPACITY.
F. PROVIDE CONTROL POWER TRANSFORMER AND LOW VOLTAGE THERMOSTAT WITH STAGES AS REQUIRED TO CONTROL HEATER.



1 HVAC FINISH FLOOR PLAN
1/4" = 1'-0"

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 1.13.23
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
BRADLEY E. CHAMBON
NUMBER PE-026603
PROFESSIONAL ENGINEER

01/27/2023

BRADLEY E. CHAMBON
LICENSE # 026603

PROJECT TEAM

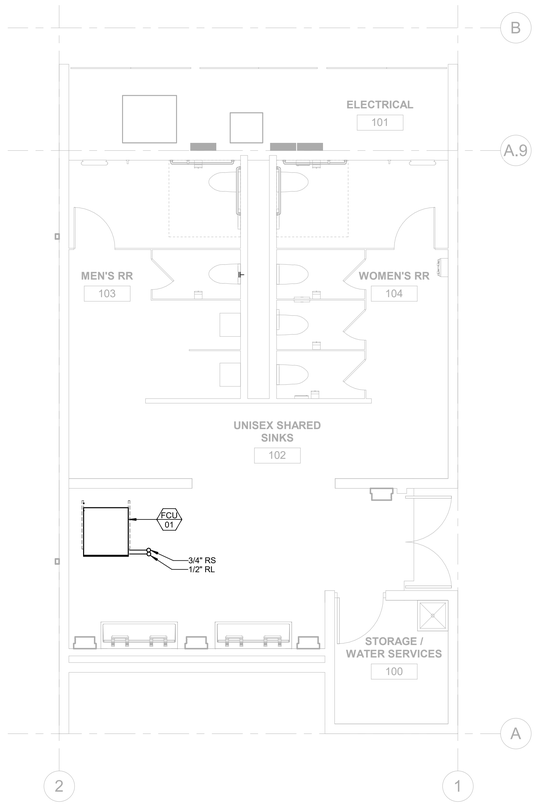
ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

HENDERSON ENGINEERS
8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM

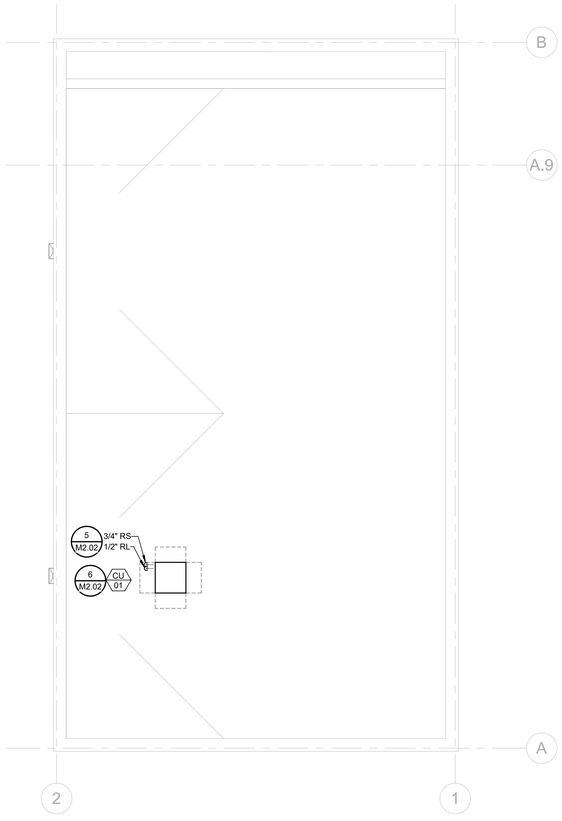
1850004412
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2023

SHEET TITLE
HVAC FINISH FLOOR PLAN - SOUTH RESTROOMS

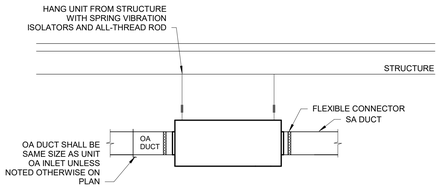
SHEET NUMBER
M1.02



13 PIPING FINISH FLOOR PLAN
1/4" = 1'-0"

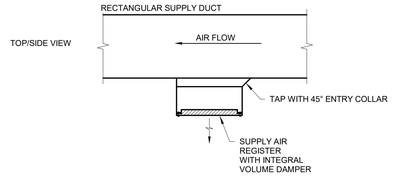


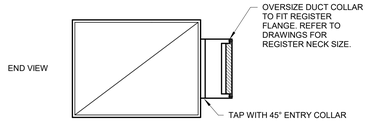
12 PIPING ROOF PLAN
1/4" = 1'-0"



NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE REQUIREMENTS.

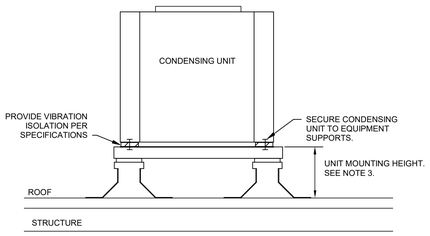
8 ENERGY RECOVERY VENTILATION UNIT DETAIL
NTS





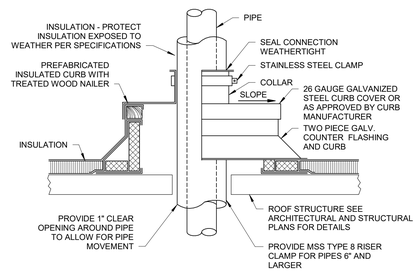
NOTES:
1. POSITION ADJUSTABLE LOUVERS DURING TESTING AND BALANCING FOR OCCUPANT COMFORT AND TO DECREASE DRAFTS IN THE SPACE.

7 REGISTER MOUNTING TO RECTANGULAR DUCT DETAIL
NTS

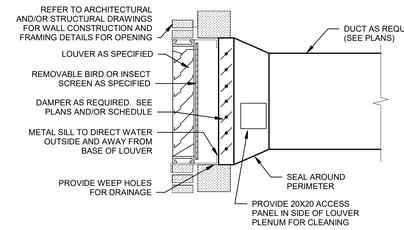


NOTES:
1. SUPPORT AND ANCHOR OUTDOOR UNITS IN COMPLIANCE WITH LOCAL SEISMIC AND WIND RESTRAINT REQUIREMENTS.
2. SEE MECHANICAL EQUIPMENT ANCHORS AND SUPPORT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
3. REFER TO THE EQUIPMENT SCHEDULE AND MANUFACTURER'S REQUIREMENTS FOR UNIT MOUNTING HEIGHT.

6 CONDENSING UNIT SUPPORT DETAIL
NTS

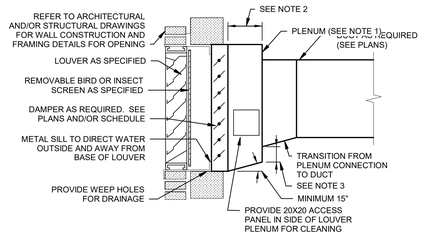


5 PIPE ROOF PENETRATION DETAIL
NTS



NOTES:
1. SEAL ALL JOINTS AND SEAMS OF PLENUM AND DUCT TO PROVIDE WATER TIGHT CONSTRUCTION. PROVIDE INSULATION FOR PLENUM AND DUCT PER SPECIFICATIONS.
2. MINIMUM DEPTH OF PLENUM SHALL BE 2'-0".
3. DISTANCE FROM EDGE OF PLENUM TO TRANSITION SHALL BE NOT MORE THAN DEPTH OF PLENUM ON ALL SIDES.

4 EXHAUST LOUVER INSTALLATION DETAIL
NTS



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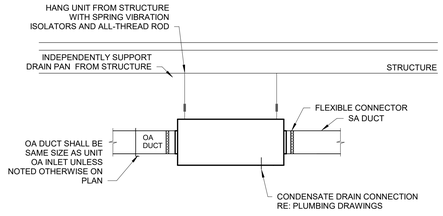
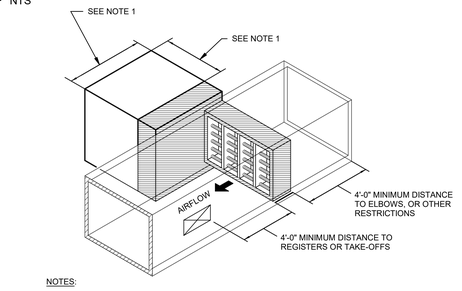
3. DISTANCE FROM EDGE OF PLENUM TO TRANSITION SHALL BE NOT MORE THAN DEPTH OF PLENUM ON ALL SIDES.

3 INTAKE LOUVER INSTALLATION DETAIL
NTS



NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE REQUIREMENTS.

2 FAN COIL UNIT DETAIL
NTS



NOTES:
1. REFER TO ELECTRICAL CODE TO DETERMINE EXACT CLEARANCE DEPTH REQUIRED BASED ON FIELD CONDITIONS. THE CLEARANCE SHALL NOT BE LESS THAN 36".
2. PROVIDE THE GREATER OF 30" MINIMUM CLEARANCE WIDTH OR THE WIDTH OF THE CONTROLS ENCLOSURE.
3. ALL ACCESS DOORS TO THE HEATER MUST BE ABLE TO OPEN A MINIMUM OF 90 DEGREES.

1 ELECTRIC DUCT HEATER DETAIL
NTS

paragon star

Paragon Star - SOUTH RESTROOMS

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STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

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WWW.HENDERSONENGINEERS.COM
1850004412
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2023

SHEET TITLE

PIPING FINISH FLOOR PLAN - SOUTH RESTROOMS

SHEET NUMBER

M2.02

Division 23: HEATING, VENTILATING, AND AIR CONDITIONING

1. GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

All requirements under Division 01 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence. Become thoroughly familiar with all its contents as to requirements that affect this division, section, or both. Work required under this division includes all material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate the function of each system as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and any portion of work described in one shall be provided as if described in both. In the event of discrepancies, notify the Engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the systems without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

B. DEFINITIONS

Division: References contained in this specification follow the numbering system defined in the Construction Specifications Institute (CSI) MasterFormat 2004 Edition. Specification Divisions 01 through 13 provided with this project may reference the CSI MasterFormat 1995 Edition. The corresponding division references between the 2004 Edition and 1995 Edition are as follows:

2004 Edition	1995 Edition
1. Division 21 - Fire Suppression	Division 15
2. Division 22 - Plumbing	Division 15
3. Division 23 - HVAC	Division 15
4. Division 26 - Electrical	Division 16
5. Division 27 - Communications	Division 16
6. Division 28 - Electronic Safety and Security	Division 16

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations."

Install: "to perform all operations at the project site including, but not limited to, the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install."

Furnished by Owner (or Owner-Furnished) or Furnished by Others: "an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete and ready for intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division."

Engineer: Where referenced in this division, "Engineer" is the Engineer of Record and the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and/or Supplementary Conditions. When used in this division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

AHJ: The local code and/or inspection agency (Authority) Having Jurisdiction over the work.

NRTL: Nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project. Nationally recognized testing laboratories and standards listed are used only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the specified criteria.

Substitution: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include Value Engineering proposals.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the Engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, or both, by an NRTL, and acceptable to the AHJ over this project.

C. PREBID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MATERIAL AND WORKMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, of best quality normally used for the purpose in good commercial practice, and free from defects. Install material and equipment in accordance with the manufacturer's installation instructions. Model numbers listed in the specifications or shown on the drawings are not necessarily intended to designate the required trim, written descriptions of the trim govern model numbers.

Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States or certified to meet the specified ASTM and ANSI standards.

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the Architect and Engineer. Workmanship shall be the finest possible by experienced mechanics. Installations shall comply with applicable codes and laws.

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal noise caused by rattling equipment, piping, ducts, air devices, and squeaks in rotating components shall not be acceptable. Materials and equipment shall be of commercial specification grade in quality. Light duty and residential grade equipment shall not be accepted unless otherwise indicated.

Remove from the premises waste material present as a result of work, including cartons, crating, paper, stickers, and/or excavation material not used in backfilling, etc. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction. Provide all safety lights, guards, and warning signs required for the performance of the work and for the safety of the public.

E. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

F. COORDINATION

Coordinate work with that of other trades so that the various components of the systems are installed at the proper time, will fit the available space, and will allow proper service access to those items requiring maintenance. Components which are installed without regard to the above shall be relocated at no additional cost to the Owner.

Unless otherwise indicated, the General Contractor shall provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the General Contractor with information where chases and openings are required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor shall be held responsible for errors that could have been avoided by proper checking and inspection.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the specifications or shown on the drawings are not intended to designate the required trim.

G. ORDINANCES AND CODES

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ, including any amendments and standards as set forth by the following:

1. National Electrical Code (NEC)
2. National Fire Protection Association (NFPA)
3. Underwriters Laboratories (UL)
4. Occupational Safety and Health Administration (OSHA)
5. American Society of Mechanical Engineers (ASME)
6. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
7. American National Standards Institute (ANSI)
8. American Society of Testing and Materials (ASTM)
9. Other national standards and codes where applicable.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence. Where conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner.

H. PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dust, dirt, paint, water, or physical damage. Replace insulation that has become wet at any time during construction. Drying the insulation is not acceptable. Seal any tears or joints of internal fiberglass insulation. Equipment and material damaged by construction activities shall be rejected and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises broom clean of foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work. Remove debris from ceiling/return air plenum, including dust.

Plug, seal, or cap open ends of ductwork and piping systems while stored and installed during construction when not in use to prevent the entrance of debris into the systems. Remove temporary protection prior to starting equipment and turning the system over to the owner.

I. SUBSTITUTIONS

Materials, products, equipment, and systems described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by the proposed substitution. The base bid shall include only the products from manufacturers specifically named in the drawings and specifications. To request a substitution, request the Substitution Request Form from the Architect or Engineer. Complete and send the Substitution Request Form for each material, product, equipment, or system that is proposed to be substituted. The burden of proof of the merit of the proposed substitution is upon the proposer.

Unless stated otherwise in writing to the Engineer by the Contractor, Contractor warrants to the Engineer, Architect, and Owner the following:

1. Proposed substitution has been fully investigated and determined to meet or exceed the specified Work in all respects unless stated otherwise in the substitution request.
2. Proposed substitution is consistent with the Contract Documents and will produce indicated results, including functional clearances, maintenance service, and sourcing of replacement parts.
3. Proposed substitution has received necessary approvals of authorities having jurisdiction.
4. Same warranty will be furnished for proposed substitution as for specified Work.
5. If accepted substitution fails to perform as required, Contractor shall replace substitute material or system with that originally specified and bear costs incurred thereby.
6. Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

No substitutions will be considered unless the Substitution Request Form is completed and attached with the appropriate substitution documentation. No substitution will be considered prior to receipt of bids unless written request for approval to bid has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of bids.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided in the contract documents.

J. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittals in sufficient detail so as to demonstrate compliance with these contract documents and the design concept. Prior to transmitting submittals, verify that the equipment submitted is mutually compatible and suitable for the intended use, will fit the available space, and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location or configuration, submit a shop drawing showing the proposed layout.

Transmit submittals as early as required to support the project schedule. Allow for two weeks Engineer review time, plus to/from mailing time via the Architect, plus a duplication of this time for resubmittal, if required. Only resubmit those sections requested for resubmittal.

Submittals shall contain the project name, applicable specification section, submittal date, equipment identification acronym as used on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples and other submittals required by this division. Highlight, mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

Submittals and shop drawings shall not contain the firm name, logo, seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph "Electronic Drawing Files" for procedures to be used.

Separate submittals according to individual specification sections. Illegible submittals will be rejected and returned without review. Catalog data shall be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification acronym or number as used on the drawings and include performance curves, capacities, sizes, weights, materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. For equipment with motor starters or VFDs, include short circuit current ratings. Mark out inapplicable items. Shop drawings will be returned without review if the above mentioned requirements are not met.

Provide the quantity of submittals required by Division 01. If not indicated and hard-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for this project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall notify the Architect and Engineer that the submittals have been posted. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name, and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the designated representatives of the Architect and Engineer. Contractor shall allow for the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal.

The checking and subsequent acceptance of submittals by the Engineer and/or Architect shall not relieve the Contractor from responsibility for deviations from the drawings and specifications, errors in dimensions, details, size of members, or quantities, omissions of components or fittings; coordination of electrical requirements; and not coordinating items with actual building conditions and adjacent work. Proceed with the procurement and installation of equipment only after receiving approved shop drawings relative to each item.

K. ELECTRONIC DRAWING FILES

In preparation of shop drawings or record drawings, Contractor may, at his option, obtain electronic drawing files in AutoCAD or DXF format on CD-ROM disk, DVD disk, flash drive or direct download, as desired, from the Engineer for a shipping and handling fee of $200 for a drawing set up to 12 sheets and $15 per sheet for each additional sheet. Contact the Architect for written authorization and Engineer for the necessary release agreement form and to specify shipping method and drawing format. In addition to payment, the written authorization from the Architect and release agreement form from the Engineer must be received before electronic drawing files will be sent.

L. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to three identical sets of the approved shop drawings. Insert one set into each copy of the manual described below.

See Division 01 and General Conditions for additional information.

M. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index and tabs separating equipment types to the Architect, for Engineer's review, at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and mailing envelopes are not considered approved binders. Final approval of systems installed under this contract shall be withheld until this equipment brochure is received and deemed complete by the Architect and Engineer. Instruct workmen to save required literature shipped with the equipment itself for inclusion in this brochure.

Include Record Drawings as described above.

Refer to Division 01 for acceptance of electronic manuals for this project. For electronic manuals, refer to paragraph "Submittals" for requirements.

N. SPARE PARTS

Furnish to Owner, with receipt, the following spare parts for the equipment furnished for this project:

1. One set of spare filters of each type required for each unit. In addition to the spare set of filters, install new filters prior to testing, adjusting, and balancing work and before turning system over to Owner.
2. Furnish one complete set of belts for each fan.
3. Furnish three operating keys for each type of air outlet and inlet that require them.

O. TRAINING

At a time mutually agreed upon between the Owner and Contractor, provide the services of a factory trained and authorized representative to train Owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include, but not be limited to, an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the Architect stating that the Owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The Contractor and the Owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule training with Owner with at least 7 days advance notice.

P. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects, occurring within the warranty period(s), as stated in the General Conditions and Division 01.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly, upon written notice from the Engineer or Owner.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the one year period and any actions the Owner must take in order to maintain warranty status. Each warranty instrument shall be addressed to the Owner and state the commencement date and term.

2. GENERAL MATERIALS AND INSTALLATION

A. BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Accomplish work requiring interruption of building operation at a time when the building is not in operation and only with written approval of building Owner and/or tenant. Coordinate interruption of building operation with the Owner and/or tenant a minimum of seven (7) days in advance of work.

B. COINCIDENTAL DAMAGE

Repair streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of the work. Repair materials shall match existing construction. Repair work shall meet all requirements of the Owner, local authorities having jurisdiction, and meet the satisfaction of the Architect.

C. CUTTING AND PATCHING

Conform to the requirements in Division 01. Cut walls, floors, ceilings, and other portions of the facility as required to install work under this division. Obtain permission from the Architect prior to cutting. Do not cut or disturb structural members without prior approval from the Architect and Structural Engineer. For post-tension slabs, x-ray slab and closely coordinate all core drill locations with Architect and Structural Engineer prior to performing any work. Obtain approval from Architect and Structural Engineer for all core drills and penetrations at least four days prior to performing work. Penetrations shall be made as small as possible while maintaining required clearances between the building element penetrated and the system component. Patch around openings to match the adjacent construction including fire ratings, if applicable. Repair and refinish areas disturbed by work to the condition of adjoining surfaces in a manner satisfactory to the Architect.

D. STRUCTURAL SUPPORT SYSTEMS

Structural steel used for support of equipment, ductwork and piping shall be new, clean, and conform to ASTM Designation A-36.

Support mechanical components from the building structure. Do not support mechanical components from ceilings, other mechanical or electrical components, and other non-structural elements.

E. ACCESS PANELS AND DOORS

Provide access doors for all concealed equipment and duct and piping accessories that require service where indicated or as required, except where above lay-in ceilings. Access doors shall be adequately sized for the devices served with a minimum size of 18 inches x 18 inches. Access doors must be of the proper construction for type of construction in which it is installed. Obtain Architect's approval of type, size, location and color before ordering. Provide factory-fabricated and assembled units, complete with attachment devices and fasteners ready for installation, concealed hinges, flush screwdriver-operated cam lock, and anchor straps. Provide access doors manufactured by Greenheck, Milcor, Titus, Zurn, or equal.

F. ELECTRICAL WIRING

High voltage wiring is defined as 50 Volts or higher. Low voltage wiring is defined as less than 50 Volts. Line voltage wiring shall be provided by Division 26. Line voltage control and interlock wiring for mechanical systems shall also be provided by Division 26. Low voltage control wiring shall be provided by Division 23. Furnish wiring diagrams to Division 26 as required for proper equipment hookup. Coordinate with Division 26 the actual wire sizing amps for mechanical equipment (from the equipment nameplate) to ensure proper installation.

Provide power and communication wiring with transient protection in accordance with IEEE C62.41.2. All control and interlock wiring shall comply with the NEC. Control wiring shall be sized to accommodate the voltage drop associated with the distance between the control device and the controller. Control wiring not installed in conduit shall be UL rated for plenum installation. All NEC Class 1 (line voltage) wiring shall be UL listed in approved raceway according to the NEC and Division 26 requirements. Maximum allowable voltage for control wiring shall be 120 V. All low-voltage wiring shall meet NEC Class 2 requirements. Low-voltage power circuits shall be sub-fused when required to meet Class 2 current limit.

Conduit for Control Wiring: EMT with compression fittings, cold rolled steel, zinc coated or zinc-coated rigid steel with threaded connections.

Pull and Junction Boxes: Size according to number, size, and position of entering raceway as required by National Electrical Codes. Enclosure type shall be suited to location.

Install wiring parallel to building lines wherever possible. Conceal all control wiring in finished rooms. Do not install Class 2 wiring in raceway containing Class 1 wiring. Boxes and panels containing high voltage wiring and equipment may not be used for low-voltage wiring except for the purpose of interfacing the two wires (e.g., relays and transformers). All wire-to device and wire-to-wire connections shall be made at a terminal block or terminal strip. All runs of communication wiring shall be unspliced length when that length is commercially available. Verify the integrity of the entire network following the cable installation. Use appropriate test measures for each particular cable. Label all wiring and cabling at each end within 2 inches of termination with the controller termination number. Label control devices used in the system with permanent labels using the identifiers that match the record documents.

G. EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or Owner to complete installation of equipment furnished by others in locations as indicated on the drawings, specified herein, or both. Equipment and accessories not provided by the equipment supplier may include, but not be limited to flues, vents, intakes, associated roof jacks and caps to outdoors, dampers, in-line fans, roof fans, and control interlocks, etc. as required for proper operation of the complete system in accordance with the manufacturer's instructions.

Contractor shall be responsible for correct rough-in dimensions and shall verify them with Architect and/or equipment supplier prior to service installations.

H. SYSTEM TESTING, ADJUSTING, AND BALANCING

Upon completion of each phase of the installation, test each system in conformance with local code requirements and as noted below. Furnish labor and equipment required to test each system installed under this contract. Assume all costs involved in making the tests and repairing and/or replacing any damages resulting therefrom.

Final system testing, balancing and adjustments (TAB) shall be performed by a Contractor certified by the National Environmental Balancing Bureau (NEBB), Associated Air Balance Council (AABC), or Testing, Adjusting and Balancing Bureau (TABB). TAB shall be performed in accordance with the most current edition of the certified agencies procedural standard for testing, adjusting and balancing and shall comply with the strictest interpretation of that standard for execution and reporting of all TAB work.

Test, adjust, and balance equipment and systems included in the scope of work. Prepare testing and balancing report log using forms equivalent with the standard forms available from the TAB certification standard being followed. Adjust equipment to deliver specified flow amounts on the drawings. For air systems, include airflow supply quantities, entering and leaving temperatures, and pressures at design flow. For hydronic systems, include entering and leaving temperatures and pressures at design flow. Include fan and unit test readings, motor voltage and amp draws, etc., and submit six copies of the final compilation of data to the Architect for evaluation and approval before final inspection of the project.

Balance air systems to within plus or minus 10 percent for terminal devices and branch lines and plus or minus 5 percent for main ducts and air handling equipment of the amount of air shown on the drawings. TAB Contractor shall record space temperatures and make adjustments in airflow to each diffuser to obtain uniform temperature (no greater than +/- 3 F) in spaces. Document temperatures and adjustments in tab report. Balance hydronic systems to provide flow rates within plus or minus 5 percent of flow specified on drawings or as required for proper system operation. Adjust equipment to operate as intended by the specification. TAB report shall include a 'report summary/remarks' section in accordance with the procedural standard that provides both system set up and a summary of deficiencies as defined by the procedural standard..

TAB Contractor shall be responsible to calibrate, set, and adjust automatic temperature control sensors, actuators and control devices. Check proper sequencing of interlock systems, and operation of safety controls, adjust thermostats, and control setpoints, limits and time based adjustment to operate in accordance with the performance requirements of the Construction Documents. Adjust pumps, fans, etc. for proper and efficient operation. Certify to Architect that adjustments have been made and that system is operating satisfactorily. Calibrate, set, and adjust automatic temperature controls. Check proper sequencing of interlock systems, and operation of safety controls.

Division 23 contractor shall align bearings and replace bearings that have dirt or foreign material in them with new bearings without additional cost to the Owner.

I. AIR FILTERS

Provide AAF/Flanders Perfect Pleat HC M8, Camfil Farr 30/30, pleated, throwaway type filters, minimum MERV 8, or similar as manufactured by Air Filter, Inc., Bioclimatic, Columbus, Koch, or approved equal, unless otherwise indicated.

Temporary filters used to protect openings in ductwork and inside equipment when permanent HVAC equipment is used during the construction period shall be pleated, throwaway type filters, minimum MERV 6.

J. REFRIGERANT AND OIL

Provide full refrigerant and oil charge in new air conditioning refrigeration systems, and maintain it for full term of the guarantee.

K. IDENTIFICATION

Provide manufacturer's standard pre-printed, semi-rigid snap-on or permanent adhesive, pressure-sensitive vinyl pipe markers. Color code pipe markers to comply with ANSI A13.1.

Install pipe markers on each HVAC piping system and include arrows to show normal direction of flow.

Locate pipe markers and color bands wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.

Provide plastic laminate or brass valve tag on every valve, cock and control device in each HVAC piping system; exclude check valves, valves within factory-fabricated equipment units, and shut-off valves at HVAC terminal devices and similar rough-in connections of end-use fixtures and units.

Provide manufacturer's standard laminated plastic, color coded equipment markers. Conform to the following color code: Green for Cooling; Yellow for Heating; Yellow/Green for combination Cooling and Heating; Brown for Energy Reclamation; Blue for other equipment types. Conform to ANSI A13.1 for Hazardous Equipment.

Provide stenciled signs for equipment identification at Contractor's option or where distance of required identification requires lettering larger than 1 inch height. Stencil paint shall be exterior type, oil-based, alkyd enamel, minimum 1-1/4 inch height or greater as required for long distance identification, white or black color for best contrast.

Provide duct markers or provide stenciled signs and arrows indicating ductwork service and flow direction in black or white lettering for best contrast with duct or insulation color. Locate markers maximum 50 feet along each duct side and within 5 feet of all control and balancing dampers or branch ducts more than 25 feet length and within 5 feet on each side of wall, floor, and ceiling penetrations. Provide additional markers in congested areas or at multiple duct runs as required for clarity.

3. DUCT INSULATION, DUCTWORK, ACCESSORIES, FLUES AND FANS

A. DUCT INSULATION

Provide fiberglass duct liner with fibers firmly bonded together with a thermosetting resin. Liner surface shall serve as a barrier against infiltration of dust and dirt, shall meet ASTM C1338 for fungi resistance, and shall be cleanable using duct cleaning methods and equipment outlined by North American Insulation Manufacturers Association (NAIMA) duct cleaning guide. Install with liner adhesive and mechanical fasteners in accordance with manufacturer's instructions and recommendations. Ductwork sizes shown on drawings are inside clear dimensions. Increase sheet metal by liner thickness in both directions where liner is installed.

Provide rectangular liner conforming to ASTM C1071, Type I or II that is 1 inch thick, 1-1/2 pound density, minimum R-4.2 Certainteed Corp. "Toughgard" or equivalent, Johns Manville, Owens-Corning, or Knauf.

Provide round liner that is 1 inch thick, 4 pound density, minimum R-4.3 Johns Manville "Spiracoustic Plus" or equivalent, Certainteed or Owens-Corning.

Provide liner on the following interior air ducts and where specified on the drawings:

1. All supply ductwork
2. All return ductwork

Insulating materials, adhesives, coatings, etc., shall not exceed flame spread rating of 25 and smoke developed rating of 50 per ASTM E84. Containers for mastics and adhesives shall have U.L. Label.

B. DUCTWORK

Provide galvanized steel ductwork and housings as shown on drawings. Construct ductwork including fittings and transitions in conformance with current SMACNA standards relative to gauge, bracing, joints, etc. Minimum thickness of duct shall be 26-gauge sheet metal. Reinforce housings and ductwork over 30 inches with 1-1/4 inch angles not less than 5'-6" on centers, and closer if required for sufficient rigidity to prevent vibration. Support horizontal runs of duct from strap iron hangers on centers not to exceed 8'-0". Do not support ceiling grid, conduits, pipes, equipment, etc. from ductwork. Coordinate routing of ductwork with other contractors such that piping, electrical conduit, and associated supports are not routed through the ductwork.

Provide pre-engineered roof duct supports supports by Cooper B-Line, Elite Components, ERICO, FNW, Miro, PHD Manufacturing, PHP Systems, Roof Top Blox, Unistrut (Atkore), Zsi Foster, or approved equal. Support ductwork on the roof with pre-engineered roof duct supports that rest on top of the roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with embedded support fixtures as required to support the duct. Provide steel pedestal type supports with minimum 18x18 inch thermoplastic or rubber base or 4 inch wide closed-cell polyethylene block with length as required. Maintain minimum 6 inches clearance under duct to finished roof surface.

Construct non-VAV supply ducts to meet SMACNA positive pressure of 2 inches w.g. Construct Return, Outdoor and Exhaust ductwork upstream of fans to meet SMACNA negative pressure of 1 inch w.g. Construct exhaust ductwork downstream of fans to meet SMACNA positive pressure of 1 inch w.g.

Provide mill phosphatized or galvanealed finish for exposed ductwork to be field painted. Shop treated sheet metal shall have galvanized metal primer applied in the shop after fabrication and prior to shipping.

Seal ductwork with heavy liquid sealant, Hardcast Irongrip 601, Design Polymer DP 1010, United Mcgill duct sealer or approved equal, applied according to sealant manufacturer's instructions. Seal all longitudinal and transverse ductwork joints airtight to meet SMACNA Seal Class A. Tapes and mastics shall be listed and labeled in accordance with UL 181A.

Provide radius elbows, turns, and offsets with a minimum centerline radius of 1-1/2 times the duct width. Where space does not permit full radius elbows, provide short radius elbows with a minimum of two continuous splitter vanes. Vanes shall be the entire length of the bend. Provide mitered elbows where space does not permit radius elbows, where shown on the drawings, or at the option of the contractor with the engineer's approval. Mitered elbows less than 45 degrees shall not require turning vanes. Mitered elbows 45 degrees and greater shall have single thickness turning vanes of same gauge as ductwork, rigidly fastened with guide strips in ductwork. Vanes for mitered elbows shall be provided in all supply and exhaust ductwork and in return and outside air ductwork that has an air velocity exceeding 1000 fpm. Do not install vanes in grease ductwork. The use of square throat, radius heel elbows is prohibited. Remove and replace all installed elbows of this type with an approved elbow at no additional cost to the owner.

Connect ducts to vibrating equipment and when transitioning between two different metallic duct materials (e.g., aluminum to galvanized steel) by means of flexible connectors. Flexible connectors shall be neoprene coated glass cloth canvas connections, Duro-Dyne, Elgen, Ventfabric or equal. Flexible connectors shall have a flame spread of 25 or less and smoke developed rating not higher than 50. Make airtight joints and install with minimum 1-1/2 inches slack.

Provide balancing dampers, manufactured by Cesco, Greenheck, Louvers & Dampers, Nailor Industries, Pottorff, Ruskin, Tamco, or approved equal, where shown on drawings and wherever necessary for complete control of air flow. Splitter dampers shall be controlled by locking quadrants; provide Young Regulator or Ventlok end bearings for the damper rod. Rectangular volume dampers shall be opposed blade interlocking type. Round volume dampers shall be single-blade type consisting of circular blade mounted to a shaft. Provide Flexmaster model STO or equal 45 degree rectangular/round side takeoff fitting with model BO3 damper with locking quadrant and insulation build out for round ductwork branch takeoffs to individual air devices. Omit damper at takeoff fitting when damper is located downstream of takeoff.

Where access to dampers through a hard ceiling is required, provide a concealed, remote cable-operated, butterfly-type volume damper assembly with external worm gear operator. Damper assembly shall include duct casing with rolled bead stiffeners, reinforced blade, self-lubricating bearing, and remote operator mounting plate. External operator shall attach to damper as a single piece with no linkage adjustment required. Damper shall be adjustable through the diffuser frame with standard 1/4 inch nutdriver or flat screwdriver. Provide positive, direct, two-way damper control with no sleeves, springs or screw adjustments to come loose after installation. Provide cable length to span the distance from the damper to the remote operator location. Install damper in branch duct. Do not install in diffuser neck. Install remote operator on the back of the diffuser frame or side of a slot diffuser plenum. Support cable assembly to avoid bends and kinks in cable at manufacturer recommended intervals. Where approved by architect, a ceiling cup with cover plate may be used for access to cable operator. Provide round dampers by Metropolitan Air Technology model RT-250, Young's Regulator model 5020-1200, or approved equal. Provide rectangular dampers by Metropolitan Air Technology model RT-200, Young's Regulator model 820-1200, or approved equal. Provide remote cable control by Metropolitan Air Technology model RT-WGA, Young's Regulator model 270-275, or approved equal.

Round or oval ductwork shall be FlaktGroup Semco, United, Hercules Industries or equal, sheetmetal, with smooth interior surface, with low pressure (duct pressure class up to and including 2 inches w.g.) Round ductwork gauges per the following table (reference SMACNA HVAC duct construction standards for gauges when pressures exceed 2 inches w.g.):

Size	Duct Gauge	Fitting Gauge
14" & under	26	24
15" thru 26"	24	22
28" thru 36"	22	20
38" thru 50"	20	20
52" thru 60"	18	18

Lewis & Lambert, Linx Industries Lindab Safe, or approved equal factory-manufactured round ductwork and fittings may be substituted for specified round branch ductwork, at Contractors option. Heavy liquid joint sealant may be omitted on factory-manufactured round ductwork.

Low pressure (duct pressure class up to and including 2 inches w.g.) Fittings 24 inches in diameter and less shall be prefabricated, spot-welded and internally sealed. Continuously weld fittings larger than 24 inches in diameter. Fitting gauge shall be 22 gauge for 36 inch fittings and under, 20 gauge for larger sizes. 90 degree tees shall be conical type. Seal longitudinal and transverse ductwork joints airtight with heavy liquid sealant applied according to manufacturer's instructions. Provide gauge thickness in medium pressure (duct pressure class 3 inches to 6 inches w.g.) ductwork as recommended by SMACNA.

If permanent HVAC equipment is used during the construction period, provide temporary filters at all openings in the ductwork and inside equipment to protect the system from dust, dirt, paint, and moisture. Replace and maintain filters when needed, but not less than every month. On the day of Substantial Completion, clean the unit and ductwork and provide a new set of filters in the unit. Refer to section "Air Filters" for filter requirements.

An independent, professional duct cleaning company shall vacuum clean all internal surfaces of equipment, coils, and ductwork connected to permanent HVAC units that are operated during the construction period. Conduct cleaning after new air filters are installed and prior to turning the system over to the owner.

C. AIR DEVICES

Provide air devices as scheduled on drawings, manufactured by Carnes, Krueger, Metalaire, Nailor Industries, Price, Titus, or Tuttle & Bailey. Select air devices to limit room noise level to no higher than NC-30 unless otherwise shown. Provide devices with a soft plastic gasket to make an airtight seal against the mounting surface. Coordinate final location, frame, and mounting type of air devices with Architectural reflected ceiling plans.

Submit complete shop drawings including information on noise level, pressure drop, throw, CFM for each air device, styles, borders, etc. Clearly marked with specified equipment number. Submit samples of each air device as requested by the Engineer.

Provide wall return air grilles and exhaust air registers with horizontal 35 or 45 degree angle vision-proof bars. Provide concealed fasteners for wall mounted registers and grilles. Provide floor supply air registers of aluminum heavy duty type with 0 degree deflection. Provide opposed blade dampers for supply air registers and exhaust air registers unless indicated otherwise.

Provide ceiling mounted air devices of lay-in or surface mounted type as required to be compatible with ceiling construction. Provide ceiling diffusers and grilles with white enamel finish unless noted otherwise.

D. LOUVERS, PLENUMS, SCREENS

Provide intake and exhaust air louvers by Ruskin model ELF375X or equal American Warming & Ventilating, Cesco, Greenheck, Industrial Louvers or Louvers & Dampers as scheduled on the drawings. Coordinate exact size and location with architectural drawings. Louvers shall be stationary, with mill finish. Louvers shall have extruded aluminum blades, 0.080 inch wall thickness, 45 degree blade angle, blades on 5 inch centers; frame shall be extruded aluminum, 0.080 inch wall thickness; with expanded flattened aluminum birdscreen. Provide louvers with a minimum free area of 45 percent, with a maximum air pressure drop of 0.1 inch at scheduled airflow.

Construct plenums with galvanized steel framing members and galvanized sheet metal, braced with galvanized angles. Gauges and bracing shall conform to SMACNA recommendations for ductwork of like sizes. Where access doors are shown, provide hinged doors with #202 Ventlok latch. Make watertight connections to louvers, sloping bottom of plenum to drain water to weepholes in bottom of louver.

Provide screens on louvers, ducts, hoods, fans, and openings to the outdoors as scheduled and/or noted on the drawings. Insect screens shall be 1/4 inch mesh, aluminum wire. Bird screens shall be 1/2 inch mesh galvanized steelwire. Provide motorized control dampers or backdraft dampers where shown on the drawings.

4. HVAC EQUIPMENT

A. CONDENSING UNITS

Provide split system, air cooled condensing units as scheduled on the drawings, manufactured by Carrier, Daikin, Lennox, Trane, or York, complete with factory installed hermetic or semi-hermetic motor/compressor assembly with internal spring vibration isolation, built-in thermal overload protection, and crankcase heater; top discharge condenser fan and motor; low ambient head pressure controls for operation to temperature as scheduled; anti-short cycle timers; time delay relays; high and low pressure switches; full refrigerant holding charge; and weathertight housing constructed of zinc coated, heavy gauge, galvanized steel with weather-resistant baked enamel finish and factory installed condenser coil hail guards. For units greater than 5 tons, provide liquid line drier and refrigerant sight glass. Provide a five year guarantee on the compressor and refrigerant circuit, and a one year guarantee on the remaining components. Provide refrigerant piping sized as recommended by equipment manufacturer with foamed plastic insulation on the suction line as specified in this section. For heat pump units provide reversing valve, suction line accumulator, flow control check valve, and solid state defrost/timed-off control. Provide concrete bases for units located on grade. Provide pre-engineered roof equipment support rails for units located on roof with Type WP continuous along support. Securely attach units to rail.

B. FAN COIL UNITS (DIRECT EXPANSION, 1.5-5 TONS)

Provide split system, fan coil units as scheduled on the drawings, manufactured by Carrier, Daikin, Lennox, Trane, or York, with configuration as scheduled, complete with zinc coated, heavy gauge, galvanized steel cabinet with weather-resistant baked enamel finish; internally insulated; access doors; direct expansion cooling coil section of aluminum/copper construction; condensate drain pan; statically and dynamically balanced centrifugal fan section with built-in motor thermal overload protection; factory installed and wired controls and single point electrical power connection; magnetic motor starters and contactors as required; air filter rack with 1 inch thick throwaway filters. Division 23 contractor shall provide UL listed duct type smoke detectors as required by code to shut down fan coil unit upon detection of smoke. Provide spring vibration isolators and all-thread hanging rods for horizontal installations. Provide an auxiliary drain pan for suspended units with auxiliary condensate drain provided by Division 22 contractor. flood detector switch to shut off unit when water is detected in auxiliary drain pan. Flood detector switch shall be Diversitech wet switch or equivalent. Detector shall shut system down when water comes in contact with the hydrophilic pad of the detector. Place detector in the lowest location in the auxiliary drain pan. Wire detector to remote alarm, Diversitech universal alarm or equivalent.

C. ELECTRIC DUCT HEATERS

Provide insulated duct heaters of the voltage, size, wattage and number of stages as scheduled on the drawings, manufactured by Besco, Brasch, Chromolox, Indeeco, Raywall, Thermolec, or Tutco. Heaters shall be UL or ETL approved for zero clearance of the heaters and their installation shall meet applicable requirements of the latest edition of the National Electric Code.

Heating elements shall be open coil type, 80 percent nickel, 20 percent chromium with adequate spacers and supporting brackets. Coil terminals shall be stainless steel, encased in a galvanized steel box. Where coils are mounted side by side, terminal boxes shall be located on the bottom of the coil. Heaters rated over 150 KW shall be furnished with heavy duty coils, derated to 35 watts per square inch of wire surface.

Provide duct heater controls to include a factory wired non-fused disconnect switch and internal branch circuit fuse protection as required by UL and the NEC whenever the total heater draw is 48 amps or greater (48 amps per step maximum). On heaters less than 48 amps, include a factory wired fused disconnect switch. Include manual and automatic overheat protection, pressure type airflow switches and safety contactors. Provide magnetic contactors where required for on/off or step control operation. Automatic reset overheat protection cutouts shall utilize linear sensing elements for coils over 72 inches wide. Operating controls and circuits shall be compatible with the type of temperature controls specified. Duct heater manufacturer shall receive and mount temperature control devices, safeties, etc., in a factory wired and hinged covered terminal box. Three phase coils shall have the load equally balanced between phases for steps of control.

Where heaters are installed in ductwork having internal insulation (lining), the coil open face area shall be reduced in height and width as required to match the duct free area. Field install baffle plate, air straighteners, or vanes at the duct heaters as required to assure even airflow across the coil.

D. ELECTRIC UNIT HEATERS

Provide electric unit heaters as scheduled on the drawings, manufactured by Berko, Brasch, Indeeco, Markel, QMark, or Raywall, standard type propeller unit heaters with sidewall mounting brackets and hardware for horizontal airflow. Furnish heater fan motors complete with a manual motor starter with automatic thermal cutouts sized to the motor load, disconnect switch, and other code required safety devices. Provide unit mounted thermostat and manual summer/winter changeover switch.

5. PIPING AND PIPING SPECIALTIES

A. CONDENSATE PIPING AND INSULATION

Condensate drain pipe installed inside of a building shall be any of the following:

1. ASTM B88, Type M hard-drawn copper tube with ANSI B16.22 wrought copper fittings for 1 inch and smaller.
2. ASTM B306, Type DWV hard-drawn copper tube with ANSI B16.23 wrought copper drainage pattern fittings for 1-1/4 inch and larger.
3. ASTM D1785, Schedule 40 PVC pipe with ASTM D2466 socket type fittings where allowed by code (Note: PVC piping is not allowed in return air plenums).

Condensate drain pipe installed outside of a building shall be any of the following:

1. ASTM B88, Type M hard-drawn copper tube with ANSI B16.22 wrought copper fittings for 1 inch and smaller.
2. ASTM B306, Type DWV hard-drawn copper tube with ANSI B16.23 wrought copper drainage pattern fittings for 1-1/4 inch and larger.
3. ASTM A53, Schedule 40 galvanized steel pipe with ASTM B16.3 galvanized malleable iron threaded fittings.
4. ASTM D1785, UV resistant, Schedule 40 PVC pipe with ASTM D2466 socket type fittings where allowed by code (Note: PVC piping is not allowed in return air plenums).

Provide soldered connections for copper piping. Solder filler metals shall be ASTM B32, 95-5 Tin-Antimony. Provide ASTM D2564 solvent weld joints for PVC. Terminate at nearest roof drain, gutter, or other location as shown on drawings. Install cleanouts at elbows greater than 45 degrees. Paint piping exposed to sunlight with 2 coats of a water-based latex paint.

Provide fiberglass or flexible elastomeric insulation on interior condensate piping. Fiberglass insulation shall conform to ASTM C547 with a Type I or II vapor barrier jacket conforming to ASTM C1136 by Certainteed, Johns Manville, Knauf, or Owens-Corning. Flexible elastomeric insulation shall conform to ASTM C534 Type I by Aeroflex, Armaflex, or K-Flex USA. Provide insulation thicknesses as follows:

Condensate piping: 1 inch thick for all condensate piping.

B. REFRIGERANT PIPING AND INSULATION

Copper Tubing: ASTM B280, Type ACR, hard-drawn straight lengths, and soft-annealed coils, seamless copper tubing. Tubing shall be factory cleaned, ready for installation, and have ends capped to protect cleanliness of pipe interiors prior to shipping.

Refrigerant Line Kits: Soft-annealed copper tubing with pipe diameters as recommended by the manufacturer and of length as required for the installation. Tubing shall be factory or field insulated with flexible unicellular insulation with thickness as specified below.

Fittings: wrought-copper fittings: ANSI B16.22, streamlined pattern.

Press fit fittings as manufactured by Rapid Locking System (Zoomlock) are an acceptable option to solder or brazed fittings. Fittings shall be approved for use with the copper tubing in the system and be compatible with the refrigerant and oils used in the system. Fittings shall be rated for continuous operating temperature from -40 F to 250 F and maximum operating pressure of 700 psi. Installers shall be trained using manufacturers training tools prior to installing any joints. Prepare the tubing, install fittings to minimum depth and crimp the fitting in accordance with manufacturers instructions. Verify the joint is properly made using crimp gauges or manufacturer's approved verification methods.

Solder filler metals: ASTM B32, 95-5 Tin-Antimony.

Brazing filler metals:

1. AWS A5.8, Classification BAg-5: Silver (Ag) 44.0-46.0 percent, Zinc (Z) 23.0-27.0 percent, and Copper (Cu) 29.0-31.0 percent.
2. AWS A5.8, Classification BCuP-5: Phosphorus (P) 4.8-5.2 percent, Silver (Ag) 14.5-15.5 percent, and Copper (Cu) remainder.

Braze mechanical joints. Solder joints connecting to refrigerant valves and specialties. Continuously purge the pipe and fittings during brazing with an inert gas per manufacturer's recommendation (e.g., dry nitrogen) to prevent formation of scale. Maintain purge until the joint is cool to the touch. Provide temporary cap or cover on completed joints with open ends to prevent entry of contaminating materials.

Insulate refrigerant lines with flexible elastomeric insulation, Armeflex or equal. Insulate suction and liquid lines between the expansion valve, evaporator, and compressor with 1/2 inch thick insulation on pipes less than 1 inch in size and 1 inch thick for pipes 1 inch and larger. Insulate hot gas and liquid lines between the compressor condenser, and expansion valve with 1 inch thick insulation on pipes less than 1-1/2 inch and 1-1/2 inch thick for pipes 1-1/2 inch and larger. Piping insulation shall have a flame spread of 25 or less, and a smoke developed rating of 50 or less when tested in accordance with ASTM E84. Coat insulation that is exposed to the elements with a protective sealer. Install and support piping to keep noise and vibration to a minimum. Support and secure piping to Unistrut type supports so that no vibration passes to the building structure. Pipe attachments shall be copper-plated or have nonmetallic coating for electrolytic protection where attachments are in direct contact with copper tubing. Install a support within one foot of each change of direction. Mount pipe hangers around the outside of the insulation with saddles to prevent hangers from rupturing the insulation. Replace insulation that is cut or broken by the hangers.

Run refrigerant lines parallel and perpendicular to wall and floor lines and to appear straight and in good order. Pitch suction lines down slightly (1 inch in 20 feet) towards the compressor. Provide oil traps at the base of vertical suction risers over 6 feet high. Install liquid line sight glasses in liquid lines nearest the expansion valve. Factory mount expansion valves with the sensing bulbs shipped loose. Field mount expansion valve bulb after refrigerant piping is complete (damage may occur if bulbs come in contact with heat).

For systems of 5 ton capacity and smaller, the contractor shall have the option to provide copper refrigerant tubing line set sized as recommended by equipment manufacturer and of length as required for the installation. Provide quick-connect flare tubing compression fittings, solder connections, or brazed connections as recommended by the manufacturer to match the connections of the condensing unit and evaporator coil.

C. SYSTEM EVACUATION AND CHARGING

Blow out refrigeration lines with dry nitrogen at a suitable pressure before making final connection at the condensing unit or coil to ensure against dirt, scale, or other foreign material being in the lines. Draw a vacuum to 29 inches of mercury. Break this vacuum by charging dry refrigerant gas into the system, raising the pressure to 0 PSIG. Repeat the latter two steps for a triple evacuation before the final evacuation is started. Make final evacuation by reducing the system absolute pressure to a maximum of 0.5 millimeters (500 microns) and allowing the pump to run at this pressure for a minimum of two hours.

Repeat the proper amount of refrigerant charge per the manufacturer's recommendations. Record the amount of refrigerant by weight charged into the system for each circuit recorded to the nearest 1/4 pound on tags and attach tags to the liquid line near the condensing unit. Refrigerant shall be supplied by the HVAC Contractor.

6. TEMPERATURE CONTROLS

A. GENERAL REQUIREMENTS

Provide a complete temperature control system including control panels, controllers, control power transformers, thermostats, sensors, time switches, override timers, actuators, relays, and wiring as required to control the systems as specified on the drawings.

Submit shop drawings of equipment provided for temperature control. Submit operation and maintenance data, including trouble-shooting maintenance guide, step-by-step procedures indexed for each controller and thermostat function, inspection period, cleaning methods and materials, and calibration tolerances.

Provide integrated wiring diagrams showing interconnections between field -installed equipment and package wiring furnished with the HVAC equipment. Control wiring shall be sized to accommodate the voltage drop associated with the distance between the control device and the controller.

Provide supervision and on-job checkout service as required to ensure that installation and operation of the temperature control system meets requirements of the drawings, specifications, and sequences of operation. The system shall be guaranteed for a period of one year following the acceptance of the system by the Architect/Engineer. Correct defects occurring during this period at no additional cost to the Owner.

Install control devices with top of device at 48 inches AFF to meet ADA requirements unless otherwise noted on the plans.

B. THERMOSTAT CONTROL EQUIPMENT

Provide thermostat control equipment with sufficient communication, programming, input and output connections, and modulating or staging capability to meet the sequence of operations. Provide thermostats with the features as indicated:

1. Display temperature.
2. Display temperature setpoint.
3. Adjust temperature setpoint.
4. Security cover.

Provide programmable thermostats that shall control packaged equipment by the packaged equipment manufacturer or Honeywell, Johnson Controls, Trane, or equal.

C. SENSORS AND RELAYS

Manufacturers and model numbers are listed for reference as to quality and features required for the sensors and relays. Provide general-purpose type sensing elements for use in input and output sensors. Provide transmitters or transducers with sensor as required, compatible with the controllers used, with range suitable for the systems encountered. Transmitters and transducers shall have offset and span adjustments, temperature compensation, shock and vibration immunity, and zeroing capability. Accuracy requirements shall include the combined effects of linearity, hysteresis, repeatability, and the transmitter.

Provide sensors that meet the following minimum performance:

1. Dry-bulb temperature sensors at a minimum shall be accurate to +/- 2 degrees Fahrenheit over the range of 40 to 80 degrees Fahrenheit.
2. Wet-bulb temperature shall be calculated using dry-bulb temperature and humidity and shall be accurate to +/- 2 degrees Fahrenheit.
3. Enthalpy shall be calculated using dry-bulb temperature and humidity and shall be accurate to +/- 3 BTU/lb over the range of 20 to 36 BTU/lb.
4. Humidity sensors at a minimum shall be accurate within +/- 3 percent full range between 20 and 95 percent, with drift less than 1 percent full scale per year.
5. Pressure transmitters at a minimum shall be accurate to +/- 1 percent full scale with drift less than 1 percent full scale per year.
6. Carbon dioxide (CO2) sensors shall measure total percentage of CO2 in ppm. Sensor shall have an accuracy of plus/minus 75 ppm at a 600 and 1000 ppm concentration and certified by the manufacturer to require calibration no more frequently than once every 5 years.

Provide remote sensors where indicated on the drawings and integrate them with the thermostat control equipment. Remote sensors shall have the following features:

1. Wired connection.
2. Temperature sensor.
3. Blank faceplate.
4. Operating mode override button.
5. At contractor's option where multiple remote sensors are shown for a single unit, the sensors may be provided in a single device.

Provide 24 Volt or 120 Volt timeswitches Intermatic Series FM1D20 or equal programmable type with 7-day programming with up to two "ons" and "offs" per day. Battery backup shall provide 48 hours of memory retention. Override timer switches shall be spring wound, 6-hour, normally open type. Coordinate 120 V wiring of timeswitch with electrical contractor if 120 V model is provided.

Provide relays with contact rating, configuration, and coil voltage that is suitable for the application. Relay shall be general purpose, enclosed plug-in type and protected by a heat and shock resistant duct cover. Number of contacts and operational function shall be as required. Transient suppression shall be provided as an integral part of the relay. Contactors shall be single coil, electrically operated, mechanically held, double-break, silver-to-silver type protected by arcing contacts. Positive locking shall be obtained without the use of hooks, latches, or semi-permanent magnets. Operating and release times shall be 100 milliseconds or less.

D. WIRING

Provide electrical and control wiring as specified under the section "Electrical Wiring."

7. SEQUENCE OF OPERATION

A. DUCT HEATER CONTROL

Cycle stage(s) of electric heating to maintain room thermostat set point (55 degrees Fahrenheit heating).

B. UNIT HEATER CONTROL

Cycle stage(s) of electric heating to maintain room thermostat set point (55 degrees Fahrenheit heating).

C. FAN COIL UNIT CONTROL

During occupied hours, operate fan coil unit supply fan continuously. Cycle stage(s) of DX cooling and electric heating to maintain room thermostat set point (75 degrees Fahrenheit cooling, 72 degrees Fahrenheit heating).

During unoccupied hours, cycle the fan coil unit supply fan and cooling or heating system to maintain unoccupied setback temperature set points.

D. ENERGY RECOVERY VENTILATION UNIT CONTROL (ERV-1)

During occupied hours, operate energy recovery ventilation unit continuously.

During unoccupied hours, cycle the energy recovery ventilation unit to maintain unoccupied setback temperature set points.

END OF SECTION 23

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

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01/27/2023

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SHEET TITLE

MECHANICAL SPECIFICATIONS

SHEET NUMBER

M4.01

PLUMBING SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED. V2.02

STANDARD MOUNTING HEIGHTS

CLINIC SERVICE SINKS (RIM)	30"
HOSE BIBB (CENTERLINE)	36"
ICE MAKER OUTLET BOX (CENTER OF BOX)	24"
JANITOR'S SINK FAUCET FITTINGS (CENTERLINE)	42"
LAVATORY OR SINK	
STANDARD HEIGHT (RIM)	31"
ADA ACCESSIBLE (RIM)	34"
CHILD HEIGHT (RIM)	24"
NON FREEZE WALL HYDRANT (AFG TO CENTERLINE)	18"
SHOWER HEAD	
MEN (CENTERLINE)	78"
WOMEN (CENTERLINE)	72"
SHOWER VALVE	
STANDARD HEIGHT - MEN (CENTERLINE)	48"
STANDARD HEIGHT - WOMEN (CENTERLINE)	42"
ADA ACCESSIBLE (CENTERLINE)	38" TO 48"
SURGEON'S SCRUB-UP SINK (FRONT RIM)	35"
TUB VALVE	
STANDARD HEIGHT (CENTERLINE)	32"
ADA ACCESSIBLE	CENTER BETWEEN GRAB BAR AND TUB RIM
URINAL	
STANDARD HEIGHT (RIM)	24"
ADA ACCESSIBLE (RIM)	17"
CHILD HEIGHT (RIM)	14"
WASHING MACHINE OUTLET BOX (RIM)	42"
WATER CLOSET	
STANDARD HEIGHT (RIM)	15"
ADA ACCESSIBLE (TOP OF SEAT)	17" TO 19"
CHILD HEIGHT (RIM)	10"
WATER COOLER OR DRINKING FOUNTAIN	
STANDARD HEIGHT (SPOUT)	41"
ADA ACCESSIBLE (SPOUT)	36"
CHILD HEIGHT (SPOUT)	30"

INSTALL PLUMBING FIXTURES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE ARCHITECTURAL DRAWINGS OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS. FINAL APPROVAL OF LOCATIONS BY ARCHITECT. MOUNTING HEIGHTS LISTED ABOVE, OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS, ARE AFF. UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ANNOTATION

- (1) PLUMBING PLAN NOTE CALLOUT
- (1) PLUMBING EQUIPMENT DESIGNATION. (CONTRACTOR FURNISHED AND INSTALLED). REFER TO PLUMBING FIXTURE OR EQUIPMENT SCHEDULES
- 1 EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)
- CU 1 MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- CONNECTION POINT OF NEW WORK TO EXISTING
- 1 / P1 DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- 1 / P1 SECTION CUT DESIGNATION
- DEDICATED EQUIPMENT ACCESS TILE
- ACCESS PANEL

ABBREVIATIONS

ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
BAS	BUILDING AUTOMATION SYSTEM
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT
CP	CONDENSATE PUMP
CPVC	CHLORINATED POLYVINYL CHLORIDE
CU	COPPER
DI	DUCTILE IRON
DN	DOWN
DFU	DRAINAGE FIXTURE UNIT
DS	DOWNSPOUT
(E)	EXISTING
EMS	ENERGY MANAGEMENT SYSTEM
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
FD	FLOOR DRAIN
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FF	FINISHED FLOOR
FL	FLOW LINE
FLA	FULL LOAD AMPS
FLR	FLOOR
GPM	GALLONS PER MINUTE
HD	HEAD, HUB DRAIN
HZ	HERTZ
IE	INVERT ELEVATION
IN WC	INCHES OF WATER COLUMN
JB	JUNCTION BOX
J-BOX	JUNCTION BOX
KW	KILOWATT
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MH	MANHOLE
MIN	MINIMUM
N/C	NORMALLY CLOSED
N/O	NORMALLY OPEN
NIC	NOT IN CONTRACT
ORD	OVERFLOW ROOF DRAIN
PDI	PLUMBING DRAINAGE INSTITUTE
PH/Ø	PHASE
PRV	PRESSURE REDUCING VALVE
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SF	SQUARE FEET
SP	SUMP
SS	STAINLESS STEEL SANITARY SEWER, SOIL STACK
TDH	TOTAL DYNAMIC HEAD
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES, INC.
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
VCP	VITRIFIED CLAY PIPE
VFD	VARIABLE FREQUENCY DRIVE
VS	VENT STACK
VTR	VENT THROUGH ROOF
W/	WITH
W/O	WITHOUT
WC	WATER COLUMN
WS	WASTE STACK
WSFU	WATER SUPPLY FIXTURE UNIT
WVS	WASTE VENT STACK

PIPING SYMBOLS

- OXYGEN OUTLET
- NITROUS OXIDE OUTLET
- MEDICAL AIR OUTLET
- NITROGEN OUTLET
- MEDICAL VACUUM INLET
- FLOOR SINK (FS), SIZE & TYPE
- FLOOR DRAIN (FD), SIZE & TYPE
- ROOF DRAIN (RD), SIZE & TYPE
- BALL VALVE
- CONTROL VALVE
- SHUTOFF VALVE
- CHECK VALVE
- BALANCING VALVE WITH PRESSURE PORTS
- WATER METER
- STRAINER
- STRAINER WITH BLOWOFF
- RELIEF/SAFETY VALVE
- SOLENOID VALVE
- PRESSURE REDUCING VALVE
- GAS PRESSURE REGULATOR
- THERMOSTATIC MIXING VALVE
- PA PIPE ANCHOR
- EXPANSION JOINT
- BACKFLOW PREVENTER
- PRESSURE GAUGE
- THERMOMETER
- UNION
- FLANGE CONNECTION
- HOSE BIBB (HB)
- NON-FREEZING WALL HYDRANT (NW)
- MANUAL / AUTOMATIC AIR VENT OR VACUUM RELIEF VALVE
- PRESSURE / VACUUM SWITCH
- CLEANOUT
- CAP
- WALL CLEANOUT (WCO)
- FLOOR CLEANOUT (FCO)
- EXTERIOR CLEANOUT (ECO)
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- ELBOW UP WITH SHUT-OFF VALVE (SOV)
- ELBOW DOWN WITH SHUT-OFF VALVE (SOV)
- TEE UP WITH SHUT-OFF VALVE (SOV)
- TEE DOWN WITH SHUT OFF VALVE (SOV)
- "A" WATER HAMMER ARRESTER (WHA) WITH PDI SIZES, (A, B, C, D, & E)
- RECIRCULATION PUMP
- P-TRAP
- GAS COCK
- TRAP PRIMER
- TRAP PRIMER WITH DISTRIBUTION UNIT

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

- EXISTING
- NEW
- DEMOLISH
- FUTURE

PIPING LINETYPES

- CW DOMESTIC COLD WATER (CW)
- SCW SOFTENED COLD WATER (SCW)
- HW DOMESTIC HOT WATER (HW)
- HWR DOMESTIC HOT WATER RECIRC. (HWR)
- 140° DOMESTIC HOT WATER (140°)
- T TRAP PRIMER LINE (T)
- S SOIL PIPING - ABOVE FLOOR (S)
- S SOIL PIPING - BELOW FLOOR (S)
- W WASTE PIPING - ABOVE FLOOR (W)
- W WASTE PIPING - BELOW FLOOR (W)
- GW GREASE WASTE - ABOVE FLOOR (GW)
- GW GREASE WASTE - BELOW FLOOR (GW)
- CGWV COMBINATION GREASE WASTE AND VENT (CGWV)
- CWV COMBINATION WASTE AND VENT (CWV)
- ST STORM DRAIN - ABOVE FLOOR (ST)
- ST STORM DRAIN - BELOW FLOOR (ST)
- OST OVERFLOW STORM DRAIN - ABOVE FLOOR (OST)
- VBG VENT BELOW GRADE (VBG)
- VBF VENT BELOW FLOOR (VBF)
- ID INDIRECT DRAIN (ID)
- CDH CONDENSATE DRAIN - HIGH EFFICIENCY RTU (CDH)
- CD CONDENSATE DRAIN (CD)
- ACD AUXILIARY CONDENSATE DRAIN (ACD)
- SPD SUMP OR SEWAGE PUMP DISCHARGE (SPD)
- G NATURAL GAS (G)
- G NATURAL GAS ON ROOF (G)
- MPG MEDIUM PRESSURE NATURAL GAS (MPG)
- MPG MEDIUM PRESSURE NATURAL GAS ON ROOF (MPG)
- NPW NON-POTABLE WATER (NPW)
- LPG LIQUEFIED PETROLEUM GAS (LPG)
- WS WATER SERVICE (WS)
- DFP FIRE PROTECTION SPRINKLER DRY (DFP)
- FP FIRE PROTECTION SPRINKLER WET (FP)
- DSP FIRE PROTECTION STANDPIPE DRY (DSP)
- WSP FIRE PROTECTION STANDPIPE WET (WSP)
- PD CONDENSATE PUMP DISCHARGE (PD)
- V VENT PIPING (V)
- AW ACID WASTE - ABOVE FLOOR (AW)
- AW ACID WASTE - BELOW FLOOR (AW)
- AV ACID VENT (AV)
- GWS GRAY WATER (GWS)
- CA COMPRESSED AIR (CA)
- MA MEDICAL AIR (MA)
- MV MEDICAL VACUUM (VE)
- HE HELIUM (HE)
- IA INSTRUMENT AIR (IA)
- IV INSTRUMENT VACUUM (IV)
- N2 NITROGEN (N2)
- N2O NITROUS OXIDE (N20)
- O2 OXYGEN (O2)
- EV EVAC/WAGD (EV)
- CO2 CARBON DIOXIDE (CO2)
- AI MEDICAL AIR INTAKE (AI)
- VE MEDICAL VACUUM EXHAUST (VE)
- DA DENTAL AIR (DA)
- DV DENTAL VACUUM (DV)
- FW1 FILTERED WATER (FW1)
- FW2 FILTERED WATER W/ SCALE INHIBITOR (FW2)
- RO REVERSE OSMOSIS (RO)
- ROR REVERSE OSMOSIS REMINERALIZATION (ROR)

CALL OUTS

- ENLARGED PLAN CALLOUT
- NOT IN SCOPE

GENERAL NOTES:

1. PROVIDE A CONSTRUCTION RECORD SET OF "AS-BUILT" DOCUMENTS TO THE ARCHITECT REFLECTING ANY VARIANCES OF INSTALLED PIPING LOCATIONS OR EQUIPMENT CONTRARY TO THE CONSTRUCTION DOCUMENTS, REFER TO SPECIFICATIONS.
2. DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY THE ARCHITECT OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
3. PROVIDE TO THE ARCHITECT A COPY OF INSPECTION REPORTS AND APPROVAL CERTIFICATES FROM LOCAL AND STATE INSPECTIONS, REFER TO SPECIFICATIONS.
4. PLANS AND SPECIFICATIONS GOVERN WHERE THEY EXCEED CODE REQUIREMENTS.
5. VERIFY LOCATION AND DEPTH OF UTILITIES AT POINTS OF CONNECTION BEFORE START OF PIPING INSTALLATION.
6. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF PLUMBING FIXTURES.
7. DO NOT SCALE FLOOR PLANS FOR EXACT HORIZONTAL LOCATION OF PIPE ROUTING.
8. INSTALL CONCEALED PIPING TIGHT TO THE STRUCTURE AND AS HIGH AS POSSIBLE. INSTALL EXPOSED PIPING TIGHT TO STRUCTURE, WALL OR CEILING AND AS HIGH AS POSSIBLE. COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS.
9. VALVES SHALL BE LINE SIZE UNLESS OTHERWISE NOTED.
10. COORDINATE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
11. COORDINATE PIPING INSTALLATION WITH STRUCTURAL GRADE BEAMS, FOOTINGS, COLUMN PIERS, ETC. SLEEVE PIPING THROUGH GRADE BEAMS, FOOTING, ETC. WHERE REQUIRED AND AS NOTED ON PLANS. COORDINATE SLEEVE INSTALLATIONS WITH THE ARCHITECT, STRUCTURAL ENGINEER, STRUCTURAL CONTRACTOR AND GENERAL CONTRACTOR BEFORE CONCRETE IS INSTALLED.
12. CLEAN FAUCET AERATORS AND PIPE STRAINERS PRIOR TO TURNING BUILDING OVER TO THE OWNER.
13. PROVIDE TRAP PRIMERS WHERE REQUIRED BY LOCAL AUTHORITIES.
14. COORDINATE PIPE ROUTING AWAY FROM ELECTRICAL PANELS. DO NOT INSTALL PIPING OVER ELECTRICAL PANELS.
15. COORDINATE ALL ROOF PENETRATIONS WITH OTHER TRADES. MAINTAIN 10' MINIMUM CLEARANCE FROM ALL AIR INTAKES. MAINTAIN 2' CLEARANCE FROM ALL OTHER EQUIPMENT.
16. PROVIDE TRANSITION ADAPTER COUPLINGS FOR CONNECTION OF PVC DWV TO CAST IRON AT SLAB ON GRADE. SEE SPECIFICATIONS FOR MORE INFORMATION.
17. WATER HAMMER ARRESTORS SHALL BE SIZE "A" UNLESS NOTED OTHERWISE.
18. PROVIDE VERTICAL LIFT SPRING LOADED CHECK VALVES IN HOT AND COLD WATER SUPPLIES FOR MOP SINK FAUCETS DOWNSTREAM OF SHUTOFF VALVES.
19. PROVIDE SIZE AND LENGTH OF HOT WATER FIXTURE SUPPLY PIPE FROM CIRCULATED HOT WATER BRANCH OR MAIN TO TERMINATION OF HOT WATER FIXTURE SUPPLY PIPE AT EACH FIXTURE PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE, TABLE C404.3.1: FOR ½" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL LAVATORIES, PROVIDE MAXIMUM LENGTH OF TWO FEET. FOR ½" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL SINKS, PROVIDE MAXIMUM LENGTH OF 43 FEET. FOR 3/4" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL SINKS, PROVIDE MAXIMUM LENGTH OF 21 FEET.

paragon star

Paragon Star - SOUTH RESTROOMS

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01/27/2023

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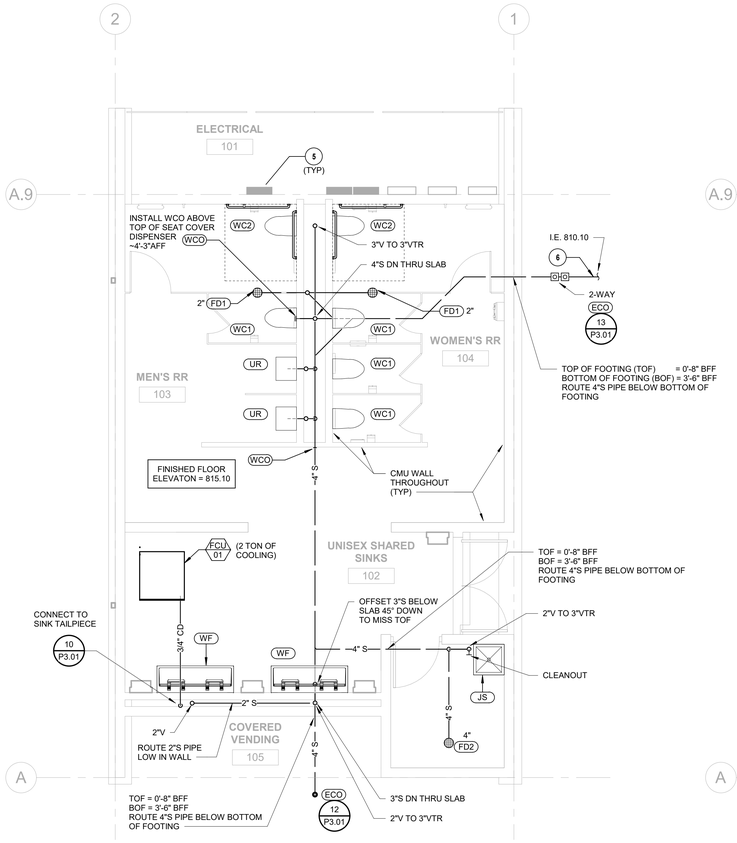
EXPIRES 12/31/2023

SHEET TITLE

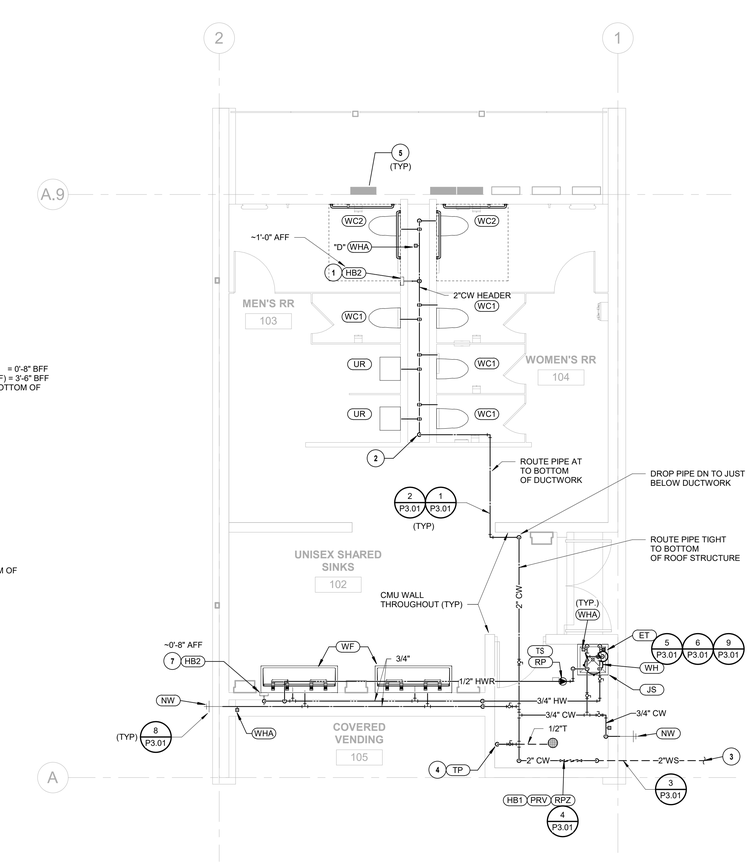
PLUMBING GENERAL NOTES AND LEGEND

SHEET NUMBER

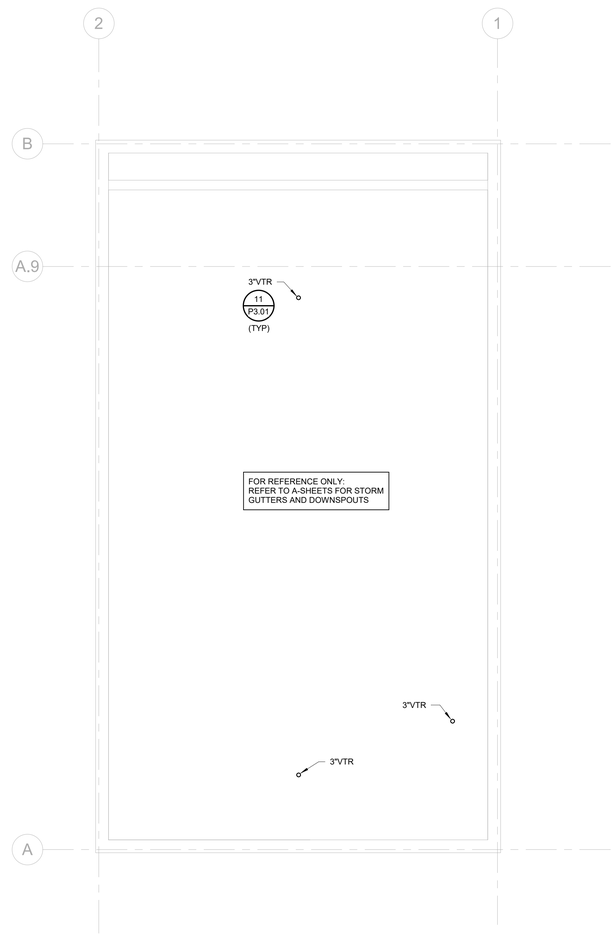
P0.00



1 PLUMBING WASTE & VENT FLOOR PLAN
1/4" = 1'-0"



2 PLUMBING WATER FLOOR PLAN
1/4" = 1'-0"



3 PLUMBING ROOF PLAN
1/4" = 1'-0"

PLUMBING PLAN NOTES:

1. LOCATE HOSE BIBB AT LOW POINT OF DOMESTIC WATER SYSTEM FOR WINTERIZATION DRAIN DOWN.
2. ROUTE WATER PIPING DOWN INSIDE WALL OR CHASE, TURN HORIZONTALLY TO SERVE FIXTURES AND/OR EQUIPMENT. REFER TO FIXTURE BRANCH SCHEDULE.
3. STUB DOMESTIC WATER PIPE 5'-0" OUTSIDE BUILDING. REFER TO CIVIL DRAWINGS FOR CONTINUATION. MAKE NECESSARY CONNECTIONS AS REQUIRED.
4. MOUNT TRAP PRIMER APPROXIMATELY 4'-0" AFF. ROUTE 1/2" SOFT "K" COPPER PRIMER LINE BFF AND CONNECT TO FLOOR DRAIN AS REQUIRED.
5. DO NOT INSTALL PLUMBING PIPING OVER ELECTRICAL PANELS OR EQUIPMENT.
6. STUB SANITARY WASTE PIPE 5'-0" OUTSIDE BUILDING. REFER TO CIVIL DRAWINGS FOR CONTINUATION. MAKE NECESSARY CONNECTIONS AS REQUIRED.
7. LOCATE HOSE BIBB AT LOW POINT OF HW SYSTEM FOR WINTERIZATION DRAIN DOWN.

paragon star

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SHEET TITLE

PLUMBING FLOOR PLANS - SOUTH RESTROOM

SHEET NUMBER

P1.01

ELECTRIC STORAGE WATER HEATER SCHEDULE

MARK	MANUFACTURER/ MODEL#	AREA SERVED	TANK SIZE (GALLONS)	ELECTRICAL DATA			RECOVERY (GPH)	NOTES
				VOLTS	PHASE	KW		
WH	A.O. SMITH DEN-20	SOUTH BUILDING	20	208	1	4.5	18	A, B, C

NOTES:
- A. 100° TEMPERATURE RISE WITH 140°F OPERATING TEMPERATURE.
- B. DUAL ELEMENT WIRED FOR NON-SIMULTANEOUS OPERATION.
- C. LOW BOY DESIGN.

EXPANSION TANK SCHEDULE

MARK	MANUFACTURER / MODEL #	TANK SIZE (GALLONS)	MIN. ACCEPTANCE VOLUME (GALLONS)	AIR PRESSURE SETTING (PSI)	SERVICE
ET	AMTROL ST-5	2	0.9	70	SOUTH BUILDING

NOTES:
- A. CHARGE TANK WITH AIR TO IDENTICAL PRESSURE AS STATIC DOMESTIC WATER PRESSURE.

RECIRCULATION PUMP SCHEDULE

MARK	MANUFACTURER / MODEL#	LOCATION	GPM	HEAD (FT.)	CONNECTION SIZE	IMPELLER SIZE (IN.)	ELECTR...			NOTES
							VOLTS	PHASE	HP	
RP	BELL & GOSSETT # NBF-22U	SOUTH BUILDING	1	11.8	1/2"	N/A	120	1	1/8	A, B, C, D

NOTES:
- A. ALL LEAD FREE CAST BRONZE BOOSTER.
- B. PROVIDE WITH STRAINER UPSTREAM OF PUMP
- C. PROVIDE ADJUSTABLE, SURFACE MOUNTED AQUASTAT - HONEYWELL L6006C
- D. SET AQUASTAT TO SHUT OFF RECIRCULATION PUMP AT WATER HEATER SET POINT AND ON AT 10F BELOW SET POINT

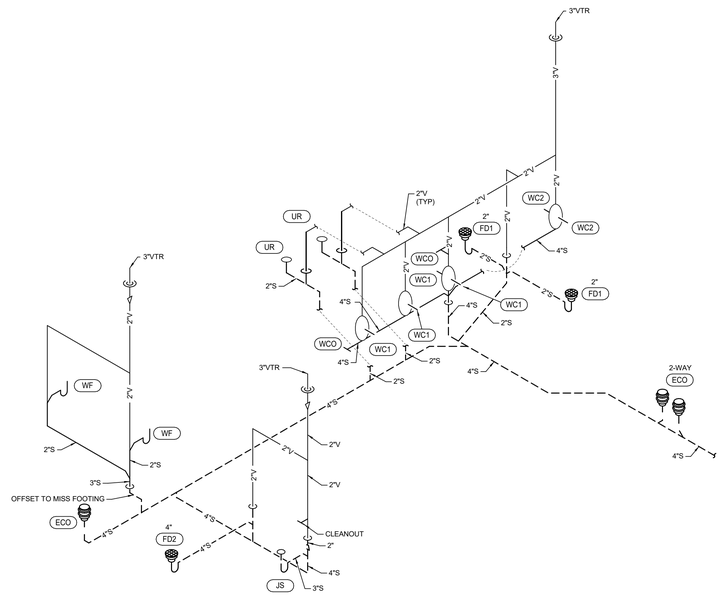
PLUMBING FIXTURE CONNECTION SCHEDULE

FIXTURE	COLD WATER	HOT WATER	WASTE	VENT
WATER CLOSET (FV)	1-1/4" (NOTE 1)	--	4"	2"
URINAL	3/4" (NOTE 2)	--	2"	2"
LAVATORY	1/2"	1/2"	2"	2"
JANITOR'S SINK	1/2"	1/2"	3"	2"
WASHFOUNTAIN	1"	1"	2"	2"
FLOOR DRAIN	--	--	2"	2"

NOTES:

PIPE SIZES SHOWN ARE MINIMUM. AND ARE FOR INDIVIUAL SERVICE PIPE SIZES

1 - PROVIDE 1-1/4" CW TO FLUSH VALVE, REDUCE TO 1" PRIOR TO CONNECTING TO FLUSH VALVE INLET AT INSIDE OF WALL.
2 - PROVIDE 1" CW TO FLUSH VALVE, REDUCE TO 3/4" PRIOR TO CONNECTING TO FLUSH VALVE INLET AT INSIDE OF WALL.



1 WASTE & VENT RISER DIAGRAM - SOUTH RESTROOMS
NTS

PLUMBING FIXTURE SCHEDULE:
FIXTURES IN THIS SCHEDULE OR THEIR APPROVED EQUIVALENT ARE PROVIDED BY THE PLUMBING CONTRACTOR. SUBMIT SHOP DRAWINGS ON EACH OF THESE ITEMS. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION AND INSTALLATION REQUIREMENTS. VERIFY ROUGH-IN REQUIREMENTS WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE PLUMBING FIXTURE MOUNTING HEIGHTS.

ECO EXTERIOR CLEANOUT: JAY R. SMITH # 4261L SERIES DUCO CAST IRON DOUBLE FLANGED HOUSING WITH HEAVY DUTY SECURED SCORIATED CAST IRON COVER WITH LIFTING DEVICE AND CLEANOUT BODY WITH ABS PLASTIC PLUG WITH GASKET SEAL AND PUSH-ON JOINT. REFER TO SPECIFICATIONS FOR INSTALLATION.

FD1 FLOOR DRAIN: JAY R. SMITH # 2005L-B-P050-U, CAST IRON BODY AND CLAMPING COLLAR, ADJUSTABLE 6" SQUARE NICKEL BRONZE STRAINER, VANDALPROOF SCREWS. USE PUSH-ON JOINT OF OUTLET SIZE AS SHOWN ON PLANS.
TRAP SEAL: PROVIDE TRAP SEAL PER SPECIFICATIONS FOR ACTUAL FLOOR DRAIN MODEL AND SIZE.

FD2 FLOOR DRAIN: JAY R. SMITH #2240 (-B), 13" DEEP CAST IRON BODY, 12" ROUND, LOOSE, MEDIUM DUTY, CAST IRON GRATE WITH INTEGRAL SEDIMENT BUCKET, BOTTOM OUTLET, SEEPAGE PAN, MEMBRANE FLASHING CLAMP. PROVIDE TRAP PRIMER PORT IF TRAP PRIMER IS PROVIDED ON THE DRAWINGS. PROVIDE PUSH-ON JOINT OF OUTLET SIZE AS SHOWN ON PLANS.

HB1 HOSE BIBB: PRIER PRODUCTS # C-155NP.75, SATIN NICKEL PLATED BRASS 3/4" FEMALE INLET, 3/4" THREADED HOSE CONNECTION, WHEEL HANDLE, AND ASSE 1011 INTEGRAL VACUUM BREAKER.

HB2 CONCEALED HYDRANT: PRIER PRODUCTS #C-634BX1N, BRONZE NICKEL PLATED BODY HYDRANT, 3/4" INLET, INTEGRAL ASSE 1052 VACUUM BREAKER, "T" HANDLE KEY, SELF DRAINING, 3/4" THREADED HOSE CONNECTION, SATIN NICKEL PLATED WALL BOX WITH LOCK.

JS JANITOR'S SINK: STERN-WILLIAMS # MTB-2424, 24" x 24" x 10" HIGH TERRAZZO BASIN WITH INTEGRAL STAINLESS STEEL DRAIN BODY.

FAUCET:CHICAGO FAUCET # 897-CP FAUCET WITH WALL BRACE, INTEGRAL VACUUM BREAKER, PAIL HOOK, AND 3/4" MALE HOSE THREADED OUTLET. SECURE FAUCET IN WALL WITH BACKBOARD.

TRIM: # T-35 THREE FOOT LONG REINFORCED HOSE WITH 3/4" CHROME COUPLING AND WALL HOOK, # V-70 EXTRUDED VINYL BUMPER GUARD, AND # T-40 24" STAINLESS STEEL MOP HANGER.

NW NON-FREEZE WALL HYDRANT: PRIER PRODUCTS # C-634N, EXPOSED SATIN NICKEL PLATED BRASS 1" MALE INLET BY 3/4" FEMALE INLET, 3/4" THREADED HOSE CONNECTION, LOOSE KEY HANDLE, HYDRANT LENGTH AS REQUIRED FOR INSTALLED WALL THICKNESS, ADJUSTABLE WALL CLAMP AND INTEGRAL ASSE 1052 DOUBLE CHECK VACUUM BREAKER.

PRV PRESSURE REDUCING VALVE: WATTS # LF223, LEAD FREE BRONZE BODY, STAINLESS STEEL SEAT, STAINLESS STEEL BOLTS, INLET AND OUTLET SIZE AS SHOWN ON PLANS, 25 - 75 PSI REDUCED PRESSURE RANGE. SET OUTLET PRESSURE TO 75 PSI WITH FLOW RATE OF 68 GPM AT A FALL OFF PRESSURE OF 17 PSI DIFFERENTIAL.

RPZ REDUCED PRESSURE ZONE BACKFLOW PREVENTER: WATTS # LF009QT-S, MEETING ASSE 1013, LEAD FREE CAST BRONZE BODY, QUARTER TURN TEST COCKS, QUARTER TURN BALL VALVES, BRONZE STRAINER, AND # 909AG AIR GAP FITTING.

TP TRAP PRIMER: PRECISION PLUMBING PRODUCTS # PR-500 "PRIME RITE", CORROSION RESISTANT BRASS BODY, "O" RING SEALS, 1/2" INLET AND OUTLET, AND INTEGRAL VACUUM BREAKER. INSTALL THE VALVE AT A MINIMUM OF 12" ABOVE FINISHED FLOOR.

TS TIME SWITCH: INTERMATIC # T-2005, 7 DAY, ONE CIRCUIT-SINGLE POLE SINGLE, DOUBLE THROW, MECHANICAL TIME SWITCH OR EQUAL BY TORK. TIME SWITCH SHALL BE MOTOR RATED (1/2 H.P. @ 120 VOLT, SINGLE PHASE), MINIMUM OF 42 SET POINTS (MINIMUM ON/OFF IN 2 HOUR CYCLES). COORDINATE WITH ELECTRICAL FOR INSTALLATION AND INTERLOCK OF TIME SWITCH IN SERIES WITH THE AQUASTAT AND RECIRCULATION PUMP.

UR URINAL (ADA ACCESSIBLE): AMERICAN STANDARD # 6400.001, "STALLBROOK", WHITE VITREOUS CHINA FIXTURE WITH SLOPING FRONT, INTEGRAL FLUSH SPREADER, 3/4" TOP SPUD AND WASHOUT FLUSH ACTION.

VALVE: SLOAN "G2 OPTIMA PLUS" # 8186-1.0 GALLON PER FLUSH, EXPOSED, CHROME-PLATED, TOP MOUNTED PLASTIC AND CHROME PLATED METAL HOUSING WITH OVERRIDE BUTTON, BATTERY POWERED SENSOR OPERATED, DIAPHRAGM TYPE FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM WITH PROTECTED ORIFICE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER AND 3/4" FLUSH TUBE, AND SWEAT ADAPTER KIT.

TRIM: SUITABLE CARRIER WITH STANCHIONS TO FLOOR.

WC1 WALL-MOUNTED WATER CLOSET: AMERICAN STANDARD # 2257.101 "AFWALL MILLENNIUM FLOWISE" WHITE VITREOUS CHINA FIXTURE WITH ELONGATED UNIVERSAL BOWL AND DIRECT-FED SIPHON JET ACTION.

VALVE: SLOAN "G2 OPTIMA PLUS" # 8111 1.6 GALLON PER FLUSH, EXPOSED, CHROME-PLATED, TOP MOUNTED PLASTIC AND CHROME PLATED METAL HOUSING WITH OVERRIDE BUTTON, BATTERY POWERED SENSOR OPERATED, DIAPHRAGM TYPE FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM WITH PROTECTED ORIFICE, OSCILLATING HANDLE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER, SOLID RING PIPE SUPPORT, AND SWEAT ADAPTER KIT.

TRIM: CHURCH #9500SSCT WHITE OPEN-FRONT CONTOURED, SOLID PLASTIC, HEAVY DUTY, SEAT LESS COVER WITH SELF-SUSTAINING CHECK HINGES AND STAINLESS STEEL BOLTS. PROVIDE SUITABLE FIXTURE CARRIER.

WC2 WALL-MOUNTED WATER CLOSET (ADA ACCESSIBLE): AMERICAN STANDARD #2257.101 "AFWALL MILLENNIUM FLOWISE" WHITE VITREOUS CHINA FIXTURE WITH ELONGATED UNIVERSAL BOWL AND DIRECT-FED SIPHON JET ACTION.

VALVE: SLOAN "G2 OPTIMA PLUS" # 8111 1.6 GALLON PER FLUSH, EXPOSED, CHROME-PLATED, TOP MOUNTED PLASTIC AND CHROME PLATED METAL HOUSING WITH OVERRIDE BUTTON, BATTERY POWERED SENSOR OPERATED, DIAPHRAGM TYPE FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM WITH PROTECTED ORIFICE, OSCILLATING HANDLE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER, SOLID RING PIPE SUPPORT, AND SWEAT ADAPTER KIT.

TRIM: CHURCH #9500SSCT WHITE OPEN-FRONT CONTOURED, SOLID PLASTIC, HEAVY DUTY, SEAT LESS COVER WITH SELF-SUSTAINING CHECK HINGES AND STAINLESS STEEL BOLTS. PROVIDE SUITABLE FIXTURE CARRIER.

WCO WALL CLEANOUT: JAY R. SMITH # 4530S, CAST IRON CLEANOUT TEE, COUNTER SUNK PLUG, STAINLESS STEEL ROUND COVER AND SCREW, AND IRON PLUG WITH GASKET SEAL. REFER TO SPECIFICATIONS FOR INSTALLATION.

WF TWO STATION LAVATORY: BRADLEY # LVQD2-C1-WB1-T-5-PC-F-HD1-DR2-STAIN-VS-S-POLY, "VERGE WITH WASHBAR TECHNOLOGY", 60" x 21" RECTANGULAR WALL HUNG MULTI-LAV WITH BOWL WITH FAUCET DECK, ONE PIECE MOLDED BASIN OF BIO-BASED RESIN, NATURAL QUARTZ, GRANITE, AND OTHER EXOTIC MINERALS, 120 VAC PLUG-IN ADAPTER, (2) POLISHED CHROME WASHBAR OUTLETS AT 0.5 GPM (0.09 GPC) NON-AERATOR OUTLETS, FOAM SOAP DISPENSER, INTEGRAL HAND DRYER WITH FAN MOTOR MOUNTED BELOW UNIT, SLOTTED STAINLESS STEEL TRNCH DRAIN CAP WITH VANDAL RESISTANT SCREWS, INDIVIDUAL CHECKSTOPS, INTEGRAL ASSE 1070 THERMOSTATIC MIXING VALVE AND SUPPLY HOSE AND SHUTOFF VALVES, SWING DOWN STAINLESS STEEL ACCESS PANEL WITH VANDAL RESISTANT SCREW, POLY P-TRAP WASTE OUTLETS, AND COLOR BY ARCHITECT. ANCHOR BACKSPLASH AND HOUSING FRAMEWORK SECURED TO WALL. INSTALLATION SHALL CONFORM TO ADA REQUIREMENTS. INSTALL "WCO" UNDERNEATH WASTE CONNECTION.

TRIM: ANGLE STOP VALVES, RISERS, ESCUTCHEONS AND P-TRAPS SUPPLIED WITH WASHFOUNTAIN.

ELECTRICAL REQUIREMENTS: 120-VOLT, 1.2 KW PER WASHBAR. FAN DRYER MOTOR AND WASHBAR CONTROLS EACH HAVE PLUG-IN ADAPTOR FOR WALL OUTLET.

WHA WATER HAMMER ARRESTER: PRECISION PLUMBING PRODUCTS, HARD DRAWN COPPER BODY WITH WROUGHT COPPER FITTINGS, PISTON TYPE WITH LUBRICATED EPDM "O" RING SEALS, MEETING ASSE 1010 OR PDI WH-201. PROVIDE PDI SIZES "A" THROUGH "F" AS SHOWN ON PLANS. PROVIDE SIZE "A" UNLESS SHOWN OTHERWISE ON THE PLANS.

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 1.13.23
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
BRADLEY E. CHAMBON
NUMBER PE-026603
PROFESSIONAL ENGINEER

01/27/2023

BRADLEY E. CHAMBON
LICENSE # 026603

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

HENDERSON ENGINEERS
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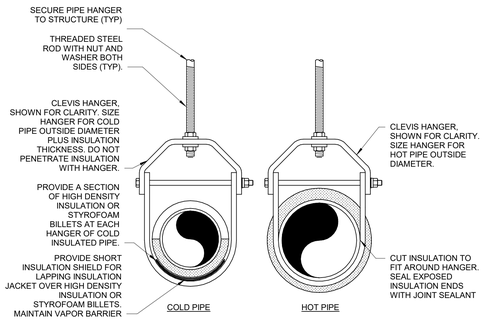
1850004412
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2023

SHEET TITLE

PLUMBING SCHEDULES AND RISER DIAGRAM

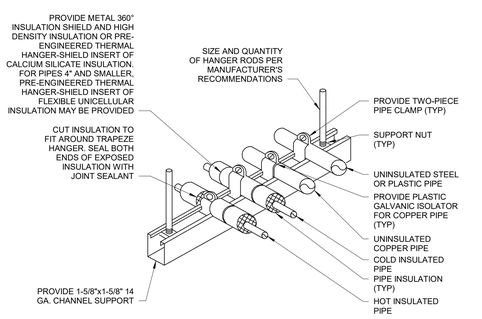
SHEET NUMBER

P2.01



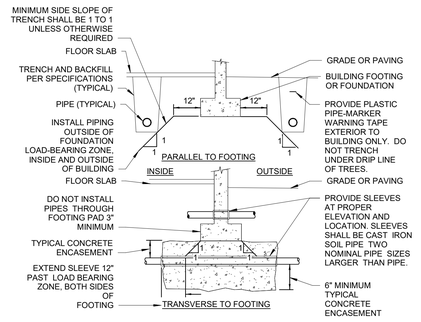
REFER TO SPECIFICATIONS FOR INSULATION TYPES, INSULATION THICKNESSES, HANGER TYPES, HANGER ROD CONNECTIONS TO STRUCTURE AND HANGER SPACING.

1 PIPE HANGER DETAIL
NTS



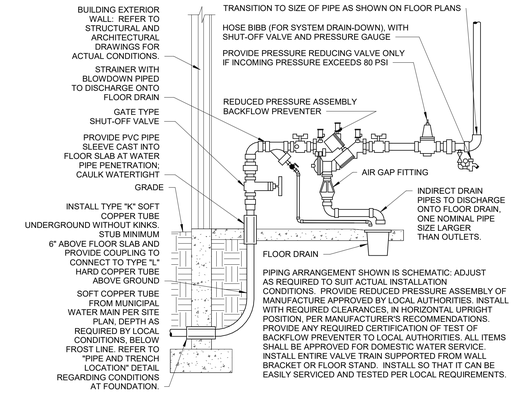
PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITONS. REFER TO SPECIFICATIONS FOR MORE INFORMATION. PIPE AND CONDUIT OF ALL TRADES MAY BE COMBINED ON THE SAME SUPPORT CHANNEL. COORDINATE SUPPORT CHANNEL LENGTH WITH PIPING AND CONDUIT TO BE SUPPORTED. SUPPORT CHANNEL SPACING SHALL BE DETERMINED BY SMALLEST PIPE TO BE SUPPORTED. CHANNEL SUPPORT MAY BE USED AS A WALL BRACKET, ATTACH TO WALL WITH ANCHOR BOLTS PER SPECIFICATIONS. FOR HORIZONTAL INSULATED PIPING, ATTACH CLAMPS AS INDICATED ABOVE, FOR VERTICAL INSULATED PIPING, ATTACH CLAMPS TO THE PIPE AND SEAL INSULATION AT BOTH CLAMP ENDS.

2 TRAPEZE PIPE HANGER
NTS



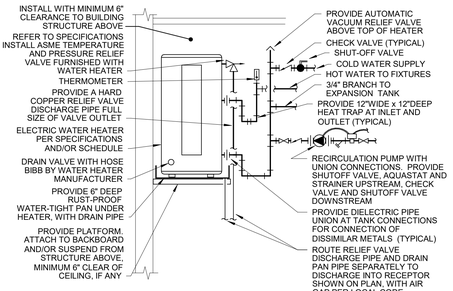
VERIFY EXCAVATION CONDITIONS (SOIL/ROCK) WITH GEOTECHNICAL REPORT AND/OR SITE INVESTIGATIONS. REFER TO SPECIFICATIONS FOR OTHER CONDITIONS. DO NOT INSTALL PIPES UNDER INTERIOR BUILDING SPREAD FOOTINGS OR PILE CAPS. COORDINATE WITH AFFECTED CONTRACTORS PRIOR TO THE START OF WORK.

3 PIPE AND TRENCH LOCATION
NTS



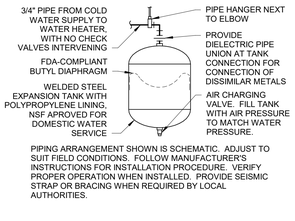
PIPING ARRANGEMENT SHOWN IS SCHEMATIC; ADJUST AS REQUIRED TO SUIT ACTUAL INSTALLATION CONDITIONS. PROVIDE REDUCED PRESSURE ASSEMBLY OF MANUFACTURE APPROVED BY LOCAL AUTHORITIES. INSTALL WITH REQUIRED CLEARANCES, IN HORIZONTAL UPRIGHT POSITION, PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE ANY REQUIRED CERTIFICATION OF TEST OF BACKFLOW PREVENTER TO LOCAL AUTHORITIES. ALL ITEMS SHALL BE APPROVED FOR DOMESTIC WATER SERVICE. INSTALL ENTIRE VALVE TRAIN SUPPORTED FROM WALL BRACKET OR FLOOR STAND. INSTALL SO THAT IT CAN BE EASILY SERVICED AND TESTED PER LOCAL REQUIREMENTS.

4 DOMESTIC WATER SERVICE ENTRY
NTS



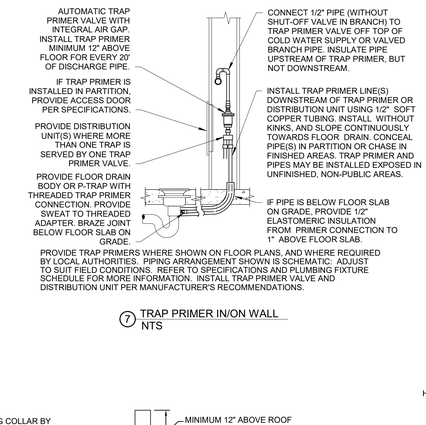
REFER TO SPECIFICATIONS, SCHEDULES AND NOTES FOR MORE INFORMATION. PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. VERIFY CONNECTION SIZES AND LOCATIONS WITH WATER HEATER FURNISHED. REFER TO FLOOR PLANS FOR PIPE SIZES. PROVIDE SEISMIC BRACE WHERE REQUIRED. PROVIDE WATER HEATER PLATFORM ATTACHED TO WALL AND/OR SUSPENDED FROM STRUCTURE ABOVE. INSTALL BOTTOM OF PLATFORM AT MINIMUM 6'-6" ABOVE FLOOR IF ABOVE JANITOR'S SINK, OTHERWISE HIGH AS POSSIBLE. POWER WIRING AND DISCONNECT ARE SPECIFIED BY ELECTRICAL. INTERLOCK OF AQUASTAT WITH RECIRCULATION PUMP IS SPECIFIED BY ELECTRICAL.

5 ELECTRIC WATER HEATER OVERHEAD WITH RECIRCULATION PUMP SYSTEM
NTS



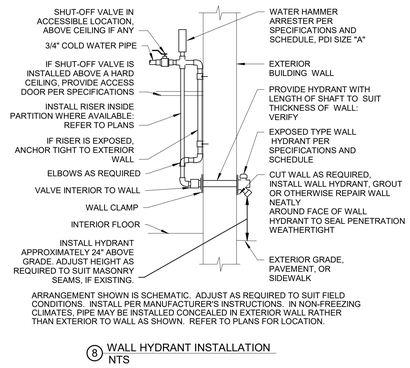
PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION PROCEDURE. VERIFY PROPER OPERATION WHEN INSTALLED. PROVIDE SEISMIC STRAP OR BRACING WHEN REQUIRED BY LOCAL AUTHORITIES.

6 SMALL EXPANSION TANK
NTS



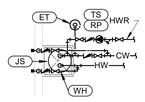
PROVIDE TRAP PRIMERS WHERE SHOWN ON FLOOR PLANS, AND WHERE REQUIRED BY LOCAL AUTHORITIES. PIPING ARRANGEMENT SHOWN IS SCHEMATIC; ADJUST TO SUIT FIELD CONDITIONS. REFER TO SPECIFICATIONS AND PLUMBING FIXTURE SCHEDULE FOR MORE INFORMATION. INSTALL TRAP PRIMER VALVE AND DISTRIBUTION UNIT PER MANUFACTURER'S RECOMMENDATIONS.

7 TRAP PRIMER IN/ON WALL
NTS

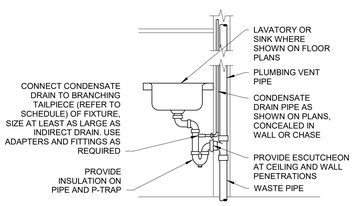


ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST AS REQUIRED TO SUIT FIELD CONDITIONS. INSTALL PER MANUFACTURER'S INSTRUCTIONS. IN NON-FREEZING CLIMATES, PIPE MAY BE INSTALLED CONCEALED IN EXTERIOR WALL RATHER THAN EXTERIOR TO WALL AS SHOWN. REFER TO PLANS FOR LOCATION.

8 WALL HYDRANT INSTALLATION
NTS

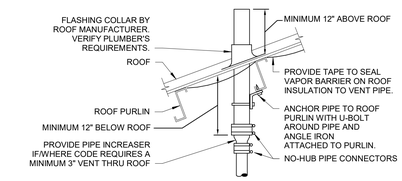


9 WATER HEATER OVER JANITOR'S SINK PLAN
NTS



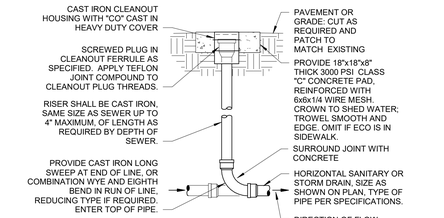
PIPING ARRANGEMENT SHOWN IS SCHEMATIC: ADJUST TO SUIT FIELD CONDITIONS. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION ABOUT PIPES, INSULATION, AND ESCUTCHEONS. PROVIDE PIPE SIZES OF INDIRECT DRAINS AS SHOWN ON PLANS, AND PIPE MATERIALS AS SPECIFIED. DO NOT DISCHARGE WATER HEATER T&P RELIEF VALVE DISCHARGE INTO SINK OR TAILPIECE. PROVIDE ENGRAVED PLASTIC LABELS ATTACHED TO WALL NEXT TO WALL PENETRATIONS: "CONDENSATE DRAIN", "AUXILIARY CONDENSATE DRAIN", "WATER HEATER DRAIN PAN", ETCETERA AS APPROPRIATE. PROVIDE MULTIPLE CONNECTIONS TO TAILPIECE IF INDICATED ON FLOOR PLAN.

10 CONDENSATE DRAIN TO SINK TAILPIECE
NTS



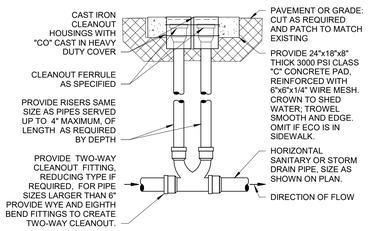
REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. VTR SHALL BE LOCATED A MINIMUM OF TEN FEET HORIZONTAL FROM OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE. LOCATE VTR A MINIMUM OF ONE FOOT FROM ANY VERTICAL SURFACE. OFFSET IN CEILING SPACE WHERE REQUIRED TO MEET THESE CONDITIONS.

11 VENT THRU ROOF
NTS



LOCATE EXTERIOR CLEANOUTS AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT MINIMUM 75 FOOT INTERVALS ON STRAIGHT RUNS, AND WHERE SHOWN ON PLANS. PROVIDE EARTH BACKFILL AND COMPACTION PER ARCHITECTURAL SPECIFICATIONS. REFER TO SPECIFICATIONS AND SCHEDULES FOR MORE INFORMATION.

12 EXTERIOR CLEANOUT
NTS



LOCATE EXTERIOR TWO-WAY CLEANOUT AT EXIT OF BUILDING DRAINS AND WHERE SHOWN ON PLAN. REFER TO SPECIFICATIONS AND SCHEDULES FOR MORE INFORMATION.

13 EXTERIOR TWO-WAY CLEANOUT
NTS

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.:	19050.04A
Date:	1.13.23
Issued For:	PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
BRADLEY E. CHAMBON
NUMBER PE-026603
PROFESSIONAL ENGINEER

01/27/2023

BRADLEY E. CHAMBON
LICENSE # 026603

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

HENDERSON ENGINEERS
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WWW.HENDERSONENGINEERS.COM

1850004412
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2023

SHEET TITLE

PLUMBING DETAILS

SHEET NUMBER

P3.01

Division 22: PLUMBING

1. GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

All requirements under Division 01 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence. Become thoroughly familiar with all its contents as to requirements that affect this division, section, or both. Work required under this division includes all material, equipment, appliances, transportation, services and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate the function of each system as implied by the design and equipment specified.

The specifications and drawings for the Project are complementary, and any portion of work described in one shall be provided as if described in both. In the event of discrepancies, notify the Engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the systems without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

B. DEFINITIONS

Division: References contained in this specification follow the numbering system defined in the Construction Specifications Institute (CSI) MasterFormat 2004 Edition. Specification Divisions 01 through 13 provided with this project may reference the CSI MasterFormat 1995 Edition. The corresponding division references between the 2004 Edition and 1995 Edition are as follows:

	2004 Edition	1995 Edition
1.	Division 21 - Fire Suppression	Division 15
2.	Division 22 - Plumbing	Division 15
3.	Division 23 - HVAC	Division 15
4.	Division 26 - Electrical	Division 16
5.	Division 27 - Communications	Division 16
6.	Division 28 - Electronic Safety and Security	Division 16

Furnish: “to supply and deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations.”

Install: “to perform all operations at the project site including, but not limited to, the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use.”

Provide: “to furnish and install, complete and ready for the intended use.”

Furnished by Owner (or Owner-Furnished) or Furnished by Others: “an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.”

Engineer: Where referenced in this division, “Engineer” is the Engineer of Record and the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and/or Supplementary Conditions. When used in this division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

AHJ: The local code and/or inspection agency (Authority) Having Jurisdiction over the work.

NRTL: Nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project. Nationally recognized testing laboratories and standards listed are used only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the specified criteria.

Substitution: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include Value Engineering proposals.

A Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

B Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

The terms "approved equal", “equivalent”, or "equal" are used synonymously and shall mean “accepted by or acceptable to the Engineer as equivalent to the item or manufacturer specified”. The term "approved" shall mean labeled, listed, or both, by an NRTL, and acceptable to the AHJ over this project.

The term lead free refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content of less than or equal to 0.25% per safe drinking water act as amended January 4, 2011 Section 1417.

C. PREBID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MATERIAL AND WORKMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, of best quality normally used for the purpose in good commercial practice, and free from defects. Install material and equipment in accordance with the manufacturer's installation instructions. Model numbers listed in specifications or shown on the drawings are not necessarily intended to designate the required trim, written descriptions of the trim govern model numbers.

Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States or certified to meet the specified ASTM and ANSI standards.

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the Architect and Engineer. Workmanship shall be the finest possible by experienced mechanics. Installations shall comply with applicable codes and laws.

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal noise caused by rattling equipment, piping and squeaks in rotating components shall not be acceptable. Materials and equipment shall be of commercial specification grade in quality. Light duty and residential grade equipment shall not be accepted unless otherwise indicated.

Remove from the premises waste material present as a result of his work, including cartons, crating, paper, stickers, and/or excavation material not used in backfilling, etc. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction. Provide all safety lights, guards, and warning signs required for the performance of the work and for the safety of the public.

E. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

F. COORDINATION

Coordinate work with that of other trades so that the various components of the systems are installed at the proper time, will fit the available space, and will allow proper service access to those items requiring maintenance. Components which are installed without regard to the above shall be relocated at no additional cost to the Owner.

Unless otherwise indicated, General Contractor shall provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the General Contractor with information where chases and openings when required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute his work in such a manner as not to interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scaled dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor shall be held responsible for errors which could have been avoided by proper checking and verification.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the specifications or shown on the drawings are not intended to designate the required trim.

G. ORDINANCES AND CODES

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ, including any amendments and standards as set forth by the following:

1. National Fire Protection Association (NFPA)
2. Underwriters Laboratories (UL)
3. Occupational Safety and Health Administration (OSHA)
4. American Society of Mechanical Engineers (ASME)
5. American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)
6. American National Standards Institute (ANSI)
7. American Society of Testing Materials (ASTM)
8. Other national standards and codes where applicable.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence. Where conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner.

H. PROTECTION OF EQUIPMENT AND MATERIAL

Store and protect from damage equipment and material after delivery to job site. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material damaged by construction activities shall be rejected and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises broom clean of foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of piping systems while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

Keep the manufacturer-provided protective coverings on floor drains, floor sinks and trench drains during construction. Remove coverings at the termination of the work and polish exposed surfaces.

I. SUBSTITUTIONS

Materials, products, equipment, and systems described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by the proposed substitution. The base bid shall include only the products from manufacturers specifically named in the drawings and specifications. To request a substitution, request the Substitution Request Form from the Architect or Engineer. Complete and send the Substitution Request From for each material, product, equipment, or system that is proposed to be substituted. The burden of proof of the merit of the proposed substitution is upon the proposer.

Unless stated otherwise in writing to the Engineer by the Contractor, Contractor warrants to the Engineer, Architect, and Owner the following:

1. Proposed substitution has been fully investigated and determined to meet or exceed the specified Work in all respects unless stated otherwise in the substitution request.
2. Proposed substitution is consistent with the Contract Documents and will produce indicated results, including functional clearances, maintenance service, and sourcing of replacement parts.
3. Proposed substitution has received necessary approvals of authorities having jurisdiction.
4. Same warranty will be furnished for proposed substitution as for specified Work.
5. If accepted substitution fails to perform as required, Contractor shall replace substitute material or system with that originally specified and bear costs incurred thereby.
6. Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

No substitutions will be considered unless the Substitution Request Form is completed and attached with the appropriate substitution documentation. No substitution will be considered prior to receipt of bids unless written request for approval to bid has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of bids.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided in the contract documents.

J. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittals in sufficient detail so as to demonstrate compliance with these Contract Documents and the design concept. Prior to transmitting submittal, verify that the equipment submitted is mutually compatible and suitable for the intended use, will fit the available space, and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location or configuration, submit a shop drawing showing the proposed layout.

Transmit submittals as early as required to support the project schedule. Allow for two weeks Engineer review time, plus to/from mailing time via the Architect, plus a duplication of this time for resubmittal, if required. Only resubmit those sections requested for resubmittal.

Submittals shall contain the project name, applicable specification section, submittal date, equipment identification acronym as used on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples and other submittals required by this division. Highlight, mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

Submittals and shop drawings shall not contain the firm name, logo, seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph “Electronic Drawing Files” for procedures to be used.

Separate submittals according to individual specification sections. Illegible submittals will be rejected and returned without review. Catalog data shall be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification acronym or number as used on the drawings and include performance curves, capacities, sizes, weights, materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. For equipment with motor starters or VFDs, include short circuit current ratings. Mark out inapplicable items. Shop drawings will be returned without review if the above mentioned requirements are not met.

Provide the quantity of submittals required by Division 01. If not indicated and hard-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for this project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall notify the Architect and Engineer that the submittals have been posted. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name, and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the designated representatives of the Architect and Engineer. Contractor shall allow for the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal.

The checking and subsequent acceptance of submittals by the Engineer and/or Architect shall not relieve the Contractor from responsibility for deviations from the drawings and specifications, errors in dimensions, details, size of members, or quantities, omissions of components or fittings; coordination of electrical requirements; and not coordinating items with actual building conditions and adjacent work. Proceed with the procurement and installation of equipment only after receiving approved shop drawings relative to each item.

K. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to three identical sets of the approved shop drawings. Insert one set into each copy of the manual described below.

See Division 01 and General Conditions for additional information.

L. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index and tabs separating equipment types to the Architect, for Engineer's review, at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and mailing envelopes are not considered approved binders. Final approval of systems installed under this contract shall be withheld until this equipment brochure is received and deemed complete by the Architect and Engineer. Instruct workmen to save required literature shipped with the equipment itself for inclusion in this brochure.

Include record drawings as described above.

Refer to Division 01 for acceptance of electronic manuals for this project. For electronic manuals, refer to paragraph “Submittals” for requirements.

M. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects, occurring within the warranty period(s), as stated in the General Conditions and Division 01.

Warranty shall include a guarantee of free circulation of liquids throughout the system as intended without leaks, excessive noise, or water hammer.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly, upon written notice from the Engineer or Owner.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the one year period and any actions the Owner must take in order to maintain warranty status. Each warranty instrument shall be addressed to the Owner and state the commencement date and term.

2. GENERAL MATERIALS AND INSTALLATION

A. EXCAVATION AND BACKFILLING

Perform excavation and backfill required for installation of underground work under this contract. Trenches shall be of sufficient width. Crib or brace trenches to prevent cave-in or settlement. Do not excavate trenches close to columns and walls of new building without prior consultation with the Architect. Use pumping equipment if required to keep trenches free of water. Backfill trenches in maximum 6 inch layers of well-tamped dry earth in a manner to prevent future settlement.

Excavation as specified herein shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and disposition of material of whatever substances and of every description encountered, including rock, if any, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Dispose of excavated materials that are considered unsuitable for backfill and surplus of excavated material which is not required for backfill to the satisfaction of the Architect.

C. EXTERIOR UTILITY CONNECTIONS

Terminate domestic water, storm, and sewer lines at a point approximately five feet from the building wall, or as shown on the drawings. Make connection to the various services provided by others and coordinate connection requirements with civil engineer. Verify that installation will tie into the various services provided by others at the indicated invert elevation point prior to installation. If the installation will not tie into the indicated invert elevation point while maintaining proper fall, notify architect and civil engineer so that an alternative may be determined.

Provide service piping and accessories required to complete utility connections that are not furnished by the serving utility.

D. COINCIDENTAL DAMAGE

Repair streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of the work. Repair materials shall match existing construction. Repair work shall meet all requirements of the Owner, local authorities having jurisdiction, and meet the satisfaction of the Architect.

E. CUTTING AND PATCHING

Conform to the requirements in Division 01. Cut walls, floors, ceilings, and other portions of the facility as required to install work under this division. Obtain permission from the Architect prior to cutting. Do not disturb structural members without prior approval from the Architect. Cut holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. Patching shall match original material and construction including fire ratings, if applicable. Repair and refinish areas disturbed by work to the condition of adjoining surfaces in a manner satisfactory to the Architect.

F. ROUGH-IN

Coordinate without delay all roughing-in with other divisions. Conceal piping, conduit, and rough-in except in unfinished areas and where otherwise shown.

G. SUPPORT SYSTEMS

Structural steel used for pipe supports, equipment supports, etc., shall be new and clean, and shall conform to ASTM designation A-36.

Support plumbing equipment and piping from the building structure. Do not support plumbing equipment and piping from ceilings, other mechanical or electrical components, and other non-structural elements.

I. PENETRATIONS

Provide sleeves for pipes passing through above grade concrete or masonry walls, concrete floor or roof slabs. Sleeves are not required for core drilled holes in existing masonry walls, concrete floors or roofs. Provide 10 gauge galvanized steel sleeves for sleeves 6 inches and smaller. Provide galvanized sheet metal sleeves for larger than 6 inches. Schedule 40 PVC sleeves are acceptable for installation in areas without return air plenums.

Seal elevated floor, exterior wall and roof penetrations watertight and weathertight with non-shrink, non-hardening commercial sealant. Pack with mineral wool and seal both ends with minimum of 1/2 inch of sealant.

Seal around penetrations of fire rated assemblies. Coordinate fire ratings and locations with the architectural drawings. Refer to architectural specifications for fire stoppings. Provide a product schedule for UL listing, location, wall or floor rating and installation drawing for each penetration fire stop system.

Extend pipe insulation for insulated pipe through floor, wall and roof penetrations, including fire rated walls and floors. The vapor barrier shall be maintained. Size sleeve for a minimum of 1 inch annular clear space between inside of sleeve and outside of insulation.

Provide sleeves for horizontal pipe passing through or under foundation. Sleeves shall be cast iron soil pipe two nominal pipe sizes larger than the pipe served.

Provide Schedule 40 PVC pipe sleeves for vertical pressure pipe passing through concrete slab on grade. Sleeves shall be one nominal pipe size larger than the pipe served and two pipe sizes larger than pipe served for ductile iron pipes with restraining rods. Seal water-tight with silicone caulk.

Provide 1/2 inch thick cellular foam insulation around perimeter of non-pressure pipe passing thru concrete slab on grade. Insulation shall extend to 2 inches above and below the concrete slab.

J. FIRESTOPPING

Sealants and accessories shall have fire-resistance ratings indicated, as established by testing identical assemblies in accordance with UL 2079 or ASTM E 814, or other NRTL acceptable to AHJ.

Manufacturers: Hilti, RectorSeal, Specified Technologies Inc., United States Gypsum Company, or 3M corp.

Through and Membrane Penetration Firestopping Systems Product Schedule: Provide UL listing, location, wall or floor rating, and installation drawing for each penetration fire stop system.

Where project conditions require modification to qualified testing and inspecting agency's illustrations for a particular firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Include qualifications data for testing agency.

K. ELECTRICAL WIRING

Line voltage wiring shall be provided by Division 26. Line voltage control and interlock wiring for plumbing systems shall also be provided by Division 26. Low voltage control wiring shall be provided by Division 23. Furnish wiring diagrams to Division 26 as required for proper equipment hookup. Coordinate with Division 26 the actual wire sizing amps for plumbing equipment (from the equipment nameplate) to ensure proper installation.

L. SYSTEM TESTING AND ADJUSTING

Upon completion of each phase of the installation, test each system in conformance with local code requirements and as noted below. Furnish labor and equipment required to test each system installed under this contract. Assume all costs involved in making the tests and repairing and/or replacing any damages resulting therefrom.

Notify the Architect and the AHJ, three (3) working days prior to making plumbing system tests. Leave concealed work uncovered until the required tests have been completed, but if necessary due to construction procedure, tests on portions of the work may be made, and when satisfactory, the work may be concealed. Test piping before insulation is installed, and before backfill. Pipes, joints, flanges, valve stems, etc., shall be leak tight. Repair or replace system defects with new materials. Caulking of defective joints, cracks or holes will not be permitted. Repeat tests after defects have been eliminated. Make tests in the presence of the administrative authority and/or the Owner's authorized representative.

Upon completion of the systems installation, and prior to acceptance by the Architect and Engineer, make general operating tests to demonstrate that equipment and systems are in proper working order, and are functioning in conformance with the intent of the drawings and specifications. As a part of these tests, open every water outlet to ensure complete system flushing, remove and clean faucet aerators, clean strainers, light pilot lights, and operate every piece of equipment furnished under this contract to demonstrate proper functioning.

Test the drainage and vent system by plugging openings with test plugs, except those at the top of the stacks. Fill the system with water; test results will be satisfactory if the water level remains stationary for not less than one (1) hour. Subject the drainage and vent system to a pressure of at least ten (10) feet of water. If leaks develop, repair them and repeat the test.

Test the domestic water system by filling it with water and then isolating the system from its source. Keep the system closed for a period of twenty-four hours with no fixture being used. The pressure differential for this test period shall not exceed 10 psig. Test water piping to a 125 PSI hydrostatic pressure.

3. PLUMBING PIPING

A. PIPING MATERIALS

Materials specified or noted on the drawings are subject to the approval of local code authorities. Verify approval before installing any material or joining method.

Domestic Water (Cold, Hot and Hot Water Recirculation): Domestic water piping installed above the floor slab inside the building shall be Type "L" hard temper copper tube with wrought copper fittings and soldered connections made up with 95/5 solder.

Underground domestic water piping 2 inch and smaller shall be Type "K" soft temper copper tubing with flared copper alloy fittings and connections, or Type "K" hard temper copper tubing with conventional wrought copper fittings and brazed joints made with AWS A5.8, BAg Silver filler meta. Install as few underground copper piping joints as possible. At building service entrance, no joints shall be installed under or within 5 feet of the building. Install domestic water piping below grade outside building at adequate depth to prevent freezing.

Interior Waste And Vent Below Slab: Waste and vent pipe below slab inside building shall be PVC schedule 40 DWV ASTM D2665 pipe with PVC meeting ASTM D1784, “solid wall” cell class 12454-B with ASTM 2665 socket fittings with solvent weld joints.

Interior Waste and Vent Above Slab: PVC schedule 40 DWV ASTM D2665 pipe with PVC meeting ASTM D1784, “solid wall” cell class 12454-B with ASTM 2665 socket fittings with solvent weld joints

Connections to Plumbing Fixtures and Equipment: 1-1/4 inch and larger waste connections from fixture traps to cast iron pipe shall be “DWV” copper with wrought copper drainage pattern fittings with copper sweat or compression joints at fixture trap connections and threaded joints at connections to cast iron pipe.

Indirect and Condensate Drain Inside Building: Indirect and condensate drain pipe installed inside the building shall be Schedule 40 PVC pipe and fittings with solvent weld joints. Install cleanouts at elbows greater than 45 degrees. Slope piping at 1/8" per foot.

B. PIPING AND EQUIPMENT INSULATION

Provide domestic cold water, hot water, hot water recirculation, indirect and condensate drain pipe (within building) with one-piece fiberglass insulation with all-service jacket with self-sealing lap to provide a continuous vapor barrier by CertainTeed Corp., Knauf Insulation, Johns Manville or Owens Corning. Provide Insulation thickness as follows:

1" thick for cold piping

1" thick for condensate piping

Up to 140F hot water and hot water return piping: 1" thick for 1-1/4" and smaller and 1-1/2" thick for 1-1/2" and larger

Provide 1 inch fiberglass insulation on vent piping within six feet of vent through the roof.
Provide fiberglass insulation on domestic cold and hot water pipes installed in walls and chases.

For hot and cold water piping installed inside masonry units of walls, provide 1/2 inch flexible unicellular insulation by Auroflex USA, Inc., Armacell LLC. or K-Flex USA.

Insulate water heaters, storage tanks, hot water pumps, etc. that are not factory insulated.

For hot piping, provide pipe hangers and riser clamps sized for the outside diameter of piping. Butt insulation to hanger or riser clamp for vertical pipe. Seal exposed insulation with insulation sealer. Exception for Vertical Piping: Provide clamps sized for the outside diameter of the vertical pipe and extend clamp through insulation. Seal penetrations of insulation and vapor barrier with wet coat of vapor barrier lap cement. For 2-1/2" and larger cold piping at hangers, provide 8 inch long sections of cellular glass meeting ASTM C552 by Johns-Manville, Fiberglass by Knauf or flexible unicellular piping insulation meeting ASTM C 534-01A, Type I with integral high density pipe supports and encased in steel insulation shield by Cooper B-line, Armacell, or approved equal. Insulation shall be continuous along the pipe surface, except at valves, unions, and where piping is exposed at fixtures. For pipes 2 inch and smaller using fiberglass or flexible elastomeric insulation without pre-insulated supports, provide insulation protection shields installed between hanger and pipe which meets the following minimum length requirements:

Pipe Size (NPS)	Insulation Thickness (inches)	Minimum Shield Length, (in) Hanger Spacing, (ft) 5	6	7	8	9	10
Less than 1"	1	3	5	5	-	-	-
	1.5	3	5	5	-	-	-
1-1/4" to 2" and Less	1	5	6	8	9	11	11
	1.5	5	6	8	8	9	9
	2	5	5	6	6	8	8

Cover fittings with Johns Manville Zeston 2000 PVC or approved equal one-piece PVC premolded insulating covers. Fitting covers, jackets and adhesives shall not exceed flame spread rating of 25 and smoke development rating of 50 per ASTM E84. Fill voids between covers and piping with fiberglass insulation and tape joints at all elbows and tees. Install pipe insulation in compliance with manufacturer's recommendations. Where premolded insulating fittings are not approved by the local AHJ, miter insulation at fittings.

C. PIPING JOINTS

Copper Tubing: Joints in hard temper tubing shall be soldered joints using lead-free 95/5 solder except where tubing is installed below grade or below the base slab, in which case joints shall be soldered with silver solder (Sil-Fos). Joints in soft temper copper tubing shall be of the flared type installed in compliance with the fitting manufacturer's recommendations.

PVC Pipe: Clean joints free from debris and moisture. Apply PVC primer meeting ASTM F656 to each joint. Apply solvent cement meeting ASTM D2564 and make joint while wet and in accordance with ASTM D2855.

Dissimilar Pipes Above Grade: Make connection of new waste pipe to new or existing dissimilar waste pipe using shielded transition couplings meeting ASTM C1460 with neoprene adapter gasket with stainless steel shield and hose clamps, Fernco, Proflex 3000 Series or Mission Flexseal MR56 Series

Dissimilar Pipes Below Grade: Make connection of new waste pipe to new or existing dissimilar waste pipe using shielded adapter couplings meeting ASTM C1173 with neoprene adapter gasket with stainless steel shield and hose clamps, Fernco, 1056 Series or Mission Sewer Couplings.

D. PIPING INSTALLATION

General: Clean pipe thoroughly prior to installation. Ream ends of pipe to remove burrs. Cut pipe accurately to measurements taken on the job. Install with adequate clearance for installation of coverings where required. Pipe shall not be sprung or bent. Neatly align pipe, connect it securely, and support it from the building structure with hangers as specified below. Provide chrome-plated escutcheons on pipes passing through ceilings, floors or walls of finished spaces. Run pipes freely through floor and wall penetrations using pipe sleeves. Do not grout in place unless required for structural fire integrity. Install pipe concealed in finished spaces wherever possible. Use a dielectric union where ferrous and copper pipe connect. Dielectric union shall have a zinc-plated steel body, a threaded nylon insert, and insulating pressure gasket. No ferrous metal-to-copper connection made without insulating unions will be allowed.

Hanger & Supports: Pipe hangers shall be as described in the specifications by B-Line or equal by Anvil, Elite Components, FNW, Michigan, Truscon, or Unistrut. Connect hangers to the structure with side beam connectors and all thread hanger rods. Provide engineered support struts between joists and other structural members as required to provide a rigid hanging installation. Do not hang pipes from other pipes, conduit or ductwork. Provide hanger rods and space hangers at intervals as specified in “hanger spacing”. Provide support within 1 foot of each elbow and tee. Provide supports within 1 foot of each equipment connection. Provide two nuts on threaded supports to securely fasten the support. Install hanger types or supports for various piping as follows:

Copper Tube: Adjustable band hangers for bare copper tube 3 inches and smaller shall be B-Line #B3170 CT copper plated adjustable band swivel ring type. Adjustable band hangers for insulated copper tube 3 inches and smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for insulated copper tube 4 inches and larger shall be B-Line #B3100 galvanized steel clevis type. Support exposed copper tube 2 inches and smaller to walls or in chases with B-Line #B3198RCT copper coated extension split ring pipe clamps, 3/8 inch threaded rod and B-Line #B3199CT ceiling flanges. Support copper tube in chases and walls at plumbing fixtures with plastic or copper brackets secured to structure and U-bolts sized to bare on the pipe. Riser clamps to support vertical copper tube shall be B-Line #B3373CT copper coated steel, cut insulation, seal vapor barrier, and attach to bare tube.

PVC Pipe: Adjustable band hangers for 3 inch and smaller. Clevis hangers for 4 inch and larger shall be B-Line #B3100 galvanized steel clevis type. Riser clamps to support vertical pipe shall be B-Line #B3373 galvanized steel.

Insulation Protection Shields: B-Line #B3151 of 18 gauge galvanized sheet metal. Shield shall cover half of the circumference of the pipe and shall be of length indicated by manufacturer for pipe size and thickness of insulation.

Hanger Spacing, Rod Sizes & Connectors: Connect rods to steel beams or joists with B-Line #B3031 or #B3033 beam clamps as required. Connect rods to concrete with B-Line #3014 malleable iron single type inserts with malleable iron nut. Connect rods in wood construction with B-Line #B3058 side beam connectors. Hang and support piping with spacing and rod sizes as follows:

Copper Tube: 1-1/2 inch and smaller - every 6 feet with 3/8 inch hanger rods; 2 inch - every 10 feet with 3/8inch hanger rods; 2-1/2 inch - every 10 feet with 3/8 inch hanger rods; 3 inch - every 10 feet with 1/2 inch rods, 4 inch - every 10 feet with 5/8 inch hanger rods. Support vertical copper tube every 10 feet.

PVC Pipe: Support all pipes sizes every 4 feet. 1-1/2 inch and smaller with 3/8 inch hanger rods; 2 inch with 1/2 inch hanger rods; 2-1/2 inch and 3 inch with 1/2 inch hanger rods, 4 inch and larger with 5/8 inch hanger rods. Support vertical PVC pipe every 4 feet.

Underground Warning Tape: Underground warning tape shall be Marking Services Incorporated # 52205 for ferrous sewer pipe and # 52206 for domestic water pipe or equal by Brady Identoline and Seton. Provide 4mil thick non-adhesive polyethylene type tape. Detectable underground warning tape shall be Marking Services Incorporated # 52216 for plastic gas pipe and # 52218 for plastic sewer pipe. Provide non-adhesive 4mil thick type tape with 18 AWG copper or aluminum tracer wire suitable for detection up to 3'-0" of burial.

Below Ground Installation for Soil, and Waste: Install soil and waste piping to a uniform slope of not less than 1/8 inch per foot for piping 4 inch or larger, and not less than 1/4 inch per foot for piping 3 inch or smaller. Lay pipe at uniform slope, free from sags, with hub end upstream. Make changes in direction from horizontal to vertical, at fixture branches and other branch connections with sanitary "tees" or short sweep "ells". Make changes in direction from vertical to horizontal or horizontal to horizontal with long radius fittings, long sweeping "ells", combination “Y and 1/8 bend” fittings, or 45 degree "ells" (1/8 bend fittings), 1/6 bend or 1/16 bend and "Y" fittings. Install pipe with the barrel of the pipe on firm, solid earth for its entire length, and excavate holes for the pipe bells. Lay pipe in a straight line and install with uniform grade to line with batten boards set not more than 24'-0" apart. Close open ends of pipe with a stopper when pipe laying is not in progress. Center spigots accurately in bells for uniform caulking. Provide a smooth and uniform invert in the system. Drilling or tapping of soil and waste lines, and saddle hubs and bands are not permitted. Locate and install soil and waste lines as indicated on the drawings. Determine exact locations in such a manner as to maintain proper clearance. Install plastic underground warning tape with name of service indicated continuously along its length for buried soil, and waste pipe five feet outside the building. Install detectable plastic underground warning tape with name of service indicated continuously along its length over buried plastic soil, and waste pipe five feet outside the building.

Above Ground Installation for Soil, and Waste: Install soil and waste piping to a uniform slope of not less than 1/8 inch per foot for piping 4 inch or larger, and not less than 1/4 inch per foot for piping 3 inch or smaller. Lay pipe at uniform slope free from sags. Support pipe within 12 inches of each joint. Make changes in direction from horizontal to vertical, at fixture branches and other branch connections with sanitary "tees" or short sweep "ells". Make changes in direction from vertical to horizontal or horizontal to horizontal with long radius fittings, long sweeping "ells", combination “Y and 1/8 bend” fittings, or 45 degree "ells" (1/8 bend fittings), 1/6 bend or 1/16 bend and "Y" fittings. Provide a smooth and uniform invert in the system. Drilling or tapping of soil and waste lines, and saddle hubs and bands are not permitted. Locate and install soil and waste lines as indicated on the drawings. Determine exact locations in such a manner as to maintain proper clearance.

Plumbing Vent: Connect plumbing vent pipes to fixture drain pipes as indicated on the drawings or as required by the installation practices adopted and enforced by local codes official, and extend vent pipes full size through the roof line. Grade pipe to a uniform slope so as to drain back by gravity to the drainage piping system. Vents passing through the roof shall be minimum 3 inch size except in tropical climates. Turn flashing down into stacks at least 2 inches, and extend flashing 24 inches in all directions from the pipe at the roof line. Vent lines shall be air and water tight.

Domestic Water: Arrange cold, hot, and hot water recirculation piping to drain at the lowest point in each system. Install at least one pipe union adjacent to all shutoff valves, at connection points of each piece of equipment, and elsewhere in the system where required to allow proper maintenance. Provide unions of the ground joint type. Make allowance for expansion and contraction where required by the installation. Where water piping occurs in exterior walls, hold pipe as close as possible to the interior face of wall and install insulation batt or other insulation (minimum R-8) between piping and the exterior wall face. Install plastic underground warning tape with name of service indicated continuously along its length for domestic water pipe five feet outside the building.

E. PIPING SANITIZATION

Sanitize the entire domestic water piping system (cold, hot, and hot water return) with a solution containing not less than 50 ppm available chlorine. Keep solution in the system for a minimum of 24 hours, with each valve being operated several times during the period. After completion, flush system with city water until chlorine residual is lowered to incoming city water level.

F. PIPE AND VALVE MARKERS

Provide manufacturer's standard pre-printed, semi-rigid snap-on or permanent adhesive, pressure-sensitive vinyl pipe markers. Pipe markers shall be color-coded complying with ANSA A13.1.

Install pipe markers on each plumbing piping system and include arrows to show normal direction of flow.

Locate pipe markers and color bands wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.

Provide plastic laminate or brass valve tag on every valve, cock and control device in each plumbing piping system; exclude check valves, valves within factory-fabricated equipment units, plumbing fixture faucets, convenience and lawn-watering hose bibbs, and shut-off valves at plumbing fixtures and similar rough-in connections of end-use fixtures and units.

4. PLUMBING SPECIALTIES

A. WATER HAMMER ARRESTORS, AND TRAPS

Provide water hammer arrestors at valves or batteries of fixtures as indicated on the drawings to prevent water hammer. Arrestors shall be Josam, Sioux Chief, Smith, Precision Plumbing Products, Proflo, Wade, Watts, or Zurn, stainless steel bellows type, or O-ring sealed and lubricated acetal piston. Install water hammer arrestors per the Plumbing and Drainage Institute (PDI) WH-201 installation instructions. Installation of arrestors at batteries of fixtures precludes the requirement for individual air chambers at each battery fixture. Submit certification that water hammer arrestors comply with NSF 61 Annex G and/or NSF 372.

Provide water-seal traps on floor drains, fixtures and equipment with drain connections, including traps not furnished in combination with fixtures and equipment. Place trap as close to the fixture or drain as possible. Exposed traps in finished spaces shall be chrome-plated brass.

Provide conventional "P" type trap, water-sealed self-cleaning design. Full "S" traps or trap standards shall be used only where specifically called for on the drawings or elsewhere in this specification. Trap water seals shall not be less than 2 inches, and deep seal traps shall be provided where specified or indicated. Each trap not integral with the fixture or floor drain or installed below the base slab shall be provided with an accessible cleanout of adequate size. Provide trap primers where required by code and where indicated on the drawings.

B. CLEANOUTS AND FLOOR DRAINS

Cleanouts and floor drains shall be by one manufacturer if possible. Acceptable manufacturers are Josam, MIFAB, Sioux Chief, Smith, Wade, Watts, and Zurn. Provide long sweep fittings for cleanout extensions; short sweeps at start of runs or change in direction and combination wye and eight bend fittings in horizontal runs. Install cleanouts with a minimum of 18 inches clear all around, consult local codes for other requirements, for easy system maintenance. Install plug with Teflon joint compound.

Floor Drains: As scheduled on the drawings.

Exterior Cleanouts: As scheduled on the drawings. Install cleanouts at points as noted on the drawings, at the building exit; at a minimum of every 100 feet in horizontal soil, waste and storm service lines. Embed each exterior cleanout in an 18 inch x 18 inch x 8 inch block of concrete, flush with finished grade.

Wall Cleanouts: As scheduled on the drawings. Install wall cleanouts at points as noted on the drawings; at the foot of each soil, waste or interior downspout stack; at horizontal soil and waste branches longer than five feet not served by a floor cleanout; consult local codes for installation at specific fixture types. Install wall cleanouts above the flood rim of the fixture served within four feet of the floor and install extensions from the cleanout tee to the wall to locate the plug within 2 inch of the wall where required. Install cleanouts on urinals and sinks where required by code.

C. VALVES, STRAINERS, HOSE BIBBS, AND UNIONS

Plumbing system valves shall be designed for 125 psi steam working pressure and 200 psi cold water pressure. Install valves on the hot and cold water lines at the water heater connections and other items of equipment, at branches from mains serving groups of fixtures, and at other places indicated or required by the installation to allow ease of future maintenance. Submit certification that valves, fittings and specialties comply with NSF 61 Annex G and / or NSF 372. Except for the following: Hose bibbs, hydrants, backflow preventers isolating irrigation or mechanical make-up systems, emergency mixing valves and trap primers.

Ball Valves 2 inch and Smaller (may be used in lieu of gate valves up to 2 inch): Class 150, two piece lead free cast bronze body, with sweat ends, chrome plated bronze ball with conventional port, 600 psi, blow-out proof stem by Apollo # 70-LF-200, Hammond # UP8501, Milwaukee # UPBA-150.

Lift Check Valves 2 inch and Smaller: Class 125, lead free cast bronze body, stainless steel spring and with sweat ends by Hammond # LP-947 or Nibco # S-413-Y-LF. Install in vertical pipe or in horizontal runs where required.

Point of Use Thermostatic Mixing Valves: Thermostatic mixing valves shall be Powers as scheduled on the drawings by Powers or equal by Acorn Engineering Co., Cash ACME or Leonard meeting ASSE 1070 with lead free brass body, non-corrosive internal parts, tamper resistant temperature adjustment, union inlets and check stops with strainers. Install valve at public lavatories and handwashing sink locations in accessible location. Set temperature as scheduled on the drawings.

Strainers: Strainers 2 inch and smaller shall be Watts #LFS777SI with lead free cast bronze body and soldered ends, brass cap and Monel 40 mesh screen. Strainers 2-1/2 inch and larger shall be Watts #77F-DI-FDA-125 with flanged iron body with fused FDA epoxy coating, bolted iron cap and stainless steel screen with 1/16 inch perforations. Strainers size 2-1/2 inch and larger shall have a 1 inch blow-off line with a 1 inch gate valve connected to the blow-off connection and shall be extended to the nearest floor drain.

Interior Hose Bibbs: As specified on the drawings by Prier or equal by Woodford or Watts.

Wall Hydrants: As specified on the drawings by Prier or equal Woodford, Josam, Prier, Wade, Watts or Zurn. Provide accessible shutoff valve and water hammer arrestor inside building.

Unions: Ferrous unions shall be Crane or equal, combination iron and brass, ground joint with screwed ends. Copper unions shall be streamline or equal, cast bronze sweat type with ground joint. Ferrous to copper unions shall be universal controls or equal, dielectric type with threaded nylon insert.

Pressure Reducing Valves: Self contained type shall be of the type as scheduled and indicated on the drawings by Watts or equal by Cash-ACME or Wilkins.

Backflow Preventers: Shall be of the type as scheduled and indicated on the drawings by Watts, Conbraco, Febco or Wilkins.

D. WATER SERVICE ENTRANCE: PRESSURE REDUCING VALVE AND BACKFLOW PREVENTER

Provide a backflow preventer (BFP) of type required by local code, and a pressure reducing valve (PRV) if required by water pressure greater than 80 psi, on the domestic water service immediately downstream of the backflow preventer at the water service entry. Set the pressure reducing valve as indicated on the drawings. Provide a pressure gauge and hose bibb with isolation valve down stream of the backflow preventer and / or PRV for system drain down.

For water services 2 inch and smaller, provide a Type “K” soft copper tube that runs continuously from five feet outside the building with sweeping bend to 12 inches above the floor slab. Provide a shutoff valve at 12 inches above the floor. There shall be no fittings under the floor slab. Provide a PVC sleeve two pipe sizes larger than the water pipe served and seal with caulk.

E. SYSTEM ACCESSORIES

Thermometers shall be American 3 inch bi-metal dial type with separable socket, and shall be installed where indicated or required.

Pressure gauges shall be Ashcroft 3 inch dial type with shut-off cock, and shall be installed where indicated or required.

Trap primers shall be as specified on the drawings, Precision Plumbing Products “Prime Rite” or equal by Mifab or Sioux Chief with brass body and integral vacuum breaker. Provide distribution box where more than one trap is indicated to be primed on the drawings. Provide access panel where required.

Trap seals shall be by Proset systems or equal by Green Drain, Mifab, ProSet, Smith, Sure Seal Systems or Zurn of molded PVC elastomer that allows the flow of waste water and closes upon termination of flow. Install per manufacturer's installation instructions. Do not touch elastomeric plug or allow contact with primer or solvent cement. Or, shall be by Sure Seal, Inc. of smooth, soft, flexible, elastomeric PVC material with a flapper closure. The flow of wastewater allows flapper to open and adequately discharge to floor drain through its interior. The flapper closes and returns to original molded shape after wastewater discharge is complete.

5. PLUMBING FIXTURES AND EQUIPMENT

A. PLUMBING FIXTURES

Furnish and install commercial grade plumbing fixtures, see the drawings for quantities and descriptions. Provide china fixtures as scheduled by American-Standard or approved equal by Gerber, Kohler, PROFLO, Sloan Valve Co, Toto-Kiki or Zurn. Provide all-in-one wash fountains and lavatories by Bradley (no substitutions). Provide mop sinks as scheduled by Stern-Williams or equal by Acorn Engineering Co., Fiat or Florestone. Provide fixtures of same manufacturer where possible.

Fixtures shown on the drawings or specified herein shall be furnished and installed, set firm and true, connected to required piping services, thoroughly cleaned, left clean and ready for use. Exposed fittings and piping at the fixtures shall be chrome-plated, and water supply piping shall be valved at each fixture.

Vitreous china fixtures shall be of the best grade vitreous ware, without pit holes or blemishes, and the outlines shall be generally true. The engineer reserves the right to reject any pieces which, in his opinion, are faulty. Fixtures set against walls shall have ground backs and shall be caulked with silicone sealant of a matching color.

B. PLUMBING FIXTURE TRIM

Submit certification that faucets and trim comply with NSF 61 Annex G and / or NSF 372. Except for the following: Faucets not used for drinking water or cooking, shower valves and heads or flush valves.

Fixture trim shall have the manufacturer's name stamped clearly and visibly on each item.

Combine electronic faucet, soap dispenser, and hand dryer by Bradley provided as part of the washstation package.

Fixture P-traps shall be 17 gauge brass body with cleanout, 17 gauge seamless tubular wall bend with cast brass slip nut, shallow steel flange, all chrome plated by McGuire, Brass Craft, Dearborn Brass, EBC, Proflo, Watts Brass and Tubular or Zurn.

Lavatory, sink, and water closet supplies shall be solid brass angle or straight type with full turn brass stem, wheel handle, or loose key types as noted on drawings, shallow steel flange, 3/8 inch copper riser flange, all chrome plated, final connection as required by McGuire, Brass Craft, EBC, Proflo or Zurn.

Lavatory drains shall be grid type chrome plated 17 gauge brass open grid with 1-1/4 inch x 6 inch long seamless brass tailpiece and brass locknut with heavy rubber basin washer and fiber friction washer, by McGuire, Brass Craft, Dearborn Brass, EBC, Franke, Proflo, Watts Brass and Tubular and Zurn.

Provide handicap insulation kits for lavatories and sinks on exposed water and waste pipes and fittings, including offset drain and continuous waste covers where required by Brocar, McGuire, Plumberex “Pro-2000”, Proflo, Trap-Wrap or Tru-Bro.

Provide diaphragm type flush valves as specified on drawings: Sloan or equal by Delaney or Zurn.

Provide Smith, Josam, Wade, Watts, or Zurn chair carriers for mounting wall mounted water closets and lavatories as described on the drawings. Securely fasten carriers to floor and test per manufacturer's recommendations prior to installation of partitions. Secure wall-mounted water closet carriers to floor with 3/8 inch anchor bolts, including the anchor foot. Secure lavatory chair carriers to floor with 1/2 inch anchor bolts.

C. WATER HEATER

Water heater shall be by A.O. Smith, Bock, Bradford-White, Hubbel, Lochinvar, State, HTP, Rheem or Ruud with capacity as scheduled on the drawings. Unit shall be electric glass-lined tank type complete with steel jacket, fiberglass insulation, magnesium anode, integral thermostats and controls, and temperature & pressure relief valve. Water heater shall be UL listed and meet ASHRAE 90.1B standards for thermal efficiency and standby heat loss.

Temperature and Pressure Relief Valve: lead free brass body meeting ANSI Z21.22, The temperature shall be normally set to relieve at 210 F and the pressure relief shall be equal to the tank pressure rating . Install line size relief valve discharge line to discharge to an approved receptor with air gap.

Vacuum Relief Valve: Lead free brass body meeting ANSI Z21.22 with silicon disc. Valve shall open at 0.5 inches HG vacuum and be rated for 200 psig working pressure and 250 F operating temperature by Apollo #37, Cash ACME #VR801, Watts #N36 or Wilkins #VR-10. Install in cold water supply to each water heater downstream of the shutoff and check valves.

Recirculation Pump: By B&G as scheduled on the drawings, or equal by Armstrong, Grundfos or Taco, of all bronze construction with Aquastat and/or timer.

Expansion Tank: Expansion tank shall be Amtrol “Therm-X-Trol” as scheduled on the drawings or equal by Armstrong, Bell & Gossett, Proflo, Taco, or Watts. Unit shall be constructed of welded carbon steel listed for 150 psig working pressure, with a FDA approved butyl rubber diaphragm, taps for pressure gage, air charging fitting, and drain fitting. Support as detailed on the drawings. Charge tank with air pressure equal to the static water pressure.

END OF SECTION 22

paragon star

Paragon Star - SOUTH RESTROOMS

PARAGON STAR SOCCER COMPLEX
101 NW VIEW HIGH DR.
LEE'S SUMMIT, MO 64081

Project No.: 19050.04A
Date: 1.13.23
Issued For: PERMIT SET

REVISIONS

No.	Date	Description

REGISTRATION

STATE OF MISSOURI
BRADLEY E. CHAMBON
NUMBER PE-028603
PROFESSIONAL ENGINEER

01/27/2023

BRADLEY E. CHAMBON
LICENSE # 028603

PROJECT TEAM

ARCHITECT	FINKLE+WILLIAMS ARCHITECTURE
CIVIL	GBA
LANDSCAPE	LAND 3
FOUNDATIONS	BSE
STRUCTURAL	BSE
PLUMBING	HENDERSON
MECHANICAL	HENDERSON
ELECTRICAL	HENDERSON
FIRE PROTECTION	HENDERSON
CONTRACTOR	FOGEL-ANDERSON

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EXPIRES 12/31/2023

SHEET TITLE

PLUMBING SPECIFICATIONS

SHEET NUMBER

P4.01

BRADLEY E. CHAMBON

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