# BAILEY FARMS CLUBHOUSE

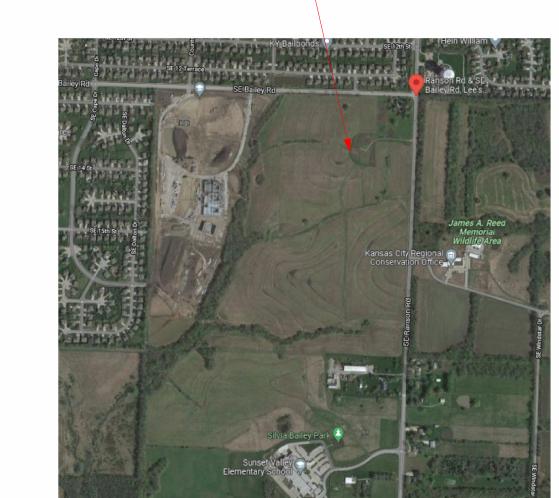
LEE'S SUMMIT, MO

## CONSTRUCTION DOCUMENTS

JUNE 26, 2024

COLLINS WEBB #: 23115





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OWNER

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SUMMIT HOMES 120 SE 30TH STREET LEE'S SUMMIT, MO 64082 P: 816.326.2909 ARCHITECT

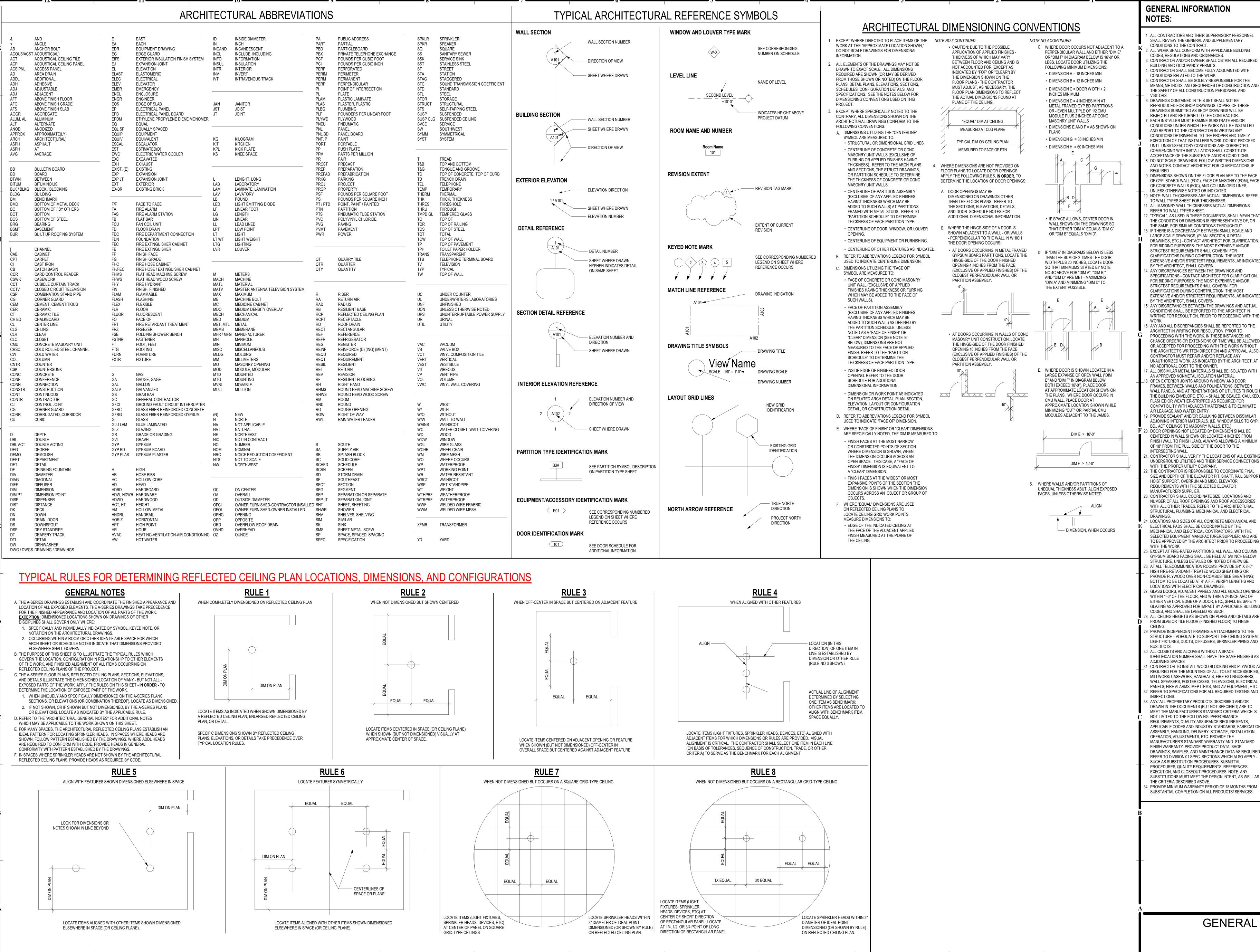
COLLINS | WEBB ARCHITECTURE 307B SW MARKET ST. LEE'S SUMMIT, MISSOURI 64063 P: 816.249.2270 www.collinsandwebb.com CIVIL

SCHLAGEL 14920 WEST 107th STREET LENEXA, KS 66215 P: 913.492.5158 WWW.SCHLAGELASSOCIATES.COM STRUCTURAL ENGINEER

LEIGH & O'KANE 250 NE MULBERRY SUITE 201 LEE'S SUMMIT, MO 64086 P: 816.444.3144 MEP ENGINEER

PKMR ENGINEERS 13300 W. 98TH ST. LENEXA, KS 66215 P: 913.492.2400 www.pkmreng.com





**GENERAL INFORMATION** 

SHALL REVIEW THE GENERAL AND SUPPLEMENTARY CONDITIONS TO THE CONTRACT. 2. ALL WORK SHALL CONFORM WITH APPLICABLE BUILDING CODES, REGULATIONS AND ORDINANCES. 3. CONTRACTOR AND/OR OWNER SHALL OBTAIN ALL REQUIRED BUILDING AND OCCUPANCY PERMITS. 4. CONTRACTOR SHALL BECOME FULLY ACQUAINTED WITH CONDITIONS RELATED TO THE WORK. . CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MEANS, METHODS, AND SEQUENCES OF CONSTRUCTION AND THE SAFETY OF ALL CONSTRUCTION PERSONNEL AND

6. DRAWINGS CONTAINED IN THIS SET SHALL NOT BE REPRODUCED FOR SHOP DRAWINGS, COPIES OF THESE DRAWINGS SUBMITTED AS SHOP DRAWINGS WILL BE REJECTED AND RETURNED TO THE CONTRACTOR. 7. EACH INSTALLER MUST EXAMINE SUBSTRATE AND/OR CONDITIONS UNDER WHICH THE WORK WILL BE INSTALLED AND REPORT TO THE CONTRACTOR IN WRITING ANY CONDITIONS DETRIMENTAL TO THE PROPER AND TIMELY EXECUTION OF THAT INSTALLERS WORK. DO NOT PROCEED

. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE FINAL SIZE AND DEPTH OF THE ELEVATOR PIT, SHAFT, RAIL SUPPORT. HOIST SUPPORT, OVERRUN AND MISC. ELEVATOR REQUIREMENTS WITH THE SELECTED ELEVATOR MANUFACTURER/ SUPPLIER.

. CONTRACTOR SHALL COORDINATE SIZE, LOCATIONS AND NUMBER OF ALL ROOF OPENINGS AND ROOF ACCESSORIES WITH ALL OTHER TRADES, REFER TO THE ARCHITECTURAL. STRUCTURAL, PLUMBING, MECHANICAL AND ELECTRICAL 4. LOCATIONS AND SIZES OF ALL CONCRETE MECHANICAL AND ELECTRICAL PADS SHALL BE COORDINATED BY THE MECHANICAL AND ELECTRICAL CONTRACTORS, WITH THE SELECTED EQUIPMENT MANUFACTURER/SUPPLIER; AND ARE TO BE APPROVED BY THE ARCHITECT PRIOR TO PROCEEDING

EXCEPT AT FIRE-RATED PARTITIONS, ALL WALL AND COLUMN GYPSUM BOARD FACING SHALL BE HELD AT 5/8 INCH BELOW STRUCTURE, UNLESS DETAILED OR NOTED OTHERWISE. 26. AT ALL TELECOMMUNICATION ROOMS: PROVIDE 3/4" X 8'-0" HIGH FIRE-RETARDANT-TREATED WOOD SHEATHING OR PROVIDE PLYWOOD OVER NON-COMBUSTIBLE SHEATHING; BOTTOM TO BE LOCATED AT 4" A.F.F. VERIFY LENGTHS AND LOCATIONS WITH ELECTRICAL DRAWINGS. . GLASS DOORS, ADJACENT PANELS AND ALL GLAZED OPENIN WITHIN 1'-6" OF THE FLOOR, AND WITHIN A 24-INCH ARC OF EITHER VERTICAL EDGE OF A DOOR, ETC., SHALL BE SAFETY GLAZING AS APPROVED FOR IMPACT BY APPLICABLE BUILDING CODES, AND SHALL BE LABELED AS SUCH. 28. ALL CEILING HEIGHTS AS SHOWN ON PLANS AND DETAILS ARE

FROM SLAB OR TILE FLOOR (FINISHED FLOOR) TO FINISH 9. PROVIDE INDEPENDENT FRAMING & ATTACHMENTS TO THE STRUCTURE - ADEQUATE TO SUPPORT THE CEILING SYSTEM, LIGHT FIXTURES, DUCTS, DIFFUSERS, SPRINKLER PIPING AND 30. ALL CLOSETS AND ALCOVES WITHOUT A SPACE IDENTIFICATION NUMBER SHALL HAVE THE SAME FINISHES AS

 CONTRACTOR TO INSTALL WOOD BLOCKING AND PLYWOOD AS REQUIRED FOR THE MOUNTING OF ALL TOILET ACCESSORIES. MILLWORK/ CASEWORK, HANDRAILS, FIRE EXTINGUISHERS, WALL SPEAKERS, POSTER CASES, TELEVISIONS, ELECTRICAL PANELS, FIRE ALARMS, MEP ITEMS, AND AV EQUIPMENT, ETC 22. REFER TO SPECIFICATIONS FOR ALL REQUIRED TESTING AND 33. ANY/ ALL PROPRIETARY PRODUCTS DESCRIBED AND/OR DRAWN IN THE DOCUMENTS (BUT NOT SPECIFIED) ARE TO MEET THE MANUFACTURER'S STANDARD CRITERIA WHICH IS

NOT LIMITED TO THE FOLLOWING: PERFORMANCE REQUIREMENTS, QUALITY ASSURANCE REQUIREMENTS. APPLICABLE CODES AND INDUSTRY STANDARDS, FABRICATION ASSEMBLY, HANDLING, DELIVERY, STORAGE, INSTALLATION, OPERATION, ADJUSTMENTS, ETC. PROVIDE THE MANUFACTURER'S STANDARD WARRANTY AND STANDARD FINISH WARRANTY, PROVIDE PRODUCT DATA, SHOP DRAWINGS, SAMPLES, AND MAINTENANCE DATA AS REQUIR REFER TO DIVISION 01 SPEC. SECTIONS WHICH ALSO APPLY SUCH AS SUBSTITUTION PROCEDURES, SUBMITTAL PROCEDURES, QUALITY REQUIREMENTS, REFERENCES, EXECUTION, AND CLOSEOUT PROCEDURES. NOTE: ANY

SUBSTITUTIONS MUST MEET THE DESIGN INTENT, AS WELL AS THE CRITERIA DESCRIBED ABOVE. 4. PROVIDE MINIMUM WARRANTY PERIOD OF 18 MONTHS FROM SUBSTANTIAL COMPLETION ON ALL PRODUCTS/ SERVICES.

PROFESSIONAL SEAL

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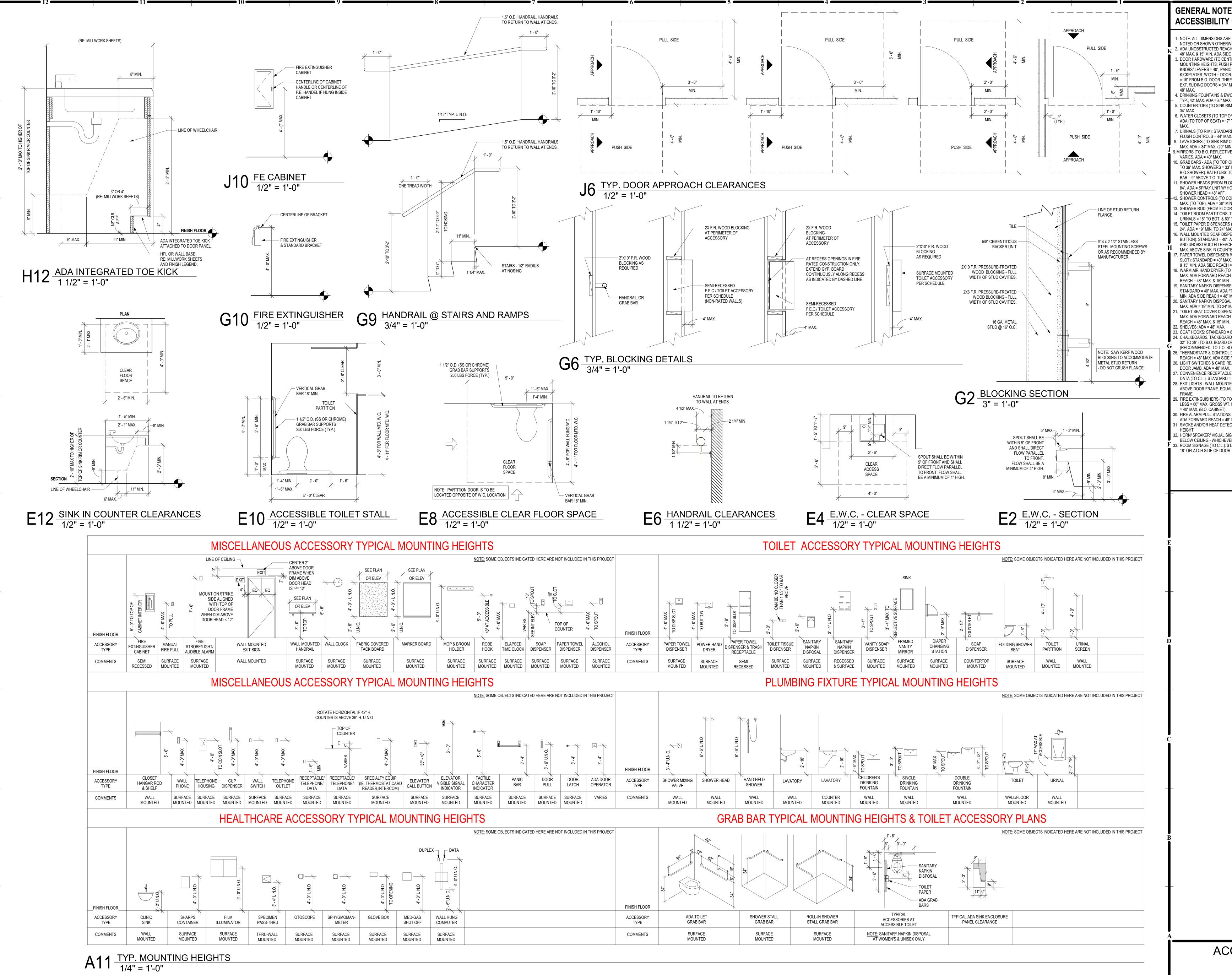
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**REVISION DATES:** 

ARCHITECTURE, LLC

COLLINS WEBB #:

GENERAL INFORMATION



**GENERAL NOTES: ACCESSIBILITY GUIDELINES** 

> NOTE: ALL DIMENSIONS ARE MEASURED FROM FLOOR, UNLES NOTED OR SHOWN OTHERWISE. 2. ADA UNOBSTRUCTED REACH RANGES: ADA FORWARD REACH 48" MAX. & 15" MIN. ADA SIDE REACH = 48" MAX. & 15" MIN. 3. DOOR HARDWARE (TO CENTER OF HARDWARE): STANDARD MOUNTING HEIGHTS: PUSH PLATES = 42", PULL HANDLES = 42 KNOBS/ LEVERS = 40", PANIC EXIT = 42" CENTERLINE OF BAR, KICKPLATES: WIDTH = DOOR WIDTH MINUS 2", CENTER, HEIGHT = 16" FROM B.O. DOOR. THRESHOLDS: STANDARD = 1/2" MAX. AT EXT. SLIDING DOORS = 3/4" MAX., ADA HARDWARE = 34" MIN. TO 4. DRINKING FOUNTAINS & EWC'S (TO SPOUT): STANDARD = 40" TYP., 42" MAX. ADA =36" MAX. (27" MIN. CLEAR KNEE SPACE) 5. COUNTERTOPS (TO SINK RIM/ COUNTERTOP): ADA = 28" MIN. TO 6. WATER CLOSETS (TO TOP OF SEAT): STANDARD = 14" TO 15". ADA (TO TOP OF SEAT) = 17" TO 19". ADA FLUSH CONTROLS = 44"

7. URINALS (TO RIM): STANDARD = 24" MAX. ADA =17" MAX. ADA FLUSH CONTROLS = 44" MAX. 8. LAVATORIES (TO SINK RIM/ COUNTERTOP): STANDARD = 36" MAX. ADA = 34" MAX. (29" MIN. CLEAR KNEE SPACE)

MIRRORS (TO B.O. REFLECTIVE SURFACE): STANDARD = ). GRAB BARS - ADA (TO TOP OF BAR): WATER CLOSETS = 33" MIN TO 36" MAX. SHOWERS = 33" MIN. TO 36" MAX. (FROM B.O.SHOWER), BATHTUBS: TOP BAR = 33" MIN. TO 36" MAX. BOT 1. SHOWER HEADS (FROM FLOOR TO HEAD): STANDARD = 72" TO 84". ADA = SPRAY UNIT W/ HOSE 60" LONG MIN. ADA = FIXED 2. SHOWER CONTROLS (TO CONTROL AREA): STANDARD = 48" MAX. (TO TOP). ADA = 38" MIN. TO 48" MAX. 3. SHOWER ROD (FROM FLOOR TO C.L.): STANDARD = 78" MAX. TOILET ROOM PARTITIONS: TOILETS = 12" TO BOT. & 70" TO TOI URINALS = 18" TO BOT. & 60" TO TOP 5. TOILET PAPER DISPENSERS (TO C.L. OF OUTLET): STANDARD = 24". ADA = 19" MIN. TO 24" MAX. 6. WALL MOUNTED SOAP DISPENSERS (TO C. L. OF PUSH BUTTON): STANDARD = 40". ADA = VARIES. RE: OBSTRUCTED AND UNOBSTRUCTED REACH RANGES. ADA SIDE REACH = 46" MAX. ABOVE SINK IN COUNTER. 7. PAPER TOWEL DISPENSER/ WASTE RECEPTACLE (TO TOWEL SLOT): STANDARD = 40" MAX. ADA FORWARD REACH = 48" MAX. & 15" MIN. ADA SIDE REACH = 48" MAX. & 15" MIN. 8. WARM AIR HAND DRYER (TO PUSH SWITCH): STANDARD = 44"

MAX. ADA FORWARD REACH = 48" MAX. & 15" MIN. ADA SIDE 9. SANITARY NAPKIN DISPENSER (TO C.L. OF COIN SLOT): STANDARD = 40" MAX. ADA FORWARD REACH = 48" MAX. & 15" MIN. ADA SIDE REACH = 48" MAX. & 15" MIN. O. SANITARY NAPKIN DISPOSAL (TO TOP OF UNIT): STANDARD = 2 MAX. ADA = 19" MIN. TO 24" MAX. (TO OPNG.) TOILET SEAT COVER DISPENSERS (TO OPNG.): STANDARD = 40 MAX. ADA FORWARD REACH = 48" MAX. & 15" MIN. ADA SIDE REACH = 48" MAX. & 15" MIN. 23. COAT HOOKS: STANDARD = 68". ADA = 48" MAX.

 CHALKBOARDS, TACKBOARDS, & MARKERBOARDS: STANDARD 32" TO 39" (TO B.O. BOARD OR CHALKTRAY). STANDARD = 80" (RECOMMENDED, TO T.O. BOARD) 5. THERMOSTATS & CONTROL DEVICES (TO TOP): ADA FORWARD REACH = 48" MAX. ADA SIDE REACH = 48" MAX. 6. LIGHT SWITCHES & CARD READERS (TO C.L.): LOCATE 6" FROM DOOR JAMB. ADA = 48" MAX. . CONVENIENCE RECEPTACLES – ELECTRICAL/ TELEPHONE/ DATA (TO C.L.): STANDARD = 18". ADA = 15" MIN. 28. EXIT LIGHTS - WALL MOUNTED: 2" MIN. BELOW CEILING. 2" MIN. ABOVE DOOR FRAME. EQUAL SPACE FROM CEILING TO TOP OF 29. FIRE EXTINGUISHERS (TO TOP, U.N.O.): GROSS WT. 40 LBS. OR LESS = 60" MAX. GROSS WT. MORE THAN 40 LBS. = 42" MAX. ADA

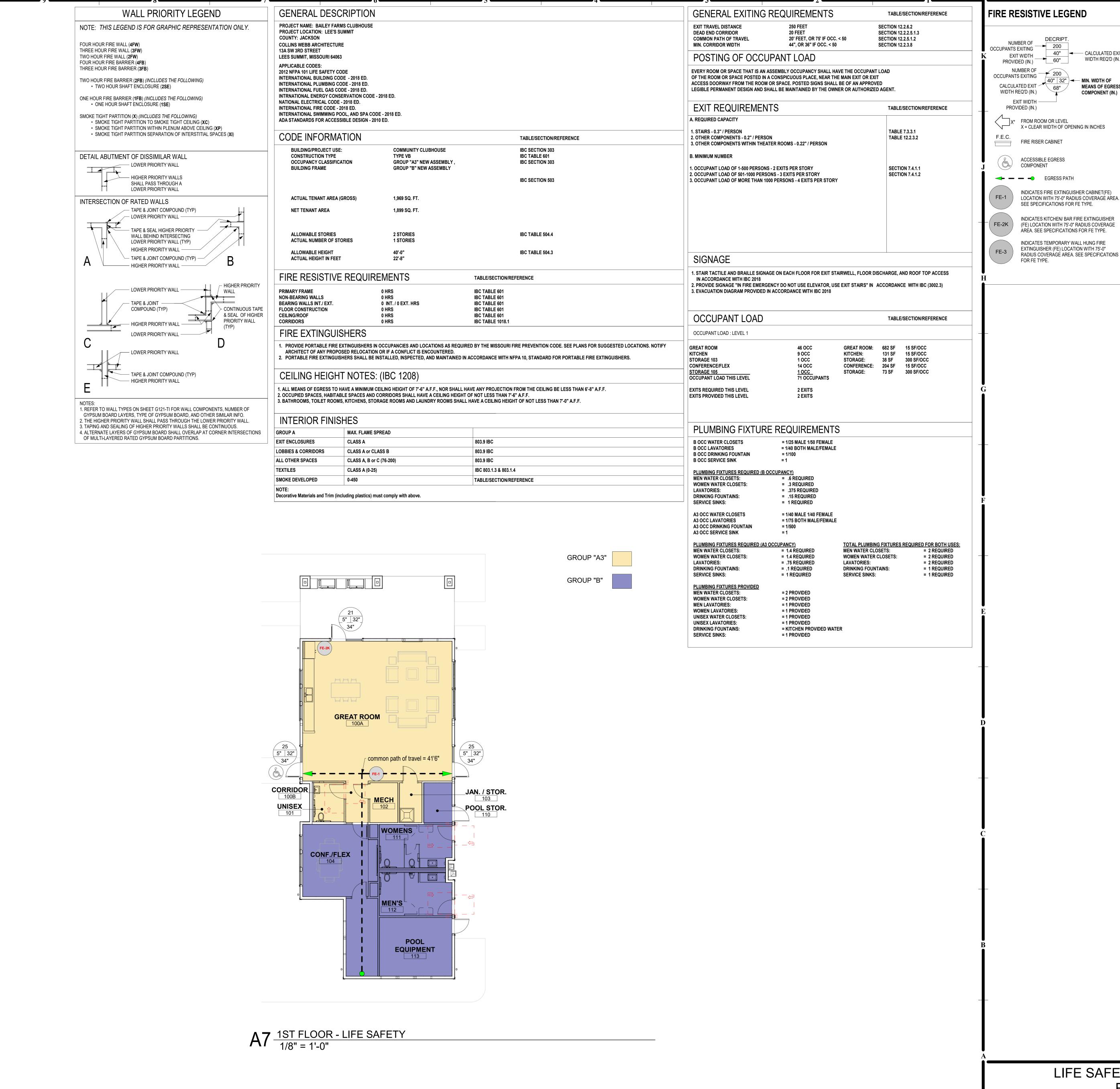
. FIRE ALARM PULL STATIONS (TO LEVER): STANDARD = 48" MAX. ADA FORWARD REACH = 48" MAX. ADA SIDE REACH = 48" MAX. SMOKE AND/OR HEAT DETECTORS: STANDARD = CEILING BELOW CEILING - WHICHEVER IS LOWER. 33. ROOM SIGNAGE (TO C.L.): STANDARD = 60" HIGH AFF. & WITHIN

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ACCESSIBILITY GUIDELINES



FIRE RESISTIVE LEGEND NUMBER OF OCCUPANTS EXITING

EXIT WIDTH PROVIDED (IN.)

DECRIPT.

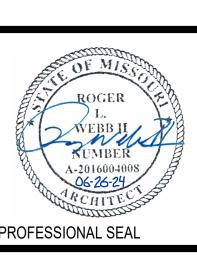
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40"

CALCULATED EXIT WIDTH REQ'D (IN.) NUMBER OF CALCULATED EXIT **MEANS OF EGRESS** WIDTH REQ'D (IN.) COMPONENT (IN.) EXIT WIDTH — PROVIDED (IN.) FROM ROOM OR LEVEL X = CLEAR WIDTH OF OPENING IN INCHES FIRE RISER CABINET ACCESSIBLE EGRESS COMPONENT **← ← ← ←** EGRESS PATH INDICATES FIRE EXTINGUISHER CABINET(FE) LOCATION WITH 75'-0" RADIUS COVERAGE AREA. SEE SPECIFICATIONS FOR FE TYPE. INDICATES KITCHEN/ BAR FIRE EXTINGUISHER (FE) LOCATION WITH 75'-0" RADIUS COVERAGE ÀRÉA. SEE SPECIFICATIONS FOR FE TYPE. INDICATES TEMPORARY WALL HUNG FIRE

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LIFE SAFETY PLANS AND PROJECT INFO.

#### 1. 1 SEE ADMINISTRATIVE SPECIFICATION FOR GENERAL REQUIREMENTS RELATED TO ADMINISTRATION OF THIS CONTRACT.

THE CONTRACTOR AND ALL SUBCONTRACTORS INVOLVED IN THE PROJECT SHALL BE REQUIRED TO OBTAIN AND PAY FOR ALL NECESSARY LICENSES AS REQUIRED BY ANY LAW OR AGENCIES HAVING JURISDICTION (AHJ) OVER THE PROJECT.

THE GENERAL CONTRACTOR WILL PAY FOR ALL PERMITS REQUIRED BY ANY AGENCY HAVING JURISDICTION (AHJ) OVER THE PROJECT FOR ALL WORK TO BE PREFORMED BY THE GENERAL CONTRACTOR.

C. <u>UTILITY FEES</u>

1. THE CONTRACTOR SHALL PAY THE NECESSARY FEES TO CONNECT TO EXISTING UTILITIES AT THE PROPERTY LINE OR IN ADJACENT STREETS AND RIGHT OF WAY AS SPECIFIED, NECESSARY, AND/OR INCLUDED IN THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL PAY ALL UTILITY COSTS (BILLS) DURING CONSTRUCTION UNTIL OWNER TAKES POSSESSION OF THE FACILITY OR THE FACILITY IS CERTIFIED AS SUBSTANTIALLY COMPLETE.

. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT FINISHED SURFACES. PROTECTION FOR FINISHES SUCH AS DOORS,

WALLS AND FLOORS SHOULD BE PROVIDED AS REQUIRED. ANY DAMAGES TO THESE AREAS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR OR REPLACE. . ANY DISCREPANCY OR CONFLICT WITHIN OR BETWEEN DRAWINGS AND ANY DISCREPANCY OR CONFLICT BETWEEN ANY

DRAWING AND ANY SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. NOTWITHSTANDING, DISCREPANCIES OR CONFLICTS NOT BROUGHT TO THE ARCHITECT'S AND/OWNERS ATTENTION AND CLARIFIED DURING THE BIDDING OF THE PROJECT WILL BE DEEMED TO HAVE BEEN BID OR PROPOSED IN THE MORE COSTLY OR DIFFICULT MANNER. AND THE BETTER QUALITY OR GREATER QUANTITY OF THE WORK SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH ARCHITECT'S INTERPRETATION. 2. THE GENERAL CONTRACTOR SHALL KEEP A COMPLETE PROTOTYPE SET OF DOCUMENTS ON THE PROJECT SITE AT ALL TIMES FOR REFERENCE DURING CONSTRUCTION

3. THE GENERAL CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK, USING THE CONTRACTOR'S BEST SKILLS AND ATTENTION. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER CONSTRUCTION MEANS AND METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT. 4. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND HAVE CONTROL OVER ALL JOB SITE SAFETY

PROCEDURES AND POLICIES. THE GENERAL CONTRACTOR SHALL HAVE A SAFETY COORDINATOR AND BE RESPONSIBLE. T HOLD REGULARLY SCHEDULED SAFETY TRAINING WITH ALL JOB SITE PERSONNEL, INCLUDING ALL SUB CONTRACTOR 5. NEITHER THE ARCHITECT'S OR THE OWNERS INSPECTION NOR FAILURE TO INSPECT SHALL RELIEVE THE CONTRACTOR OF ANY OBLIGATION HEREUNDER. IF ANY WORK FAILS TO CONFORM TO THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PROMPTLY REMEDY AND/OR REPLACE THE SAME AT THE CONTRACTOR'S EXPENSE. NO ACCEPTANCE OR PAYMENT BY THE OWNER OR ARCHITECT SHALL CONSTITUTE A WAIVER OF THE FOREGOING AND NOTHING HEREIN SHALL EXCLUDE OR LIMIT ANY WARRANTIES IMPLIED BY LAW. 6. THE GENERAL CONTRACTOR SHALL SO CONDUCT ITS OPERATIONS AS NOT TO UNREASONABLY INTERFERE WITH TRAFFIC ON PUBLIC THOROUGHFARES ADJACENT OR NEAR TO THE PROJECT SITE. 7. DO NOT SCALE DRAWINGS.

THE GENERAL CONTRACTOR REPRESENTS THAT IT POSSESSES THE SKILLS REQUIRED FOR THE WORK, ASSUMES THE RESPONSIBILITIES OF AN EMPLOYER FOR PERFORMANCE OF THE WORK, AND ACTS AS AN EMPLOYER OF ONE OR MORE FMPI OYFFS BY PAYING WAGES. DIRECTING ACTIVITIES AND PERFORMING OTHER SIMILAR FUNCTIONS. THE GENERAL CONTRACTOR IS AN INDEPENDENT CONTRACTOR, FREE TO DETERMINE THE MANNER IN WHICH THE WORK IS PERFORMED. 2. THE GENERAL CONTRACTOR SHALL PROVIDE, AND MAINTAIN IN GOOD WORKING ORDER, THE FOLLOWING ITEMS FOR USE BY THE PROJECT SUPERINTENDENT DAILY DURING THE ENTIRE DURATION OF THE PROJECT: A. LAPTOP WITH INTERNET ACCESS.

B. DIGITAL CAMERA WITH 'DATE STAMP' CAPABILITY AND WITH PROPER CABLES TO ATTACH TO LAPTOP. C. EMAIL ACCESS THROUGH THE LAPTOP. D. A PRINTER/SCANNER/FAX MACHINE WITH PROPER CABLES TO ATTACH TO LAPTOP.

3. THE GENERAL CONTRACTOR SHALL HAVE A CONSTRUCTION SUPERINTENDENT ASSIGNED TO THIS PROJECT. AND THIS SUPERINTENDENT SHALL BE ON SITE EVERY DAY THERE IS ANY CONSTRUCTION ON THIS PROJECT. THE SUPERINTENDENT SHALL BE REACHABLE BY PHONE DURING NORMAL BUSINESS HOURS. ONCE ASSIGNED, THE SUPERINTENDENT SHALL NOT BE REMOVED OR REPLACED WITHOUT WRITTEN APPROVAL FROM OWNER & ARCHITECT. UNLESS SPECIFICALLY REQUESTED TO BE REPLACED BY OWNER. 4. THE SUPERINTENDENT WILL BE REQUIRED TO PROVIDE PHOTOGRAPHS (VIA EMAIL USING A DIGITAL CAMERA) TO THE

OWNER & ARCHITECT EACH FRIDAY BY NOON CST. SHOWING THE PROGRESS OF CONSTRUCTION. THE GENERAL CONTRACTOR IS ENCOURAGED TO TAKE PHOTOS SEVERAL TIMES EACH WEEK TO HELP MAINTAIN PROOF OF CONSTRUCTION PROGRESS. RECORD UNCOVERED CONDITIONS. RECORD CONDITION AND AMOUNTS OF VENDOR GOODS UPON RECEIPT, AND RECORD CONSTRUCTION THAT VARIES FROM THE CD'S (AS PART OF THE AS-BUILTS). ALL PHOTOS WILI HAVE A 'DATE STAMP'.

IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OVERSEE CONSTRUCTION OF THE PROJECT. CONTINUALLY INSPECTING THE WORK, MATERIALS, AND WORKMANSHIP PROVIDED BY ALL OF HIS TRADESMEN, SUBCONTRACTORS, AND SUPPLIERS. EXCELLENCE IN QUALITY OF CONSTRUCTION CAN ONLY BE ACHIEVED IF THE CONTRACTOR ENFORCES HIGH STANDARDS OF ACCEPTABILITY. THE GENERAL CONTRACTOR CANNOT DELEGATE HIS RESPONSIBILITY TO THE

SUBCONTRACTORS, BUT MUST CONTINUALLY MONITOR THE WORK OF EACH TRADE ON THE PROJECT. ? IT IS THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE AND SCHEDULE ALL AGENCIES HAVING JURISDICTION (AHJ) INSPECTIONS NECESSARY TO OBTAIN THE CERTIFICATE OF OCCUPANCY (CERTIFICATE OF COMPLIANCE). PRIOR TO THE DATE OF THE AGENCY INSPECTION, THE GENERAL CONTRACTOR SHOULD INSPECT THE PROJECT TO INSURE THAT CONSTRUCTION COMPLIES WITH THE AGENCY REQUIREMENTS. SCHEDULING FINAL INSPECTIONS WITH AGENCY REPRESENTATIVES WHEN THE PROJECT IS NOT COMPLETE MUST BE AVOIDED. COPIES OF FINAL INSPECTIONS MUST BE PROVIDED TO OWNER & ARCHITECT AS THEY ARE AVAILABLE. 3. PRIOR TO REQUESTING THE SUBSTANTIAL COMPLETION INSPECTION. IT IS THE CONTRACTOR'S

RESPONSIBILITY TO CONDUCT HIS OWN PRE-SUBSTANTIAL COMPLETION INSPECTION OF THE CONSTRUCTION FOR QUALITY OF CONSTRUCTION AND COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS. 4. THE FOLLOWING PEOPLE SHOULD BE IN ATTENDANCE FOR THE SUBSTANTIAL COMPLETION INSPECTION: A. GENERAL CONTRACTOR B. GENERAL CONTRACTOR SUPERINTENDENT

C. MECHANICAL CONTRACTOR D. ELECTRICAL CONTRACTOR

E. PLUMBING CONTRACTOR F. PAINTING CONTRACTOR

H. FLOORING CONTRACTOR

5. ITEMS TO BE SUBMITTED AS A PREREQUISITE TO THE REQUEST FOR THE CERTIFICATE OF SUBSTANTIAL COMPLETION AND OWNER / ARCHITECT OBSERVATION OF ITEMS TO BE COMPLETED AND CORRECTED. A. GENERAL CONTRACTOR'S PUNCH LISTS B. HVAC TEST AND BALANCE REPORT

C. SPRINKLER SYSTEM ACCEPTANCE INSPECTION REPORT D. COPY OF VIDEO OF COMPLETED SEWER SYSTEM

S. THE REVIEW TEAM SHOULD PROCEED IN AN ORGANIZED MANNER THROUGHOUT THE BUILDING INSPECTING EACH SPACE OR ROOM. THE PUNCH LIST GENERATED BY THE SUBSTANTIAL COMPLETION INSPECTION TOUR IS TO BE PREPARED BY THE CONTRACTOR. ALONG WITH THE PUNCH LIST, THE ARCHITECT SHALL PREPARE THE "CERTIFICATE OF SUBSTANTIAL 7. IMMEDIATELY AFTER RECEIPT OF THE PUNCH LIST. THE GENERAL CONTRACTOR AND SUBCONTRACTORS ARE EXPECTED. TO BEGIN CORRECTION OF THE OUTSTANDING ITEMS. AFTER COMPLETION OF PUNCHLIST, THE CONTRACTOR SHALL NOTIFY OWNER & ARCHITECT IN WRITTING THAT FULL LIST OF ITENMS TO BE COMPLETED AND OR CORRECT IS FINALIZED.

I. THE OWNER REQUIRES THE GENERAL CONTRACTOR AND SUBCONTRACTORS TO MAINTAIN AN ACCURATE, CURRENT SET OF RECORD DOCUMENTS (AS-BUILTS) AS CONSTRUCTION PROGRESSES. ALL PERTINENT INFORMATION RELATING TO THE PROJECT MUST BE TIMELY MAINTAINED ON THE AS-BUILTS. THE AS-BUILTS MUST BE MAINTAINED ON-SITE IN THE GENERAL CONTRACTOR'S OFFICE AND WILL NOT BE USED FOR ANY OTHER PURPOSE. SINCE THE OWNER WILL OWN AND OPERATE THE FACILITY, IT IS IMPERATIVE THAT ALL PARTIES MAINTAIN ACCURATE INFORMATION REGARDING THE ACTUAL CONSTRUCTION OF THE PROJECT.

ALL DEVIATIONS FROM THE CONTRACT SET OF DRAWINGS MUST BE NOTED ON THE AS-BUILTS IN RED WITH CLOUDS FOR CLEAR IDENTIFICATION. THE OWNER WILL REVIEW THE AS-BUILTS FOR ACCURACY AND COMPLETENESS MONTHLY, DURING THE PAYMENT APPLICATION REVIEW PROCESS. FAILURE TO POST CHANGES TO THE PROJECT ON THE AS- BUILTS AS IDENTIFIED DURING THE ON-SITE MONTHLY REVIEW WILL BE CAUSE TO SUSPEND PAYMENT UNTIL RECTIFIED. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO ENFORCE THE TIMELY POSTING OF AS-BUILT CHANGES WITH THE SUBCONTRACTORS.

WITHIN THIRTY (30) CALENDAR DAYS AFTER THE FINAL PROJECT SUBSTANTIAL COMPLETION, THE GENERAL CONTRACTOR SHALL COMPILE ALL CLOSE-OUT DOCUMENTS AND SUBMIT THEM TO THE OWNER FOR REVIEW. IF THE CONTRACTOR FAILS TO COMPLETE ITS REQUIREMENTS WITHIN THIS TIMELINE NOTED ABOVE THE CONTRACTOR MAY BE SUBJECT TO ADDITONAL ADMINISTATION FEES.

1. THE CATEGORIES LISTED BELOW SHOULD BE SUBMITTED AT THE SAME TIME. A. A DISK WITH ALL PHOTOS TAKEN DURING CONSTRUCTION. B. CHANGE ORDERS AND ALL ADDENDA ATTACHED AND POSTED TO THE AS-BUILT DRAWINGS. C. AS-BUILT DRAWINGS: ONE HARD COPY TO REMAIN ON SITE AND IN PLAN TUBE; ONE ELECTRONIC COPY TO BE SENT WITH CLOSE-OUT PAPERWORK.

D. MATERIALS SELECTION DATA - PROVIDE ALL APPROVED SUBMITTALS. E. OPERATION AND MAINTENANCE MANUALS (O&M) - PROVIDE O&M MANUALS BOXED AND BOUND. THIS ITEM IS OF SIGNIFICANT IMPORTANCE TO MSI FUTURE MAINTENANCE ACTIVITIES.

F. ALL HVAC TEST AND BALANCE REPORTS. H. RELEASE OF LIEN (AIA FORM 706A), PAYMENT OF DEBT (AIA FORM 706),

I. WARRANTIES, CERTIFICATES, AFFIDAVITS: 2. ALL INFORMATION INCLUDED IN THIS CATEGORY WILL BE FURNISHED IN ONE (1) COPY AND BOUND IN A STURDY THREE-RING BINDER WITH A LABEL ON THE OUTSIDE READING "GENERAL CLOSE-OUT DOCUMENTS" TO INCLUDE AN INDEX OF THE CONTENTS. ALL AIA DOCUMENTS WILL BE ORIGINAL (WITH RED LETTERING ON THE BOTTOM OF THE FORM) AND NOTARIZED. IF THE ELECTRONIC VERSION IS USED A COPY WITH ORIGINAL SIGNATURES WILL BE SUBMITTED. THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR WILL HAVE SEPARATE TABS IDENTIFYING EACH BY NAME. THE GENERAL CONTRACTOR WILL LIST EACH SUBCONTRACTOR ALPHABETICALLY AND WILL CHECK TO INSURE THAT A "RELEASE OF LIEN" - AIA FORM G706A AND A "PAYMENT OF DEBT-AIA FORM G706 IS INCLUDED FOR HIMSELF AND EACH SUBCONTRACTOR. THE GENERAL CONTRACTOR WILL INCLUDE A "CONSENT OF SURETY" - AIA FORM G707. IN ADDITION, THE GENERAL CONTRACTOR WILL INCLUDE BEHIND HIS TAB THE FOLLOWING INFORMATION:

A. A LIST OF NAMES, BUISNESS ADDRESSES, PHONE NUMBERS AND EMAIL ADRESSES FOR THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR. B. AN ANNOTATED COPY OF THE SUBSTANTIAL COMPLETION PUNCH LIST INDICATING ACTION TAKEN ON EACH ITEM. C. WARRANTIES, CERTIFICATES AND AFFIDAVITS SHALL BE INCLUDED FOR ANY EQUIPMENT, MATERIALS OR SYSTEMS, **DIVISION 4 - MASONRY** 

04 7000 MASONRY VENEERS & SIMULATED STONES A. SUBMITTALS: SHOP DRAWINGS AND CALCULATIONS INDICATING PRODUCTS TYPES AND LAYOUT. VERTICAL AND HORIZONTAL DIMENSIONS, EDGE CONDITIONS, AND CONNECTION DETAILS TO SUBSTRATES. PROVIDE GROUT TYPES

B. BASIS OF DESIGN: ELDORADO STONE, TYPES AS IN THE CONSTRUCTION DOCUMENTS.

C. <u>MATERIALS</u>

1. MORTAR: TYPE "N" TINTED TO A COLOR SELECTED BY THE ARCHITECT. 2. METAL LATH SHALL BE MINIMUM 2.5 LB. PAPER BACKED GALVANIZED METAL LATH (DIAMOND MESH) ATTACHED WITH 1-1/4" TYPE S-12 GALVANIZED NAILS. GALVANIZED FLASHING MAY ALSO BE USED.

C. <u>FABRICATIONS</u>: FABRICATE ITEMS IN LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.

1. FOLLOW MANUFACTURER RECOMMENDED INSTALLATION INSTRUCTIONS TO MAINTAIN WARRANTY 2. APPLY MORTAR 1/2" TO 3/4" THICK TO PREPARED SURFACE AREA USING A PLASTERER'S OR MASON'S TROWEL AND LAY SIMULATED STONE UNITS LEVEL AND TRUE TO LINE IN FULL BEDS OF MORTAR. ALL JOINTS MUST BE COMPLETELY FILLED. APPLY ONLY ENOUGH MORTAR TO ALLOW STONES TO BE SET BEFORE MORTAR BEGINS TO 3. ALL JOINTS IN SIMULATED STONE WORK SHALL NOT EXCEED AN AVERAGE OF 1/2" IN WIDTH.

TO APPLICATION OF THE MORTAR BASE. MORTAR BASE MAY BE APPLIED DIRECTLY TO MASONRY BACK-UP.

4. RETAIN 1/2" DEEP X 1/4" WIDE SEALANT JOINTS AT PERIMETER OF ADJACENT CONSTRUCTION. 5. DO NOT ALLOW MORTAR DROPPINGS TO HARDEN ON EXPOSED SURFACES. 6. WALLS SHALL BE COVERED WITH 15 LB. BUILDING FELT AND GALVANIZED METAL LATH SHALL BE INSTALLED PRIOR

DIVISION 6 - WOOD AND PLASTICS

06 1000 ROUGH CARPENTRY

1. PROVIDE SUFFICIENT FIRE RETARDANT TREATED WOOD BLOCKING AT ALL STUDS FOR SECURING OF WALL & CEILING ITEMS, WHETHER FURNISHED BY OWNER OR CONTRACTOR. 2. CONCEALED WOOD IS TO BE FIRE RETARDANT TREATED UNLESS NOTED OTHERWISE. 3. PRESERVATIVE TREATED LUMBER IS REQUIRED FOR ALL ITEMS TO REMAIN IN CONTACT WITH CONCRETE OR MASONRY TO CONFORM TO AWPA STANDARD 5. 4. PLYWOOD SHALL BE CD GRADE APA FIR OR YELLOW PINE. ALL PLY-WOOD TO BE FIRE RATED WHERE WALLS ARE INDICATED AS RATED CONSTRUCTION. 5. BLOCKING SHALL BE CLOSELY FITTED, ACCURATELY SET TO REQUIRED LINES & LEVELS, SECURELY CONNECTED & RIGIDLY FIXED IN PLACE, USING NAILS, SCREWS, &/OR BOLTS AS INDICATED OR REQUIRED BY GOOD PRACTICE AND MANUFACTURER'S RECOMMENDATIONS.

6 4023 INTERIOR ARCHITECTURAL WOODWORK A. SUBMITTALS: SAMPLES OF FINISH MATERIALS, CATALOG CUTS OF HARDWARE, AND SHOP DRAWINGS INCLUDING

MENSIONED PLANS, ELEVATIONS, AND SECTIONS. B. QUALITY STANDARD: ARCHITECTURAL WOODWORK INSTITUTE'S "ARCHITECTURAL WOODWORK QUALITY

2. MEDIUM DENSITY FIBERBOARD: 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. 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 CHROME BHMA 626 OR 652 OR SATIN STAINLESS STEEL: BHMA 630.

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.

I. 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 8 TOLERANCE OF 1 "/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 4. INSTALL TRIM WITH MINIMUM NUMBER OF JOINTS POSSIBLE USING FULL-LENGTH PIECES TO GREATEST EXTENT POSSIBLE. STAGGER JOINTS IN ADJACENT AND RELATED MEMBERS.

06 4023 INTERIOR ARCHITECTURAL WOODWORK A. SUBMITTALS: SAMPLES OF FINISH MATERIALS, CATALOG CUTS OF HARDWARE, AND SHOP DRAWINGS INCLUDING IMENSIONED PLANS, ELEVATIONS, AND SECTIONS.

B. QUALITY STANDARD: ARCHITECTURAL WOODWORK INSTITUTE'S "ARCHITECTURAL WOODWORK QUALITY

. CLUBHOUSE MILLWORK FLAT TRIM SHALL BE AS INDICATED OF PAINT GRADE POPLAR OR PAINT GRADE

1. INSTALL NO INTERIOR FINISH CARPENTRY OR MILLWORK UNTIL SPACES ARE ENCLOSED, DRY, AND CAPABLE OF BEING HEATED. MAINTAIN TEMPERATURE BETWEEN 55 F. AND 75 F. FOR 72 HOURS BEFORE BEGINNING INSTALLATION AND FOR DURATION OF PROJECT 2. LUMBER FOR TRANSPARENT FINISH (STAINED OR CLEAR): USE PIECES MADE OF SOLID LUMBER

3. LUMBER FOR PAINTED FINISH: AT CONTRACTOR'S OPTION, USE PIECES WHICH ARE EITHER GLUED-UP OR MADE OF SOLID LUMBER STOCK. 4. DISCARD UNITS OF MATERIAL WHICH ARE UNSOUND, WARPED, BOWED, TWISTED, IMPROPERLY TREATED, NOT ADEQUATELY SEASONED OR TOO SMALL TO FABRICATE WORK WITH MINIMUM OF JOINTS OR OPTIMUM JOINTING ARRANGEMENTS, OR WHICH ARE DEFECTIVELY MANUFACTURED WITH RESPECT TO SURFACES, SIZES OR PATTERNS. 5. INSTALL THE WORK PLUMB, LEVEL, TRUE AND STRAIGHT WITH NO DISTORTIONS. SHIM AS REQUIRED USING CONCEALED SHIMS. 6. SCRIBE AND CUT WORK TO FIT ADJOINING WORK, AND REFINISH CUT SURFACES OR REPAIR DAMAGED FINISH AT CUTS. 7. FINISH WORK SHALL BE SMOOTH, FREE FROM ABRASION, TOOL MARKS, RAISED GRAIN MARKINGS, OR

## DIVISION 7 - THERMAL AND MOISTURE PROTECTION

SIMILAR DEFECTS ON EXPOSED SURFACES.

07 2100 BUILDING INSULATION A. <u>SUBMITTALS</u>: PRODUCT DATA FOR EACH TYPE OF INSULATION SPECIFIED.

1. FLAME SPREAD INDEX: 25 OR LESS

2. SMOKE DEVELOPED INDEX: 50 OR LESS IN EXPOSED AREAS AND PLENUMS; 450 OR LESS WHERE CONCEALED.

. MINERAL FIBER OR GLASS FIBER BLANKET INSULATION: TYPE I, UNFACED WHERE SPECIFIED WITH SEPARATE VAPOR BARRIER.FIBERS MANUFACTURED FROM GLASS, SLAG WOOL, OR ROCK WOOL. SEE DRAWINGS FOR SPECIFIC TYPES.

I. VAPOR RETARDER: 6 MIL POLYETHYLENE AT CONCEALED AREAS (FLAME SPREAD/SMOKE DEVELOPED: 25/450), FOIL/SCRIM AT PLENUMS AND EXPOSED AREAS (FLAME SPREAD/SMOKE DEVELOPED: 25/50)

1. ALL BATT INSULATION SHALL BE THE PRODUCT OF OWENS/CORNING FIBERGLAS OR EQUAL. 2. BATT INSULATION IN ALL 2X4 OR 2X6 EXTERIOR WALLS SHALL BE 3-1/2" THICK, R-15 IN 2X4 CONSTRUCTION OR 5-1/2" THICK R-19. KRAFT FACED FIBERGLASS BATTS AS REQUIRED TO FILL THE STUD SPACE. 3. BATT OR BLOWN-IN INSULATION IN ALL CEILINGS ADJACENT TO ATTIC SPACES SHALL BE THICKNESS REQUIRED. TO ACHIEVE MINIMUM R-49 RATING. PROVIDE A VAPOR RETARDER HAVING A TRANSMISSION RATE NOT EXCEEDING 1 PERM IN ACCORDANCE WITH ASTM E 96 INSTALLED ON THE WARM SIDE OF THE ATTIC

I. 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. 2. EXTEND VAPOR RETARDER TO EXTREMITIES OF AREAS TO BE PROTECTED FROM VAPOR TRANSMISSION. SECURE IN PLACE WITH ADHESIVES OR OTHER ANCHORAGE AS RECOMMENDED BY MANUFACTURER. LOCATE SEAMS AT FRAMING MEMBERS, OVERLAP AND SEAL WITH SUITABLE TAPE (DUCT TAPE IS NOT SUITABLE). 3. SOUND CONTROL BATT INSULATION IN BOTH WALLS OF PARTITIONS SEPARATING APARTMENT UNITS AS WELL AS CORRIDOR AND STAIRWAY WALLS, ALL UNIT CEILINGS WITH UNITS ABOVE AND ALL WALLS AND CEILINGS

INDICATED TO RECEIVE ACOUSTICAL BATT INSULATION SHALL BE QUITZONE FIBERGLASS ACOUSTIC BATTS.

**DIVISION 7 - THERMAL AND MOISTURE PROT**ECTION - CONT

07 4646 ENGINEERED SIDING & ACCESSORIES A. <u>SUBMITTALS</u>: PRODUCT DATA: INDICATE PANEL PROFILES, SIZES, FASTENING METHODS, SURFACE TEXTURE. AND

A. 4 X 6 INCH PANEL SAMPLES. B. 3 INCH LONG TRIM SAMPLES

HARDIE OR APPROVED EQUAL.

1. SINGLE SOURCE RESPONSIBILITY: PANELS, METAL TRIM, AND FASTENERS FURNISHED BY SINGLE MANUFACTURER. 2. MOCK-UP WALL: PROVIDE A MOCK-UP WALL AS EVALUATION TOOL FOR PRODUCT AND INSTALLATION

WORKMANSHIP. MAY BE PART OF PERMANENT INSTALLATION IF APPROVED. A. SIZE: MINIMUM 4 X 8 FEET B. SHOW: MOISTURE BARRIER, FURRING, PANELS, TRIM, FLASHINGS, AND JOINT SEALERS, INCLUDE ONE HORIZONTAL FLASHING AND ONE INTERNAL AND ONE EXTERNAL CORNER.

C. <u>BASIS OF DESIGN</u>:
1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS PROVIDE FIBER-CEMENT VERTICAL PANEL SYSTEM BY JAMES

2.HORIZONTAL SIDING-: WOODTONE - RUSTIC SERIES 3. MEET ASTM C1186, GRADE A, TYPE II. 4. COMBUSTIBILITY: NONCOMBUSTIBLE, TESTED TO ASTM E136.

5. FINISH: FACTORY PRIME PAINTED, FOR FIELD-APPLIED PAINT FINISH.

1. MATERIAL: EXTRUDED ALUMINUM, ASTM B221, 6063-T5 ALLOY AND TEMPER, CLEAR ANODIZED FINISH. 2. SHAPES AS REQUIRED: A. VERTICAL TRIM.

C. HORIZONTAL TRIM. D. HORIZONTAL EDGE TRIM E. OUTSIDE CORNER TRIM.

B. VERTICAL F-TRIM.

F. DRAINAGE FLASHING TRIM. 3. FASTENERS: STAINLESS STEEL, TORX PAN HEAD TYPE AS RECOMMENDED BY PANEL MANUFACTURER, OF EQUAL OR GREATER HOLDING POWER THAN REQUIRED BY MANUFACTURER'S CODE COMPLIANCE REPORTS. 4. EDGE SEALER: TYPE RECOMMENDED BY PANEL MANUFACTURER. 5. FILLER: PC-WOODY BY PROTECTIVE COATING CO. (WWW.PCEPOXY.COM)

1. GENERAL: INSTALL PRODUCTS IN ACCORDANCE WITH THE LATEST INSTALLATION GUIDELINES OF THE MANUFACTURER AND ALL APPLICABLE BUILDING CODES AND OTHER LAWS, RULES, REGULATIONS AND ORDINANCES. REVIEW ALL MANUFACTURER INSTALLATION, MAINTENANCE INSTRUCTIONS, AND OTHER APPLICABLE DOCUMENTS BEFORE INSTALLATION.

07 7200 ROOFING MATERIALS & ACCESSORIES

METAL ROOFING MATERIALS & ACCESSORIES A. SUBMITTALS: PRODUCT DATA, AND SAMPLES OF EACH PRODUCT AND COLOR OPTIONS.

B. <u>WARRANTY:</u> SPECIAL WARRANTY: MANUFACTURER'S STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR OR REPLACE COMPONENTS OF METAL PANEL SYSTEMS THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD. 1. WARRANTY PERIOD: TWO YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

SPECIAL WARRANTY ON PANEL FINISHES: MANUFACTURER'S STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR FINISH OR REPLACE METAL PANELS THAT SHOW EVIDENCE OF DETERIORATION OF FACTORY-APPLIED FINISHES WITHIN SPECIFIED WARRANTY PERIOD. 1. FINISH WARRANTY PERIOD: 20 YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

SPECIAL WEATHERTIGHTNESS WARRANTY: MANUFACTURER'S STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR OR REPLACE STANDING-SEAM METAL ROOF PANEL ASSEMBLIES THAT FAIL TO REMAIN WEATHERTIGHT, INCLUDING LEAKS, WITHIN SPECIFIED WARRANTY PERIOD. 1. WARRANTY PERIOD: 20 YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

C. <u>BASIS OF DESIGN:</u> VERTICAL-RIB, SNAP-JOINT, STANDING-SEAM METAL ROOF PANELS:SUBJECT TO COMPLIANCE WITH REQUIREMENTS PROVIDE HIGH SEAM TEE-PANEL ROOFING, WITH 18-1/4 INCH COVERAGE AND 1" HIGH RIBS AS MANUFACTURED BY BERRIDGE MANUFACTURING COMPANY OR APPROVED EQUAL. 1. METALLIC-COATED STEEL SHEET: ZINC-COATED (GALVANIZED) STEEL SHEET COMPLYING WITH ASTM A 653/A 653M, G90 (Z275) COATING DESIGNATION, OR ALUMINUM-ZINC ALLOY-COATED STEEL SHEET COMPLYING WITH ASTM A 792/A 792M, CLASS AZ50 (CLASS AZM150) COATING DESIGNATION STRUCTURAL QUALITY. PREPAINTED BY THE COIL-COATING PROCESS TO COMPLY WITH ASTM A 755/A 755M. A. NOMINAL THICKNESS: 0.034 INCH, 22 GA. B. EXTERIOR FINISH: TWO-COAT FLUOROPOLYMER.

C. COLOR: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE. D. PANEL COVERAGE: NOMINAL 18 INCHES. E. PANEL HEIGHT: 1.0 INCH.

1. SELF-ADHERING, HIGH-TEMPERATURE UNDERLAYMENT: PROVIDE SELF-ADHERING, COLD-APPLIED, SHEET UNDERLAYMENT, A MINIMUM OF 30 MILS THICK, CONSISTING OF SLIP-RESISTANT, POLYETHYLENE-FILM TOP SURFACE LAMINATED TO A LAYER OF BUTYL OR SBS-MODIFIED ASPHALT ADHESIVE, WITH RELEASE-PAPER BACKING. PROVIDE PRIMER WHEN RECOMMENDED BY UNDERLAYMENT MANUFACTURER. 2. FELT UNDERLAYMENT: ASTM D 226/D 22M. TYPE II (NO. 30). ASPHALT-SATURATED ORGANIC FELTS. 3. SLIP SHEET: MANUFACTURER'S RECOMMENDED SLIP SHEET. OF TYPE REQUIRED FOR APPLICATION. 4. MISCELLANEOUS METAL SUBFRAMING AND FURRING: ASTM C 645; COLD-FORMED, METALLIC-COATED STEEL SHEET, ASTM A 653/A 653M, G90 (Z275 HOT-DIP GALVANIZED) COATING DESIGNATION OR ASTM A 792/A 792M, CLASS AZ50 (CLASS AZM150) COATING DESIGNATION UNLESS OTHERWISE INDICATED. PROVIDE MANUFACTURER'S STANDARD SECTIONS AS REQUIRED FOR SUPPORT AND ALIGNMENT OF METAL PANEL SYSTEM.

 PANEL ACCESSORIES: PROVIDE COMPONENTS REQUIRED FOR A COMPLETE, WEATHERTIGHT PANEL SYSTEM INCLUDING TRIM, COPINGS, FASCIAE, MULLIONS, SILLS, CORNER UNITS, CLIPS, FLASHINGS, SEALANTS, GASKETS, FILLERS, CLOSURE STRIPS, AND SIMILAR ITEMS. MATCH MATERIAL AND FINISH OF METAL PANELS

UNLESS OTHERWISE INDICATED. A. CLOSURES: PROVIDE CLOSURES AT EAVES AND RIDGES, FABRICATED OF SAME METAL AS METAL PANELS. B. BACKING PLATES: PROVIDE METAL BACKING PLATES AT PANEL END SPLICES, FABRICATED FROM MATERIAL RECOMMENDED BY MANUFACTURER. C. FLASHING AND TRIM: PROVIDE FLASHING AND TRIM FORMED FROM SAME MATERIAL AS METAL PANELS AS REQUIRED TO SEAL AGAINST WEATHER AND TO PROVIDE FINISHED APPEARANCE. LOCATIONS INCLUDE, BUT ARE NOT LIMITED TO, EAVES, RAKES, CORNERS, BASES, FRAMED OPENINGS, RIDGES, FASCIAE, AND FILLERS. FINISH FLASHING AND TRIM WITH SAME FINISH SYSTEM AS ADJACENT METAL PANELS. D. PANEL FASTENERS: SELF-TAPPING SCREWS DESIGNED TO WITHSTAND DESIGN LOADS. E. PANEL SEALANTS: PROVIDE SEALANT TYPE RECOMMENDED BY MANUFACTURER THAT ARE COMPATIBLE WITH PANEL MATERIALS, ARE NONSTAINING, AND DO NOT DAMAGE PANEL FINISH. 1. SEALANT TAPE: PRESSURE-SENSITIVE, 100 PERCENT SOLIDS, GRAY POLYISOBUTYLENE COMPOUND SEALANT TAPE WITH RELEASE-PAPER BACKING; 1/2 INCH WIDE AND 1/8 INCH THICK.

2. JOINT SEALANT: ASTM C 920; AS RECOMMENDED IN WRITING BY METAL PANEL MANUFACTURER.

3. BUTYL-RUBBER-BASED, SOLVENT-RELEASE SEALANT: ASTM C 1311. 1. INSTALL ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.

A. <u>SUBMITTALS</u>: PRODUCT DATA, AND SCHEDULE OF LOCATIONS FOR EACH TYPE OF SEALANT SUBMITTED. B. <u>ENVIRONMENTAL LIMITATIONS</u>: DO NOT PROCEED WITH INSTALLATION OF JOINT SEALANTS WHEN AMBIENT AND SUBSTRATE TEMPERATURE CONDITIONS ARE OUTSIDE LIMITS PERMITTED BY JOINT SEALANT MANUFACTURER OR

C. <u>COMPATIBILITY</u>: PROVIDE JOINT SEALANTS, JOINT FILLERS, AND OTHER RELATED MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND WITH JOINT SUBSTRATES UNDER SERVICE AND APPLICATION CONDITIONS.

1. 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.

2. INTERIOR JOINTS AROUND PERIMETERS OF DOORS AND FRAMES; LATEX SEALANT, SINGLE COMPONENT, NONSAG, MILDEW-RESISTANT, PAINTABLE, ACRYLIC EMULSION SEALANT COMPLYING WITH ASTM C 834. 3. ACOUSTICAL SEALANT FOR EXPOSED INTERIOR JOINTS: NONSAG, PAINTABLE, NONSTAINING, LATEX SEALANT COMPLYING WITH ASTM C 834. 4. ACOUSTICAL SEALANT FOR CONCEALED JOINTS: NONDRYING. NONHARDENING. NONSKINNING. NONSTAINING. GUNNABLE, SYNTHETIC-RUBBER SEALANT RECOMMENDED FOR SEALING INTERIOR CONCEALED JOINTS TO REDUCE TRANSMISSION OF AIRBORNE SOUND.

E. <u>JOINT SEALANT BACKING</u>: CYLINDRICAL CLOSED CELL PVC ROD COMPLYING WITH ASTM C330; SIZE 30% TO 50%

F. <u>BOND-BREAKER TAPE</u>: 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.

G. 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.

A. SUBMITTALS: PRODUCT DATA: PROVIDE DATA ON MATERIAL CHARACTERISTICS. SHOP DRAWINGS: PROVIDE DRAWINGS OF SPECIAL JOINT CONDITIONS.

B. MOCK-UP: INSTALL AIR BARRIER, VAPOR RETARDER, AND WATER-RESISTIVE BARRIER MATERIALS IN MOCK-UP. C. PRODUCTS: AIR BARRIER. FLUID APPLIED: VAPOR PERMEABLE. ELASTOMERIC WATERPROOFING.

D. BASIS OF DESIGN: BASF CORPORATION; MASTERSEAL AWB 665:

1. SEALANTS, TAPES, AND ACCESSORIES FOR SEALING WEATHER BARRIER AND SEALING WEATHER BARRIER TO ADJACENT SUBSTRATES: AS SPECIFIED OR AS RECOMMENDED BY WEATHER BARRIER MANUFACTURER. 2. FLEXIBLE FLASHING: SHEATHING FABRIC SATURATED WITH AIR BARRIER COATING AND COMPLYING WITH THE APPLICABLE REQUIREMENTS OF ICC-ES AC148. 3. LIQUID FLASHING: ONE PART, FAST CURING, NON-SAG, ELASTOMERIC, GUN GRADE, TROWELABLE LIQUID FLASHING.

1. VERIFY THAT SURFACES AND CONDITIONS ARE READY TO ACCEPT THE WORK OF THIS SECTION. 2. REMOVE PROJECTIONS, PROTRUDING FASTENERS, AND LOOSE OR FOREIGN MATTER THAT MIGHT INTERFERE 3. CLEAN AND PRIME SUBSTRATE SURFACES TO RECEIVE ADHESIVES IN ACCORDANCE WITH MANUFACTURER'S

.5 WEATHER BARRIERS - CONT.

1. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. 2. AIR BARRIERS: INSTALL CONTINUOUS AIR TIGHT BARRIER OVER SURFACES INDICATED, WITH SEALED SEAMS AND

WITH SEALED JOINTS TO ADJACENT SURFACES. 3. PREPARE SUBSTRATE IN MANNER RECOMMENDED BY COATING MANUFACTURER; TREAT JOINTS IN SUBSTRATE AND BETWEEN DISSIMILAR MATERIALS AS RECOMMENDED BY MANUFACTURER. 4. MASTIC COATING: INSTALL BY TROWEL OR ROLLER TO MINIMUM THICKNESS OF 1/4 INCH; USE SHEET SEAL TO JOIN TO ADJACENT CONSTRUCTION, SEAL AIR TIGHT WITH SEALANT

5. USE FLASHING TO SEAL TO ADJACENT CONSTRUCTION AND TO BRIDGE JOINTS. 6. INSTALL FLASHING OVER SILLS, COVERING ENTIRE SILL FRAME MEMBER, EXTENDING AT LEAST 5 INCHES ONTO WEATHER BARRIER AND AT LEAST 6 INCHES UP JAMBS: MECHANICALLY FASTEN STRETCHED EDGES. 7. AT OPENINGS TO BE FILLED WITH FRAMES HAVING NAILING FLANGES, SEAL HEAD AND JAMB FLANGES USING A CONTINUOUS BEAD OF SEALANT COMPRESSED BY FLANGE AND COVER FLANGES WITH SEALING TAPE AT LEAST 4 INCHES WIDE; DO NOT SEAL SILL FLANGE. 8. AT OPENINGS TO BE FILLED WITH NON-FLANGED FRAMES. SEAL WEATHER BARRIER TO EACH SIDE OF OPENING FRAMING. USING FLASHING AT LEAST 9 INCHES WIDE. COVERING ENTIRE DEPTH OF FRAMING. 9. AT HEAD OF OPENINGS, INSTALL FLASHING UNDER WEATHER BARRIER EXTENDING AT LEAST 2 INCHES BEYOND FACE OF JAMBS; SEAL WEATHER BARRIER TO FLASHING. 10. AT INTERIOR FACE OF OPENINGS, SEAL GAP BETWEEN WINDOW/DOOR FRAME AND ROUGH FRAMING, USING

DIVISION 8 - DOOR AND WINDOWS

JOINT SEALANT OVER BACKER ROD.

A. <u>SUBMITTALS</u>: PRODUCT DATA AND DOOR SCHEDULE INDICATING DOOR AND FRAME SIZES. TYPES. ELEVATIONS. DETAILS, WITH DOOR AND HARDWARE NUMBERING CORRESPONDING TO THOSE USED IN CONSTRUCTION

08 1400 INTERIOR FLUSH WOOD DOORS A. <u>SUBMITTALS</u>: PRODUCT DATA, PREFINISHED DOOR SKIN SAMPLES, AND DOOR SCHEDULE INDICATING DOOR AND FRAME SIZES. TYPES, ELEVATIONS, DETAILS, AND HARDWARE WITH DOOR AND HARDWARE NUMBERING CORRESPONDING TO THOSE USED IN CONSTRUCTION DOCUMENTS.

1.MARSHFIELD, 1-3/4" THICK FLUSH SOLID CORE WOOD DOORS OR APPROVED EQUAL MADE OF PAINT GRADE POPLAR. DOORS SHALL BE INSTALLED IN HOLLOW METAL FRAMES. 2. DOORS SHALL BE OF SIZES INDICATED ON THE DRAWINGS. DOOR UNITS SHALL BE 1-3/4" SOLID CORE DOORS OR APPROVED EQUAL SET IN TWO PIECE W.P. SPLIT JAMB FRAMES WITH 1X4 WOOD

CASING. DOORS SHALL BE MACHINED FOR HARDWARE SPECIFIED IN DIVISION 08, SECTION "DOOR HARDWARE" C. DOORS: 1-3/4" THICK PREHING. SIZES, SPECIES, AND DESIGNS AS INDICATED COMPLYING WITH WDMA I.S.1-A 1. GRADE: PREMIUM

1. FACTORY FIT DOORS TO SUIT FRAME OPENINGS TO COMPLY WITH REFERENCED STANDARD. COMPLY WITH NFPA 80 FOR FIRE-RESISTANCE RATED DOORS. 2. FACTORY MACHINE DOORS FOR HARDWARE THAT IS NOT SURFACE APPLIED. 3. CUT AND TRIM OPENINGS TO COMPLY WITH REFERENCED STANDARDS.

E. <u>INSTALLATION</u>:
1. COMPLY WITH WDMA'S "HOW TO STORE, HANDLE, FINISH, INSTALL, AND MAINTAIN WOOD DOORS" ALIGNED AND FITTED IN FRAMES WITH UNIFORM CLEARANCES. 08 4113 EXTERIOR STOREFRONT & DOORS

A. <u>SUBMITTALS</u>: PRODUCT DATA, PREFINISHED DOOR SKIN SAMPLES, AND DOOR SCHEDULE INDICATING DOOR AND FRAME SIZES. TYPES, ELEVATIONS, DETAILS. AND HARDWARE WITH DOOR AND HARDWARE NUMBERING CORRESPONDING TO THOSE USED IN CONSTRUCTION DOCUMENTS.

STOREFRONT: BASIS OF DESIGN: MANKO 2450CG FRAMING MEMBERS SHALL BE 2" X 41/2" TO RECEIVE 1" INSULATING DOORS: BASIS OF DESIGN: 2450FS SERIES THERMALLY BROKEN FRONT SET FLUSH GLAZED STOREFRONT FRAMING

AS MANUFACTURED BY MANKO OR APPROVED EQUAL. FRAMING MEMBERS SHALL BE 2" X 41/2" TO RECEIVE 1"

EXTERIOR BI-FOLD DOORS: WESTERN WINDOW SYSTEMS. SERIES 9500: BI FOLD DOOR - ( THERMAL BREAK ) - HEAVY DUTY HEAD LOAD HARDWARE, EQUAL LEG BLOCK FRAME - ( 3L3R ) - FOLD IN , W/ FLUSH THRESHOLD SILL.

08 3113 ACCESS DOORS AND FRAMES FOR WALLS A. SUBMITTALS: PRODUCT DATA & SHOP DRAWINGS.

1. FIRE RATED ACCESS DOORS AND FRAMES: WHERE REQUIRED UNITS SHALL COMPLY WITH NFPA 80 TESTED ACCORDING TO THE FOLLOWING TEST METHOD: A. NFPA 252 OR UL 10B FOR FIRE RATED ACCESS DOOR ASSEMBLIES INSTALLED VERTICALLY.

B. NFPA 288 FOR FIRE · RATED ACCESS DOOR ASSEMBLIES INSTALLED HORIZONTALLY. 2. ATTIC ACCESS DOORS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE BABCOCK DAVIS MODEL BITM, OR APPROVED EQUAL, 22 BY 30 INCH, PRIME COATED STEEL CEILING MOUNTED ACCESS DOOR WITH CONCEALED FASTENERS.

3. ACCESS DOORS THROUGH ATTIC DRAFTSTOPS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS. PROVIDE BABCOCK DAVIS BDTK SERIES, OR APPROVED EQUAL, 22 BY 30 INCH, SELF. CLOSING, SELF. LATCHING, PRIME COATED FLUSH STEEL ACCESS DOORS WITH FLUSH CONTINUOUS PIANO HINGE AND KNURLED KNOW. KEY OPERATED LATCH BOLT.

08 5313 EXTERIOR WINDOWS

A. SUBMITTALS: THE CONTRACTOR SHALL PREPARE, AND SUBMIT TO THE ARCHITECT FOR APPROVAL, COMPLETE SHOP DRAWINGS FOR ALL WORK INCLUDED IN THIS SECTION, AND SHALL NOT PROCEED WITH FABRICATION AND DELIVERY PRIOR TO RECEIVING SUCH APPROVAL.

B. <u>BASIS OF DESIGN</u>: VINYL CASEMENT WINDOWS- BASIS OF DESIGN: MGM INDUSTRIES. ALL WINDOWS SHALL BE GLAZED WITH 270 #2-DS-ARG ARGON ENHANCED INSULATED GLASS WITH A MAXIMUM SHGC OF 0.30. . <u>INSTALLATION:</u> ALL WINDOWS SHALL BE SET TRUE, PLUMB, LEVEL AND IN STRICT ACCORDANCE WITH THE

08 7100 DOOR HARDWARE

PART 1 - GENERAL

MANUFACTURER'S DIRECTIONS.

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following: Swinging doors.

Sliding doors. . Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

Mechanical door hardware. Electromechanical door hardware. 3. Cylinders specified for doors in other sections.

Related Sections:

. Division 08 Section "Hollow Metal Doors and Frames" Division 08 Section "Flush Wood Doors".

3. Division 08 Section "Aluminum-Framed Entrances and Storefronts". D. Codes and References: Comply with the version year adopted by the Authority Having

ANSI A117.1 - Accessible and Usable Buildings and Facilities.

ICC/IBC - International Building Code.

NFPA 70 - National Electrical Code.

NFPA 80 - Fire Doors and Windows. NFPA 101 - Life Safety Code. NFPA 105 - Installation of Smoke Door Assemblies.

7. State Building Codes, Local Amendments.

Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

ANSI/BHMA Certified Product Standards - A156 Series.

UL10C - Positive Pressure Fire Tests of Door Assemblies. ANSI/UL 294 - Access Control System Units. UL 305 - Panic Hardware.

5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and

final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware. 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing,

fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the

2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating

complete designations of every item required for each door or opening. Organize door

hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals

that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission. 3. Content: Include the following information:

Format for the Hardware Schedule.

a. Type, style, function, size, label, hand, and finish of each door hardware item.

b. Manufacturer of each item. c. Fastenings and other pertinent information. d. Location of door hardware set, cross-referenced to Drawings, both on floor plans

and in door and frame schedule. e. Explanation of abbreviations, symbols, and codes contained in schedule.

Door and frame sizes and materials. Warranty information for each product.

Mounting locations for door hardware.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the b. Complete (risers, point-to-point) access control system block wiring diagrams.

c. Wiring instructions for each electronic component scheduled herein. 2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

Operating and Maintenance Manuals: Provide manufacturers operating and maintenance

manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 OUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD). Installer Qualifications: A minimum 3 years documented experience installing both standard

Project and whose work has resulted in construction with a record of successful in-service D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during

and electrified door hardware similar in material, design, and extent to that indicated for this

the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keving. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted. 2. Provide electromechanical door hardware from the same manufacturer as mechanical

F. Each unit to bear third party permanent label indicating compliance with the referenced testing G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section

Project Meetings." Keying conference to incorporate the following criteria into the final keying

Function of building, purpose of each area and degree of security required.

Plans for existing and future key system expansion. Requirements for key control storage and software. Installation of permanent keys, cylinder cores and software.

Address and requirements for delivery of keys.

door hardware, unless otherwise indicated.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.

1. Prior to installation of door hardware, conduct a project specific training meeting to

Inspect and discuss electrical roughing-in, power supply connections, and other

preparatory work performed by other trades. Review sequence of operation narratives for each unique access controlled opening. 4. Review and finalize construction schedule and verify availability of materials. 5. Review the required inspecting, testing, commissioning, and demonstration procedures

At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved

1.5 DELIVERY, STORAGE AND HANDLING A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or

accessories at Project site without prior authorization. B. Tag each item or package separately with identification related to the final Door Hardware

Schedule, and include basic installation instructions with each item or package.

and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software

1.6 COORDINATION

Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring,

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced

signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties

components of standard and electrified door hardware that fails in materials or workmanship

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace

within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

made by Contractor under requirements of the Contract Documents.

Structural failures including excessive deflection, cracking, or breakage. Faulty operation of the hardware. Deterioration of metals, metal finishes, and other materials beyond normal weathering. 4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of

Substantial Completion.

PART 2 - PRODUCTS 2.1 SCHEDULED DOOR HARDWARE

> General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

1. Named Manufacturer's Products: Product designation and manufacturer are listed for

each door hardware type required for the purpose of establishing requirements.

C. Please note that ASSA ABLOY is transitioning the Yale Commercial brand to ASSA ABLOY ACCENTRA. This affects only the brand name; the products and product numbers will remain unchanged. The brand transition is expected to be complete in or about May of 2024, and products shipping after that time will be branded ASSA ABLOY ACCENTRA.

D. Substitutions: Requests for substitution and product approval for inclusive mechanical and

electromechanical door hardware in compliance with the specifications must be submitted in

Manufacturers' names are abbreviated in the Door Hardware Schedule.

writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 BUTT HINGES A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as

specified in the Door Hardware Sets.

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1. Quantity: Provide the following hinge quantity:

Two Hinges: For doors with heights up to 60 inches. Three Hinges: For doors with heights 61 to 90 inches.

Four Hinges: For doors with heights 91 to 120 inches. d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

Widths up to 3'0": 4-1/2" standard or heavy weight as specified. b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight. b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing

hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

5. Manufacturers:

a. McKinney (MK) - TA/T4A Series, 5-knuckle.

#### 2.3 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:.

a. Pemko (PE).

#### 2.4 POWER TRANSFER DEVICES

A. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to throughdoor wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:

a. McKinney (MK) - Electrical Connecting Kit: QC-R001. b. McKinney (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

a. McKinney (MK) - QC-C Series.

#### 2.5 DOOR OPERATING TRIM

A. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.

Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardwar

sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated. 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise

4. Pulls, where applicable, shall be provided with a 10" clearance from the finished floor on the push side to accommodate wheelchair accessibility.

Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. 6. Manufacturers:

#### a. Rockwood (RO).

2.6 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats

Threaded mortise cylinders with rings and cams to suit hardware application. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim

Bored or cylindrical lock cylinders with tailpieces as required to suit locks.

Tubular deadlocks and other auxiliary locks. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be

flush and be free spinning with matching finishes. Keyway: Manufacturer's Standard.

## C. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.

Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.

3. New System: Key locks to a new key system as directed by the Owner.

D. Key Quantity: Provide the following minimum number of keys:

Change Keys per Cylinder: Two (2) Master Keys (per Master Key Level/Group): Five (5).

Construction Keys (where required): Ten (10).

E. Construction Keying: Provide construction master keyed cylinders.

F. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing

into key control software. Provide transcript list in writing or electronic file as directed by the Owner.

## 2.7 KEY CONTROL

A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers: a. Lund Equipment (LU).

b. MMF Industries (MM). c. Telkee (TK).

## 2.8 CYLINDRICAL LOCKS AND LATCHING DEVICES

A. Cylindrical Locksets, Grade 1 (Commercial Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed cylindrical locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. ASSA ABLOY ACCENTRA, formerly known as Yale (YA) 4700LN Series.

## 2.9 DEADLOCKS AND LATCHES

Cylindrical Deadlocks: ANSI/BHMA A156.36 Grade 1 Certified Products Directory (CPD) listed deadlocks to fit standard ANSI 161 preparation. Provide tapered collars to resist vandalism and 1" throw solid steel bolt with hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other locksets.

1. Manufacturers: a. ASSA ABLOY ACCENTRA, formerly known as Yale (YA) - D100 Series.

## 2.10 LOCK AND LATCH STRIKES

indicated, and as follows:

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by

Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.

Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for

## Standards: Comply with the following:

Strikes for Mortise Locks and Latches: BHMA A156.13 Strikes for Bored Locks and Latches: BHMA A156.2.

Strikes for Auxiliary Deadlocks: BHMA A156.36.

2.11 ELECTRIC STRIKES

A. Standard Electric Strikes: Electric strikes conforming to ANSI/BHMA A156.31, Grade 1, for use on non-rated or fire rated openings. Strikes shall be of stainless steel construction tested to a minimum of 1500 pounds of static strength and 70 foot-pounds of dynamic strength with a minimum endurance of 1 million operating cycles. Provide strikes with 12 or 24 VDC capability, fail-secure unless otherwise specified. Where specified provide latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.

1. Manufacturers:

a. HES (HS) - 1500/1600 Series.

B. Surface Mounted Rim Electric Strikes: Surface mounted rim exit device electric strikes conforming to ANSI/BHMA A156.31, Grade 1, and UL Listed for both Burglary Resistance and for use on fire rated door assemblies. Construction includes internally mounted solenoid with two heavy-duty, stainless steel locking mechanisms operating independently to provide tamper resistance. Strikes tested for a minimum of 500,000 operating cycles. Provide strikes with 12 or 24 VDC capability supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike. Strike requires no cutting to the jamb prior to

#### Manufacturers:

a. HES (HS) - 9400/9500/9600/9700/9800 Series.

devices where specified in Hardware Sets.

match that of the specified locksets.

C. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

#### 2.12 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following

At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed

and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the 2. Where exit devices are required on fire rated doors, provide devices complying with

NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements. 3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on

4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.

5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts. a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to

b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets. 6. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used

at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor. 7. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.

Dummy Push Bar: Nonfunctioning push bar matching functional push bar. Rail Sizing: Provide exit device rails factory sized for proper door width application. 10. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Commercial Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein. Listed manufacturers shall meet all functions and

1. Provide locksets with functions and features as follows:

a. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.

b. Meets UL and CUL Standard 10C Positive Pressure. Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code. c. Five-year limited warranty for mechanical features.

#### 2. Manufacturers:

a. ASSA ABLOY ACCENTRA, formerly known as Yale (YA) - 6000 Series.

#### 2.13 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.

4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in 5. Closers shall not be installed on exterior or corridor side of doors; where possible install

closers on door for optimum aesthetics. 6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Commercial Duty): ANSI/BHMA 156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, institutional grade door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck, closing sweep, and latch speed control valves. Provide non-handed units standard.

1. Manufacturers:

a. ASSA ABLOY ACCENTRA, formerly known as Yale (YA) - 3500 Series. b. ASSA ABLOY ACCENTRA, formerly known as Yale (YA) - 5800 Series.

## 2.14 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets. 2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in

3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications. 4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop),

fabricated from the following: a. Stainless Steel: 300 grade, 050-inch thick.

Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes. Manufacturers:

a. Rockwood (RO).

## 2.15 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

## 1. Manufacturers:

a. Rockwood (RO).

indicated, based on testing according to UL-10C.

## 2.16 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a

testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings

Provide smoke labeled perimeter gasketing at all smoke labeled openings.

#### 2.17 ELECTRONIC ACCESSORIES

A. Request-to-Exit Motion Sensor: Request-to-Exit Sensors motion detectors specifically designed

#### 1. Manufacturers:

a. Alarm Controls (AK) - SREX Series.

2.18 FABRICATION

prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

indicated by certain manufacturers for their products. B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

to comply with manufacturer's written instructions and according to specifications. 1. Installers are to be trained and certified by the manufacturer on the proper installation and

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities." 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

Sections. Do not install surface-mounted items until finishes have been completed on substrates

A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures" Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies

Images and Video Recordings.

3.5 ADJUSTING operate as intended. Adjust door control devices to compensate for final operation of heating

and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

DEMONSTRATION

electromechanical door hardware.

3.8 DOOR HARDWARE SETS A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with

> Quantities listed are for each pair of doors, or for each single door. The supplier is responsible for handing and sizing all products. Where multiple options for a piece of hardware are given in a single line item, the

6. SU - Securitron 7. LU - Lund Equipment Co

for detecting exiting through a door from the secure area to a non-secure area. Include built-in timers (up to 60 second adjustable timing), door monitor with sounder alert, internal vertical pointability coverage, 12VDC or 24VDC power and selectable relay trigger with fail safe/fail secure modes.

b. Securitron (SU) - XMS Series.

A. Fasteners: Provide door hardware manufactured to comply with published templates generally

2.19 FINISHES A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes

complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes

specified by referenced standards for the applicable units of hardware

PART 3 - EXECUTION

3.2 PREPARATION

A. Install each item of mechanical and electromechanical hardware and access control equipment

adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames." DHI TDH-007-20: Installation Guide for Doors and Hardware.

Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying

with requirements specified in Division 7 Section "Joint Sealants." Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

causing the Work to be incomplete or rejected. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed

B. Clean adjacent surfaces soiled by door hardware installation. C. Clean operating items as necessary to restore proper finish. Provide final protection and

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and

corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application

supplier shall provide the appropriate application for the opening.

1. MK - McKinney 2. PE - Pemko 3. YA - ASSA ABLOY ACCENTRA 4. HS - HES

5. RO - Rockwood

B. Manufacturer's Abbreviations:

1 SMART Pac Bridge Rectifier 2005M3 1 Pull, offset RM201 5831 1 Surface Closer 1 Drop Plate 5800PDP 1 Blade Stop 1 Set Weatherstrip by Door Manufacturer 1 Sweep 3452BSPV 1 Threshold 279x292BSPFGPK 1 ElectroLynx Harness QC-C1500/C1500P

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY. ALWAYS FREE

Systems Integrator

#### **Set: 3.0**

Doors: 113 Description: EXTERIOR HMD STOREROOM LOCK ELEC STRIKE CPS CLOSER SRI

1 Continuous Hinge	BSPFMHD1		PE	087100	
1 Storeroom or Closet Lock	PB 4705LN	BSP	YA	087100	
1 SMART Pac Bridge Rectifier	2005M3		HS	087100	4
1 Electric Strike	1600	BSP	HS	087100	4
1 Surface Closer	3531	600 x BSP	YA	087100	
1 Rain Guard	346BSP		PE	087100	
1 Gasketing	2891BSPS		PE	087100	
1 Sweep	3452BSPV		PE	087100	
1 Threshold	1710BSP		PE	087100	
1 ElectroLynx Harness	QC-C1500/C1500P		MK	087100	4
1 Motion Sensor	XMS		SU	087100	4
1 Power Supply	AQD per hardware requirements		SU	087100	4
1 CARD READER	Wall Reader to be provided by Systems Integrator				

3452BSPV PE 087100 1 Sweep 1 Threshold 1710BSP PE 087100

T4A3386 FT 4-1/2" x 4-1/2" BSP(SS) MK 087100 D161 BSP YA 087100 110x70C BSP RO 087100 70C-RKW BSP RO 087100 1 Surface Closer 3501 YA 087100 BSP RO 087100 1 Wall Stop RM861 S88BL PE 087100 1 Gasketing PE 087100 346BSP 1 Rain Guard

1 Storeroom or Closet Lock PB 4705LN

5831

1 Sweep

1 Threshold

1 Surface Closer

1 Kick Plate

3 Silencer

1 Gasketing

1 Knox Box

**Set: 7.0** Doors: 105 Description: STOREROOM LOCK PR CLOSER 3 Hinge, Full Mortise TA2714 NRP FT 4-1/2" x 4-1/2" BSP MK 087100 PB 4705LN BSP YA 087100 1 Storeroom or Closet Lock 1 Surface Closer 5801 BSP YA 087100 K1050 10" x 2" LDW BEV CSK BSP RO 087100 1 Kick Plate

Doors: 104

Description: PASSAGE LATCH NO CLOSER \*\*\*WIDE STILE REQUIRED\*\*\* TA2714 FT 4-1/2" x 4-1/2" BSP MK 087100 PB 4701LN BSP YA 087100 1 Passage Latch BSP RO 087100 1 Wall Stop

**Set: 10.0** Doors: MISC Description: MISC BSP YA 087100 4 Storeroom or Closet Lock PB 4705LN 1 BITTING LIST KEY RECORDS 1 KEY BLANKS BOX OF 50 LU

Notes: LOCKSET FOR ATTIC STOCK AT CORROSIVE LOCATIONS.

**Set: 1.0** 

Hardware Sets

Description: EXTERIOR TELESCOPING ALD 1 Hardware By Others Hardware By Door Supplier

Doors: 100D

1 Continuous Hinge

1 CARD READER

Doors: 100A, 100B, 100C Description: EXTERIOR ALD NL EXIT X PULL X ELEC STRIKE CPS CLOSER

BSPFMSLF-HD1

1 Rim Exit Device, Nightlatch 6100ED 121NL BSP YA 087100 BSP HS 087100 4 1 Electric Strike HS 087100 4 BSP RO 087100 BSP YA 087100 BSP YA 087100 BSP YA 087100 PE 087100 PE 087100 MK 087100 4 1 Motion Sensor SU 087100 4 SU 087100 👍 1 Power Supply AQD per hardware requirements Wall Reader to be provided by

EGRESS

Notes: ACCESS BY AUTHORIZED CARD CREDENTIAL OR MANUAL KEY, ALWAYS FREE EGRESS.

Doors: 110 Description: EXTERIOR HMD STOREROOM LOCK CPS CLOSER SRI PE 087100 1 Continuous Hinge **BSPFMHD1** 1 Storeroom or Closet Lock PB 4705LN BSP YA 087100 3531 YA 087100 1 Surface Closer PE 087100 1 Rain Guard 346BSP PE 087100 2891BSPS 1 Gasketing

Notes: CORROSIVE ENVIORNMENT, SEE MISC SET FOR ATTIC STOCK LOCKSET.

Doors: 111, 112 Description: EXTERIOR HMD CLASSROOM LOCK CLOSER 3 Hinge, Full Mortise, Hvy Wt 1 Deadbolt 1 Pull Plate 1 Push Plate

> 315BSPN 1710BSP

Doors: 102, 103 Description: STOREROOM LOCK CPS CLOSER GASKET 3 Hinge, Full Mortise TA2714 NRP FT 4-1/2" x 4-1/2" BSP MK 087100 BSP YA 087100

PE 087100

PE 087100

BSP YA 087100

PE 087100

PE 087100

K1050 10" x 2" LDW BEV CSK BSP RO 087100

1 Gasketing

1 Wall Stop RM861 BSP RO 087100 RO 087100

608-RKW

4 Hinge, Full Mortise

Description: PRIVACY LATCH NO CLOSER GASKET 3 Hinge, Full Mortise TA2714 FT 4-1/2" x 4-1/2" BSP MK 087100 **PB 4702LN** BSP YA 087100 1 Privacy Lock BSP RO 087100 1 Wall Stop RM861

station for requirements and

<u>Set: 9.0</u>

1 Key Cabinet Sized per specification documents Knox Box (coordinate with local fire

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

PE 087100

A. Section Includes: Standard and custom hollow metal doors and frames. Steel sidelight, borrowed lite and transom frames.

Louvers installed in hollow metal doors. 4. Light frames and glazing installed in hollow metal doors.

Division 01 Section "General Conditions".

Division 08 Section "Door Hardware"

Doors and Frames

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

B. Related Sections:

Division 08 Section "Access Control Hardware".

Division 04 Section "Unit Masonry" for embedding anchors for hollow metal work into masonry construction. Division 08 Section "Flush Wood Doors".

Division 08 Section "Glazing" for glass view panels in hollow metal doors.

Division 09 Sections "Exterior Painting" and "Interior Painting" for field painting hollow metal doors and frames.

C. Codes and References: Comply with the version year adopted by the Authority Having

ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames. ANSI/SDI A250,4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing. 3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel

4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames. 6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-

ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-

Coated by the Hot-Dip Process. 9. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus. 10. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames. 11. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and

12. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection

14. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection 15. UL 10C - Positive Pressure Fire Tests of Door Assemblies.

16. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

minutes of standard fire-test exposure.

Provide labeled glazing material.

electrified or access control hardware.

3. Smoke Control Door Assemblies: Comply with NFPA 105.

13. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.

Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible. B. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for

Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL10C (neutral pressure at 40" above sill) or UL 10C. 1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.

2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell

openings) and exit passageways, provide doors that have a maximum transmitted

temperature end point of not more than 450 deg F (250 deg C) above ambient after 30

a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control

gasketing applied to frame and on meeting stiles of pair doors. D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having

jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257.

E. Storm Shelter Openings: Provide complete door systems for hurricane or tornado storm shelters, and other areas of refuge, complying and tested according to ICC 500 (2014/2020), ICC/NSSA Standard for the Design and Construction of Storm Shelters. 1. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

Section "Project Meetings" with attendance by representatives of Supplier, Installer, and

Contractor to review proper methods and procedures for installing hollow metal doors and

frames and to verify installation of electrical knockout boxes and conduit at frames with

F. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a

1.4 DELIVERY, STORAGE, AND HANDLING A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.

vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.

the coordinated BIM applications.

to jambs and mullions.

1.5 PROJECT CONDITIONS A. Field Measurements: Verify actual dimensions of openings by field measurements before

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings,

templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor

bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

disciplines are responsible for the product data integration and data reliability of their Work into

Door and frames to be stacked in a vertical upright position.

1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

B. Building Information Modeling (BIM) Support: Utilize designated BIM software tools and obtain training needed to successfully participate in the Project BIM processes. All technical

1.7 WARRANTY

of defective doors.

SDI Certified manufacturer:

fabrication.

1.6 COORDINATION

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

B. Warranty includes installation and finishing that may be required due to repair or replacement

PART 2 - PRODUCTS MANUFACTURERS

Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a

1. CECO Door Products (C). 2. Curries Company (CU).

2.2 MATERIALS

for exposed applications. B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS),

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable

2.3 HOLLOW METAL DOORS General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated;

fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.

Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

ROFESSIONAL SEAL

Dustproof Strikes: BHMA A156.16.

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ROFESSIONAL SEAL

COLLINS WEBB #: 23115

**GENERAL PROJECT** 

B. Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

Design: Flush panel.

Core Construction: Manufacturer's standard polystyrene. Where indicated, provide doors fabricated as thermal-rated assemblies with a minimum R-value of 2.8 or better. 3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053-inch - 1.3-mm) thick steel, Model 2.

4. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.

5. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped. 6. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing

C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

Design: Flush panel

Core Construction: Manufacturer's standard kraft-paper honeycomb, or one-piece polystyrene core, securely bonded to both faces.

a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings

3. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2. 4. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the

5. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.

6. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

D. Manufacturers Basis of Design:

1. Curries Company (CU) - Polystyrene Core - 707 Series.

plates from same material as door face sheets.

2.4 HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.

Fabricate frames with mitered or coped corners. Profile as indicated on drawings. Frames: Minimum 14 gauge (0.067-inch -1.7-mm) thick steel sheet. Manufacturers Basis of Design:

a. Curries Company (CU) – M Series.

Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M

Fabricate frames with mitered or coped corners. Profile as indicated on drawings.

Frames: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet. Manufacturers Basis of Design:

a. Curries Company (CU) - CM Series. b. Curries Company (CU) - M Series.

D. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

E. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.

Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick. 3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression

B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.

C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

A. Metal Louvers: Unless otherwise indicated provide louvers to meet the following requirements.

Blade Type: Vision proof inverted V or inverted Y. Metal and Finish: Galvanized steel, 0.040 inch thick, factory primed for paint finish with baked enamel or powder coated finish. Match pre-finished door paint color where

B. Louvers for Fire Rated Doors: Metal louvers with fusible link and closing device, listed and

labeled for use in doors with fire protection rating of 1-1/2 hours and less.

1. Manufacturers: Subject to compliance with requirements, provide louvers to meet rating

Metal and Finish: Galvanized steel, 0.040 inch thick, factory primed for paint finish with baked enamel or powder coated finish. Match pre-finished door paint color where

2.7 LIGHT OPENINGS AND GLAZING

Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator's shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and

gauge thick, fabricated from same material as door face sheet in which they are installed.

B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20

C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 exterior and on secure side of interior doors and frames.

D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.

2.8 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick

metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors: 1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to

glazing where indicated. Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fireperformance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on

which astragal is mounted. 4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".

D. Hollow Metal Frames:

Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth,

flush and invisible a. Welded frames are to be provided with two steel spreaders temporarily attached to

seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.

5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware". 6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners

7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements. 8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot

9. Jamb Anchors: Provide number and spacing of anchors as follows:

Four anchors per jamb from 90 to 120 inches high. 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches

b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of

Five anchors per jamb from 90 to 96 inches high. 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches

or fraction thereof above 96 inches high.

10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware". 11. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement

based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service

Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door

Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8. Reinforce doors and frames to receive non-template, mortised and surface mounted door 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series

specifications for preparation of hollow metal work for hardware. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 - EXECUTION

3.1 EXAMINATION A. Examine substrates, areas, and conditions, with Installer present, for compliance with

requirements for installation tolerances and other conditions affecting performance of the Work. B. General Contractor to verify the accuracy of dimensions given to the steel door and frame DEFLECTION OF WALL FRAMING OF L/240 AT 5 PSF. manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back STUDS WITH PROVISION FOR CRIMP LOCKING TO STUD. STUDS: C SHAPED WITH FLAT OR FORMED WEBS WITH

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

3.2 PREPARATION

A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed

B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and

D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door

E. Verify tolerances against manufacturers installations instructions for tornado and hurricane

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with

ANSI/SDI A250.11 and NFPA 80 at fire rated openings. 1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and

necessary to comply with installation tolerances. 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors. Masonry Walls: Coordinate installation of frames to allow for solidly filling space

secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as

between frames and masonry with mortar. 4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

Jambs and Head: 1/8 inch plus or minus 1/16 inch.

Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after

C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

3.5 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures".

causing the Work to be incomplete or rejected.

B. QUALITY ASSURANCE: VINYL CASEMENT WINDOWS- BASIS OF DESIGN: MI 3500 VINYL SINGLE- HUNG WINDOWS.

1. GLAZING PUBLICATIONS: COMPLY WITH GANA'S "GLAZING MANUAL" AND "MIRRORS, HANDLE WITH EXTREME CARE: TIPS FOR THE PROFESSIONAL ON THE CARE AND HANDLING OF MIRRORS." 2.SAFETY GLAZING PRODUCTS: FOR MIRRORS, PROVIDE PRODUCTS COMPLYING WITH TESTING REQUIREMENTS IN 16 CFR 1201 FOR CATEGORY II MATERIALS. 3. PRECONSTRUCTION MIRROR MASTIC COMPATIBILITY TEST: SUBMIT MIRROR MASTIC PRODUCTS TO MIRROR MANUFACTURER FOR TESTING TO DETERMINE COMPATIBILITY OF MASTIC WITH MIRROR BACKING AND SUBSTRATES ON WHICH MIRRORS ARE INSTALLED.

A. <u>SUBMITTALS:</u> FOR EACH TYPE OF PRODUCT INDICATED.THE CONTRACTOR SHALL PREPARE, AND SUBMIT TO

THE ARCHITECT FOR APPROVAL, COMPLETE SHOP DRAWINGS: INCLUDE MIRROR ELEVATIONS, EDGE DETAILS,

MIRROR HARDWARE. AND ATTACHMENTS TO OTHER WORK, WARRANTY: SAMPLE OF SPECIAL WARRANTY.

. WARRANTY: SPECIAL WARRANTY: MANUFACTURER'S STANDARD FORM IN WHICH MIRROR MANUFACTURER AGREES TO REPLACE MIRRORS THAT DETERIORATE WITHIN SPECIFIED WARRANTY PERIOD. DETERIORATION OF MIRRORS IS DEFINED AS DEFECTS DEVELOPED FROM NORMAL USE THAT ARE NOT ATTRIBUTED TO MIRROR BREAKAGE OR TO MAINTAINING AND CLEANING MIRRORS CONTRARY TO MANUFACTURER'S WRITTEN INSTRUCTIONS. DEFECTS INCLUDE DISCOLORATION, BLACK SPOTS, AND CLOUDING OF THE SILVER FILM. 1. WARRANTY PERIOD: FIVE YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

D. <u>BASIS OF DESIGN</u>: SILVERED FLAT GLASS MIRRORS . GLASS MIRRORS, GENERAL: ASTM C 1503; MANUFACTURED USING COPPER FREE, LOW LEAD MIRROR COATING 2. CLEAR GLASS: MIRROR GLAZING QUALITY; ULTRACLEAR (LOW IRON) FLOAT GLASS WITH A MINIMUM 91 PERCENT VISIBLE LIGHT TRANSMISSION. NOMINAL THICKNESS: 1/4 INCH. 3. TEMPERED CLEAR GLASS: MIRROR GLAZING QUALITY, FOR BLEMISH REQUIREMENTS; AND COMPLY WITH ASTM C 1048 FOR KIND FT, CONDITION A, TEMPERED FLOAT GLASS BEFORE SILVER COATING IS APPLIED. NOMINAL THICKNESS: 1/4 INCH.

E. MIRROR HARDWARE: TOP AND BOTTOM ALUMINUM J CHANNELS: ALUMINUM EXTRUSIONS WITH A RETURN DEEP ENOUGH TO PRODUCE A GLAZING CHANNEL TO ACCOMMODATE MIRRORS OF THICKNESS INDICATED AND IN LENGTHS REQUIRED TO COVER BOTTOM AND TOP EDGES OF EACH MIRROR IN A SINGLE PIECE. FINISH: CLEAR BRIGHT ANODIZED.

1. TOP AND BOTTOM MIRROR MOUNTING CLIPS: #277 MIRROR CLIPS AS MANUFACTURED BY KNAPE & VOGT OR APPROVED FOUAL 2. FASTENERS: FABRICATED OF SAME BASIC METAL AND ALLOY AS FASTENED METAL AND MATCHING IT IN FINISHED COLOR AND TEXTURE WHERE FASTENERS ARE EXPOSED.

F. INSTALLATION: GENERAL: EXAMINE SUBSTRATES. OVER WHICH MIRRORS ARE TO BE MOUNTED. WITH INSTALLER PRESENT, FOR COMPLIANCE WITH INSTALLATION TOLERANCES, SUBSTRATE PREPARATION, AND OTHER CONDITIONS AFFECTING PERFORMANCE OF THE WORK. A. VERIFY COMPATIBILITY WITH AND SUITABILITY OF SUBSTRATES, INCLUDING COMPATIBILITY OF MIRROR MASTIC WITH EXISTING FINISHES OR PRIMERS.

B. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED AND SURFACES ARE DRY.

1.INSTALL MIRRORS TO COMPLY WITH MIRROR MANUFACTURER'S WRITTEN INSTRUCTIONS AND WITH

REFERENCED GANA PUBLICATIONS. MOUNT MIRRORS ACCURATELY IN PLACE IN A MANNER THAT AVOIDS DISTORTING REFLECTED IMAGES. 2. INSTALL WALL MOUNTED ANNEALED GLASS MIRRORS IN THE APARTMENT UNITS WITH MIRROR CLIPS. ATTACH MIRROR HARDWARE SECURELY TO MOUNTING SURFACES WITH MECHANICAL FASTENERS INSTALLED WITH B. ANCHORS OR INSERTS AS APPLICABLE. INSTALL FASTENERS SO HEADS DO NOT IMPOSE POINT LOADS ON BACKS OF MIRRORS. 4. PROTECT MIRRORS FROM BREAKAGE AND CONTAMINATING SUBSTANCES RESULTING FROM CONSTRUCTION 5. MAINTAIN ENVIRONMENTAL CONDITIONS THAT WILL PREVENT MIRRORS FROM BEING EXPOSED TO MOISTURE FROM CONDENSATION OR OTHER SOURCES FOR CONTINUOUS PERIODS OF TIME. 6. WASH EXPOSED SURFACE OF MIRRORS NOT MORE THAN FOUR DAYS BEFORE DATE SCHEDULED FOR INSPECTIONS THAT ESTABLISH DATE OF SUBSTANTIAL COMPLETION. WASH MIRRORS AS RECOMMENDED IN WRITING BY MIRROR MANUFACTURER.

**DIVISION 9 - FINISHES** 

9.1 - NON-STRUCTURAL METAL FRAMING

A. SUBMITTALS: SHOP DRAWINGS: INDICATE PREFABRICATED WORK, COMPONENT DETAILS, STUD LAYOUT, FRAMED OPENINGS, ANCHORAGE TO STRUCTURE ACQUISTIC DETAILS, TYPE AND LOCATION OF FASTENERS, ACCESSORIES. AND ITEMS OF OTHER RELATED WORK. DESCRIBE METHOD FOR SECURING STUDS TO TRACKS, SPLICING, AND FOR BLOCKING AND REINFORCEMENT OF FRAMING CONNECTIONS. 1. PRODUCT DATA: PROVIDE MANUFACTURER'S DATA ON PARTITION HEAD TO STRUCTURE CONNECTORS, SHOWING COMPLIANCE WITH REQUIREMENTS. 2. MANUFACTURER'S INSTALLATION INSTRUCTIONS: INDICATE SPECIAL PROCEDURES AND PERIMETER CONDITIONS REQUIRING SPECIAL ATTENTION.

B. <u>MANUFACTURERS:</u>
1. CLARKDIETRICH BUILDING SYSTEMS: WWW.CLARKDIETRICH.COM. 2. CEMCO: WWW.CEMCOSTEEL.COM. 3. JAIMES INDUSTRIES: WWW.JAIMESIND.COM 4. STEEL CONSTRUCTION SYSTEMS: WWW.STEELCONSYSTEMS.COM

1. FIRE RATED ASSEMBLIES: COMPLY WITH APPLICABLE CODE AND AS FOLLOWS: A. TOP OF FIRE RATED PARTITIONS: LISTED ASSEMBLY BY UL, NO. [ON DRAWINGS]; [1 AND 2] HOUR RATING. B. FIRE RATED SHAFT WALL REQUIREMENTS: LISTED ASSEMBLY BY UL, NO. [ON DRAWINGS]; [1] HOUR RATING. 2. NON-LOADBEARING FRAMING SYSTEM COMPONENTS: ASTM C645; GALVANIZED SHEET STEEL, OF SIZE AND PROPERTIES NECESSARY TO COMPLY WITH ASTM C754 FOR THE SPACING INDICATED, WITH MAXIMUM A. TRACKS AND RUNNERS: SAME MATERIAL AND THICKNESS AS STUDS, BENT LEG RETAINER NOTCHED TO RECEIVE

KNURLED FACES. B. CEILING CHANNELS: C SHAPED. C. FURRING: HAT-SHAPED SECTIONS, MINIMUM DEPTH OF 7/8 INCH. D. CONTRACTOR TO PROVIDE BRACING AS REQUIRED TO COMPLETE SYSTEM.

ROTATION OF STUDS WHILE MAINTAINING STRUCTURAL PERFORMANCE OF PARTITION.

F, WHERE INDICATED IN DRAWINGS. SHAFT WALL STUDS AND ACCESSORIES: ASTM C645: GALVANIZED SHEET STEEL, OF SIZE AND PROPERTIES NECESSARY TO COMPLY WITH ASTM C754 AND SPECIFIED PERFORMANCE REQUIREMENTS. G. CEILING HANGERS: TYPE AND SIZE AS SPECIFIED IN ASTM C754 FOR SPACING REQUIRED. H. PARTITION HEAD TO STRUCTURE CONNECTIONS: PROVIDE MECHANICAL ANCHORAGE DEVICES THAT

ACCOMMODATE DEFLECTION USING SLOTTED HOLES, SCREWS AND ANTI-FRICTION BUSHINGS, PREVENTING

I. FIT, REINFORCE, AND BRACE FRAMING MEMBERS TO SUIT DESIGN REQUIREMENTS. D. <u>INSTALLATION:</u>
1.COMPLY WITH REQUIREMENTS OF ASTM C754.

CONNECTIONS: DO NOT LEAVE STUDS UNATTACHED TO TRACK.

WORK TO BE PLACED WITHIN OR BEHIND STUD FRAMING.

2. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. 3. VERIFY THAT ROUGH-IN UTILITIES ARE IN PROPER LOCATION. 4.EXTEND PARTITION FRAMING TO STRUCTURE WHERE INDICATED AND TO CEILING IN OTHER LOCATIONS. 5. PARTITIONS TERMINATING AT CEILING: ATTACH CEILING RUNNER SECURELY TO CEILING TRACK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. 6.PARTITIONS TERMINATING AT STRUCTURE: ATTACH TOP RUNNER TO STRUCTURE. MAINTAIN CLEARANCE BETWEEN TOP OF STUDS AND STRUCTURE, AND CONNECT STUDS TO TRACK USING SPECIFIED MECHANICAL DEVICES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS; VERIFY FREE MOVEMENT OF TOP OF STUD

7.FIT RUNNERS UNDER AND ABOVE OPENINGS; SECURE INTERMEDIATE STUDS TO SAME SPACING AS WALL STUDS. 8. ALIGN STUD WEB OPENINGS HORIZONTALLY. 9. SECURE STUDS TO TRACKS USING CRIMPING METHOD. DO NOT WELD. 10. STUD SPLICING IS NOT PERMISSIBLE. 11. FABRICATE CORNERS USING A MINIMUM OF THREE STUDS.

12. DOUBLE STUD AT WALL OPENINGS, DOOR AND WINDOW JAMBS, NOT MORE THAN 2 INCHES FROM EACH SIDE OF 13. BRACE STUD FRAMING SYSTEM RIGID. 14. COORDINATE ERECTION OF STUDS WITH REQUIREMENTS OF DOOR FRAMES; INSTALL SUPPORTS AND ATTACHMENTS 15. COORDINATE INSTALLATION OF BUCKS, ANCHORS, AND BLOCKING WITH ELECTRICAL, MECHANICAL, AND OTHER

16. BLOCKING: USE WOOD BLOCKING SECURED TO STUDS. PROVIDE BLOCKING FOR SUPPORT OF PLUMBING

9.2 GYPSUM BOARD ASSEMBLIES A. 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 WITH MANUFACTURER'S STANDARD CORROSION-RESISTANT ZINC COATING 2. TIE WIRE: ASTM A 641/A 641M, CLASS 1 ZINC COATING, SOFT TEMPER. .0625" DIAMETER OR

FIXTURES, WALL CABINETS, TOILET ACCESSORIES, HARDWARE, AND OPENING FRAMES.

DOUBLE STRAND OF .0475" DIAMETER WIRE. 3. WIRE HANGERS: ASTM A 641/A 641M, CLASS 1 ZINC COATING, SOFT TEMPER. .0162" DIAMETER. B. PANEL PRODUCTS:PROVIDE IN THICKNESS AND TYPE INDICATED IN THE CONSTRUCTION DRAWINGS IN MAXIMUM LENGTHS AVAILABLE TO MINIMIZE END-TO-END BUTT JOINTS AND AS FOLLOWS: 1. GYPSUM WALLBOARD: ASTM C 36, TYPE 'X' WITH TAPERED EDGES, SAG-RESISTANT TYPE FOR CEILING SURFACES 2. WATER-RESISTANT GYPSUM BACKING BOARD: ASTM C 630. TYPE 'X' ON ALL TOILET ROOM AND

1. TRIM: ASTM 1047, FORMED FROM GALVANIZED OR ALUMINUM COATED STEEL SHEET, ROLLED ZINC, OR PLASTIC a. OUTSIDE CORNERS: PROVIDE CORNER BEAD UNLESS NOTED OTHERWISE

SHOWER ROOM WALLS, BEHIND ALL PLUMBING FIXTURES, AND AS INDICATED.

b. EXPOSED PANEL EDGES: PROVIDE LC-BEAD (J-BEAD) UNLESS NOTED OTHERWISE; USE TEAR-AWAY BEAD WHERE GYP. BD. MEETS WINDOW FRAMES OR CEILING GRID. c. CONTROL JOINTS: PROVIDE WHERE INDICATED OR APPROXIMATELY 30'-0" MAX. CONTACT ARCHITECT FOR LOCATIONS IF NOT INDICATED. SOUND-ATTENUATION BLANKETS: ASTM C 665, TYPE L/UNEACED 3. ACOUSTICAL SEALANT: COMPLY WITH ASTM C 834, NONSAG, PAINTABLE, NONSTAINING LATEX.

J. <u>INSTALLATION:</u> FRAMING: COMPLY WITH ASTM C 754 AND ASTM C 840 AND WITH U.S. GYPSUM'S "GYPSUM CONSTRUCTION HANDBOOK" ISOLATE FRAMING FROM BUILDING STRUCTURE TO PREVENT TRANSFER OF LOADING IMPOSED BY STRUCTURAL MOVEMENT AND PROVIDE BRACING AS NECESSARY FOR PROPER SUPPORT WHETHER INDICATED OR NOT. 2. GYPSUM PANELS AND FINISH: COMPLY WITH ASTM C 840 AND GA-216. ISOLATE GYPSUM BOARD ASSEMBLIES FROM ABUTTING STRUCTURAL AND MASONRY WORK AND FINISH AS FOLLOWS: a. LEVEL 1 (EMBED TAPE AT JOINTS): AT CONCEALED AREAS UNLESS A HIGHER LEVEL IS INDICATED OR REQUIRED FOR FIRE-RESISTANCE-RATED ASSEMBLY. b. LEVEL 2 (EMBED TAPE AND APPLY SEPARATE FIRST COAT OF JOINT COMPOUND TO TAPE. FASTENERS, AND TRIM FLANGES AND SAND SMOOTH AFTER EACH COAT): AT

COMPOUND TO TAPE, FASTENERS, AND TRIM FLANGES AND SAND SMOOTH AFTER EACH COAT): AT ALL WALLS RECEIVING FLAT, EGGSHELL, OR SATIN SHEEN PAINT OR WALLCOVERING) d. LEVEL 5 (EMBÉD TAPE, APPLY SEPARATE FIRST, FILL, AND FINISH COATS OF JOINT COMPOUND TO TAPE, FASTENERS, AND TRIM FLANGES. AND APPLY THIN SKIM COAT OF JOINT COMPOUND OVER ENTIRE SURFACE AND SAND SMOOTH AFTER EACH COAT): AT ALL WALLS RECEIVING SEMI-GLOSS OR GLOSS SHEEN PAINT, AND ALL GYPSUM BOARD

c. LEVEL 4 (EMBED TAPE AND APPLY SEPARATE FIRST, FILL, AND FINISH COATS OF JOINT

SUBSTRATES BEHIND TILE.

A. <u>SUBMITTALS:</u> PRODUCT DATA AND THREE (3) DRAW-DOWN SAMPLES OF EACH COLOR AND SHEEN

B. ATTIC STOCK: FURNISH ONE (1) GALLON OF EACH PAINT COLOR AND SHEEN, IN CONTAINERS, PROPERLY LABELED AND SEALED.

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.

D. <u>PAINT SYSTEMS:</u>
1. ALL PAINT, STAIN, AND VARNISH SHALL BE PRODUCTS OF DEVOE, KWAL, SHERWIN WILLIAMS, PPG INDUSTRIES, PRATT & LAMBERT OR APPROVED EQUAL. 2. ALL MATERIAL SHALL BE OF THE STANDARD RESIDENTIAL GRADE OF THE TYPES DESIGNATED. ALL MATERIAL SHALL BE DELIVERED TO THE JOB SITE IN THE ORIGINAL, UNOPENED, LABELED CONTAINERS. COLORS NOT SPECIFICALLY CALLED FOR IN THE PAINT SCHEDULE WILL BE SELECTED BY THE ARCHITECT. E. APPLICATION / INSTALLATION:

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 3. APPLY PRODUCTS PER MANUFACTURER RECOMMENDED GUIDELINES. PRODUCT COVERAGE MINIMUM ONE COAT OF PRIMER AND TWO FINAL COATS ON MATERIALS.APPLY PRODUCTS TO MATERIALS APPROVED BY

. EQUIPMENT: APPLY COATINGS BY BRUSH, ROLLER, SPRAY, OR OTHER APPLICATORS

MANUFCTURER PRODUCT DATA SHEETS. A. Exterior Work: ONE COAT COMMERCIAL METAL ETCH. 1. ALL EXTERIOR GALVANIZED METAL

TWO COATS EXTERIOR SEMI-GLOSS METAL PAINT. 2.ALL EXPOSED STEEL FRAMES, ANGLES, TWO COATS SEMI-GLOSS METAL PAINT. (PRIME COAT CHANNELS, POSTS, RAILINGS, BEAMS, ETC. SURFACES THAT ARE NOT PRIMED.)

ONE COAT EXTERIOR METAL PRIMER.

PATCH DENTS, TOUCH UP PRIMER, TWO

COATS OF OIL BASE SEMI-GLOSS PAINT

ONE COAT OF PRIME LATEX PAINT AND

ONE COAT OF PRIME LATEX PAINT AND

PAINT AT CEILINGS ADJACENT TO ATTICS.

INSIDE AND OUTSIDE.

3. ALL EXPOSED MISC. FERROUS METAL ITEMS TWO COATS SEMI-GLOSS METAL PAINT. INCLUDING RAILS, PLATES, ANGLES, BOLTS. (PRIME COAT SURFACES THAT ARE NOT PRIMED.) GRATES, CONDUITS, POSTS, PIPING, ETC. 4. ALL UNPRIMED EXTERIOR MILLWORK, PRIME AND BACK LATEX PRIMER. TWO COATS OF EXTERIOR LATEX SATIN OR TRIM. SMOOTH WOOD MATERIALS, ETC.

5. PRIMED MILLWORK AND TRIM. TOUCH-UP PRIME. TWO COATS OF EXTERIOR 100% SATIN OR SEMI-GLOSS ACRYLIC LATEX PAINT. ONE COAT PRIMER. TWO COATS EXTERIOR 6. ROUGH SAWN TRIM, BEAMS, COLUMNS, HEAVY BODIED STAIN.

9.3 PAINTING- CONT

1. GYPSUM BOARD WALLS EXCEPT IN

2. GYPSUM BOARD WALLS IN KITCHENS.

7. PRIMED METAL ENTRY DOORS, FRENCH

DOORS AND METAL FRAMES, GARAGE DOORS.

SEMI-GLOSS PAINT.

FLASHINGS, CONNECTORS, ETC.

8. ANY OTHER PAINTING REQUIRED BY TWO COATS TO MATCH ADJACENT THE DRAWINGS. SURFACES B. INTERIOR WORK:

COMMON AREA CORRIDORS, UNLESS PAINT. (TWO COATS IF REQUIRED TO SCHEDULED FOR WALLCOVERING ACHIEVE FULL COVERAGE.) ONE WALL IN EACH APARTMENT UNIT LIVING SPACE AND EACH BEDROOM SHALL BE PAINTED ACCENT COLORS.

ONE FINISH COAT OF LATEX EGGSHELL WALL BATHROOMS AND LAUNDRIES UNLESS PAINT. (TWO COATS IF REQUIRED TO ACHIEVE FULL SCHEDULED FOR WALLCOVERING OR TILE. COVERAGE.) ONE COAT OF PRIME LATEX PAINT AND 3. GYPSUM BOARD WALLS IN COMMON

ONE FINISH COAT OF SCRUBABLE LATEX AREA CORRIDORS FLAT WALL PAINT. (TWO COATS IF REQUIRED TO ACHIEVE FULL COVERAGE.) 4. GYPSUM BOARD CEILINGS. TWO COATS OF LATEX FLAT PAINT. TWO COATS OF CLASS II VAPOR RETARDER

ONE PRIME COAT OF LATEX PAINT, ONE 5. DOOR CASINGS, BASE, WOOD, MILL-COAT LATEX PAINT AND ONE FINISH COAT WORK, ETC. (PRE-PRIMED.) OF LATEX SEMI-GLOSS PAINT. 6. PRIMED HARDWOOD DOORS. ONE COAT OF LATEX PAINT AND ONE FINISH COAT OF LATEX SEMI-GLOSS PAINT.

7. ALL MISCELLANEOUS FERROUS METAL, TWO COATS METAL PAINT TO MATCH INCLUDING GRILLES, REGISTERS, ETC. ADJACENT SURFACES UNLESS FACTORY PREFINISHED WHITE 8. ANY OTHER PAINTING WORK REQUIRED FINISH TO MATCH SIMILAR CONDITIONS.

9.4 LUXURY VINYL PLANK TILE AND WALL BASE A. <u>SUBMITTALS</u>: PRODUCT DATA AND (1) SAMPLES OF EACH TILE AND BASE SPECIFIED FOR

VERIFICATION PURPOSES. B.BASIS OF DESIGN:

COVERING AND LABELED FOR STORAGE.

BY THE DRAWINGS.

1. SEE FINISH PLAN DRAWINGS C. ATTIC STOCK: FURNISH ONE (1) BOX FOR EACH 50 BOXES OR FRACTION THEREOF OF EACH TYPE OF LOOR TILE AND 20' OF EACH COLOR AND TYPE OF WALL BASE PACKAGED WITH PROTECTIVE

D. RESILIENT TILE PRODUCTS: PROVIDE FLOOR TILE IN TYPE AND SIZES INDICATED IN THE CONSTRUCTION DOCUMENTS COMPLYING WITH THE FOLLOWING: E. RESILIENT WALL BASE: ASTM TYPE TS (RUBBER, VULCANIZED THERMOSET) 1/8" THICK, FURNISHED IN COILS IN STYLES AND SIZES INDICATED IN THE CONSTRUCTION DOCUMENTS WITH JOB-FORMED INSIDE

F. INSTALLATION ACCESSORIES: . LEVELING AND PATCHING COMPOUNDS: LATEX-MODIFIED, PORTLAND CEMENT, OR BLENDED HYDRAULIC CEMENT-BASED FORMULATION PROVIDED OR APPROVED BY FLOORING MANUFACTURER TO SUIT RESILIENT PRODUCTS AND SUBSTRATE CONDITIONS. 2. ADHESIVES: WATER-RESISTANT TYPE RECOMMENDED BY MANUFACTURER TO SUIT RESILIENT PRODUCTS AND SUBSTRATE CONDITIONS. SPREAD ONLY ENOUGH ADHESIVE TO PERMIT INSTALLATION OF MATERIALS BEFORE INITIAL SET.

3. MOLDINGS, TRANSITION AND EDGE STRIPS: SAME MATERIAL AS FLOORING. 1. PREPARE CONCRETE SUBSTRATES PER ASTM F 710. VERIFY THAT SUBSTRATES ARE DRY AND FREE OF CURING COMPOUNDS. SEALERS AND HARDENERS 2. LAY OUT TILES SO WIDTHS AT OPPOSITE EDGES OF ROOM ARE EQUAL AND NOT LESS THAN HALF-WIDTH. 3. LAY TILES IN PATTERNS INDICATED WITH GRAIN DIRECTION ALTERNATING IN ADJACENT TILES, UNLESS NOTED OTHERWISE. 4. CLEAN, SEAL, AND WAX RESILIENT FLOORING IN ACCORDANCE WITH MANUFACTURER'S

H. 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 3. INSTALL TRANSITION STRIPS WHERE FLOORING MATERIALS MEET OR WHERE EDGE OF TILE IS

EXPOSED AS INDICATED IN THE FINISH SCHEDULE.

EDGE AS MANUFACTURED BY SCHLUTER SYSTEMS OR APPROVED EQUAL AS REQUIRED FOR THE ADJACENT FLOOR COVERING MATERIAL. 1. TYPICAL INTERIOR INSTALLATIONS: LATEX/POLYMER MODIFIED PORTLAND CEMENT

MANUFACTURED BY SCHLUTER SYSTEMS OR APPROVED EQUAL.

2. GROUT:UNSANDED FOR JOINTS 1/16" WIDTH OR LESS, SANDED FOR JOINTS GREATER THAN 1/16" IN COLOR INDICATED IN SCHEDULE OR TO BE SELECTED BY ARCHITECT AND OWNER. A. TYPICAL INTERIOR INSTALLATIONS: STANDARD CEMENT GROUT WITH INTEGRAL STAIN INHIBITORS (TEC ACCUCOLOR XT, OR EQUAL) 3. SETTING BED ACCESSORIES: ANSI A 108.1A

A. SUBMITTALS: PRODUCT DATA FOR SETTING AND GROUTING MATERIALS AND THREE (3) SAMPLES OF

B. ATTIC STOCK: FURNISH 2% OF EACH TYPE OF CERAMIC TILE PACKAGED WITH PROTECTIVE COVERING

D. TILE: COMPLY WITH STANDARD GRADE REQUIREMENTS IN ANSI A137.1 "SPECIFICATIONS FOR CERAMIC

1. CEMENTITIOUS FIBER MAT REINFORCED SHEATHING (TILE BACKER BOARD): ASTM C 1325, ANSI A118.9,

CEMENTITIOUS BACKER. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE DUROCK BRAND

APPROVED EQUAL WITH CORROSION RESISTANT COATING, LENGTH AS RECOMMENDED BY BACKER

2. TILE BACKER BOARD FASTENERS: DUROCK BRAND WOOD OR USG SHEATHING WF SCREWS OR

3. INTERIOR TILE SHALL BE THIN SET WITH LATICRETE LATAPOXY 300 ADHESIVE EPOXY ADHESIVE OR

4. GROUT SHALL BE LATICRETE SPECTRALOCK PRO PREMIUM EPOXY GROUT OR APPROVED EQUAL.

EHK STAINLESS STEEL EDGE AS MANUFACTURED BY SCHLUTER SYSTEMS OR APPROVED EQUAL.

8. FLOOR TILE EDGE PROFILE SHALL BE SCHLUTER RENO TK OR SCHLUTER RENO U STAINLESS STEEL

7. OUTSIDE CORNER AND EDGE PROFILE SHALL BE SCHLUTER JOLLY STAINLESS STEEL EDGE AS

5. SHOWER STALL SEAT SHALL BE MODEL BB 30 SELF SUPPORTING CORNER MOUNTED ALLOYED

ALUMINUM SEAT AS MANUFACTURED BY INNOVIS CORPORATION OR APPROVED EQUAL.

6. INSIDE WALL CORNER AND FLOOR/WALL TRANSITION PROFILE SHALL BE SCHLUTER DILEX

TILE" FOR PRODUCTS AND SIZES INDICATED IN THE CONSTRUCTION DOCUMENTS.

CEMENT BOARD BY UNITED STATES GYPSUM COMPANY OR APPROVED EQUAL.

EACH TILE SPECIFIED FOR VERIFICATION PURPOSES.

AND LABELED FOR STORAGE.

C. <u>BASIS OF DESIGN</u>:

1. SEE FINISH PLAN DRAWINGS.

BOARD MANUFACTURER.

COLOR TO BE SELECTED BY THE ARCHITECT.

COMPLYING WITH ANSI A108.5 AND ANSI 118.4.

APPROVED EQUAL.

F. INSTALLATION METHODS: COMPLY WITH TILE INSTALLATION STANDARDS IN ANSI'S "SPECIFICATIONS FOR THE INSTALLATIONS OF CERAMIC TILE" AND TCA'S "HANDBOOK FOR CERAMIC TILE INSTALLATION" THAT APPLY TO THE MATERIALS AND METHODS INDICATED BELOW:

1. WHERE CUT TILE IS SPECIFIED AS THE TOP COURSE ON WALL WAINSCOTING OR WALL BASE WITH AN EXPOSED TOP EDGE, THE FACTORY EDGE SHALL BE USED AS THE EXPOSED EDGE. H. CONFLICTS: IF NOT ADDRESSED ON DRAWINGS, WHERE ELECTRICAL DEVICES OR TOILET ACCESSORIES STRADDLE THE TRANSITION FROM THE TOP EDGE OF WAINSCOT WALL TILE TO GYPSUM BOARD SUBSTRATE, CONTACT ARCHITECT FOR RESOLUTION.

1. JOINT SIZE: SET TILE WITH THE SMALLEST GROUT JOINT ACHIEVABLE AND AS RECOMMENDED BY THE MFR. BASED ON THE TILE PRODUCT AND SUBSTRATE CONDITIONS, UNLESS NOTED 2. TILE PATTERN: LAY TILE IN PATTERNS AS INDICATED IN THE CONSTRUCTION DOCUMENTS. ALIGN JOINTS WHERE ADJOINING TILES ON FLOOR, BASE, WALLS, AND TRIM ARE THE SAME SIZE, UNLESS INDICATED OTHERWISE 3. INSTALLATION: INSTALL GROUT PER MANUFACTURER'S INSTRUCTIONS, EXERCISING CARE TO AVOID REMOVAL OF GROUT COLOR BY USE OF EXCESS WATER DURING INSTALLATION. FADED OR CHALKY GROUT SHALL BE CAUSE FOR REJECTION. 4. SEALER: AFTER FULLY CURED, GROUT SHALL BE SEALED WITH TWO (2) COATS OF COMMERCIAL QUALITY PENETRATING SILICONE SEALER.

**DIVISION 10 - SPECIALTIES** 

DISABILITIES ACT.

ACCORDING TO ASTM F 446.

B. THICKNESS: 1 INCH (25 MM).

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

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

3. STORAGE AND HANDLING REQUIREMENTS AND RECOMMENDATIONS. 4. INSTALLATION METHODS. 3. <u>INSTALLATION:</u>
1. INSTALLER MUST EXAMINE SUBSTRATES, PREVIOUSLY INSTALLED INSERTS AND ANCHORAGES NECESSARY FOR MOUNTING OF TOILET ACCESSORIES, AND OTHER CONDITIONS UNDER WHICH INSTALLATION IS TO OCCUR, AND MUST NOTIFY CONTRACTOR IN WRITING OF CONDITIONS DETRIMENTAL TO PROPER AND TIMELY COMPLETION OF WORK. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

1. PRODUCT DATA: MANUFACTURER'S DATA SHEETS ON EACH PRODUCT TO BE USED, INCLUDING:

2. PREPARATION INSTRUCTIONS AND RECOMMENDATIONS.

2. INSTALL ACCESSORIES ACCORDING TO RESPECTIVE MANUFACTURERS' WRITTEN INSTRUCTIONS, USING FASTENERS APPROPRIATE TO SUBSTRATE INDICATED AND RECOMMENDED BY UNIT MANUFACTURER. I NSTALL UNITS LEVEL, PLUMB, AND FIRMLY ANCHORED IN LOCATIONS AND AT HEIGHTS INDICATED. INSTALLATIONS ARE NOT PERMITTED. 3. MOUNTING HEIGHTS SHALL BE AS RECOMMENDED BY THE ACCESSORY MANUFACTURER AND AT HEIGHTS RECOMMENDED BY USE FOR PHYSICALLY HANDICAPPED TO COMPLY WITH THE AMERICANS WITH

5. ADJUST ACCESSORIES FOR PROPER OPERATION AND VERIFY THAT MECHANISMS FUNCTION SMOOTHLY.

10.3 SOLID PLASTIC TOILET COMPARTMENTS A. REFERENCE CONSTRUCTION DRAWINGS & SCHEDULES FOR TYPE, QUANTITY, AND LOCATIONS OF TOILET

4. GRAB BARS: INSTALL TO WITHSTAND A DOWNWARD LOAD OF AT LEAST 250 LBF, WHEN TESTED

6. CLEAN AND POLISH ALL EXPOSED SURFACES AFTER REMOVING PROTECTIVE COATINGS.

AND BATH ACCESSORIES. BASIS OF DESIGN: HADRIAN- POWDER COATED. COLOR- 545 CHARCOAL 1. STYLE: FLOOR MOUNTED OVERHEAD-BRACED TOILET COMPARTMENTS. 2. DOORS AND PANELS: HIGH DENSITY POLYETHYLENE (HDPE), FABRICATED FROM SEQ CHAPTER 1 EXTRUDED POLYMER RESINS, FORMING SINGLE THICKNESS PANEL. A. WATERPROOF AND NONABSORBENT, WITH SELF-LUBRICATING SURFACE, RESISTANT TO MARKS BY PENS, PENCILS, MARKERS, AND OTHER WRITING INSTRUMENTS.

C. EDGES: SHIPLAP. 3. PANEL COLOR: 545 CHARCOAL. 4. DOORS AND PANELS: HIGH PRIVACY: HEIGHT: 62 INCHES (1575 MM) HIGH AND MOUNTED AT 8 TO 14 INCHES (203 TO 356 MM) ABOVE THE FINISHED FLOOR.

7. <u>SUBMITTALS</u>
1. PRODUCT DATA: MANUFACTURER'S DATA SHEETS ON EACH PRODUCT TO BE USED, INCLUDING: 2. PREPARATION INSTRUCTIONS AND RECOMMENDATIONS. 3. STORAGE AND HANDLING REQUIREMENTS AND RECOMMENDATIONS. 4. INSTALLATION METHODS. 5. SHOP DRAWINGS: PROVIDE LAYOUT DRAWINGS AND INSTALLATION DETAILS WITH LOCATION AND TYPE OF 6. SELECTION SAMPLES: FOR EACH FINISH PRODUCT SPECIFIED, TWO COMPLETE SETS OF COLOR CHIPS

REPRESENTING MANUFACTURER'S FULL RANGE OF AVAILABLE COLORS AND PATTERNS. 1. METAL POSTS: 82.75 INCHES (2102 MM) HIGH, HEAVY DUTY EXTRUDED ALUMINUM, CLEAR ANODIZED FINISH, FASTENED TO FOOT WITH STAINLESS STEEL TAMPER RESISTANT SCREW. 2. HIDDEN SHOE (FOOT): ONE-PIECE MOLDED POLYETHYLENE INVISIBLE SHOE INSERTED INTO METAL POST AND SECURED TO METAL POST WITH STAINLESS STEEL TAMPER RESISTANT SCREW. 3. HEADRAIL CAP AND CORNER CAP: ONE-PIECE MOLDED POLYETHYLENE SECURED TO METAL POST WITH STAINLESS STEEL TAMPER RESISTANT SCREW: ADJUSTABLE TO LEVEL HEADRAIL TO FINISHED FLOOR. 4. WALL BRACKETS: CONTINUOUS HEAVY DUTY EXTRUDED ALUMINUM, CLEAR ANODIZED FINISH, INSERTED INTO SLOTTED PANEL AND FASTENED TO PANELS WITH STAINLESS STEEL TAMPER RESISTANT SCREWS. 5. HEADRAIL: HEAVY DUTY EXTRUDED ALUMINUM, CLEAR ANODIZED FINISH, SECURED TO WALL WITH STAINLESS STEEL TAMPER SCREWS.

6. DOOR HARDWARE: A. HINGES: EDGE-MOUNTED HELIX STYLE STAINLESS STEEL CONTINUOUS HINGE. CLOSING DEGREE: 5 DEGREES. COMES TO A FULL CLOSE ON ITS OWN WEIGHT. B.OCCUPANCY INDICATOR LATCH AND HOUSING: MATERIAL: SATIN STAINLESS STEEL. OCCUPANCY INDICATORS: GREEN FOR OCCUPIED AND RED NOT OCCUPIED. SLIDE BOLT AND BUTTON. C.COAT HOOK AND DOOR BUMPER COMBINATION: MATERIAL: CHROME PLATED ZAMAK. HANDICAP DOOR:

EQUIP WITH SECOND DOOR PULL AND DOOR STOP.

D. DOOR PULLS: CHROME PLATED ZAMAK:

1. CLEAN SURFACES THOROUGHLY PRIOR TO INSTALLATION. 2. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND APPROVED SHOP DRAWINGS. 3. INSTALL PARTITIONS RIGID, STRAIGHT, PLUMB, AND LEVEL. 4. LOCATE BOTTOM EDGE OF DOORS AND PANELS INCHES ABOVE FINISHED FLOOR. 5. CLEARANCE AT VERTICAL EDGES OF DOORS SHALL BE UNIFORM TOP TO BOTTOM AND SHALL NOT EXCEED 3/8 INCH (9.5 MM)

7. FINISHED SURFACES SHALL BE CLEANED AFTER INSTALLATION AND BE LEFT FREE OF IMPERFECTIONS. 8. ADJUST DOORS AND LATCHES TO OPERATE CORRECTLY. 9. PROTECT INSTALLED PRODUCTS UNTIL COMPLETION OF PROJECT. 10. TOUCH-UP, REPAIR OR REPLACE DAMAGED PRODUCTS BEFORE SUBSTANTIAL COMPLETION.

6. NO EVIDENCE OF CUTTING. DRILLING. AND/OR PATCHING SHALL BE VISIBLE ON THE FINISHED WORK.

END OF SECTION 081113

mm) high unless otherwise indicated. Provide fixed frame moldings and stops on outside of

2.9 FABRICATION Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form

Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08

Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

the bottom of both jambs to serve as a brace during shipping and handling.

Spreader bars are for bracing only and are not to be used to size the frame opening. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face

4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.

unless otherwise indicated for removable stops, provide security screws at exterior

a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

1) Two anchors per jamb up to 60 inches high. Three anchors per jamb from 60 to 90 inches high.

or fraction thereof above 120 inches high.

frame. Space anchors not more than 32 inches o.c. and as follows:

1) Three anchors per jamb up to 60 inches high. Four anchors per jamb from 60 to 90 inches high.

5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.

2.10 STEEL FINISHES

ARCHITECTURE, LLC

**REVISION DATES:** 

COLLINS WEBB #: 23115

**GENERAL PROJECT SPECIFICATIONS** 

**DIVISION 11 - EQUIPMENT** 

11 3113 APPLIANCES A. REFERENCE CONSTRUCTION DRAWINGS FOR QUANTITY, AND LOCATION OF APPLIANCES.

SUBMITTALS PRODUCT DATA: MANUFACTURER'S DATA SHEETS ON EACH PRODUCT TO BE USED I. SUBMIT SHOP DRAWINGS OF ALL WORK SPECIFIED HEREIN SHOWING SIZES. METHODS OF INSTALLATION AND MOUNTING REQUIREMENTS, INCLUDING ROUGH-IN AND CONNECTION DETAILS FOR ELECTRICAL, PLUMBING, AND VENTILATION, CATALOG CUTS, BROCHURES, AND OPERATING CHARACTERISTICS OF ALL

2. SUBMIT EQUIPMENT DATA, FLOOR PLANS AND SHOP DETAILS WITH THE CLEAR UNDERSTANDING THAT NO FABRICATION OR ORDERING OF EQUIPMENT SHALL PROCEED UNTIL EQUIPMENT AND DRAWINGS HAVE BEEN APPROVED BY ARCHITECT. 3. OPERATION AND MAINTENANCE DATA.

WARRANTY: SPECIAL WARRANTIES: MANUFACTURER'S STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR OR REPLACE RESIDENTIAL APPLIANCES OR COMPONENTS THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD. I. WARRANTY PERIOD: TWO YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

A. THE FOLLOWING APPLIANCES SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR, WORK SHALL INCLUDE SETTING-IN-PLACE ALL APPLIANCES AND ALL ELECTRICAL, MECHANICAL AND PLUMBING HOOK-UPS TO MAKE A COMPLETE AND FIRST-CLASS INSTALLATION. KITCHEN APPLIANCES SHALL BE STAINLESS STEEL AND LAUNDRY APPLIANCES SHALL BE WHITE. APPLIANCES LISTED ARE AS MANUFACTURED BY GENERAL ELEC-TRIC UNLESS OTHERWISE NOTED.

A. BUILT-IN EQUIPMENT: SECURELY ANCHOR UNITS TO SUPPORTING CABINETS OR COUNTERTOPS WITH CONCEALED FASTENERS. VERIFY THAT CLEARANCES ARE ADEQUATE FOR PROPER FUNCTIONING AND THAT ROUGH OPENINGS ARE COMPLETELY CONCEALED. B. FREESTANDING EQUIPMENT: PLACE UNITS IN FINAL LOCATIONS AFTER FINISHES HAVE BEEN COMPLETED IN EACH AREA. VERIFY THAT CLEARANCES ARE ADEQUATE TO PROPERLY OPERATE EQUIPMENT. C. RANGE ANTI-TIP DEVICE: INSTALL AT EACH RANGE ACCORDING TO MANUFACTURER'S WRITTEN D. UTILITIES: COMPLY WITH PLUMBING AND ELECTRICAL REQUIREMENTS.

#### A. TESTS AND INSPECTIONS:

1. PERFORM VISUAL, MECHANICAL, AND ELECTRICAL INSPECTION AND TESTING FOR EACH APPLIANCE ACCORDING TO MANUFACTURERS' WRITTEN RECOMMENDATIONS. CERTIFY COMPLIANCE WITH EACH MANUFACTURER'S APPLIANCE-PERFORMANCE PARAMETERS. 2. OPERATIONAL TEST: AFTER INSTALLATION, START UNITS TO CONFIRM PROPER OPERATION. 3. TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND COMPONENTS.

1. PRIOR TO FINAL ACCEPTANCE, CLEAN ALL EQUIPMENT AND REMOVE ALL STAINS, PAINT SPOTS, PROTECTIVE WRAPPINGS AND COATINGS, TAPES, GREASE, OIL, PLASTER, DUST, POLISHING COMPOUNDS AND INSTALL ALL INTERNAL COMPONENTS AND ACCESSORIES.

C. AFTER INSTALLATION, PROVIDE MAINTENANCE MANUALS, OPERATING INSTRUCTIONS, REPLACEMENT PARTS LIST, SERIAL AND MODEL NUMBERS AND REGISTRY CARDS FOR EACH ITEM OF EQUIPMENT.

#### **DIVISION 12 - FURNISHINGS**

A. REFERENCE CONSTRUCTION DRAWINGS & SCHEDULES FOR TYPE, QUANTITY, AND LOCATIONS. B. ALL CABINETS SHALL MEET OR EXCEED THE RECOMMENDED MINIMUM CONSTRUCTION AND PERFORMANCE STANDARDS OF THE NATIONAL KITCHEN CABINET ASSOCIATION AND ANSI A161.1.

B. SUBMITTALS: INCLUDE PLANS, SECTIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK: I. SHOP DRAWINGS: FOR CABINETS AND COUNTERTOPS. INCLUDE PLANS, ELEVATIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK. SHOW MATERIALS, FINISHES, FILLER PANELS, HARDWARE, EDGE AND BACKSPLASH PROFILES, METHODS OF JOINING COUNTERTOPS, AND CUTOUTS FOR PLUMBING FIXTURES. 2. SAMPLES: FOR EACH TYPE AND FINISH OF MATERIAL EXPOSED TO VIEW.

. EXAMINE ALL SUBSURFACES TO RECEIVE WORK AND REPORT IN WRITING TO GENERAL CONTRACTOR, WITH A COPY TO ARCHITECT ANY CONDITIONS DETRIMENTAL TO THE INSTALLATION OF CABINETRY. FAILURE TO OBSERVE THIS INJUNCTION CONSTITUTES A WAIVER TO ANY SUBSEQUENT CLAIMS TO THE CONTRARY AND MAKES CONTRACTOR RESPONSIBLE FOR ANY CORRECTIONS THE ARCHITECT MAY REQUIRE. COMMENCEMENT OF WORK WILL BE CONSTRUED AS ACCEPTANCE OF ALL SUBSURFACES.

SUBJECT TO COMPLIANCE WITH REQUIREMENTS, CABINETRY SHALL BE FLUSH DOORS AND DRAWERS AS INDICATED, CONTRACTOR'S CHOICE CABINETS AS SUPPLIED BY MASTERBRAND CABINETS, INC. OR APPROVED EQUAL PRODUCTS SUPPLIED BY KOUNTRY WOOD PRODUCTS OR MID AMERICA CABINETS. KITCHEN CABINETS SHALL BE STAINED AND BATHROOM VANITIES SHALL BE PAINTED. 2. HANDICAPPED UNITS SHALL BE PROVIDED WITH KITCHEN CABINETS IN LOCATIONS SHOWN AND VANITY CABINETS IN BATHROOMS THAT ARE PARTIALLY REMOVABLE TO ALLOW FOR WHEELCHAIRS TO ROLL UNDER SINK IN CASE OF HANDICAPPED OCCUPANT.

1. KITCHEN WALL CABINET PULLS: IKEA GRIP ALUMINUM 1 · 1/4" TAB PULL OR APPROVED EQUAL. 2. KITCHEN BASE CABINET PULLS: IKEA GRIP ALUMINUM 5 · 1/2" TAB PULL OR APPROVED EQUAL. 3. VANITY PULLS: MOCKET DP3. US15. 1. 1/4" TAB PULL OR APPROVED EQUAL. 4. HINGES: HEAVY DUTY EUROPEAN HINGES WITH SOFT CLOSE, SELF CLOSE BY BLUM OR APPROVED

5. DRAWER GUIDES: BLUM TANDEM PLUS BLUMOTION OR APPROVED EQUAL. SIZE AND CONFIGURATION AS

PLUMBING FIXTURES AND COUNTERTOPS.

I. INSTALL CABINETS WITH NO VARIATIONS IN FLUSHNESS OF ADJOINING SURFACES; USE CONCEALED WHERE CABINETS ABUT OTHER FINISHED WORK, SCRIBE AND CUT FOR ACCURATE FIT. PROVIDE FILLER STRIPS, SCRIBE STRIPS, AND MOLDINGS IN FINISH TO MATCH CABINET FACE. 2. INSTALL CABINETS WITHOUT DISTORTION SO DOORS AND DRAWERS FIT OPENINGS, ARE ALIGNED, AND ARE UNIFORMLY SPACED. COMPLETE INSTALLATION OF HARDWARE AND ACCESSORIES AS INDICATED.

3. INSTALL CABINETS LEVEL AND PLUMB TO A TOLERANCE OF 1/8 INCH IN 8 FEET. 4. FASTEN CABINETS TO ADJACENT UNITS AND TO BACKING. FASTEN WALL CABINETS THROUGH BACK, NEAR TOP AND BOTTOM, AT ENDS AND NOT LESS THAN 24 INCHES O.C. WITH NO. 10 WAFER. HEAD SCREWS SIZED FOR 1INCH PENETRATION INTO WOOD FRAMING, BLOCKING, OR HANGING STRIPS.

5. ADJUST CABINETS AND HARDWARE SO DOORS AND DRAWERS ARE CENTERED IN OPENINGS AND OPERATE SMOOTHLY WITHOUT WARP OR BIND. LUBRICATE OPERATING HARDWARE AS RECOMMENDED BY MANUFACTURER. S. PROTECT FINISHED SURFACES FROM DAMAGE OR STAINING RESULTING FROM SUBSEQUENT WORK. REPAIR OR REPLACE DAMAGED CABINETWORK, INCLUDING WARPED OR LOOSE MEMBERS. 7. CAULK ALL JOINTS BETWEEN KITCHEN AND VANITY COUNTERTOPS AND WALLS AND JOINTS BETWEEN

BATH ACCESSORIES B. S<u>UBMITTALS:</u> INCLUDE PLANS, SECTIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK: PRODUCT DATA :FOR EACH STONE, STONE ACCESSORY, AND MANUFACTURED PRODUCT. 2. STORAGE AND HANDLING REQUIREMENTS AND RECOMMENDATIONS.

2. QUALITY STANDARD: SEFA 3 FOR LABORATORY WORKSURFACES.

E. MANUFACTURERS:

12 3661 COUNTERTOPS

3. SAMPLES: FOR EACH STONE TYPE INDICATED.

1. FIELD MEASUREMENTS: VERIFY DIMENSIONS OF CONSTRUCTION TO RECEIVE STONE COUNTERTOPS B FIELD MEASUREMENTS BEFORE FABRICATION.

A. REFERENCE CONSTRUCTION DRAWINGS & SCHEDULES FOR TYPE, QUANTITY, AND LOCATIONS OF TOILET

 SOURCE LIMITATIONS FOR STONE: OBTAIN FROM A SINGLE SOURCE TO PROVIDE MATERIALS OF CONSISTENT QUALITY IN APPEARANCE AND PHYSICAL PROPERTIES.

1. QUALITY STANDARD: PREMIUM GRADE, IN ACCORDANCE WITH AWI/AWMAC/WI (AWS) OR AWMAC/WI (NAAWS), UNLESS NOTED OTHERWISE.

3. PLASTIC LAMINATE COUNTERTOPS: HIGH-PRESSURE DECORATIVE LAMINATE (HPDL) SHEET BONDED T A. LAMINATE SHEET: NEMA LD 3, GRADE HGS, 0.048 INCH NOMINAL THICKNESS.

B. EXPOSED EDGE TREATMENT: AS NOTED, SUBSTRATE BUILT UP TO MINIMUM 1-1/4 INCH THICK; COVERED WITH MATCHING LAMINATE. C. BACK AND END SPLASHES: SAME MATERIAL, SAME CONSTRUCTION. D. FABRICATE IN ACCORDANCE WITH AWI/AWMAC/WI (AWS) OR AWMAC/WI (NAAWS), SECTION 11 COUNTERTOPS, CUSTOM GRADE.

A. REFER TO FINISH LEGEND. 4. NATURAL QUARTZ AND RESIN COMPOSITE COUNTERTOPS: SHEET OR SLAB OF NATURAL QUARTZ AND PLASTIC RESIN OVER CONTINUOUS SUBSTRATE. A. FLAT SHEET THICKNESS: 1-1/4 INCH, MINIMUM.

B. NATURAL QUARTZ AND RESIN COMPOSITE SHEETS, SLABS AND CASTINGS: COMPLYING WITH ISFA 3-01 AND NEMA LD 3; ORTHOPHTHALIC POLYESTER RESIN, MINERAL FILLER, AND PIGMENTS; HOMOGENOUS, NON-POROUS AND CAPABLE OF BEING WORKED AND REPAIRED USING STANDAR WOODWORKING TOOLS; NO SURFACE COATING; COLOR AND PATTERN CONSISTENT THROUGHOUT THICKNESS. C. MANUFACTURERS:

A. REFER TO FINISH LEGEND FOR SOLID SURFACE AND CORIAN QUARTZ DESCRIPTIONS, MANUFACTURERS, PRODUCT NUMBERS, COLORS, SIZES AND CONTACT INFORMATION. D. FACTORY FABRICATE COMPONENTS TO THE GREATEST EXTENT PRACTICAL IN SIZES AND SHAPES INDICATED; COMPLY WITH THE MIA DIMENSION STONE DESIGN MANUAL.

E. FINISH ON EXPOSED SURFACES: POLISHED. F. COLOR AND PATTERN: AS INDICATED ON DRAWINGS.

5. CULTURED MARBLE AND RESIN COMPOSITE VANITY COUNTERTOP WITH INEGRATED BOWL OVER CONTINUOUS SUBSTRATE. A. CULTURED MARBLE AND RESIN COMPOSITE SHEETS, SLABS AND CASTINGS: ORTHOPHTHALIC POLYESTER RESIN, MINERAL FILLER, AND PIGMENTS; HOMOGENOUS, NON-POROUS AND CAPABLE OF BEING WORKED AND REPAIRED USING STANDARD WOODWORKING TOOLS; NO SURFACE

COATING; COLOR AND PATTERN CONSISTENT THROUGHOUT THICKNESS.

B. MANUFACTURERS: A. REFER TO FINISH LEGEND FOR DESCRIPTIONS, MANUFACTURERS, PRODUCT NUMBERS, COLORS, SIZES AND CONTACT INFORMATION.

C. FINISH ON EXPOSED SURFACES: POLISHED. D. COLOR AND PATTERN: AS INDICATED ON DRAWINGS.

1. SECURELY ATTACH COUNTERTOPS TO CABINETS OR SUPPORTS USING CONCEALED FASTENERS. MAKE FLAT SURFACES LEVEL; SHIM WHERE REQUIRED. 2. ATTACH PLASTIC LAMINATE COUNTERTOPS USING SCREWS WITH MINIMUM PENETRATION INTO

SUBSTRATE BOARD OF 5/8 INCH. 3. SEAL JOINT BETWEEN BACK/END SPLASHES AND VERTICAL SURFACES. 4. GENERAL: INSTALL COUNTERTOPS OVER PLYWOOD SUBTOPS WITH FULL SPREAD OF WATER CLEANABI EPOXY ADHESIVE.

5. GENERAL: INSTALL COUNTERTOPS BY ADHERING TO SUPPORTS WITH WATER CLEANABLE EPOXY 6. SET STONE TO COMPLY WITH REQUIREMENTS INDICATED. SHIM AND ADJUST STONE TO LOCATIONS

INDICATED, WITH UNIFORM JOINTS OF WIDTHS INDICATED AND WITH EDGES AND FACES ALIGNED ACCORDING TO ESTABLISHED RELATIONSHIPS. 7. SPACE JOINTS WITH 1/16+ INCH GAP FOR FILLING WITH SEALANT. USE TEMPORARY SHIMS TO ENSURE UNIFORM SPACING. CLAMP UNITS TO TEMPORARY BRACING, SUPPORTS, OR EACH OTHER TO ENSURE

THAT COUNTERTOPS ARE PROPERLY ALIGNED AND JOINTS ARE OF SPECIFIED WIDTH. 8. COMPLETE CUTOUTS NOT FINISHED IN SHOP. MASK AREAS OF COUNTERTOPS ADJACENT TO CUTOUTS TO PREVENT DAMAGE WHILE CUTTING. USE POWER SAWS WITH DIAMOND BLADES TO CUT STONE. MA CUTOUTS TO ACCURATELY FIT ITEMS TO BE INSTALLED, AND AT RIGHT ANGLES TO FINISHED SURFACES UNLESS BEVELING IS REQUIRED FOR CLEARANCE. EASE EDGES SLIGHTLY TO PREVENT SNIPPING.

INSTALL BACKSPLASHES AND END SPLASHES BY ADHERING TO WALL WITH WATER CLEANABLE EPOXY ADHESIVE. LEAVE 1/16. INCH GAP BETWEEN COUNTERTOP AND SPLASHES FOR FILLING WITH SEALANT. USE TEMPORARY SHIMS TO ENSURE UNIFORM SPACING. 10. GROUT JOINTS TO COMPLY WITH ANSI A108.10. REMOVE TEMPORARY SHIMS BEFORE GROUTING. TOO GROUT UNIFORMLY AND SMOOTHLY WITH PLASTIC TOOL. 11. APPLY SEALANT TO JOINTS AND GAPS SPECIFIED FOR FILLING WITH SEALANT; COMPLY WITH SECTION

079200 "JOINT SEALANTS." REMOVE TEMPORARY SHIMS BEFORE APPLYING SEALANT. 12. ASSURE THAT SEAMS ARE SMOOTH, LEVEL AND TIGHT. SEAMS SHALL BE FILLED ENTIRELY SO FLUSH WIT COUNTERTOP. POLISH SURFACE AT SEAM. ASSURE THAT FILLER IS "NON. YELLOWING." 13. CLEANING: CLEAN COUNTERTOPS AS WORK PROGRESSES. REMOVE ADHESIVE, GROUT, MORTAR, AND SEALANT SMEARS IMMEDIATELY. CLEAN STONE COUNTERTOPS NO FEWER THAN SIX DAYS AFTER COMPLETION OF INSTALLATION, USING CLEAN WATER AND SOFT RAGS. DO NOT USE WIRE BRUSHES ACID TYPE CLEANING AGENTS, CLEANING COMPOUNDS WITH CAUSTIC OR HARSH FILLERS, OR OTHER

MATERIALS OR METHODS THAT COULD DAMAGE STONE. 14. SEALER APPLICATION: APPLY STONE SEALER TO COMPLY WITH STONE PRODUCER'S AND SEALER MANUFACTURER'S WRITTEN INSTRUCTIONS.

## **DIVISION 32 - EXTERIOR IMPROVEMENTS**

32 3113 FENCES, GATES & HARDWARE

A. REFERENCE CONSTRUCTION DRAWINGS FOR QUANTITY, AND LOCATIONS

B.SUBMITTALS: THE CONTRACTOR SHALL PREPARE. AND SUBMIT TO THE ARCHITECT FOR APPROVAL. COMPLETE SHOP DRAWINGS FOR ALL WORK INCLUDED.PROVIDE PRODUCT DATA IN THE FORM OF MANUFACTURER'S TECHNICAL DATA, SPECIFICATIONS, AND INSTALLATIONS FOR FENCE, POSTS, GATE UPRIGHTS, POST CAPS, GATES, GATE HARDWARE AND ACCESSORIES. VERIFY LAYOUT INFORMATION FOR FENCES AND GATES SHOWN ON THE DRAWINGS IN RELATION TO THE PROPERTY SURVEY AND EXISTING STRUCTURES. VERIFY DIMENSIONS BY FIELD MEASUREMENTS. PROVIDE SAMPLES IN THE FORM OF 3" LENGTHS OF ACTUAL PRODUCT USED.

C. WARRANTY: LIFETIME NON-PRORATED LIMITED TRANSFERABLE WARRANTY APPLIES TO ORIGINAL HOMEOWNER/CONSUMER, OR 30 YEAR NON-PRORATED LIMITED WARRANTY APPLIES TO COMMERCIAL APPLICATIONS.

D. <u>BASIS OF DESIGN</u>: DIGGER SPECIALTIES INC.(DSI), POLYVINYL FENCE SYSTEMS. TRI-MAX II, HEIGHT -72"

3.RAILS: ONE PIECE EXTRUDED, OF LENGTHS INDICATED PRE-ROUTED TO RECEIVE PICKETS AT SPACING

1. POSTS, RAILS, PICKETS, GATE UPRIGHTS, POST CAPS, AND ACCESSORIES SHALL BE OF HIGH IMPACT, ULTRA VIOLET (U.V.) RESISTANT, RIGID PVC, AND SHALL COMPLY WITH ASTM D 1784, CLASS 14344B. 2.FENCE POSTS: ONE PIECE EXTRUDED. OF LENGTHS INDICATED AND PRE-ROUTED TO RECEIVE RAILS AT SPACING INDICATED. PROVIDE CROSS SECTION, WALL THICKNESS AND CORNER RADIUS MINIMUM TOLERANCES.

PROVIDE CROSS SECTION, WALL THICKNESS AND CORNER RADIUS MINIMUM TOLERANCES. 4. PICKETS: ONE PIECE EXTRUDED, OF LENGTHS INDICATED. PROVIDE CROSS SECTION, WALL THICKNESS AND CORNER RADIUS MINIMUM TOLERANCES. PICKET SPACING FULL PRIVACY. 5.GATE UPRIGHTS: ONE PIECE EXTRUDED, OF LENGTHS INDICATED WITH ALUMINUM U CHANNEL INSERT. PROVIDE CROSS SECTION, WALL THICKNESS AND CORNER RADIUS MINIMUM TOLERANCES. 6. POST CAPS: MOLDED, ONE PIECE. CROSS SECTION TO MATCH POST OR GATE SECTION. PROVIDE MINIMUM THICKNESS REQUIREMENTS. CONFIGURATION: FLAT OR FOUR-SIDED AS REQUIRED FOR INSTALLATION TO TOP OF POSTS AND GATE. ACCESSORIES: MANUFACTURERS' STANDARD GATE BRACE, SCREW CAPS, RAIL END

REINFORCERS, AND OTHER ACCESSORIES AS REQUIRED. 7. STIFFENER CHANNELS, GALVANIZED STEEL STRUCTURAL CHANNEL. CONFIGURE CHANNELS FOR CONCEALED INSTALLATION WITHIN PVC RAILS WITH PRE-DRILLED HOLES FOR DRAINAGE. ALUMINUM EXTRUDED CHANNEL AVAILABLE UPON REQUEST. CROSS SECTION: 1.775 X 1.700 GALVANIZED STEEL CHANNEL THICKNESS: 0.040 8. FASTÈNERS AND ANCHORAGE: STAINLESS STEEL. ALL FASTENERS TO BE CONCEALED OR COLORED HEADS TO MATCH. PROVIDE SIZES AS RECOMMENDED BY FENCE MANUFACTURER. 9. PVC CEMENT: AS RECOMMENDED BY FENCE MANUFACTURER.

1. GENERAL: PROVIDE HARDWARE AND ACCESSORIES FOR EACH GATE ACCORDING TO THE FOLLOWING REQUIREMENTS: 2. HINGES: COLOR- BLACK, SIZE AND MATERIAL TO SUIT GATE SIZE, NON LIFT-OFF TYPE, SELF CLOSING, GLASS FILLED NYLON WITH ADJUSTER PLATE, OFFSET TO PERMIT 120 DEGREE GATE OPENING. PROVIDE ONE PAIR OF HINGES FOR EACH GATE. 3. LATCH: FINISH TO MATCH HINGE. MANUFACTURERS' STANDARD SELF LATCHING, GLASS FILLED NYLON AND STAINLESS STEEL COMPOSITION SINGLE OR DUAL ACCESS GRAVITY LATCH. PROVIDE ONE LATCH PER GATE. 4. HARDWARE: FINISH TO MATCH HINGE.STAINLESS STEEL. PROVIDE SIZES AS RECOMMENDED BY FENCE MANUFACTURER.

G. <u>CONCRETE:</u>
1. CONCRETE: PROVIDE CONCRETE CONSISTING OF PORTLAND CEMENT PER ASTM C 150, AGGREGATES PER ASTM C 33, AND POTABLE WATER. MIX MATERIALS TO OBTAIN CONCRETE WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2000 PSI. USE AT LEASE FOUR SACKS OF CEMENT PER CUBIC YARD, 1-INCH MAXIMUM SIZE AGGREGATE, 3-INCH MAXIMUM SLUMP. USE 1/2 INCH MAXIMUM SIZE AGGREGATE IN POST WHERE REQUIRED. 2. PACKAGES CONCRETE MIX: MIX DRY-PACKAGED NORMAL-WEIGHT CONCRETE CONFORMING TO ASTM C 387 WITH CLEAN WATER TO OBTAIN A 2 TO 3 INCH SLUMP.

1. INSTALL FENCE IN COMPLIANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. DURING INSTALLATION. PVC COMPONENTS SHALL BE CAREFULLY HANDLED AND STORED TO AVOID CONTACT WITH ABRASIVE SURFACES. INSTALL COMPONENTS IN SEQUENCE AS RECOMMENDED BY FENCE MANUFACTURER.

A. INSTALL FENCING AS INDICATED ON THE DRAWINGS PROVIDED. B. VARIATIONS FROM THE INSTALLATION INDICATED MUST BE APPROVED. C. VARIATIONS FROM THE FENCE AND GATE INSTALLATION INDICATED AND ALL COSTS FOR REMOVAL AND REPLACEMENT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

D. ALLOW MINIMUM 72 HOURS TO LET CONCRETE SET-UP BEFORE OPENING GATES. E. CLEANING, REMOVE ALL TRACES OF DIRT AND SOILED AREAS.

CONCEALED LOCATIONS WHERE POSSIBLE. CONSTRUCTION JOINTS MAY BE PLACED IN LIEU OF CONTROL JOINTS AT CONTRACTOR'S DISCRETION. COORDINATE LOCATION OF CONTROL JOINTS WITH ARCHITECT.

PRIOR TO PLACING CONCRETE IN ANY LOCATION, IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO HAVE THOROUGHLY CHECKED AND COORDINATED ALL DIMENSIONS, ELEVATIONS, OPENINGS, RECESS, AND BLOCKOUTS AS SHOWN ON ANY CONTRACT DRAWINGS. IN THE EVENT ERRORS, CONFLICTS, OR OMISSIONS EXIST, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE ARCHITECT OR ENGINEER FOR NECESSARY CORRECTIVE ACTION.

EMBEDDED ITEMS ARE TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR PRIOR TO PLACING CONCRETE ANCHOR RODS AND ANCHOR BOLTS SHALL BE HELD IN PLACE WITH A RIGID TEMPLATE

HORIZONTAL JOINTS BEYOND THOSE SHOWN IN THE CONTRACT DOCUMENTS SHALL NOT BE CONSTRUCTED WITHOUT THE APPROVAL OF THE ARCHITECT AND ENGINEER. ALL REINFORCING SHALL BE ASTM A615 GRADE 60, EXCEPT WELDED REINFORCING WHICH SHALL BE ASTM A706 GRADE 60.

ALL WELDED WIRE FABRIC SHALL BE ASTM A82 COLD DRAWN WIRE. ALL ACCESSORIES FOR SUPPORTING REINFORCING SHALL BE GALVANIZED OR HAVE PLASTIC-PROVIDE CORNER BARS AT THE EXTERIOR FACE OF ALL WALL AND FOOTING CORNERS EQUAL REINFORCING SHALL BE DETAILED, FABRICATED, PLACED, AND SUPPORTED IN ACCORDANCE

WITH ACI 315, LATEST APPLICABLE EDITION. STANDARD COVERAGE OF REINFORCING SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE. PERMANENTLY EXPOSED TO WEATHER CAST AGAINST EARTH

IN CONTACT WITH WATER

2. NOT EXPOSED TO EARTH OR WEATHER SLABS AND WALLS BEAMS AND COLUMNS G. SPLICE LENGTH 3000 PSI CONCRETE 55 db (BAR DIAMETER) NON-COATED EPOXY COATED 83 db 4000 PSI CONCRETE NON-COATED EPOXY COATE 72 db 5000 PSI CONCRETE NON-COATED

EPOXY COATED REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT, EXCEPT AS SHOWN AND NOTED ON THE CONTRACT DRAWINGS OR PERMITTED BY THE ENGINEER OF

ALL REINFORCEMENT AND EMBEDDED ITEMS INCLUDING PLATES AND ANCHOR RODS SHALL BE ACCURATELY PLACED, ADEQUATELY SUPPORTED, AND SECURED AGAINST DISPLACEMENT BEFORE CONCRETE IS PLACED. NEITHER REINFORCEMENT NOR EMBEDDED ITEMS SHALL BE PLACED INTO FRESHLY PLACED CONCRETE UNLESS APPROVED BY THE ENGINEER OF RECORD. 11. STRUCTURAL STEEL A. ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE

> WITH AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, LATEST APPLICABLE EDITION AND AISC CODE OF STANDARD PRACTICE. ALL STRUCTURAL STEEL FOR WIDE FLANGE SHALL BE A992 GRADE 50 UNLESS NOTED OTHERWISE. ALL ANGLES, PLATES AND CHANNELS SHALL BE ASTM A36 UNLESS NOTED OTHERWISE. ALL RECTANGULAR AND ROUND HSS SHAPES SHALL BE ASTM A500, GRADE B. ALL BOLTS SHALL BE 3/4" Ø A-325 BOLTS WITH HEAVY HEX HEADS UNLESS NOTED OTHERWISE. ALL CONNECTIONS SHALL HAVE A MINIMUM OF (2) 3/4" Ø BOLTS, BEARING TYPE CONNECTIONS ALL STRUCTURAL STEEL WELDS IN THE SHOP OR IN THE FIELD SHALL BE PERFORMED BY A QUALIFIED WELDER AND SHALL CONFORM TO THE CURRENT REQUIREMENTS OF A.W.S.

SHOP WELDED AND FIELD BOLTED CONNECTIONS ARE PREFERRED UNLESS NOTED ALL STEEL EXPOSED TO THE EXTERIOR, EXHIBITS, POOLS, AND LSS AREAS SHALL BE HOT-DIP GALVANIZED AND PAINTED PER ARCHITECT UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL PROVIDE SHELF ANGLES, GLASS SUPPORTS, LINTELS, AND OTHER MISC. STEEL AS SHOWN ON THESE DRAWINGS AS REQUIRED TO PROVIDE SUPPORT (STABILIZATION) AROUND AND THROUGHOUT THE BUILDING. SEE ARCHITECTURAL DRAWINGS

FOR ADDITIONAL MISC. STEEL DETAILS.

A. HEADERS, JOISTS, AND RAFTERS SHALL MEET OR EXCEED THE FOLLOWING MINIMUM REQUIREMENTS. (EXAMPLE SPECIES: #2 SPRUCE-PINE-FIR)

135 PSI 1150 PSI 1400 KSI INTERIOR WALLS AND EXTERIOR WALLS SHALL MEET OR EXCEED THE FOLLOWING MINIMUM REQUIREMENTS. (EXAMPLE SPECIES: #2 SPRUCE-PINE-FIR) 135 PSI 1150 PSI TIMBER FRAMING MEMBERS SHALL MEET OR EXCEED THE FOLLOWING MINIMUM REQUIREMENTS. (EXAMPLE SPECIES: #2 SPRUCE-PINE-FIR) 135 PSI

1150 PSI ALL LVL MEMBERS SHALL BE MICROLLAM 2.0E 2600 OR APPROVED EQUAL. ALL WOOD FRAMING MEMBERS INDICATED ARE NOMINAL SIZES. PROVIDE ACTUAL DRESSED SIZES, KILN-DRIED, WITH MAXIMUM IN-PLACE MOISTURE CONTENT OF 19%. ALL BOLTS ARE A36 OR A307, GRADE 1, AND ALL NAILS ARE COMMON WIRE NAILS UNLESS

NOTED OTHERWISE. LAY ALL STRUCTURAL PANELS WITH FACE GRAIN PERPENDICULAR TO SUPPORTING MEMBERS AND OFFSET END JOINTS 4'-0". PANELS TO BE APA RATED AND STAMPED FOR THE LOADING SHOWN IN SECTION 2 "DESIGN" AND SHOULD MATCH THE SUPPORT SPACING SHOWN ON THE ROOF DECKING SHALL BE 3/4" THICK APA RATED EXTERIOR GRADE SHEATHING FASTENED WITH 10d NAILS AT 6" O.C. ON EDGES AND 12" O.C. IN FIELD UNLESS NOTED OTHERWISE FASTENER QUALITY, QUANTITY, SIZE, AND SPACING SHALL COMPLY WITH IBC FASTENING

SCHEDULE (TABLE 2304.9) UNLESS NOTED OTHERWISE. ALL WOOD IN CONTACT WITH CONCRETE OR EXPOSED TO WEATHER SHALL BE PRESERVATIVE

13. PREFABRICATED WOOD TRUSSES A. TRUSS SPACING TO BE AS SHOWN ON DRAWINGS. LOADS SHOWN IN SECTION 2 "DESIGN LOADS" ARE A MINIMUM. TRUSS DESIGNER IS RESPONSIBLE FOR ESTABLISHING FINAL LOADS USED FOR DESIGN, INCLUDING LIVE, DEAD, SNOW (WITH DRIFTS), WIND, AND SEISMIC LOADS. TRUSS FABRICATOR IS TO SUPPLY SEALED TRUSS SHOP DRAWINGS AND SEALED PLAN PLACEMENT DRAWINGS PREPARED UNDER THE SUPERVISION OF THE SAME LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI TRUSS MANUFACTURER IS RESPONSIBLE FOR DESIGNING, DETAILING, AND PROVIDING ALL

TRUSS-TO-TRUSS, TRUSS-TO-WALL, AND TRUSS-TO-BEAM CONNECTIONS, UNLESS NOTED ROOF SHOP DRAWINGS SHALL INCLUDE DETAILED ERECTION DRAWINGS, AS WELL AS DESIGN INFORMATION FOR EACH TRUSS. PROVIDE ALL INFORMATION AS REQUIRED IN THE INTERNATIONAL BUILDING CODE SECTION 2303.4 "TRUSSES", INCLUDING CONNECTION

TRUSS MEMBERS AND COMPONENTS SHALL NOT BE CUT, NOTCHED, DRILLED, SPLICED, OR OTHERWISE ALTERED IN ANY WAY WITHOUT WRITTEN CONCURRENCE AND APPROVAL OF THE LICENSED PROFESSIONAL ENGINEER RESPONSIBLE FOR THE TRUSS DESIGN AND THE ENGINEER OF RECORD.

REFERENCE SECTION 16 "SUBMITTALS" FOR MORE INFORMATION. 14. POST CONSTRUCTION ANCHORS POST INSTALLED ANCHORS ARE NOT TO BE SUBSTITUTED FOR ANCHORS SHOWN ON THE

> OMITTED, CONTRACTOR MUST GENERATE A REQUEST FOR INFORMATION IN REGARDS TO THE EMBEDMENT DEPTH SHALL BE DEFINED AS THE DISTANCE FROM THE SURFACE OF THE LOAD-BEARING BASE MATERIAL TO THE DEEPEST PART OF THE ANCHOR AFTER THE ANCHOR HAS

OBSERVATION AND VERIFICATION OF EMBEDMENT HOLE CLEANING, DEPTH, AND ANCHOR INSTALLATION IS REQUIRED FOR ALL EPOXY ANCHORS. EQUIVALENT ANCHORS MAY BE SUBMITTED FOR THE ENGINEER'S APPROVAL. SUBMITTALS ARE THE CONTRACTOR'S RESPONSIBILITY AND MUST INCLUDE EVALUATION REPORTS FROM THE INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS, CURRENT WITH THE REQUIREMENTS

 THE CONTRACT STRUCTURAL DRAWINGS REPRESENT THE FINISHED STRUCTURE AND, except where specifically shown, do not indicate the method or means o CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, AND SEQUENCES. THE ENGINEER SHALL NOT HAVE CONTROL NOR CHARGE OF, AND SHALL NOT BE

RESPONSIBLE FOR, CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, OR SEQUENCES, FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, FOR THE ACTS OR OMISSION OF THE CONTRACTOR, SUBCONTRACTOR, OR AN OTHER PERSONS PERFORMING ANY OF THE WORK, OR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. PERIODIC SITE OBSERVATION BY FIELD REPRESENTATIVES OF LEIGH & O'KANE L.L.C. IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK OF THE CONTRACTOR IS

PROCEEDING IN 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 OWNER AGAINST DEFECTS AND DEFICIENCIES IN THE WORK OF THE CONTRACTOR.

ALL SHOP DRAWINGS AND SUBMITTALS MUST BE REVIEWED AND APPROVED BY THE CONTRACTOR PRIOR TO SUBMITTAL. ENGINEER'S REVIEW OF SHOP DRAWINGS IS LIMITED TO CHECKING FOR GENERAL CONFORMANCE WITH DESIGN DRAWINGS AND STRENGTH OF COMPONENTS AND MATERIALS. CONTRACTOR IS RESPONSIBLE FOR ANY CHANGES FROM THE DESIGN DRAWINGS, QUANTITIES, DIMENSIONAL ERRORS, OR OMISSIONS IN THE SHOP

ALL SHOP DRAWINGS MUST BE ORIGINAL DOCUMENTS AND SHALL NOT BE REPRODUCTIONS OF THESE CONTRACT DOCUMENTS. SUBMIT SHOP DRAWINGS DETAILING FABRICATION OF EACH MEMBER AND ITS CONNECTIONS. DETAIL DRAWINGS ARE TO BE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI FOR THE FOLLOWING ITEMS.

PREFABRICATED WOOD TRUSSES D. CONTRACTOR SHALL SUBMIT STRUCTURAL SHOP DRAWINGS FOR THE FOLLOWING ITEMS. CONCRETE MIX DESIGN AND MATERIALS

CONCRETE REINFORCING STEEL PREFABRICATED WOOD TRUSSES PROVIDE A FINAL, "FOR CONSTRUCTION" SET OF ALL SHOP DRAWINGS TO THE ENGINEER OF RECORD PRIOR TO FABRICATION OR CONSTRUCTION OF THOSE ITEMS.

17. SPECIAL INSPECTIONS A. THE FOLLOWING MINIMUM ITEMS REQUIRE SPECIAL INSPECTION IN ACCORDANCE WITH THE

> BUILDING CODE. CONCRETE PLACING CONCRETE REINFORCING

BOLTS EMBEDDED IN CONCRETE / POST-INSTALLED ANCHORS ANCHOR RODS

ROOF DIAPHRAGM ATTACHMENT SOIL VERIFICATION

B. THE CONTRACTOR SHALL REQUEST SPECIAL INSPECTION OF THE ITEMS LISTED ABOVE PRIOR TO THOSE ITEMS BECOMING INACCESSIBLE AND UNOBSERVABLE DUE TO PROGRESSION OF

SCHEDULE OF MINIMUM SPECIAL INSPECTIONS INSPECTION FREQUENCY CONTINUOUS | PERIODIC REQUIRED VERIFICATION AND INSPECTION OF STRUCTURAL STEEL CONSTRUCTION MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS: A. IDENTIFICATION MARKING TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED. Χ INSPECTION OF HIGH-STRENGTH BOLTING: (INSPECTION SHALL BE IN ACCORDANCE WITH AISC SPECIFICATIONS) SNUG-TIGHT JOINTS. Χ PRE-TENSIONED AND SLIP-CRITICAL JOINTS USING THE TURN-OF-NUT WITH MATCHMARKING, TWIST-OFF BOLT DIRECT TENSION INDICATOR METHODS OF INSTALLATION. PRE-TENSIONED AND SLIP-CRITICAL JOINTS USING THE CALIBRATED WRENCH OR TURN-OF-NUT METHOD WITHOUT MATCHMARKING OR CALIBRATED WRENCH METHODS OF INSTALLATION. MATERIAL VERIFICATION OF STRUCTURAL STEEL AND COLD-FORMED STEEL DECK: FOR STRUCTURAL STEEL, INDENTIFICATION MARKING TO CONFORM TO AISC 360. FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS. Χ MANUFACTURERS' CERTIFIED TEST REPORTS. MATERICAL VERIFICATION OF WELD FILLER MATERIALS IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS. MANUFACTURER'S CERTIFICATE OF COMPLIANCE. INSTPECTION OF WELDING: (WELDING INSPECTION SHALL BE IN COMPLIANCE WITH AWS D1.1)(IN COOPERATION WITH OWNER'S TESTING LAB) A. STRUCTURAL STEEL AND COLD-FORMED STEEL DECK: COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS. MULTIPASS FILLET WELDS. SINGLE-PASS FILLET WELDS > 5/16. PLUG AND SLOT WELDS. SINGLE PASS FILLET WELDS  $\leq 5/16$ . FLOOR AND ROOF DECK WELDS. REINFORCING STEEL: VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706. 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. SHEAR REINFORCEMENT. OTHER REINFORCING STEEL. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE: DETAILS SUCH AS BRACING AND STIFFENING. MEMBER LOCATIONS APPLICATION OF JOINT DETAILS AT EACH CONNECTION. INSPECTION OF COLD-FORMED STEEL TRUSSES SPANNING 60 FT OR GREATER: VERIFY TEMPORARY INSTALLATION RESTRAINT/BRACING AND THE PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAINT/BRACING ARE INSTALLED IN ACCORDANCE WITH THE APPROVED TRUSS SUBMITTAL PACKAGE. REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT. VERIFY GRADE, SIZE, QUANTITY, AND SPACING OF REINFORCING BARS FOR COMPLIANCE WITH CONTRACT DOCUMENTS AS WELL AS APPROVED SHOP DRAWINGS. REPORT ANY NOTED CONFLICT BEFORE CONCRETE IS POURED SO THAT CORRECTIONS MAY BE MADE. (INSPECTION MAY BE PERIODIC BUT ALL REBAR TO BE INSPECTED) INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1705.3 (REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION, INSPECTION OF WELDING, REINFORCING STEEL). INSPECTION OF BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED. INSPECTION OF ANCHORS INSTALLED IN HARDENED CONCRETE. VERIFYING USE OF REQUIRED DESIGN MIX. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES. Χ INSPECTION OF PRESTRESSED CONCRETE: A. APPLICATION OF PRESTRESSING FORCES. B. GROUTING OF BONDED PRESTRESSING TENDONS IN THE SEISMIC-FORCE-RESISTING SYSTEM Χ ERECTION OF PRECAST CONCRETE MEMBERS. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POSTTENSIONED CONRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS. 12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED. REQUIRED VERIFICATION AND INSPECTION OF SOILS (IN COOPERATION WITH OWNERS' GEOTECHNICAL TESTING AGENCY) VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY REQUIRED VERIFICATION AND INSPECTION OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS (IN COOPERATION W/ OWNER'S GEOTECHNICAL TESTING AGENCY) OBSERVE DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, BELL DIAMETERS (IF APPLICABLE), EMBEDMENT INTO BEDROCK (IF APPLICABLE) AND ADEQUATE END-BEARING STRATA CAPACITY. RECORD CONCRETE OR GROUT VOLUMES. FOR CONCRETE ELEMENTS, PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH THE REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION NOTED ABOVE. REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION COMPLIANCE WITH REQUIRED INSPECTION PROVISIONS OF THE CONSTRUCTION DOCUMENTS AND THE APPROVED SUBMITTALS. Χ VERIFICATION OF F'M AND F'AAC PRIOR TO CONSTRUCTION AND FOR EVERY 5000 SQUARE FEET DURING CONSTRUCTION Χ VERIFICATION OF PROPORTIONS OF MATERIALS IS PREMIXED OR PREBLEDED MORAR AND GROUT AS DELIVERED TO THE SITE VERIFICATION OF SLUMP FLOW AND VSI AS DELIVERD TO THE SITE FOR SELF-CONSOLIDATION GROUT. THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE: PROPORTIONS OF SITE-PREPARED MORTAR, GROUT, AND PRESTRESSING FOR BONDED TENDONS. PLACEMENT OF MASONRY UNITS AND CONSTRUCTION OF MORAR JOINTS. Χ PLACEMENT OF REINFORCEMENT CONNECTORS AND PRESTRESSING TENDONS AND ANCHORAGES Χ GROUT SPACE PRIOR TO PLACEMENT. PLACEMENT OF GROUT. F. PLACEMENT OF PRESTRESSING GROUT. SIZE AND LOCATION OF STRUCTURAL ELEMENTS. Χ TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION. SPECIFIED SIZE, GRADE AND TYPE OF REINFORCEMENT, ANCHOR BOLTS, PRESTRESSING TENDONS AND ANCHORAGES. Χ WELDING OF REINFORCING BARS. PREPARATION OF ANY REQUIRED GROUT SPECIMENS AND/OR PRISMS SHALL BE OBSERVED. Χ

APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE.

**PLAN SYMBOL KEY** F? = FOOTING TYPE (REFER TO FOOTING SCHEDULE) (?) = COLUMN TYPE (REFER TO COLUMN SCHEDULE) (W?) = WOOD WALL TYPE (REFER TO WOOD WALL SCHEDULE) (SW?) = SHEAR WALL TYPE (REFER TO WOOD WALL SCHEDULE) (CW?) = CONCRETE WALL TYPE (REFER TO CONCRETE WALL SCHEDULE) (MW?) = MASONRY WALL TYPE (REFER TO MASONRY WALL SCHEDULE) = SHEAR WALL HOLDOWN = MOMENT FRAME CONNECTION = BEAM SPLICE CONNECTION

EXIST. **WALL TYPE KEY** FINISH FLOOR = LOAD BEARING WALL GALV. = NON-LOAD BEARING WALL = SHEAR WALL **HATCH PATTERN KEY** = CONCRETE IN SECTION LOW = EARTH IN SECTION = EPOXY IN SECTION = EXISTING IN PLAN AND SECTION = GRANULAR FILL IN SECTION PLATE = GRATING IN PLAN AND SECTION SCHED. = GROUT IN SECTION = INSULATION IN SECTION

= PLYWOOD IN SECTION

= STEEL IN SECTION

= TOPPING IN SECTION

Χ

= SNOW DRIFT LOADING IN PLAN

= WOOD END GRAIN IN SECTION

= WOOD FACE GRAIN IN SECTION

BOTTOM BOTTOM OF BUILDING CENTER LINE CLR. CLEAR COLUMN CONCRETE CONNECTION CONTINUOUS CONTROL JOINT DIAMETER DIMENSION DWG(S) DRAWING(S) ELEVATION ELEVATION EQUAL **EQUIPMENT EXISTING** EXTERIOR FAR SIDE FOOTING **FOUNDATION** GAL VANTZET GYPSUM HEADED STUD HORIZONTAL INSULATION INTERIOR LOCATION LONG LEG HORIZONTAL LONG LEG OUT LONG LEG VERTICAL LONGITUDINAL MASONRY MAXIMUM MECHANICA MINIMUM MIRRORED NEAR SIDE NOT APPLICABL NOT TO SCALE ON CENTER REFERENCE REINFORCING SCHEDULE SECTION SIMILAR SQUARE S.S. STAINLESS STEEL TOP & BOTTOM TOP OF TRANS. TRANSVERSE UNLESS NOTED OTHERWISE VERT. VERTICAL WITH

WITHOUT

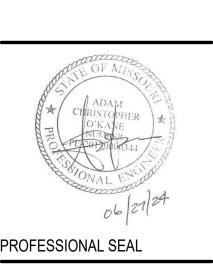
STANDARD ABBREVIATIONS

ANCHOR BOLT

ARCHITECT

ARCH.

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**GENERAL NOTES** 

SECTION 033000 - CAST-IN-PLACE CONCRETE A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials mixture design, placement procedures, and finishes. A. Cementitious Materials: Portland cement alone or in combination with one or more of the materials subject to compliance with requirements. PREINSTALLATION MEETINGS . Preinstallation Conference: Conduct conference at Project site. Before submitting design mixtures, review concrete design mixture and examine entity directly concerned with cast-in-place concrete to attend, including the following . Contractor's superintendent. Independent testing agency responsible for concrete design mixtures. Ready-mix concrete manufacturer. Special concrete finish Subcontractor. Review special inspection and testing and inspecting agency procedures for field quality ontrol, concrete finishes and finishing, cold- and hot-weather concreting procedu curing procedures, construction contraction and isolation joints, and joint-filler strip forms and form removal limitations, shoring and reshoring procedures, vapor-reta installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, methods for achieving specified floor and slab flatness and levelness floor and slab flatness and levelness measurement, concrete repair procedures, and concrete restatetion. acteristics of materials, Project conditions, weather, test results, or other circumstances 1. Indicate amounts of mixing water to be withheld for later addition at Project site. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete minforcement. D. Construction Joint Layout: Indicate proposed construction joints required to construct the Location of construction joints is subject to approval of the Architect. INFORMATIONAL SUBMITTALS Qualification Data: For Installer, manufacturer, and testing agency. Material Certificates: For each of the following, signed by manufacturers Curing compounds. Floor and slab treatments. Material Test Reports: For the following, from a qualified testing agency Aggregates: Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork F. Floor surface flatness and levelness measurements indicating compliance with specified H. Minutes of preinstallation conference Flatwork Technician and Finisher and a supervisor who is an ACI-certified products and that complies with ASTM C 94/C 94M requirements for production facilities and Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agenc laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II. D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M .8 PRECONSTRUCTION TESTING A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction DELIVERY, STORAGE, AND HANDLING Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and .. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low When average high and low temperature is expected to fall below 40 deg F for three frozen subgrade or on subgrade containing frozen materials.

Do not use calcium chloride, salt, or other materials containing antifreeze agents or B. Hot-Weather Placement: Comply with ACI 301 and as follows: Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalen ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concret A. ACI Publications: Comply with the following unless modified by requirements in the Contract FORM-FACING MATERIALS Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows: a. High-density overlay, Class 1 or better.
 b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fi paper, or fiber tubes that produce surfaces with gradual or abrupt irregularities not exceedin specified formwork surface class. Provide units with sufficient wall thickness to resist plastic Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads. . Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum G. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal. stain, or adversely affect concrete surfaces and does not impair subsequent treatments of Formulate form-release agent with rust inhibitor for steel form-facing materials. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of 1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete 3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed. B. Steel Bar Mats: ASTM A 184/A 184M, fabricated from ASTM A 615/A 615M, Grade 60, C. Deformed-Steel Wire: ASTM A 1064/A 1064M. A. Zinc Repair Material: ASTM A 780/A 780M B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from stee wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

3. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from Portland Cement: ASTM C 150/C 150M, Type I or Type II, gray Fly Ash: ASTM C 618, Class F.
Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
Silica Fume: ASTM C 1240, amorphous silica. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 1N coarse aggregate or better, graded. Provide aggregates from a single source. Maximum Coarse-Aggregate Size: 3/4 inch nominal. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement. D. Air-Entraining Admixture: ASTM C 260/C 260M. that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride. Water-Reducing Admixture: ASTM C 494/C 494M, Type A. Retarding Admixture: ASTM C 494/C 494M, Type B. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494/C 494M, Type C. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following: a. Euclid Chemical Company (The); an RPM company
 b. GCP Applied Technologies Inc.

 Sika Corporation. G. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-setaccelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of formin protective barrier and minimizing chloride reactions with steel reinforcement in concrete. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to a. Cortec Corporation.
b. GCP Applied Technologies Inc.
c. Sika Corporation. H. Water: ASTM C 94/C 94M and potable.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to 3.5 VAPOR-RETARDER INSTALLATION

2.6 VAPOR RETARDERS A. Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils thick. LIQUID FLOOR TREATMENTS hardens, and densifies concrete surfaces. . Manufacturers: Subject to compliance with requirements, available manufacturers ffering products that may be incorporated into the Work include, but are not limited to

offering products that may be incorporated into the Work include, but are not limited to

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1752, cork or self-expanding cork

fill or cover face opening of reglet to prevent intrusion of concrete or debris.

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match

B. Bonding Agent: ASTM C 1059/C 1059M, Type II, nonredispersible, acrylic emulsion or

Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing

. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to

icknesses from 1/8 inch and that can be feathered at edges to match adjacent fl

nydraulic cement as defined in ASTM C 219.

Primer: Product of underlayment manufacturer recommended for substrate, conditions,

Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended

Compressive Strength: Not less than 4000 psi (29 MPa) at 28 days when tested according

Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended

Primer: Product of topping manufacturer recommended for substrate, conditions, and

Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

Prepare design mixtures for each type and strength of concrete, proportioned on the basis of

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than

Use a qualified independent testing agency for preparing and reporting proposed mixture

Slag Cement: 50 percent.
Combined Fly Ash or Pozzolan and Slag Cement: 50 percent portland cement minimum,

exceeding 25 percent and silica fume not exceeding 10 percent.

Combined Fly Ash or Pozzolans, Slag Cement, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as

Use water-reducing and -retarding admixture when required by high temperatures, low numidity, or other adverse placement conditions.

Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a

Slump Limit: 8 inches for concrete with verified slump of 2 to 4 inches (50 to 100 mm

Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch

Slump Limit: 4 inches, plus or minus 1 inch. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch

ore adding high-range water-reducing admixture or plasticizing admixture, plus or

6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not

Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of

laboratory trial mixture or field test data, or both, according to ACI 301.

Combined Fly Ash and Pozzolan: 25 percent.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

Use corrosion-inhibiting admixture in concrete mixtures where indicated.

Minimum Compressive Strength: 4000 psi at 28 days.

Minimum Compressive Strength: 4000 psi at 28 days.

Minimum Cementitious Materials Content: 540 lb/cu. yd..

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice

nominal maximum aggregate size.

6. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to

of water added. Record approximate location of final deposit in structure.

-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and

For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each

Provide batch ticket for each batch discharged and used in the Work, indicating Project

dentification name and number, date, mixture type, mixture time, quantity, and amount

Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure

B. Construct formwork so concrete members and structures are of size, shape, alignment,

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

E. Construct forms for easy removal without hammering or prying against concrete surfaces.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork

Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does

3. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or

not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by

Leave formwork for beam soffits, joists, slabs, and other structural elements that suppo-

otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new

weight of concrete in place until concrete has achieved at least 70 percent of its 28-day

design compressive strength.

Remove forms only if shores have been arranged to permit removal of forms without

Install dovetail anchor slots in concrete structures as indicated.

Install anchor rods, accurately located, to elevations required and complying with

of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and

Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and

Install keyways, reglets, recesses, and the like, for easy removal.

Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

elevation, and position indicated, within tolerance limits of ACI 117.

Class A, 1/8 inch for smooth-formed finished surfac

Class B, 1/4 inch for rough-formed finished surface

D. Construct forms tight enough to prevent loss of concrete mortan

2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

Slabs-on-Grade: Normal-weight concrete.

FORMWORK INSTALLATION

maintain proper alignment.

3.2 EMBEDDED ITEM INSTALLATION

REMOVING AND REUSING FORMS

form-release agent.

A. Footings: Normal-weight concrete

Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended

to damp surfaces, of class suitable for application temperature and of grade to suit

2.9 RELATED MATERIALS

2.10 REPAIR MATERIALS

requirements, and as follows:

CONCRETE MIXTURES, GENERA

Silica Fume: 10 percent.

3.6 STEEL REINFORCEMENT INSTALLATION A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that ffering products that may be incorporated into the Work include, but are not limited to

Accurately position, support, and secure reinforcement against displacement. Locate and rossing reinforcing bars Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated. D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces. B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry. C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to 3.15 CONCRETE SURFACE REPAIRS is to prevent continuous laps in either direction. Lace overlaps with wire

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, General: Construct joints true to line with faces perpendicular to surface plane of concrete offering products that may be incorporated into the Work include, but are not limited to B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, ondissipating, certified by curing compound manufacturer to not interfere with bonding of

Place joints perpendicular to main reinforcement Continue reinforcement acro Immediately after form removal, cut out honeycombs, rock pockets, and voids more that 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges o cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat hole and voids with bonding agent. Fill and compact with patching mortar before bonding joints unless otherwise indicated. Do not continue reinforcement through se a bonding agent at locations where fresh concrete is placed against hardened or agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in pla-Repair defects on surfaces exposed to view by blending white portland cement at Manufacturers: Subject to compliance with requirements, available manufacturers oncrete into areas as indicated. Construct contraction joints for a depth equal to at least one-Patch a test area at inconspicuous locations to verify mixture and color match befo proceeding with patching. Compact mortar in place and strike off slightly higher the ffering products that may be incorporated into the Work include, but are not limited to Repair defects on concealed formed surfaces that affect concrete's durability and each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after Sawed Joints: Form contraction joints with power saws equipped with shatterproof G. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, erify surface tolerances specified for each surface. Correct low and high areas. Test surfac

When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.

. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and

distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to 3.13

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and

B. Bituminous Vapor Retarders: Place, protect, and repair bituminous vapor retarder according to

. Lap joints 6 inches and seal with manufacturer's recommended tape

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete

SHORING AND RESHORING INSTALLATION

action does not tear, abrade, or otherwise damage surface and before concrete develops junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and her locations, as indicated. Extend ioint-filler strips full width and depth of joint, terminating flush with finished ncrete surface unless otherwise indicated.

rminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below ished concrete surface where joint sealants, specified in Section 079200 "Joint sealants", specified in Section 0. Sealants," are indicated.

Install joint-filler strips in lengths as long as practicable. Where more than one length is

construction joints, until placement of a panel or section is complete

slab surfaces before starting finishing operations.

lope surfaces uniformly to drains where required.

legin initial floating using bull floats or darbies to form a uniform and open-texture

defects repaired and patched. Remove fins and other projections that exceed specified limits

defects. Remove fins and other projections that exceed specified limits on formed-surface

Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be

Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform

color and texture. Do not apply cement grout other than that created by the rubbing

Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick

poun to total surfaces and till stinati notes. MIX I part portland cement to 1-1/2 parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlan and leans surface drawn by for a general few at 1-2.2 C for the parts of the parts o

clean burlap and keep surface damp by fog spray for at least 36 hours. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix 1 part portland cement and 1 part fine sand with a 1:1 mixture of bonding agent and water. Add white

portland cement in amounts determined by trial patches, so color of dry grout matches

accent to formed surfaces, strike off smooth and finish with a texture matching adjacent traces access the surface surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent

cessible to power-driven floats. Restraighten, cut down high spots, and fill low spots.

tepeat float passes and restraightening until surface is left with a uniform, smooth, granular

and of power-driven tower. Committee towering passes and restraighten until surface is free of rowel marks and uniform in texture and appearance. Grind smooth any surface defects that rould telegraph through applied coatings or floor coverings.

inish surfaces to the following tolerances, according to ASTM E 1155, for a randomly

Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with

Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17; for slabs-on-

Specified overall values of flatness, F(F) 30; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 15; for

Finish and measure surface, so gap at any point between concrete surface and ar

Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces as indicated per Architect. While concrete is still plastic, slightly scarify surface with a fine broom.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still

Coordinate sizes and locations of concrete bases with actual equipment provide Construct concrete bases 4 inches high unless otherwise indicated, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported

reen and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and

Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated,

Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated item

General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather

rindy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing perations. Apply according to manufacturer's written instructions after placing, screeding, and

Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported

surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods

slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the

Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

for curing concrete, placed in widest practicable width, with sides and ends lapped at

days. Immediately repair any holes or tears during curing period, using cover material

Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive

or supported equipment, install epoxy-coated anchor bolts that extend through concrete se and anchor into structural concrete substrate.

. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

MISCELLANEOUS CONCRETE ITEM INSTALLATION

Minimum Compressive Strength: 4000 psi at 28 days.

ull floating or darbying concrete, but before float finishing.

terminations slightly rounded

Equipment Bases and Foundations:

3.12 CONCRETE PROTECTING AND CURING

unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch.

Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by

Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed sur

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-

finishing operations for concrete surfaces. Do not wet concrete surfaces

Apply float finish to surfaces as indicated per Architect

in one direction.

icent surfaces. Compress grout into voids by grinding surface. In a swirling motion

Rubbed Finish: Apply the following to smooth-formed-finished as-cast concrete where

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes

plane, before excess bleedwater appears on the surface. Do not further disturb

After concrete has cured at least 14 days, correct high areas by grinding.

Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired rrect other low areas scheduled to receive floor coverings with a repair underlaymen Prepare, mix, and apply repair underlayment and primer according to manufa required, lace or clip sections together oduce a smooth, uniform, plane, and level surface. Feather edg o match adjacent floor elevations.

Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's the property of the pr Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint. CONCRETE PLACEMENT Repair defective areas, except random cracks and single holes 1 inch or less in diame y cutting out and replacing with fresh concrete. Remove defective areas with clear A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded square cuts and expose steel reinforcement with at least a 3/4-inch clearance all aroun oncrete surfaces in contact with patching concrete and apply bonding as B. Do not add water to concrete during delivery, at Project site, or during placement unless coarse aggregate. Place, compact, and finish to blend with adjacent finished concret

Repair random cracks and single holes 1 inch or less in diameter with patching morta Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours. Before test sampling and placing concrete, water may be added at Project site, subject to 1. Do not add water to concrete after adding high-range water-reducing admixtures to ictural repairs of concrete, subject to Architect's approval, using epoxy adhesive an Deposit concrete commutativity in one layer of in indizional angers of such interness than to new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit Repair materials and installation not specified above may be used, subject to Architec Deposit concrete in horizontal layers of depth not to exceed formwork design pressures 3.16 FIELD QUALITY CONTROL Consolidate placed concrete with mechanical vibrating equipment according to ACI 301

Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to Special Inspections: Owner will engage a special inspector and qualified testing and inspecting . Testing Agency: Engage a qualified testing and inspecting agency to perform tests and nsolidate concrete and complete embedment of reinforcement and other embedded Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of

rification of concrete strength before removal of shores and forms from beams at Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements: Testing Frequency: Obtain one composite sample for each day's pour of each concre ixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional : a. When frequency of testing provides fewer than five compressive-strength tests f ch concrete mixture, testing shall be conducted from at least five random ected batches or from each batch if fewer than five are used. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample ot less than one test for each day's pour of each concrete mixture. Perform addition ests when concrete consistency appears to change. test for each composite sample, but not less than one test for each day's pour of each

b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to rece

bonding of floor covering used on Project.

of coating and repair damage during curing period.

LIQUID FLOOR TREATMENT APPLICATION

Cure concrete surfaces to receive floor coverings with either a moisture-reta

rithin three hours after initial application. Maintain continuity of coating and repa

damaging concrete surfaces by method recommended by curing compound

a. Removal: After curing period has elapsed, remove curing compound witho

Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial.

Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatm

is dry. Apply a second coat in a similar manner if surface is rough or porous.

Defer joint filling until concrete has aged at least one month(s). Do not fill joints unti
construction traffic has permanently ceased.

. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact

Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

Repairing Formed Surfaces: Surface defects include color and texture irregularities, crac

ains and other discolorations that cannot be removed by cleaning.

sloped to drain for trueness of slope and smoothness; use a sloped template.

Repair finished surfaces containing defects. Surface defects include spalls, popou

honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless or width, and other objectionable conditions.

alls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, at

B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound

. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants as

comprese surface repairs.

Do not apply to concrete that is less than three days' old.

Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface

pplication. Repeat process 24 hours later and apply a second coat. Maintain continu

CTION 051200 - STRUCTURAL STEEL FRAMING

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

along grid lines designated as "SLRS" on Drawings, including columns, beams, and braces and

Shapes included in ASTM A 6/A 6M with flanges thicker than 1-1/2 inches.

Protected Zone: Structural members or portions of structural members indicated as "Protected

Demand Critical Welds: Those welds, the failure of which would result in significant

Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint

Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

Include details of cuts, connections, splices, camber, holes, and other pertinent data

Identify members and connections of the Seismic-Load-Resisting Syster

Electrode manufacturer and trade name, for demand critical welds.

Mill test reports for structural steel, including chemical and physical propertie

sion-control, high-strength, bolt-nut-washer assemblies.

Include embedment Drawings.

Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed

Indicate type, size, and length of bolts, distinguishing between shop and field bolts.

Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded

Delegated-Design Submittal: For structural-steel connections indicated to comply with design

ads, include analysis data signed and sealed by the qualified professional engineer responsible

Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers,

Bolts, nuts, and washers including mechanical properties and chemical analysis.

Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality

Installer Qualifications: A qualified installer who participates in the AISC Quality Certification

Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M

Comply with applicable provisions of the following specifications and documents:

RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

round and spaced by using pallets, dunnage, or other supports and spacers. Protect steel

overload to members or supporting structures. Repair or replace damaged materials or

Fasteners may be repackaged provided Owner's testing and inspecting agency observes

Connections: Provide details of simple shear connections required by the Contract Documents

Select and complete connections using schematic details indicated and AISC 360.
 Use Allowable Stress Design; data are given at service-load level.

Corrosion-Resisting Structural-Steel Shapes, Plates, and Bars: ASTM A 588/A 588M Grade 50.

Cold-Formed Hollow Structural Sections: ASTM A 500/A 500M, Grade B, structural tubing.

Corrosion-Resisting, Cold-Formed Hollow Structural Sections: ASTM A 847/A 847M,

High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural

bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened

. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with plain

respectively and seals containers.

Clean and relubricate bolts and nuts that become dry or rusty before use.

Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

Store fasteners in a protected place in sealed containers with manufacturer's labels intact. 3.3 ERECTION

Welders and welding operators performing work on bottom-flange, demand-critic

welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for

Shop-Painting Applicators: Qualified according to AISC's Sophisticated Paint Endorsement P3 or to SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting

and coating manufacturers written recommendations to ensure that shop primers and topcoats are compatible with one another.

elded built-up members with plates thicker than 2 inches

indicated as "Demand Critical" or "Seismic Critical" on Drawings.

Heavy Sections: Rolled and built-up sections as follows:

Column base plates thicker than 2 inches.

ACTION SUBMITTALS

Product Data: For each type of product.

Shop Drawings: Show fabrication of structural-steel componen

joint qualified by testing, including the following:

INFORMATIONAL SUBMITTALS

Qualification Data: For Installer fabricate

Product Test Reports: For the following:

. Field quality-control and special inspection reports

QUALITY ASSURANCE

"Structural Welding Code - Steel."

AISC 303. AISC 341 and AISC 341s1.

DELIVERY, STORAGE, AND HANDLING

PERFORMANCE REQUIREMENTS

Construction: Moment frame.

STRUCTURAL-STEEL MATERIALS

Channels, Angles-Shapes: ASTM A 36/A 36M

Steel Pipe: ASTM A 53/A 53M, Type E or Type S, Grade B.

Welding Electrodes: Comply with AWS requirements

carbon-steel washers; all with plain finish.

W-Shapes: ASTM A 992/A 992M.

Plate and Bar: ASTM A 36/A 36M.

Weight Class: Standard.
 Finish: Black.

certifying that shop primers are compatible with topcoats

RELATED DOCUMENTS

ART 1 - GENERAL

SUMMARY

Section Includes:

4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature Compression Test Specimens: ASTM C 31/C 31M. a. Cast and laboratory cure two sets of two standard cylinder specimens for each b. Cast and field cure one set of five sets of two standard cylinder specimens for each 6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cure ART 2 - PRODUCTS specimens at 7 days and one set of two specimens at 28 days. a. Test one set of two field-cured specimens at 7 days and one set of two specimens ssive-strength test shall be the average compressive strength from a set two specimens obtained from same composite sample and tested at age indicated. red cylinders, Contractor shall evaluate operations and provide corrective procedu r protecting and curing in-place concrete. Strength of each concrete mixture will be satisfactory if every average of any thr nsecutive compressive-strength tests equals or exceeds specified com . Moment Connections: Type FR, fully restrained.

nd no compressive-strength test value falls below specified compressive strength by Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive trength at 28 days, concrete mixture proportions and materials, compressive breaking trength, and type of break for both 7- and 28-day tests. londestructive Testing: Impact hammer, sonoscope, or other nondestructive device me e permitted by Architect but will not be used as sole basis for approval or rejection additional Tests: Testing and inspecting agency shall make additional tests of concr Adultional Tests. Testing and inspecting agency shant make adultional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect. Additional testing and inspecting, at Contractor's expense, will be performed to determ compliance of replaced or additional work with specified requirements. orrect deficiencies in the Work that test reports and inspections indicate do not comply E. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of

H. Steel Castings: ASTM A 216/A 216M, Grade WCB with supplementary requirement S11. Steel Forgings: ASTM A 668/A 668M. 3.17 PROTECTION OF LIQUID FLOOR TREATMENTS A. Protect liquid floor treatment from damage and wear during the remainder of construct

> High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type I, heavy-hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436, Type I, hardened carbon-steel under the structure of Direct-Tension Indicators: ASTM F 959, Type 490, compressible-washer type with plain Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH heavy-hex carbon-steel nuts; and ASTM F 436, rect-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with mechanically deposited zinc coating finish. hex head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbonsteel nuts, and hardened carbon-steel washers. Finish: Plain. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B. Unheaded Anchor Rods: ASTM F 1554, Grade 36 Washers: ASTM F 436, Type 1, hardened carbon stee

> > Nuts: ASTM A 563 heavy-hex carbon steel.
> >  Washers: ASTM F 436, Type 1, hardened carbon steel.
> >  Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780/A 780M. Eye Bolts and Nuts: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1030. B. Touchup Painting: Immediately after erection, clean exposed areas where primer is damage Sleeve Nuts: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1018. Primer: SSPC-Paint 25, Type I, zinc oxide, alkyd, linseed oil primer. Primer: SSPC-Paint 25 BCS, Type I, zinc oxide, alkyd, linseed oil prime Primer: SSPC-Paint 23, latex primer. D. Touchup Priming: Cleaning and touchup priming are specified in Section 099600 "High-Performance Coatings." Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer END OF SECTION 051200 Galvanizing Repair Paint: MPI#18, MPI#19, or SSPC-Paint 20. Metallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.

Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C

Plate Washers: ASTM A 36/A 36/M carbon steel.

Washers: ASTM F 436, Type 1, hardened carbon steel.

Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.

Headed Anchor Rods: ASTM F 1554, Grade 36, straight.

Nuts: ASTM A 563 heavy-hex carbon steel.

Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged illic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time. FABRICATION Fabricate beams with rolling camber up. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain 5. Complete structural-steel assemblies, including welding of units, before starting shop-Thermal Cutting: Perform thermal cutting by machine to greatest extent possible

Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces. ECTION 061000 - ROUGH CARPENTRY D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC SP 1, "Solvent Cleaning." F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors.

Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M G. Steel Wall-Opening Framing: Select true and straight members for fabricating steel wall-

PART 1 - GENERAL RELATED DOCUMENTS Drawings and general provisions of the Contract, including General and Supplemental Conditions and Division 01 Specification Sections, apply to this Section. uniform, square, and true members in completed wall framing. Build up welded framing, weld Section Includes: H. Welded Door Frames: Build up welded door frames attached to structural-steel frame. W Framing with timber.

sed joint continuously and grind smooth. Plug-weld fixed steel bar stops to frames. Secured by the continuously and grind smooth. Plug-weld fixed steel bar stops to frames. Secured by the countersunk machine screws, uniformly spaced not more that 10 inches o.c. unless otherwise indicated. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt hole Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to Weld threaded nuts to framing and other specialty items indicated to receive other work.

SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning

Change color of second coat to distinguish it from first.

Systems," to provide a dry film thickness of not less than 1.5 mils.

Ultrasonic Inspection: ASTM E 164. Radiographic Inspection: ASTM E 94.

and locations of anchor rods, bearing plates, and other embedments for compliance with

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

connections, and bracing are in place unless otherwise indicated.

A. Provide temporary shores, guys, braces, and other supports during erection to keep structure.

A. Set structural steel accurately in locations and to elevations indicated and according to

Set plates for structural members on wedges, shims, or setting nuts as required.

Snug-tighten anchor rods after supported members have been positioned and plumbed Do not remove wedges or shims but, if protruding, cut off flush with edge of plate befor

Promptly pack grout solidly between bearing surfaces and plates so no voids rema

Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice

permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for

Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

se automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M

D. Align and adjust various members that form part of complete frame or structure bef

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be

H. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connec

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding

connections, and removal of paint on surfaces adjacent to field welds.

Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth

Assemble and weld built-up sections by methods that maintain true alignment of

thout exceeding tolerances in AISC 303, "Code of Standard Practice for Ste

procedure specifications, weld quality, and methods used in correcting welding work

A. Install prefabricated building columns to comply with AISC 360, manufacturer's writ

A. Special Inspections: Owner will engage a qualified special inspector to perform the following

erify connection materials and inspect high-strength bolted connection

Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.

E. In addition to visual inspection, test and inspect field-welded shear connectors according to

Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree

flash or welding repairs to any shear connector.

Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.

and paint with the same material as used for shop painting to comply with SSPC-PA

. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool

Touchup Painting: Cleaning and touchup painting are specified in Secti

Liquid Penetrant Inspection: ASTM E 165.

requirements in AWS D1.1/D1.1M for stud welding and as follows:

3.7 REPAIRS AND PROTECTION

for touching up shop-painted surfaces.

Painting" and Section 099123 "Interior Painting."

Testing Agency: Owner will engage a qualified testing agency to perform tests and inspection

Bolted Connections: Inspect bolted connections according to RCSC's "Specification fo Structural Joints Using ASTM A 325 or A 490 Bolts."

In addition to visual inspection, test and inspect field welds according AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not

Verify structural-steel materials and inspect steel frame joint details

Level and plumb individual members of structure

E. Splice members only where indicated

Joint Type: Pretensioned.

Buildings and Bridges," for mill material

PREFABRICATED BUILDING COLUMNS

F. Do not use thermal cutting during erection.

roughen surfaces prior to setting plates. Clean bottom surface of plates

steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel,

Do not remove temporary shoring supporting composite deck construction until cast-in

bearing plates, and other embedments showing dimensions, locations, angles, and

Plywood backing panels Related Requirements: Section 061300 "Heavy Timber Construction tion 061533 "Wood Patio Decking" for elevated decks, including support framing. A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint Joint Type: Pretensioned. B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding

6. Section 313116 "Termite Control" for site application of borate treatment to wood 2.8 FASTENERS procedure specifications, weld quality, and methods used in correcting welding work Assemble and weld built-up sections by methods that maintain true alignment of Boards or Strips: Lumber of less than 2 inches nominal size in least dimension. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal Exposed Framing: Framing not concealed by other construction Shop prime steel surfaces except the following OSB: Oriented strand board

Surfaces embedded in concrete or mortar. Extend priming of partially embedded Timber: Lumber of 5 inches nominal size or greater in least dimension members to a depth of 2 inches. ACTION SUBMITTALS Surfaces of high-strength bolted, slip-critical connections. Surfaces to receive sprayed fire-resistive materials (applied fireproofing). Product Data: For each type of process and factory-fabricated product. Indicate componen Surfaces enclosed in interior construction. B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spa slag, or flux deposits. Prepare surfaces according to the following specifications and stand SSPC-SP 2, "Hand Tool Cleaning,"

certification by treating plant that treated materials comply with requirements. Indicate Include data for fire-retardant treatment from chemical treatment manufacturer and physical properties of treated materials based on testing by a qualified independent For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664. For products receiving a waterborne treatment, include statement that moisture content o treated materials was reduced to levels specified before shipment to Project site. Fastener Patterns: Full-size templates for fasteners in exposed framing. Priming: Immediately after surface preparation, apply primer according to manufac 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, an INFORMATIONAL SUBMITTALS Material Certificates: For dimension lumber specified to comply with minimum allowable uni

stresses. Indicate species and grade selected for each use and design values approved by th ALSC Board of Review. Evaluation Reports: For the following, from ICC-E Painting: Prepare steel and apply a one-coat, nonasphaltic primer complying with SSI S Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Engineered wood products. Shear panels.
Power-driven fasteners. A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural stee

 Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth. QUALITY ASSURANCE rdant treated material, an inspection agency acceptable to authorities having jurisdiction t periodically performs inspections to verify that the material bearing the classification marking 2.10 SOURCE QUALITY CONTROL representative of the material tested. A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and DELIVERY, STORAGE, AND HANDLING

. Provide testing agency with access to places where structural-steel work is being Stack wood products flat with spacers beneath and between each bundle to provide air B. Bolted Connections: Inspect shop-bolted connections according to RCSC's "Specification fo Structural Joints Using ASTM A 325 or A 490 Bolts. Welded Connections: Visually inspect shop-welded connections according Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency Liquid Penetrant Inspection: ASTM E 165.

dicated, comply with the applicable rules of any rules-writing agency certified by the AL Board of Review. Grade lumber by an agency certified by the ALSC Board of Review inspect and grade lumber under the rules indicated. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished Factory mark each piece of lumber with grade stamp of grading agency.

For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on D. In addition to visual inspection, test and inspect shop-welded shear connectors according requirements in AWS D1.1/D1.1M for stud welding and as follows Dress lumber, S4S, unless otherwise indicated Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear nodel code research or evaluation reports exist that show compliance with building code in

qualified independent testing agency. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior nstruction not in contact with ground. Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board

. For exposed lumber indicated to receive a stained or natural finish, mark end or back of

Wood sills, sleepers, blocking, and similar concealed members in contact with masonry 4. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.

Wood framing members that are less than 18 inches above the ground in crawlspaces or Wood floor plates that are installed over concrete slabs-on-grade.

FIRE-RETARDANT-TREATED MATERIALS General: Where fire-retardant-treated materials are indicated, materials shall comply with est-response characteristics specified as determined by testing identical products per test nethod indicated by a qualified testing agency. index of 25 or less when tested according to ASTM E 84, and with no evidence of significan ront not extending more than 10.5 feet beyond the centerline of the burners at any time during

Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.

Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where ASTM D 5664 and design value adjustment factors shall be calculated according to Kiln-dry lumber after treatment to maximum moisture content of 19 percen

Identify fire-retardant-treated wood with appropriate classification marking of qualified testing For exposed lumber indicated to receive a stained or natural finish, mark end or back or not bleed through, contain colorants, or otherwise adversely affect finishes.

Non-Load-Bearing Interior Partitions: Construction, Stud, or No. 3 grade. Application: Interior partitions not indicated as load bearing. Spruce-pine-fir; NLGA Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA. Load-Bearing Partitions: No. 2 grade.

Application: Exterior walls and interior load-bearing partitions. a. Spruce-pine-fir; NLGA.
b. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA. 3. Application: Exterior walls and interior load-bearing partitions. Ceiling Joists: Construction or No. 2 grade.

Spruce-pine-fir: NLGA. . Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA. Joists, Rafters, and Other Framing Not Listed Above: No. 2 grade. Species: a. Spruce-pine-fir; NLGA. b. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

ENGINEERED WOOD PRODUCTS Source Limitations: Obtain each type of engineered wood product from single source from a marily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and nufactured with an exterior-type adhesive complying with ASTM D 2559.

Extreme Fiber Stress in Bending, Edgewise: 2600 psi for 12-inch nominal-depth Modulus of Elasticity, Edgewise: 2,000,000 psi. Parallel-Strand Lumber: Structural composite lumber made from wood strand elements with

ain primarily parallel to member lengths, evaluated and monitored according to STM D 5456 and manufactured with an exterior-type adhesive complying with Extreme Fiber Stress in Bending, Edgewise: 2900 psi for 12-inch nominal-depth Modulus of Elasticity, Edgewise: 2,200,000 psi. Rim Boards: Product designed to be used as a load-bearing member and to brace wood I-joists

Material: All-veneer product glued-laminated wood or product made from any combination solid lumber, wood strands, and veneers. Comply with APA PRR-401, rim board grade. Factory mark rim boards with APA-EWS trademark indicating thickness, grade, and compliance with APA-EWS standard. brace wood I-joists at bearing ends, complying with research/evaluation report for I-joists. Manufacturer: Provide products by same manufacturer as I-ioist Naminacture: Provide products by same manufacturer as 1-joists.

Rim Board Material: All-veneer product glued-laminated wood or product made from any combination solid lumber, wood strands, and veneers.

Rim Board Thickness: 1-1/4 inches.

Insulation: 1-1/2-inch-thick polyisocyanurate foam complying with ASTM C 1289. Inside Facing: 7/16-inch-thick OSB.
Comply with APA PRR-401, rim board grade. Factory mark rim boards with APA-EWS trademark indicating thickness, grade, and compliance with APA-EWS standard

SHEAR WALL PANELS Wood-Framed Shear Wall Panels: Prefabricated assembly consisting of wood perimeter framing, tie downs, and Exposure I, Structural I plywood or OSB sheathing. design products. Manufacturer's published values shall be determined from empirical data or by ational engineering analysis and demonstrated by comprehensive testing performed by a

MISCELLANEOUS LUMBER . General: Provide miscellaneous lumber indicated and lumber for support or attachment of other Rooftop equipment bases and support curb

Utility shelving.

D. Do not notch in middle third of joists: limit notches to one-sixth depth of joist, one-third at end- Dimension Lumber Items: Standard, Stud, or No. 3 grade lumber of any species. Spruce-pine-fir (south) or spruce-pine-fir; Select Merchantable or No. 1 Common grade; NeLMA, NLGA, WCLIB, or WWPA

Do not bore holes larger than one-third depth of joist; do not locate closer than 2 inches from C. Utility Shelving: Lumber with 15 percent maximum moisture content of any of the following Provide solid blocking of 2-inch nominal thickness by depth of joist at ends of joists unless Eastern white pine, Idaho white, lodgepole, ponderosa, or sugar pine; Premium or No. 2 Common (Sterling) grade; NeLMA, NLGA, WCLIB, or WWPA.
 Mixed southern pine or southern pine; No. 1 grade; SPIB.
 Hem-fir or hem-fir (north); Select Merchantable or No. 1 Common grade; NLGA, WCLIB, or WWPA. or securely tie opposing members together. Provide solid blocking of 2-inch nominal thickness by depth of joist over supports. G. Anchor members paralleling masonry with 1/4-by-1-1/4-inch metal strap anchors spaced not D. Concealed Boards: 19 percent maximum moisture content and any of the following species and inches into grouted masonry with ends bent at right angles and extending 4 inches beyond bend

 Provide solid blocking between joists under jamb studs for openings. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above. Hem-fir or hem-fir (north); Standard or No. 3 Common grade; NLGA, WCLIB, or

Provide triple joists separated as above, under partitions receiving ceramic tile and

Diagonal wood bridging formed from bevel-cut, 1-by-3-inch nominal-size lumber,

Steel bridging installed to comply with bridging manufacturer's written instructions.

Ceiling Joists: Install with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.

Rafters: Notch to fit exterior wall plates and use metal framing anchors. Double rafters to form

headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use

afters from wall plate to first joist; nail to ends of rafters and to top plate, and nail to first

by-4-inch nominal-size stringers spaced 48 inches o.c. crosswise over main ceiling

hickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing

oist or anchor with framing anchors or metal straps. Provide 1-by-8-inch nominal-size

similar heavy finishes or fixtures.

against valley rafters.

indicated if not continuous.

3.7 PROTECTION

1/2-inch airspace at sides and ends of wood members.

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despit

[wet enough that moisture content exceeds that specified], apply EPA-registered borate

CEILING JOIST AND RAFTER FRAMING INSTALLATION

Spruce-pine-fir (south) or spruce-pine-fir; Standard or No. 3 Common grade; NeLMA, NLGA, WCLIB, or WWPA. Eastern softwoods; No. 3 Common grade; NeLMA. J. Provide bridging of type indicated below, at intervals of 96 inches o.c., between joists. Western woods; Standard or No. 3 Common grade; WCLIB or WWPA.

E. For blocking not used for attachment of other construction, Utility, Stud. or No. 3 grade lumb of any species may be used provided that it is cut and selected to eliminate defects that interfere with its attachment and purpose. G. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling. A. General: Fasteners shall be of size and type indicated and shall comply with requirements

treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M. B. Nails, Brads, and Staples: ASTM F 1667. C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 as appropriate for the substrate. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against hip l: Carbon-steel components, zinc plated to comply with ASTM B 63 Provide collar beams (ties) as indicated or, if not indicated, provide 1-by-6-inch nominal-size Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2. member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters. D. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if Allowable design loads, as published by manufacturer, shall meet or exceed those of basis-o TIMBER FRAMING INSTALLATION

gn products. Manufacturer's published values shall be determined from empirical data or by an engineering analysis and demonstrated by comprehensive testing performed by a fifed independent testing agency. Framing anchors shall be punched for fasteners adequate internal polar for fasteners adequate. Install timber beams with crown edge up and provide not less than 4 inches of bearing on supports. Provide continuous members unless otherwise indicated; tie together over supports as to withstand same loads as framing anchors. 3. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with B. Where beams or girders are framed into pockets of exterior concrete or masonry walls, provide ASTM A 653/A 653M, G60 coating designation. Use for interior locations unless otherwise indicated. Install wood posts using metal anchors indicated. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), hig D. Treat ends of timber beams and posts exposed to weather by dipping in water-repellent strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

1. Use for wood-preservative-treated lumber and where indicate D. Stainless-Steel Sheet: ASTM A 666, Type 316. 1. Use for exterior locations and where indicated. E. Joist Hangers: U-shaped joist hangers with 2-inch-long seat and 1-1/4-inch-wide nailing flange at least 85 percent of joist depth.

F. I-Joist Hangers: U-shaped joist hangers with 2-inch-long seat and 1-1/4-inch-wide nailing Thickness: 0.050 inch. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.

H. Bridging: Rigid, V-section, nailless type, 0.050 inch thick, length to suit joist size and spacing. above base and with 2-inch-minimum side cover, socket 0.062 inch thick, and standoff and

inches wide by 0.050 inch thick. Tie fastens to side of rafter or truss, face of top plates, and side to wall studs below, 2-1/4 inches wide by 0.062 inch thick. Tie fits over top of rafter or trus and fastens to both sides of rafter or truss, face of top plates, and side of stud below M. Floor-to-Floor Ties: Flat straps, with holes for fasteners, for tying upper floor wall studs to band

Joist Ties: Flat straps, with holes for fasteners, for tying joists together over supports.

seven bolt diameters from reinforced base. Base Reinforcement Thickness: 0.239 inch. O. Wall Bracing: T-shaped bracing made for letting into studs in saw kerf, 1-1/8 inches wide by

bolts or to other hold-downs with threaded rods and designed with first of two bolts placed

P. Wall Bracing: Angle bracing made for letting into studs in saw kerf, 15/16 by 15/16 by 0.040 inch thick with hemmed edges. A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill standard widths to suit width of sill members indicated.

B. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's . Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

D. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active

INSTALLATION, GENERAL . Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Framing with Engineered Wood Products: Install engineered wood products to comply with D. Install plywood backing panels by fastening to studs; coordinate locations with utilities Install shear wall panels to comply with manufacturer's written instructions

Install metal framing anchors to comply with manufacturer's written instructions. Install . Install sill sealer gasket to form continuous seal between sill plates and foundation walls.

 $H. \hspace{0.5cm} \hbox{Do not splice structural members between supports unless otherwise indicated}.$ Provide blocking and framing as indicated and as required to support facing materials, fixtures, framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and

Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to nherent in framing system used, provide closely fitted solid wood blocks of same widtl as framing members and 2-inch nominal thickness. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. and to solidly fill space below

Fire block concealed spaces behind combustible cornices and exterior trim at not more K. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints of Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated

Use inorganic boron for items that are continuously protected from liquid wat Use copper naphthenate for items not continuously protected from liquid water M. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking N. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC). Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
3. ICC-ES evaluation report for fastener.

O. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully Use steel common mans unless otherwise microach over modern or mill receive finish material Make tight connections between members. Install fasteners without splitting wood. Drive nai For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
 Use common nails unless otherwise indicated. Drive nails snug but do not countersink

and cut as required for true line and level of attached work. Coordinate locations with other B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not of finish material. Remove temporary grounds when no longer required. WALL AND PARTITION FRAMING INSTALLATION

are located directly over studs. Fasten plates to supporting construction unless otherwise For exterior walls, provide 2-by-6-inch nominal- size wood studs spaced 16 inches o.c or interior partitions and walls, provide 2-by-6-inch nominal- size wood studs spaced 16 inches o.c. unless otherwise indicated.

Provide continuous horizontal blocking at midheight of partitions more than 96 inches high, using members of 2-inch nominal thickness and of same width as wall or partitions.

B. Construct corners and intersections with three or more studs, except that two studs may be used

for interior non-load-bearing partitions. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4 from four-load-beamp partitions, provide double-jaint stude and releases not less than from hominal depth for openings 48 inches and less in width, 6-inch nominal depth for openings 48 to 72 inches in width, 8-inch nominal depth for openings 72 to 120 inches For load-bearing walls, provide double-jamb studs for openings 60 inches and less in

General: Install floor joists with crown edge up and support ends of each member with not les n 1-1/2 inches of bearing on wood or metal, or 3 inches on masonry. Attach floor joists as Where supported on wood members, by using metal framing anchors.
 Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.

B. Fire Cuts: At joists built into masonry, bevel cut ends 3 inches and do not embed more than 4 C. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches.

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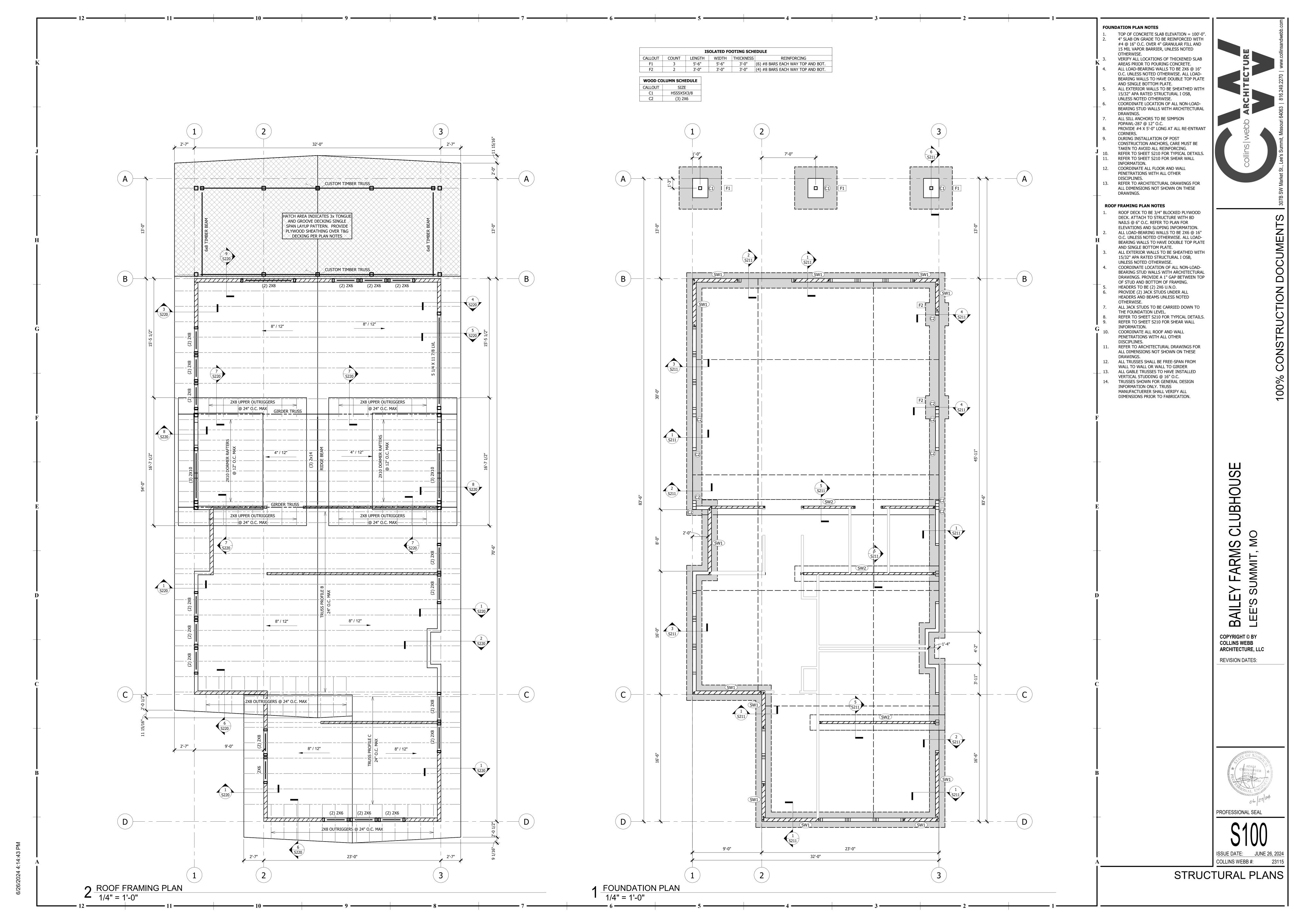
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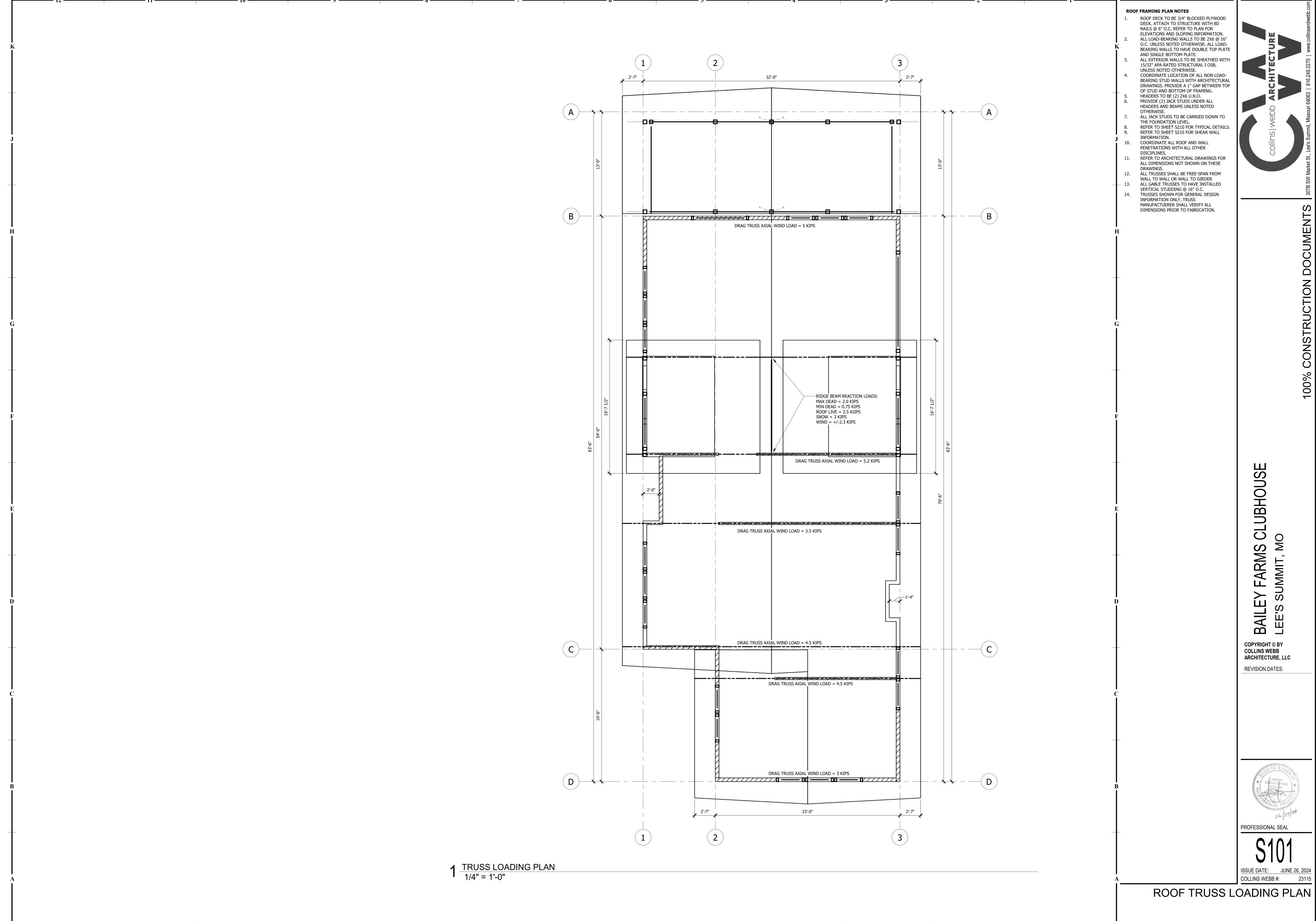
ISSUE DATE: JUNE 26, 2024 COLLINS WEBB #: 23115

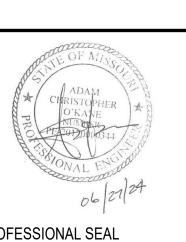
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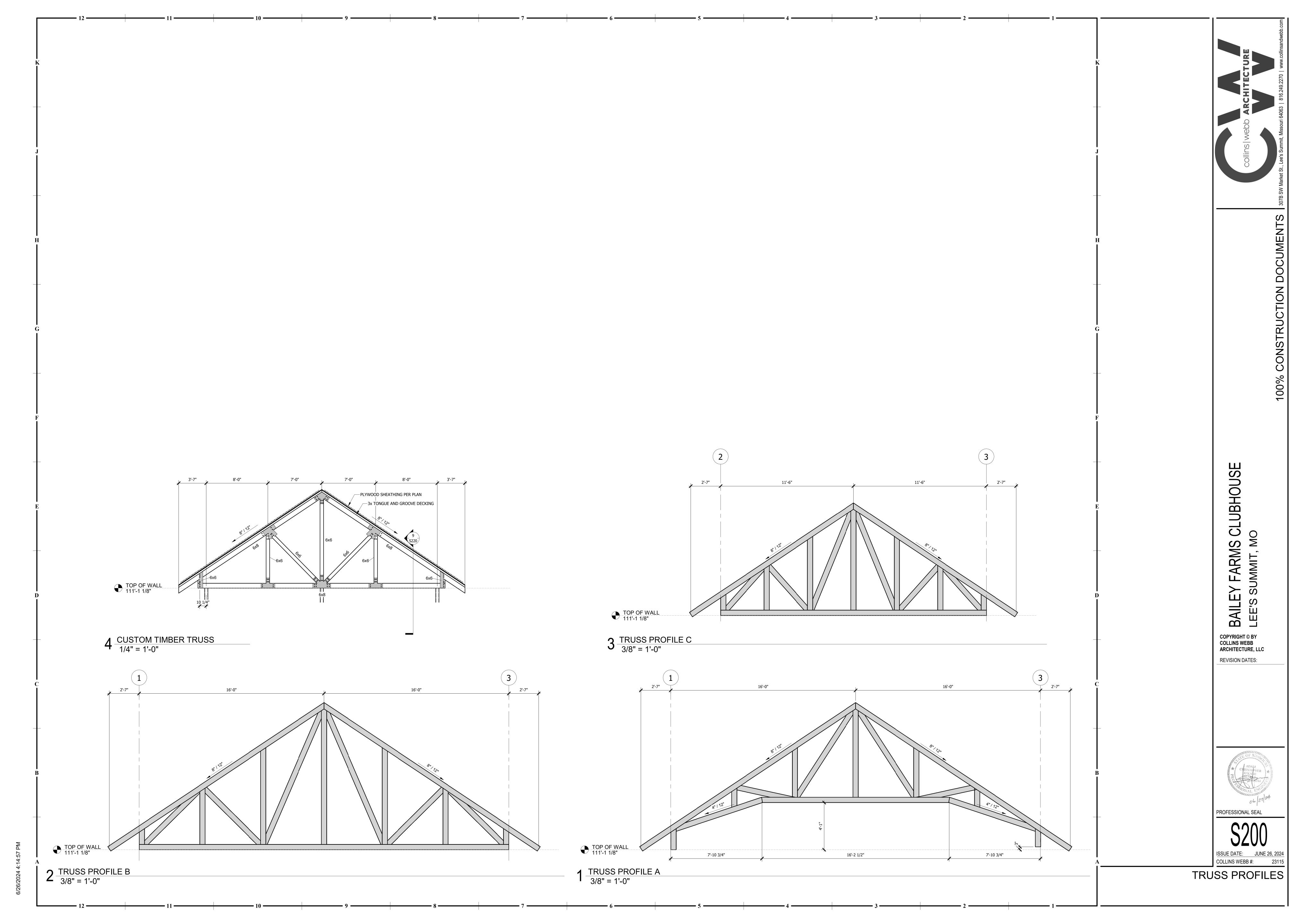
**SPECIFICATIONS** 

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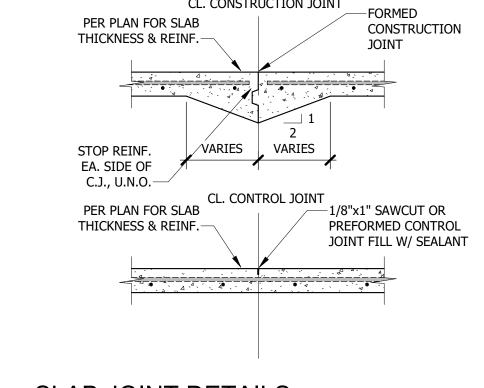
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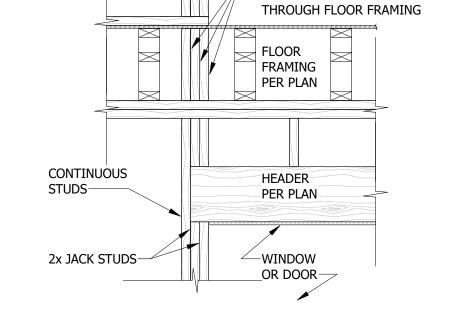
ISSUE DATE: JUNE 26, 2024 COLLINS WEBB #: 23115

TYPICAL DETAILS

—(4) 3/4" ANCHOR RODS -HSS5X5X3/8 COLUMN 11 BASE PLATE DETAILS
1 1/2" = 1'-0"

-EXTEND (2) #4 2'-6" AT ALL REENTRANT CORNERS TYP. —(1) #4 x 5'-0" DIAGONAL SLAB EDGE-CONTINUOUS REINFORCING PER PERIMETER SECTIONS—



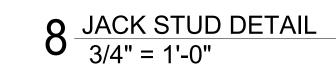


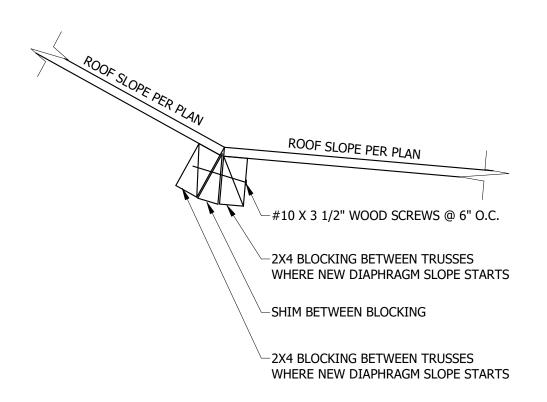
—JACK & CONTINUOUS

STUDS TO CONTINUE

 $10^{\frac{\text{TYPICAL REENTRANT CORNER REINF. DETAIL}}{1/4" = 1'-0"}$ 

9 SLAB JOINT DETAILS 3/4" = 1'-0"





-BASE PLATE PER

—1 1/2" NON-SHRINK GROUT

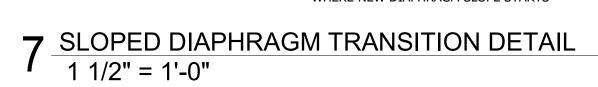
-LEVELING NUT

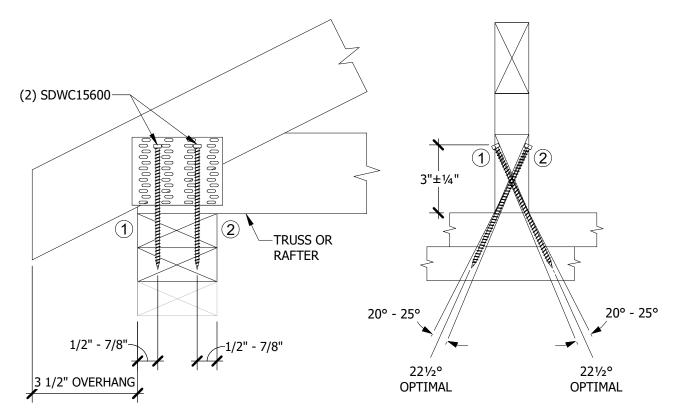
-8" THREAD MIN.

—ANCHOR ROD DIA. PER DETAIL

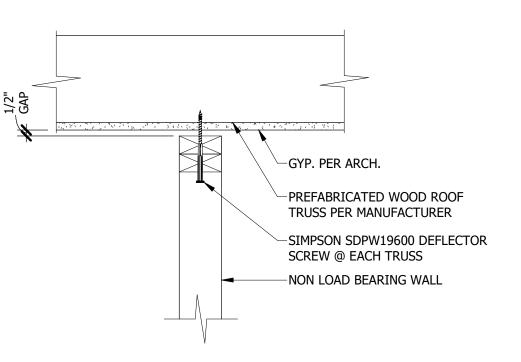
----NUT & WASHER

12 ANCHOR BOLT DETAIL
1 1/2" = 1'-0"

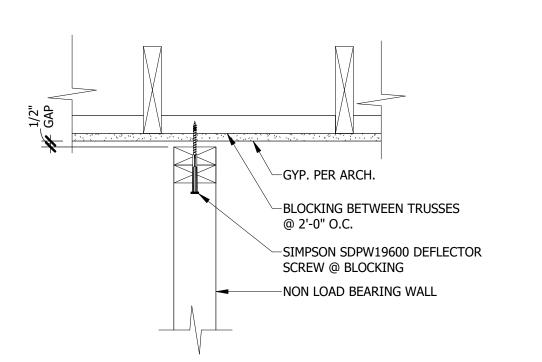




 $6 \frac{\text{SIMPSON SDWC INSTALLATION DETAIL}}{3/4" = 1'-0"}$ 



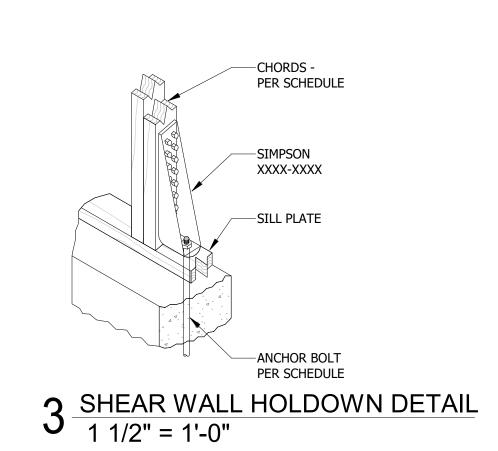
 $5 \frac{\text{NLB WALL PERP. TO TRUSS CONNECTION}}{1 \ 1/2" = 1'-0"}$ 

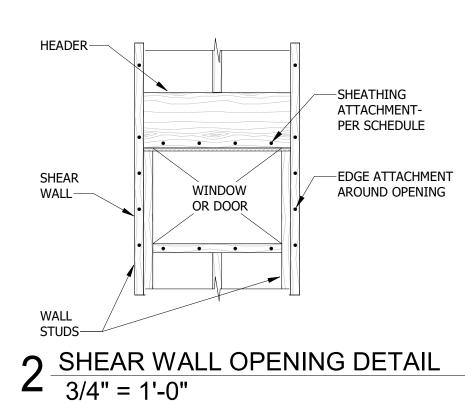


 $\frac{\text{NLB WALL PARALLEL TO TRUSS CONNECTION}}{1 \text{ 1/2"} = 1'-0"}$ 

-- PLYWOOD ROOF DIAPHRAGM

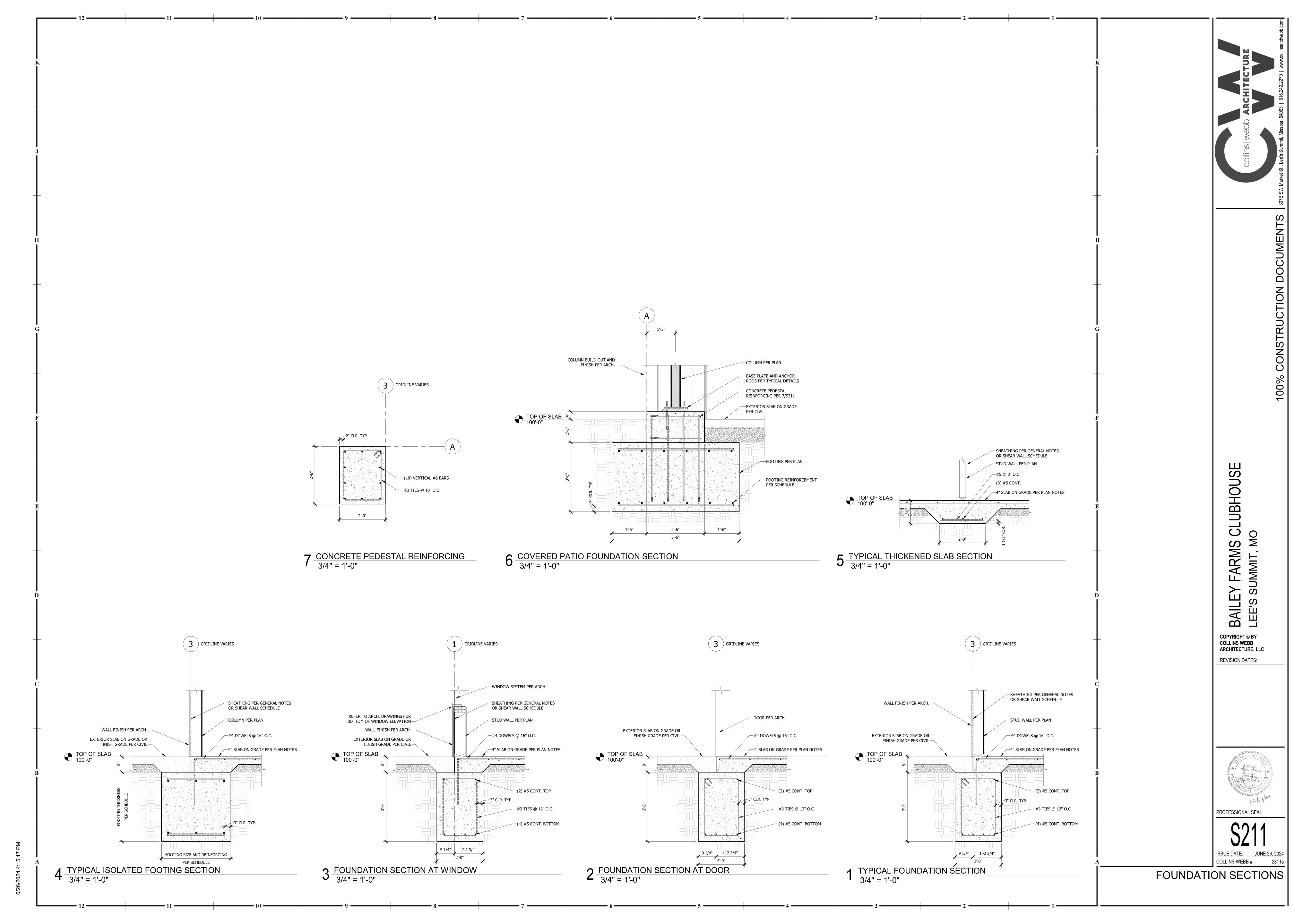
SHEAR WALL					SHEAR WALL SW1		SHEAR WALL SW2				
					(EXTERIOR)			(INTERIOR)			
LOCATION	ITEM	ITEM	SIZE	SPACING	REMARKS	SIZE	SPACING	REMARKS			
	5	CHORDS	(2) 2X6	EA. CHORD	SPF #2 GRADE	(2) 2x4	EA. CHORD	SPF #2 GRADE			
	4	SHEATHING ATTACHMENT	10d 10d	4" O.C. 4" O.C.	ALL INTERMIDATE SUPPORTS ALL PANEL EDGES	6d 6d	7" O.C. 7" O.C.	ALL INTERMEDIATE SUPPORTS ALL PANEL EDGES			
1ST FLOOR	3	SHEATHING TYPE	15/32"	BLOCKED	OSB ONE SIDE	5/8"	BLOCKED	GYPSUM WALLBOARD TWO SIDES			
	2	SIMPSON HOLDOWN	-	EA. CHORD	HDU5-SDS2.5 - SEE DET. #/S30#	-	EA. CHORD	HDU8-SDS2.5 - SEE DET. #/S30#			
	1	SILL PLATE ANCHORAGE	SIMPSON PDPAWL-287	8" O.C.	-	SIMPSON PDPAWL-287	, 12" O.C.	-			

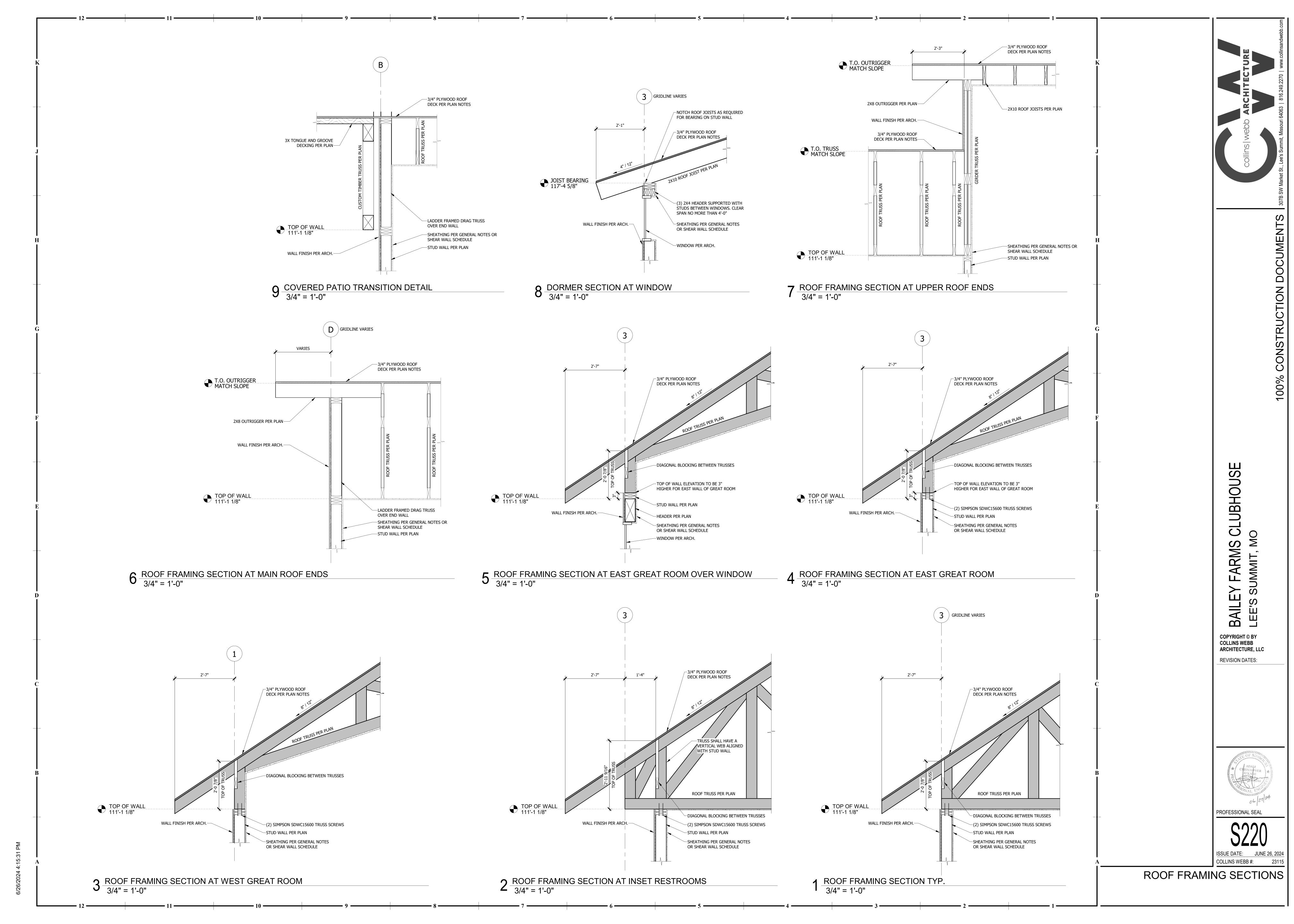


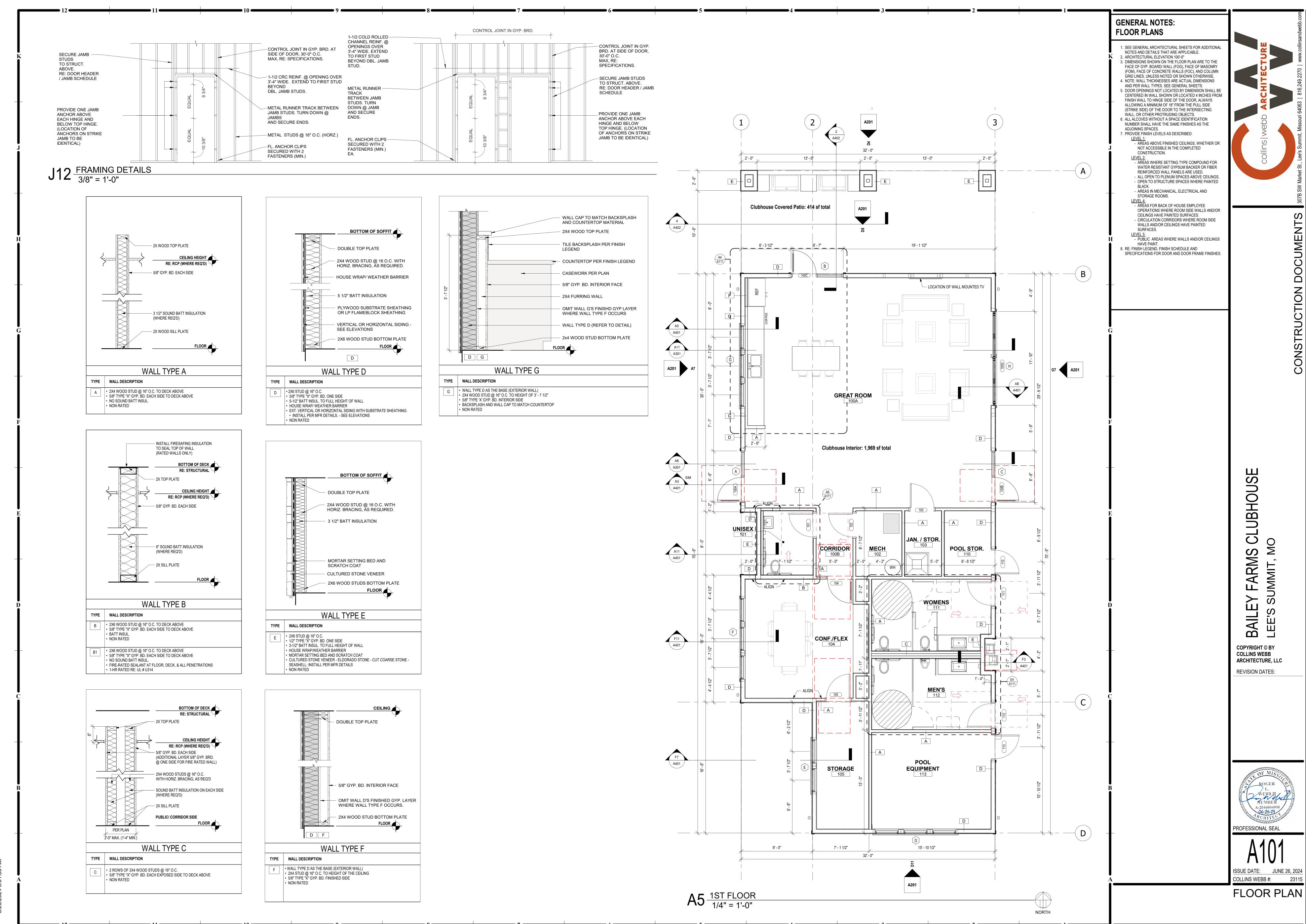


=	
	*PANELS MAY BE VERTICAL OR HORIZONTAL, BLOCK ALL EDGES.
_	TYPICAL 1 STORY SHEAR WALL ELEVATION  1/4" = 1'-0"
-	1/4 - 1-0

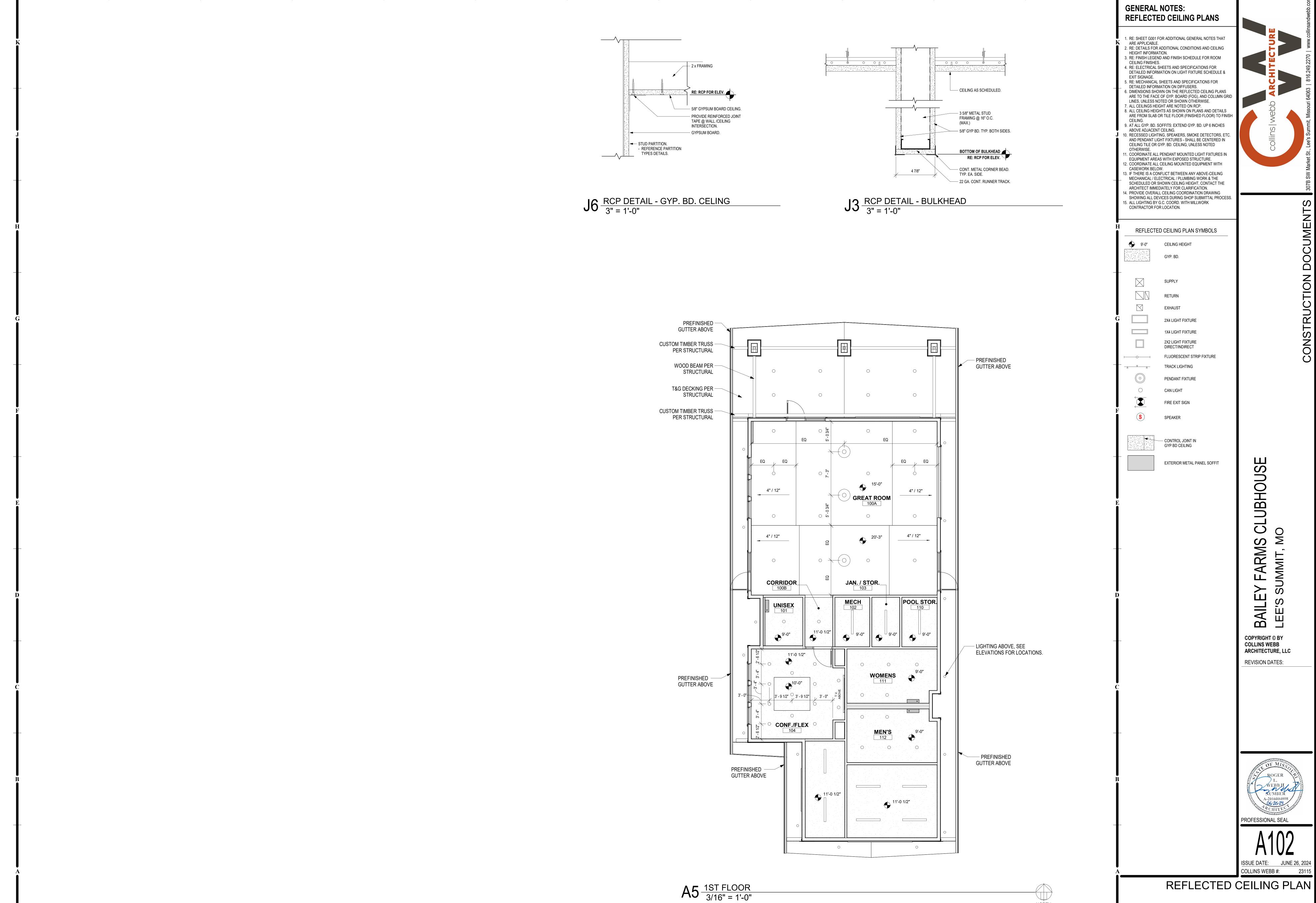
ROOF TRUSSES—

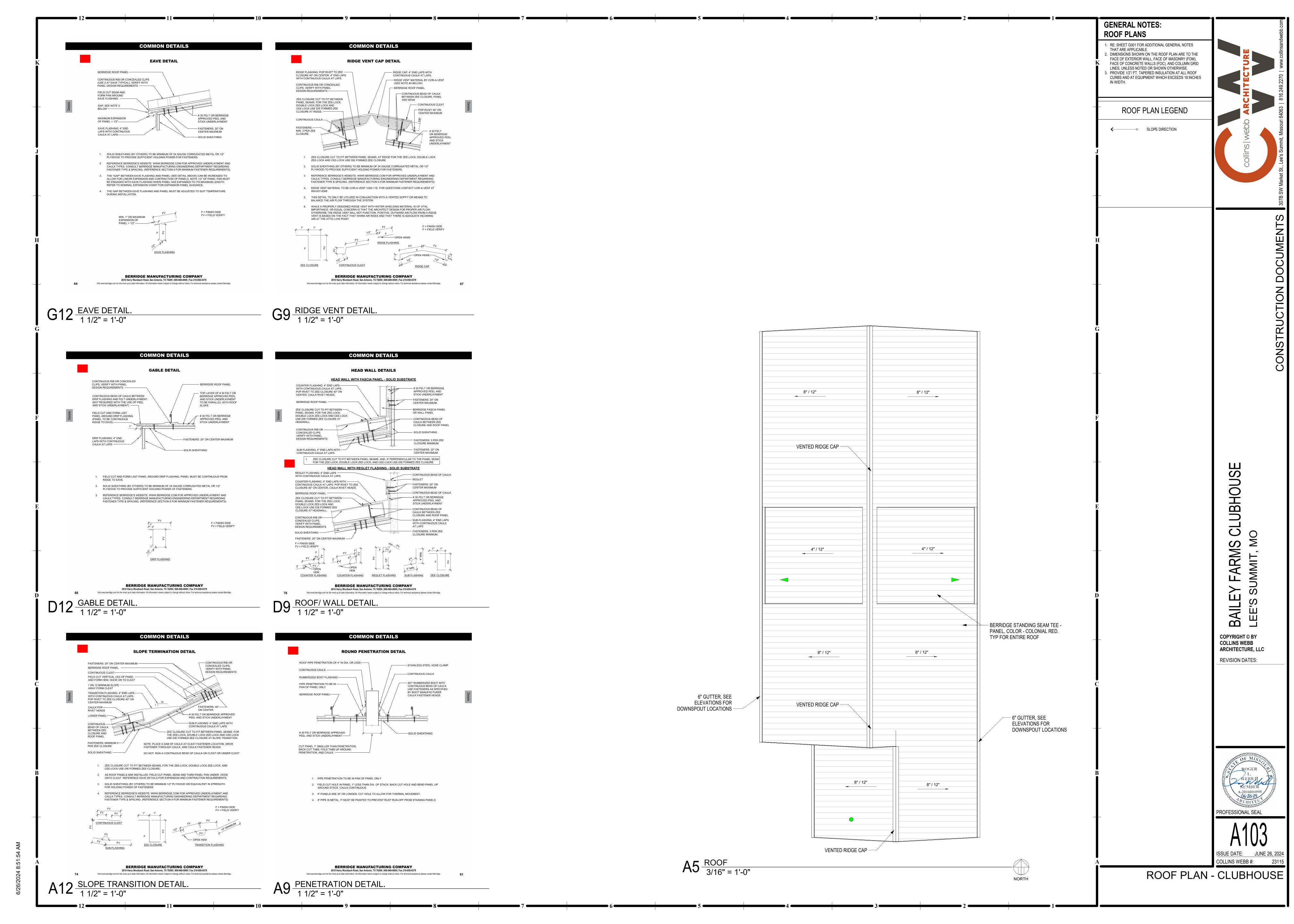


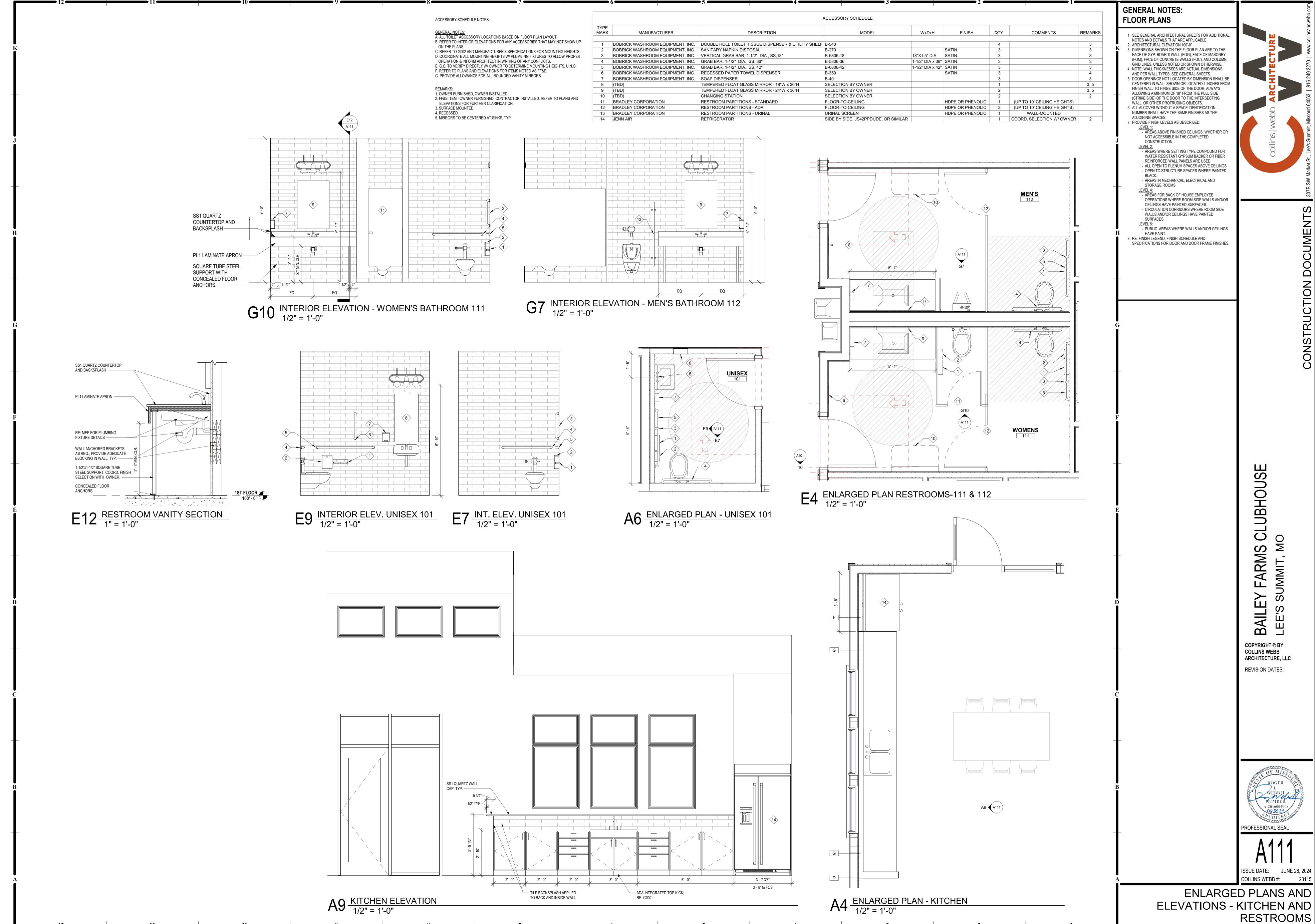


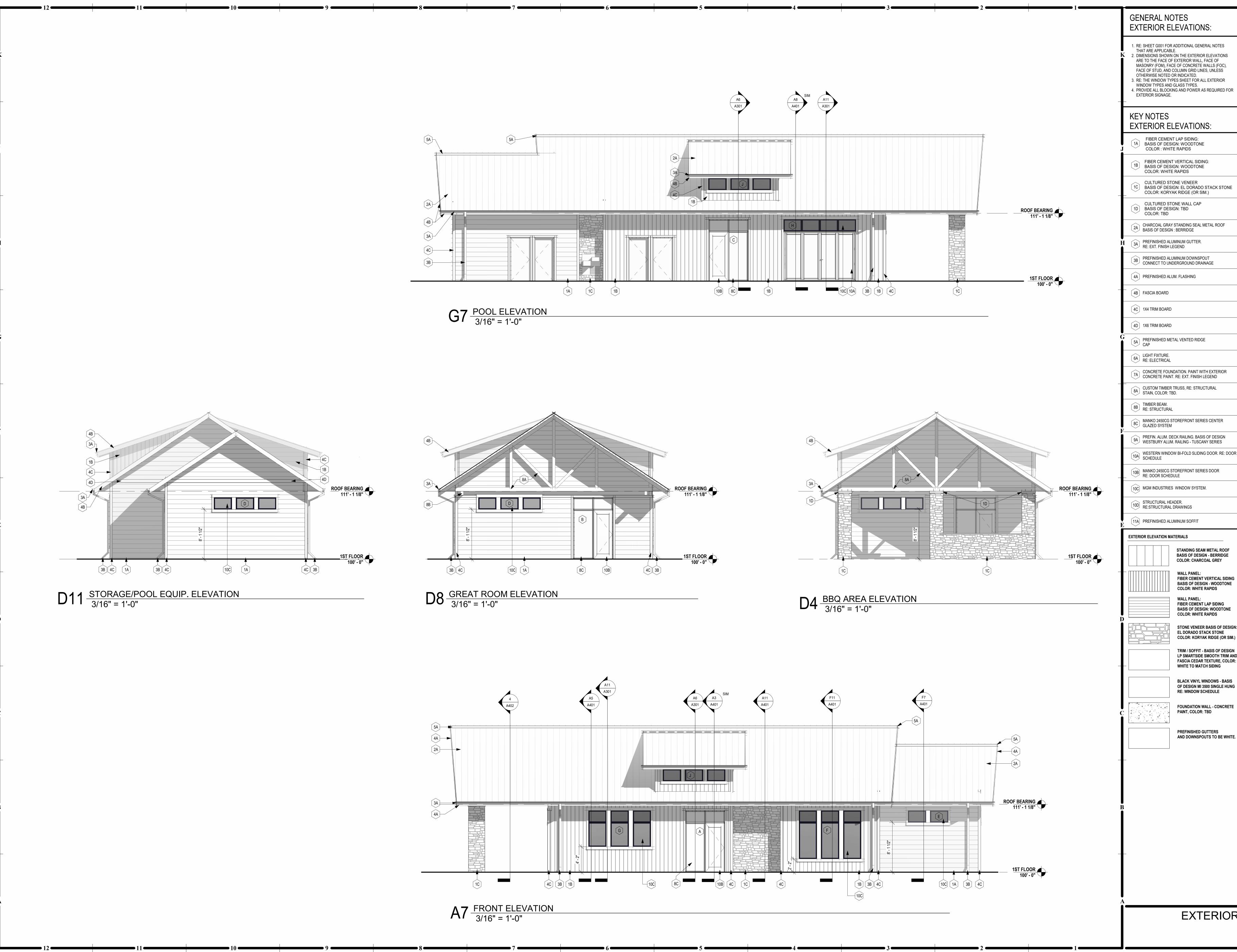


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**GENERAL NOTES EXTERIOR ELEVATIONS:** 

1. RE: SHEET G001 FOR ADDITIONAL GENERAL NOTES 2. DIMENSIONS SHOWN ON THE EXTERIOR ELEVATIONS ARE TO THE FACE OF EXTERIOR WALL, FACE OF MASONRY (FOM), FACE OF CONCRETE WALLS (FOC), FACE OF STUD, AND COLUMN GRID LINES, UNLESS OTHERWISE NOTED OR INDICATED. 3. RE: THE WINDOW TYPES SHEET FOR ALL EXTERIOR WINDOW TYPES AND GLASS TYPES. 4. PROVIDE ALL BLOCKING AND POWER AS REQUIRED FOR

FIBER CEMENT LAP SIDING: 1A BASIS OF DESIGN: WOODTONE

FIBER CEMENT VERTICAL SIDING: 1B BASIS OF DESIGN: WOODTONE

CULTURED STONE VENEER 1C BASIS OF DESIGN: EL DORADO STACK STONE

CULTURED STONE WALL CAP 1D BASIS OF DESIGN: TBD

CHARCOAL GRAY STANDING SEAL METAL ROOF BASIS OF DESIGN : BERRIDGE

PREFINISHED ALUMINUM GUTTER. RE: EXT. FINISH LEGEND

PREFINISHED ALUMINUM DOWNSPOUT CONNECT TO UNDERGROUND DRAINAGE

PREFINISHED METAL VENTED RIDGE CAP

CONCRETE PAINT. RE: EXT. FINISH LEGEND

WESTERN WINDOW BI-FOLD SLIDING DOOR. RE: DOOR SCHEDULE

11A PREFINISHED ALUMINUM SOFFIT

**EXTERIOR ELEVATION MATERIALS** 

STANDING SEAM METAL ROOF BASIS OF DESIGN - BERRIDGE

**COLOR: CHARCOAL GREY** FIBER CEMENT VERTICAL SIDING

**COLOR: WHITE RAPIDS** WALL PANEL: FIBER CEMENT LAP SIDING

BASIS OF DESIGN: WOODTONE COLOR: WHITE RAPIDS

STONE VENEER BASIS OF DESIGN: EL DORADO STACK STONE COLOR: KORYAK RIDGE (OR SIM.)

TRIM / SOFFIT - BASIS OF DESIGN LP SMARTSIDE SMOOTH TRIM AND FASCIA CEDAR TEXTURE, COLOR: WHITE TO MATCH SIDING

**BLACK VINYL WINDOWS - BASIS** OF DESIGN MI 3500 SINGLE HUNG RE: WINDOW SCHEDULE

PREFINISHED GUTTERS AND DOWNSPOUTS TO BE WHITE.

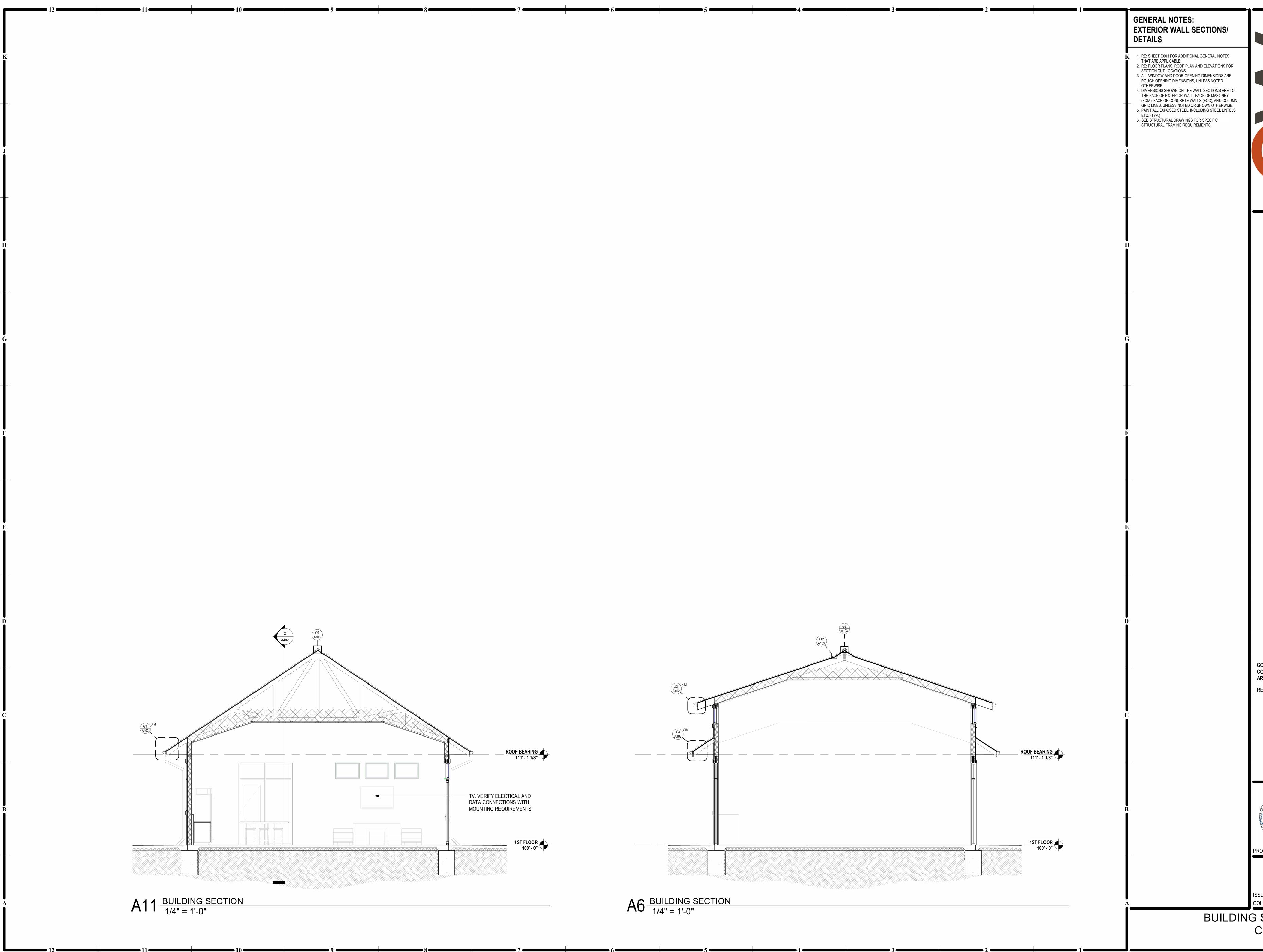
CLUBHOUSE

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ISSUE DATE: JUNE 26, 2024 COLLINS WEBB #: 23115 **EXTERIOR ELEVATIONS -**CLUBHOUSE

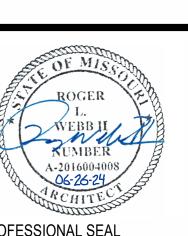


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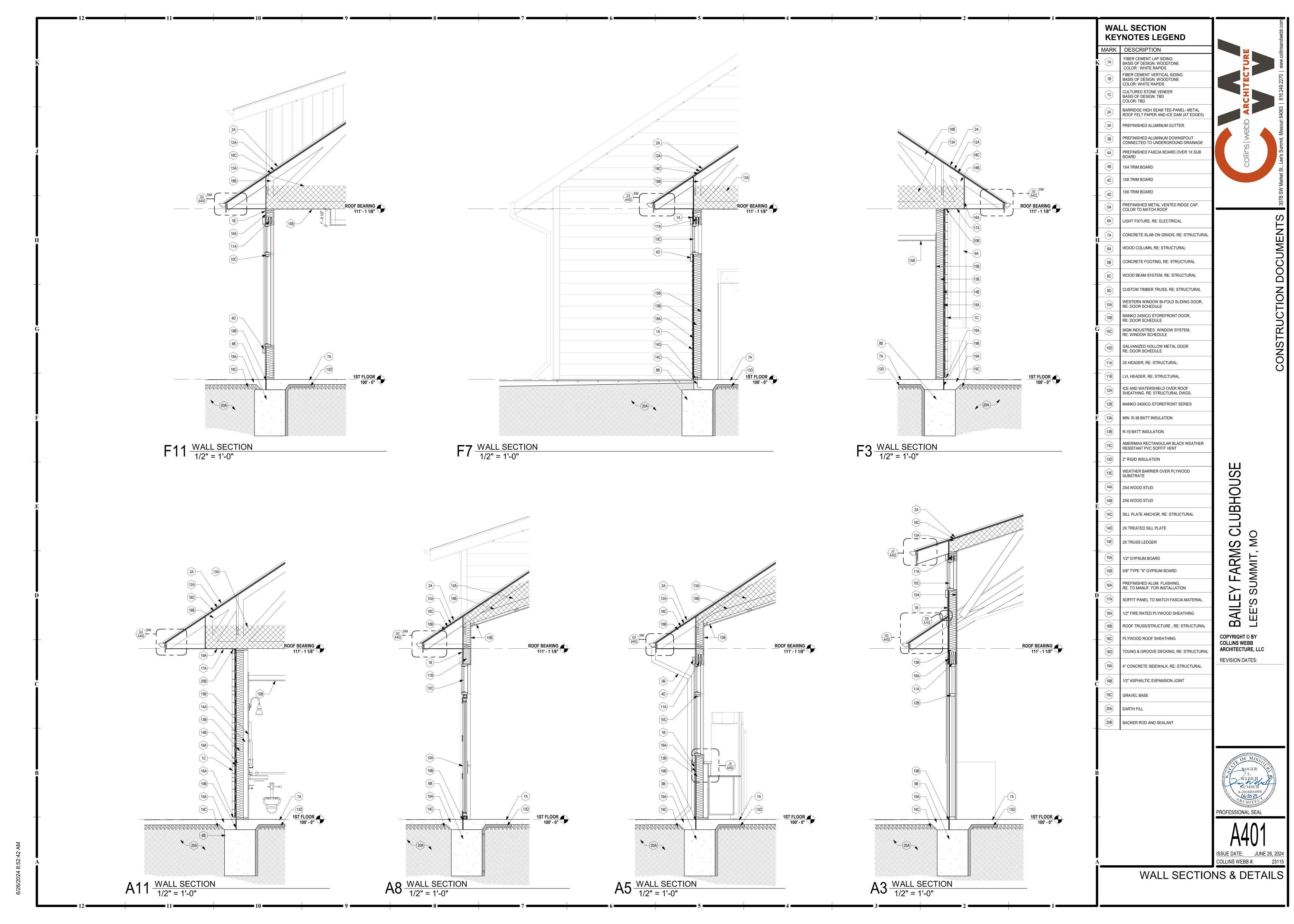


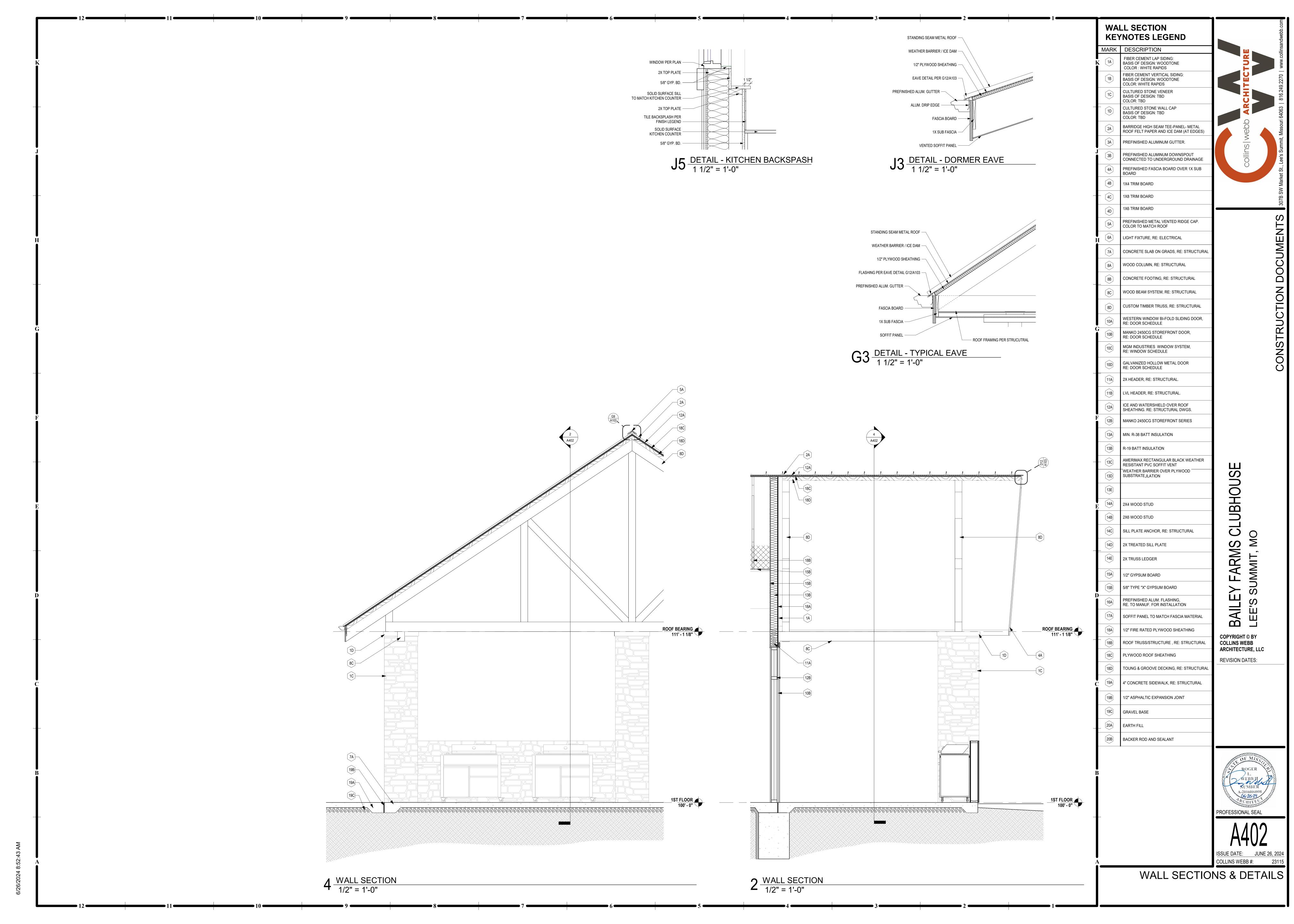
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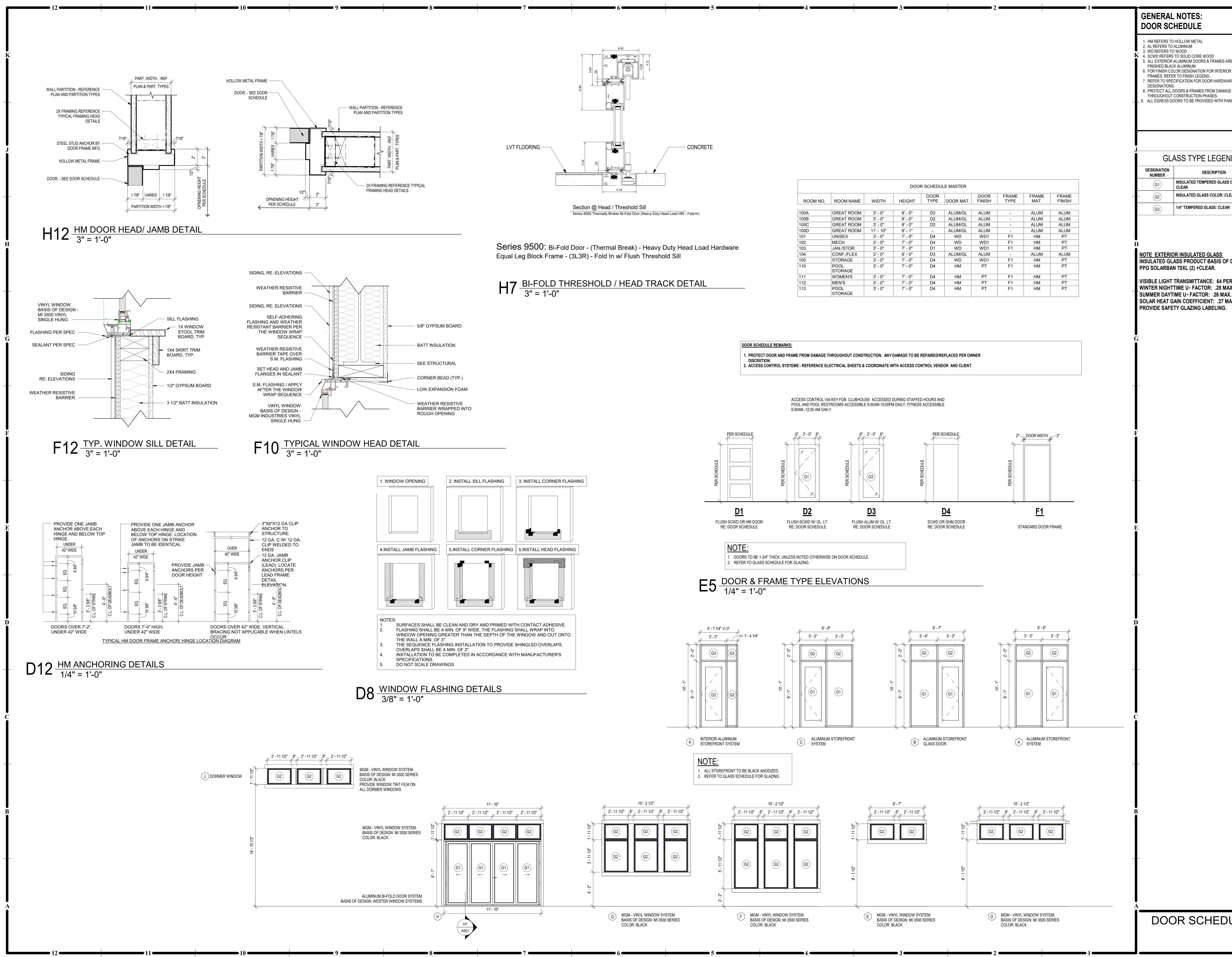
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ISSUE DATE: JUNE 26, 2024
COLLINS WEBB #: 23115

BUILDING SECTIONS -CLUBHOUSE







**GENERAL NOTES:** DOOR SCHEDULE

1. HM REFERS TO HOLLOW METAL K 4. SCWD REFERS TO SOLID CORE WOOD 5. ALL EXTERIOR ALUMINUM DOORS & FRAMES ARE TO BE

6. FOR FINISH COLOR DESIGNATION FOR INTERIOR DOOR AND FRAMES, REFER TO FINISH LEGEND. 7. REFER TO SPECIFICATION FOR DOOR HARDWARE SET

8. PROTECT ALL DOORS & FRAMES FROM DAMAGE THROUGHOUT CONSTRUCTION PHASES. 9. ALL EGRESS DOORS TO BE PROVIDED WITH PANIC HARDWARE

**GLASS TYPE LEGEND** DESCRIPTION INSULATED TEMPERED GLASS COLOR: **INSULATED GLASS COLOR: CLEAR** 

NOTE EXTERIOR INSULATED GLASS INSULATED GLASS PRODUCT BASIS OF DESIGN :

**VISIBLE LIGHT TRANSMITTANCE: 64 PERCENT MIN** WINTER NIGHTTIME U - FACTOR: .28 MAX. SUMMER DAYTIME U. FACTOR: .26 MAX. SOLAR HEAT GAIN COEFFICIENT: .27 MAX.

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DOOR SCHEDULE AND DETAILS -CLUBHOUSE

#### **GENERAL NOTE:**

FINISH MATERIALS TO BE PROCURRED AS INDICATED IN THE SPECIFICATIONS. ALTERNATES OR SUBSTITUTIONS SHALL BE OF EQUAL QUALITY AND PERFORMANCE.

SYMBOL	MARK	BASIS OF DESIGN / DESCRIPTION
		GRAIN / INSTALL DIRECTION
	P1	PAINT, LATEX - ORIGAMI SW7636
	P2	PAINT, EPOXY - ORIGAMI SW7636
L	WP-CG	WALL PROTECTION - CORNER GUARD, SELECTION BY OWNER
	WP-EC	WALL PROTECTION - END CAP, SELECTION BY OWNER
V 10 V 2	PC1/SC	POLISHED / SEALED CONCRETE
+ + + + + + + + + + + + + + + + + + +	EPOXY FLOORING	EPOXY FLOORING, COLOR AND FINISH SELECTION BY OWNER
	LVP	CORTEC - FERNDOWN OAK
	T1	KITCHEN WALL: EMSER KAZE WHITE 4X4 ON 12X16 MESH STRAIGHT STACK CHARCOAL GROUT
	-	
	T2	RR WALL TILE: EMSER BUILDING BLOCKS MIXT ENHANCE LIGHT GRAY BRUSHED 24X24
	•	
	SIM. STONE	ACCENT WALL ROOM 102 FRONT ENTRANCE EL DORADO TUNDRA BRICK - BAILEY FARMS LOGO PAINTED IN BLACK
	•	
	PL1	CASEWORK - HIGH PRESSURE LAMINATE, COLOR AND FINISH SELECTION BY OWNER
	SS1	COUNTERTOPS - MIAMI VENA QUARTZ, 2CM
	MTL1	METAL SUPPORTS AT VANITY COUNTERTOPS, COORDINATE FINISH WITH OWNER
	WD1	WOOD STAIN WITH CLEAR POLY FINISH, COORDINATE FINISH WITH OWNER
	WB1	1X6 FINISHED WOOD BASE, WOOD STAIN WITH CLEAR POLY FINISH (OR) PAINTED, COORDINATE FINISH WITH OWNER
	FT1	FLOOR TRANSITION: COORDINATE WITH FLOORING MFR. FOR TRANSITIONS AT DOOR THRESHOLDS BETWEEN DISSIMILAR FLOORING TYPES. TRANSITION TO MEET MIN. ADA REQUIREMENTS. RE: FINISH PLAN FOR LOCATIONS.
	FRP1	FIBERGLASS REINFORCED PANEL: INSTALLED TO 4'-0" A.F.F., COORDINATE SELECTION WITH OWNER; RE:

CONFIRM ALL FINISH SELECTIONS WITH OWNER.

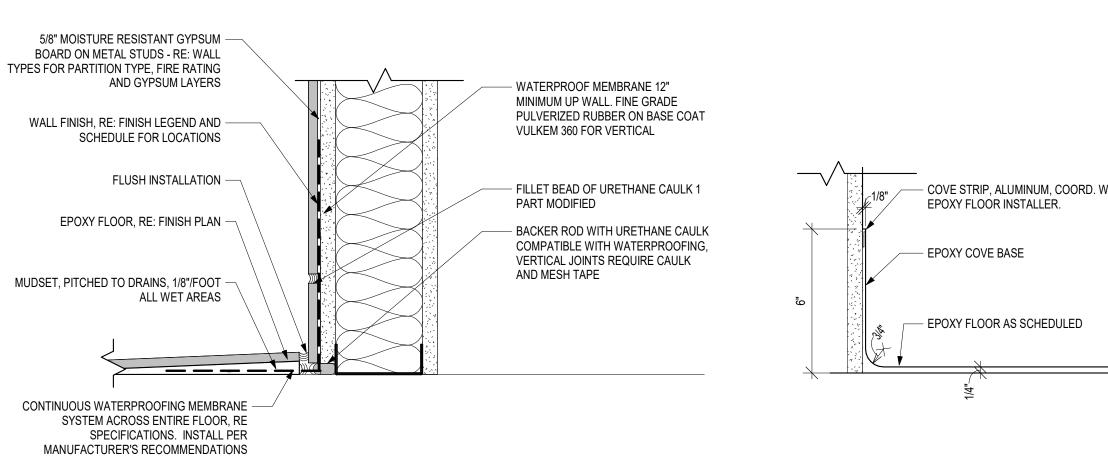
NOT ALL WALL FINISHES ARE GRAPHICALLY SHOWN . REFER TO FINISH SCHEDULE AND INTERIOR ELEVATIONS FOR SPECIFIC LOCATIONS AND MATERIALS.

NOT ALL FLOOR FINISHES ARE GRAPHICALLY SHOWN, ONLY THOSE FOR TRANSITION CLARIFICATION. LVT FLOORING SHALL BE COMMERCIAL GRADE SLIP RESISTANT FLOORING.

					ROOM FINISH SCHEDULE	<b>!</b>			
		FLOO	FLOORS WALL FINISH						
RM. NO.	ROOM NAME	FLOOR	WALL BASE	NORTH WALL	EAST WALL	SOUTH WALL	WEST WALL	CEILING FINISH	REMARKS
100A	GREAT ROOM	LVP	WB1	P1	P1	P1	P1/T1	GYP / P1	
100B	CORRIDOR	LVP	WB1	P1	P1	P1	P1	GYP / P1	
101	UNISEX	LVP	TB1	T2/P2	P2	T2/P2	T2/P2	GYP / P1	1
102	MECH	PC1/SC	-	TAPE/MUD	TAPE/MUD	TAPE/MUD	TAPE/MUD	TAPE/MUD	
103	JAN. / STOR.	PC1/SC	-	P2	P2	P2, FRP1	P2, FRP1	TAPE/MUD	3
104	CONF./FLEX	LVP	WB1	P1	P1	P1	P1	GYP / P1	
105	STORAGE	PC1/SC	-	TAPE/MUD	TAPE/MUD	TAPE/MUD	TAPE/MUD	TAPE/MUD	
110	POOL STOR.	PC1/SC	-	TAPE/MUD	TAPE/MUD	TAPE/MUD	TAPE/MUD	TAPE/MUD	
111	WOMENS	EPOXY	TB1	T2/P2	T2/P2	P2	T2/P2	GYP / P1	1
112	MEN'S	EPOXY	TB1	P2	T2/P2	T2/P2	T2/P2	GYP / P1	1

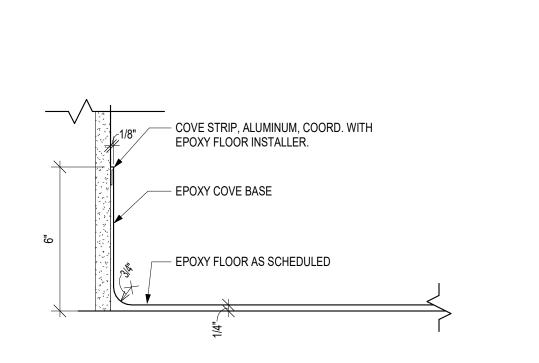
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TAPE/MUD

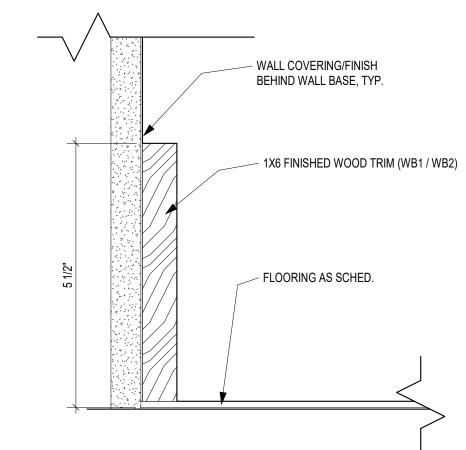


113 POOL EQUIPMENT PC1/SC -

G6 BASE DETAIL - WATERPROOFING 3" = 1'-0"



TAPE/MUD



TAPE/MUD

TAPE/MUD

1. RE: SHEET G001 FOR ADDITIONAL GENERAL NOTES THAT ARE APPLICABLE. 2. RE: G002 FOR ACCESSIBILITY GUIDELINES. 3. RE: A900 SERIES SHEETS FOR ADDITIONAL FLOOR FINISH & WALL PROTECTION INFORMATION. 4. HOLLOW METAL FRAMES SHALL RECEIVE SEMI-GLOSS FINISH

**GENERAL NOTES:** 

**INTERIOR FINISHES** 

WHERE WALL COLOR IS DIFFERENT ON EACH SIDE OF THE HOLLOW METAL FRAME, PAINT FRAME TO MATCH CORRIDOR WALL, UNLESS NOTED OR SHOWN OTHERWISE.

5. CONTINUE WALL FINISH AS SCHEDULED BEHIND EQUIPMENT. 6. CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CASEWORK FABRICATION AND INSTALLATION. 7. ALL EXPOSED CASEWORK SURFACES SHALL BE FINISHED PLASTIC LAMINATE AS SCHEDULED, U.N.O.

8. ALL PLASTIC LAMINATE DOOR AND DRAWERS TO RECEIVE 1MM PVC EDGEBAND 9. WHERE TWO MODULAR TILES (PORCELAIN, MARBLE, OR QUARRY) OF VARYING THICKNESSES MEET, THE SETTING BED FOR THE THINNER TILE SHALL BE BUILT UP TO ENSURE THAT THE FACES OF THE DIFFERENT TILES ARE FLUSH.

10. TRANSITION ALL WALL FINISHES/COLOR CHANGES AT INSIDE CORNERS, UNLESS NOTED OTHERWISE (U.N.O.) 11. TRANSITION WALL BASE AT INSIDE CORNERS, U.N.O. 12. INSTALL METAL TRANSITION STRIP WHERE WALL TILE MEETS PAINTED GYP. BD. WALL IN ALL VERTICAL AND/ OR HORIZONTAL CONDITIONS, U.N.O.

#### **ROOM FINISH SCHEDULE REMARKS:**

AREAS WITH MULTIPLE DESIGNATED FINISHES, RE: FINISH FLOOR PLANS & INTERIOR ELEVATIONS FOR ADDITIONAL

1. PROVIDE FULL HEIGHT WALL TILE RESTROOM WALLS, RE: INTERIOR ELEVATIONS. 2. VERIFY WITH OWNER PAINTED ACCENT WALL LOCATIONS.

## **GENERAL NOTES:** FLOOR FINISH PLANS

3. INSTALL FRP TO 4'-0" A.F.F.

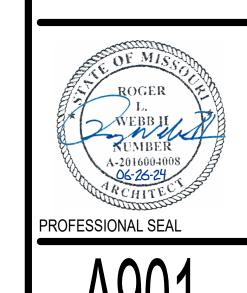
- 1. RE: G-SHEETS FOR ADDITIONAL GENERAL NOTES THAT ARE 2. RE: FINISH LEGEND, FINISH SCHEDULE, AND FLOOR FINISH PLANS FOR SPECIFIC FLOOR FINISH INFORMATION AND
- 3. FLOOR FINISHES SHOWN ARE FOR ACCENT CLARIFICATION
- 4. INSTALL TRANSITION STRIPS AT ALL FLOOR FINISH MATERIAL CHANGES, UNLESS NOTED OTHERWISE.
- 5. RE: DETAILS FOR FINISH & FLOOR TRANSITION DETAILS. 6. FLOOR FINISH PATTERN SHALL BE CENTERED IN ROOM, UNLESS NOTED OTHERWISE. 7. ALIGN ALL WALL TILE JOINTS WITH FLOOR TILE JOINTS, UNLESS NOTED OR SHOWN OTHERWISE.
- 8. ALL CLOSETS & ALCOVES W/OUT A SPACE IDENTIFICATION NUMBER SHALL HAVE THE SAME FLOOR FINISHES AS ADJOINING SPACES. 9. FLOOR FINISH MATERIAL &/ OR PATTERN SHALL BE INSTALLED UNDER TOE KICKS OF CASEWORK/ MILLWORK,
- UNDER OPEN COUNTERTOPS, & UNDER EQUIPMENT. 10. FLOOR MATERIAL/ COLOR TRANSITIONS TO ALIGN WITH ROOM SIDE OF DOOR STOP, UNLESS NOTED OTHERWISE.

#### WALL FINISH / WALL PROTECTION PLANS:

- 1. RE: G-SHEETS FOR ADDITIONAL GENERAL NOTES THAT ARE
- 2. RE: FINISH LEGEND & FINISH SCHEDULE FOR SPECIFIC FINISH INFORMATION & LOCATIONS.
- 3. CONTRACTOR SHALL PROVIDE ALL NECESSARY BLOCKING FOR WALL PROTECTION ATTACHMENT. THIS INCLUDES, BUT IS NOT LIMITED TO: HANDRAILS, TV MONITORS, BATHROOM ACCESSORIES, FIRE EXTINGUISHERS AND EQUIPMENT. RE: ROUGH CARPENTRY SPECIFICATION SECTION FOR
- 4. CONTRACTOR SHALL PROVIDE MANUFACTURER'S STANDARD ACCESSORY MOLDING OR TRIM FOR WALL PROTECTION ITEMS, UNLESS NOTED OTHERWISE.

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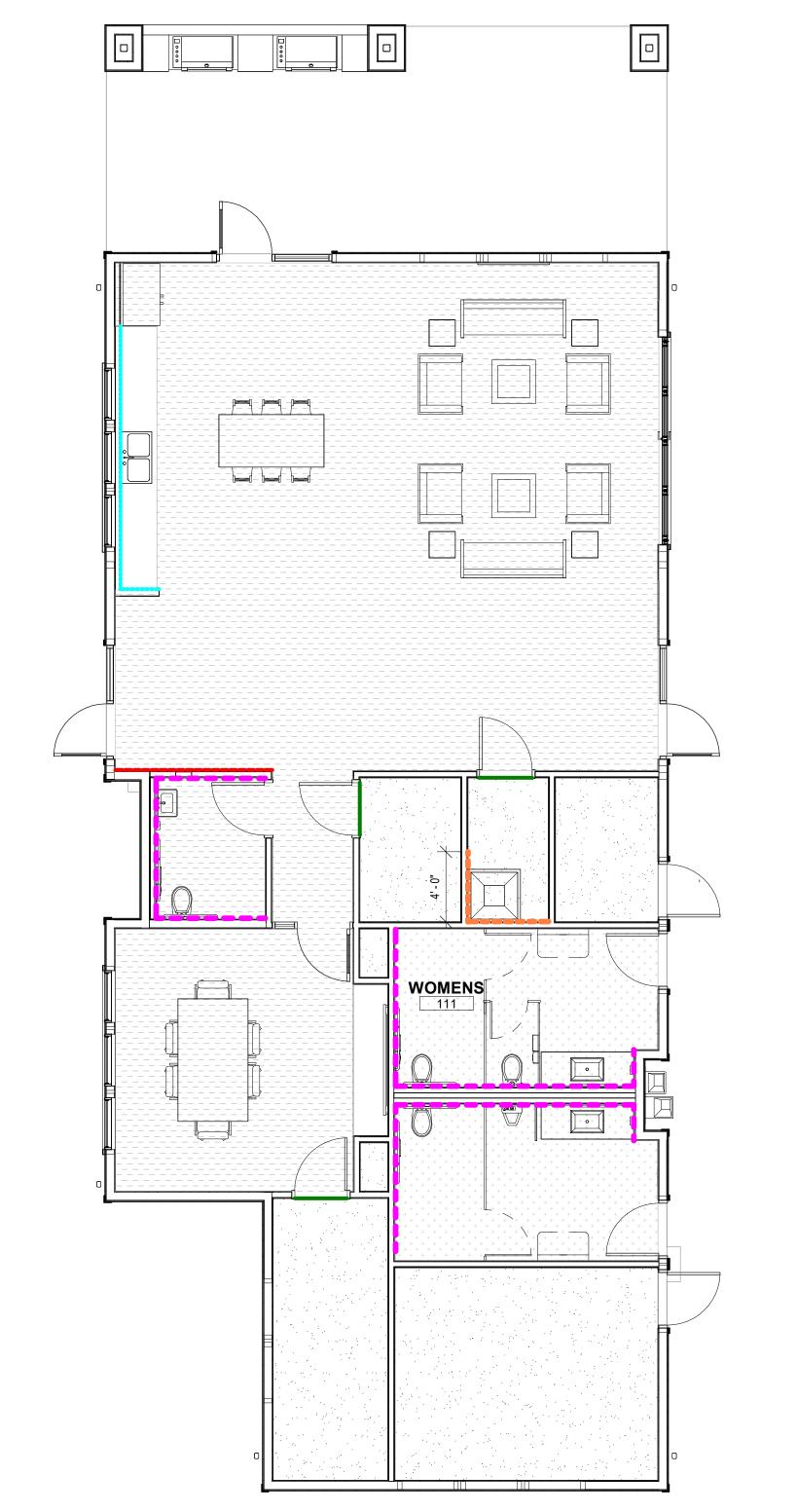
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FINISH LEGEND AND SCHEDULE -CLUBHOUSE



A5 1ST FLOOR - FINISH 3/16" = 1'-0"

NORTH

## **ARRPEVIATIONS**

EDF ELECTRIC DRINKING FOUNTAIN

FOR EQUIPMENT (KITCHEN, SHOP, ETC.)

<u>AE</u>	BREVIATIONS				
A/E	ARCHITECT / ENGINEER	ELEV	ELEVATION	MLO	MAIN LUGS ONLY
AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY FIXTURE/DEVICE	NFA	NET FREE AREA
AFG	ABOVE FINISHED GRADE	<b>EWT</b>	ENTERING WATER TEMPERATURE	NL	NIGHT LIGHT
AG	ABOVE GRADE	EX	EXISTING ITEM	OA	OUTSIDE AIR
AHJ	AUTHORITY HAVING JURISDICTION	FFA	FROM FLOOR ABOVE	ORD	OVERFLOW ROOF DRAIN
AHU	AIR HANDLING UNIT	FFB	FROM FLOOR BELOW	P/C	PLUMBING CONTRACTOR
ARCH	ARCHITECT	FFCO	FINISH FLOOR CLEANOUT	PSI	POUNDS PER SQUARE INCH
BFP	BACKFLOW PREVENTER	FGCO	FINISH GRADE CLEANOUT	PVC	POLYVINYL CHLORIDE
BG	BELOW GRADE	FL	FLOW LINE	RA	RETURN AIR
BLDG	BUILDING	FLR	FLOOR	RE/REF	REFER TO / REFERENCE
BMS	BUILDING MANAGEMENT SYSTEM	FP	FIRE PROTECTION	RF	RELIEF FAN
С	CONDUIT	FPM	FEET PER MINUTE	RL	RELOCATED ITEM
CD	CANDELA	FWCO	FLUSH WALL CLEANOUT	RPZ	REDUCED PRESSURE ZONE
CD	COLD DECK	G	GROUND / GANG	RR	RESTROOM
CLG	COOLING	G/C	GENERAL CONTRACTOR	SA	SUPPLY AIR
CM	COORDINATE MOUNTING HEIGHT	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SPD	SURGE PROTECTIVE DEVICE
co	CLEANOUT	GPM	GALLONS PER MINUTE	ST	SHUNT TRIP
CTE	CONNECT TO EXISTING	HD	HOT DECK	TA	TRANSFER AIR
DCVA	DOUBLE CHECK VALVE ASSEMBLY	HTG	HEATING	TFA	TO FLOOR ABOVE
DCW	DOMESTIC COLD WATER	IG	ISOLATED GROUND	TFB	TO FLOOW BELOW
DDC	DIRECT DIGITAL CONTROLS	JB	JUNCTION BOX	TP	TAMPER PROOF
DF	DRINKING FOUNTAIN	LED	LIGHT EMMITING DIODE	TYP	TYPICAL
DHW	DOMESTIC HOT WATER	LWT	LEAVING WATER TEMPERATURE	UNO	UNLESS NOTED OTHERWISE
DHWR	DOMESTIC HOT WATER RETURN	M/C	MECHANICAL CONTRACTOR	VRF	VARIABLE REFRIGERANT FL
DIA	DIAMETER	MA	MIXED AIR	VTR	VENT THROUGH ROOF
DN	DOWN	MAU	MAKE UP AIR UNIT	WCO	WALL CLEANOUT
E/C	ELECTRICAL CONTRACTOR	MCB	MAIN CIRCUIT BREAKER	WG	WIRE GUARD
EA	EXHAUST AIR	MECH	MECHANICAL	WP	WEATHERPROOF

MH MANHOLE

#### MECHANICAL AND PLUMBING SYMBOL LEGEND SOME SYMBOLS AND ABBREVIATIONS ON THIS LEGEND MAY NOT BE USED SHEET METAL PIPING SYMBOLS MECHANICAL PIPING → SHUTOFF VALVE HIGH-EFFICIENCY DUCT TAKEOFF (WITH AND WITHOUT MANUAL DAMPER) ------RL------- REFRIGERANT LIQUID —> SHUTOFF VALVE IN RISER **─**|**>>**| -----RS------ REFRIGERANT SUCTION BALANCING VALVE SPIN-IN ROUND DUCT TAKEOFF -----RV------ REFRIGERANT VENT $\longrightarrow$ PIPING ELBOW UP PIPING ELBOW DOWN -----RD------ RUPTURE DISK <del>----</del>⊃ CONICAL BELLMOUTH ROUND DUCT TAKEOFF -----CWS------ CHILLED WATER SUPPLY PIPING TEE -----CWR------ CHILLED WATER RETURN PIPING ELBOW ROUND DUCT TAKEOFF WITH FLEX DUCT RUNOUT (MAXIMUM FLEX DUCT LENGTH IS 6'-0") ——C/HWS—— CHILLED/HOT WATER SUPPLY <del>---</del> PIPING TEE UP PIPING TEE DOWN DUCTWORK ELBOWS (WITH AND WITHOUT TURNING VANES -----HWS------ HOT WATER SUPPLY INCREASER/REDUCER -----HWR------ HOT WATER RETURN FD: FIRE DAMPER FS: FIRE/SMOKE DAMPER UNION SD: SMOKE DAMPER BD: BACKDRAFT DAMPER (GRAVITY) -----CTWS----- COOLING TOWER WATER SUPPLY PIPE FLEX -+++-(MD) AUTOMATIC MOTORIZED DAMPER **─**塚─ STEAM (ANY #'S DENOTE PRESSURE) 3-WAY VALVE 8"Ø \$1 225. SUPPLY DIFFUSER AND CALLOUT ------CR-------CONDENSATE RETURN (ANY #'S DENOTE PRESSURE) CHECK VALVE -(NECK SIZE, TYPE, AND CFM) Y-STRAINER LINEAR/SLOT DIFFUSER IN-LINE (BASKET) STRAINER 22x22 🕅 🦳 RETURN GRILLE (NECK SIZE AND TYPE, MAY ALSO INCLUDE CFM) PLUMBING PIPING AUTOMATIC 2-WAY CONTROL VALVE 10x10 ETHAUST GRILLE (NECK SIZE AND TYPE, MAY ALSO INCLUDE CFM) — - DOMESTIC COLD WATER ——— - - — DOMESTIC HOT WATER AUTOMATIC 3-WAY CONTROL VALVE SUPPLY AIR FLOW INDICATOR ----- RECIRCULATING DOMESTIC HOT WATER SOLENOID VALVE **/──** RETURN OR EXHAUST AIR FLOW INDICATOR CONTROL WIRING — — SAN — — WASTE BELOW GRADE OR FLOOR THERMOSTAT PIPING SPECIALTIES — — V—— — PLUMBING VENT TEMPERATURE SENSOR ----- WATER SERVICE PRESSURE AND TEMPERATURE GAUGE (WITH COCK) **HUMIDITY SENSOR** STORM DRAIN ABOVE GRADE OR FLOOR DIFFERENTIAL PRESSURE SENSOR — ST — STORM DRAIN BELOW GRADE OR FLOOR THERMOMETER CARBON DIOXIDE DETECTOR ST/O STORM OVERFLOW ABOVE GRADE OR FLOOR CARBON MONOXIDE DETECTOR — — ST/O — — STORM OVERFLOW BELOW GRADE OR FLOOR PRESSURE REDUCING VALVE NITROUS OXIDE DETECTOR GAS DETECTOR RELIEF VALVE VOLATILE ORGANIC COMPOUND DETECTOR -----RO------- REVERSE OSMOSIS WATER WATER HAMMER ARRESTOR MEDICAL GAS -----DI------ DE-IONIZED WATER -----MV------ MEDICAL VACUUM PIPING -----G----- NATURAL GAS OXYGEN PIPING -----LP----- PROPANE PIPING FIXTURES / EQUIPMENT NO-NITROUS OXIDE PIPING -----NP----- NON-POTABLE WATER HOSE BIBB -----MA------ MEDICAL COMPRESSED AIR PIPING WALL HYDRANT N------ NITROGEN PIPING ———ACID——— ACID WASTE D CLEANOUTS ———ACID——— ACID VENT RPZ REDUCED PRESSURE BACKFLOW PREVENTER -----VV------ VACUUM VENT PIPING PD—PD—PUMPED DISCHARGE (FROM SUMP PUMPS / DCPB DOUBLE CHECK BACKFLOW PREVENTER EJECTORS) ——GV—— MEDICAL GAS VENT PIPING PLUMBING FIXTURE AND CALLOUT GENERAL SYMBOLS MEDICAL GAS INLET/OUTLET W/DESIGNATION (RE: PIPE TYPES) **├**•X INDICATES CONNECT TO EXISTING FLOOR DRAIN, AREA DRAIN, OR FLOOR SINK MEDICAL SLIDE MEDICAL GAS ALARM WIRING CONNECTION — INDICATES ELEVATION ROOF DRAIN OR OVERFLOW ROOF DRAIN MEDICAL GAS ALARM WIRING - PRESSURE SWITCH PLUMBING RISER CALLOUT (TYPE/RISER NO.) (W&V = WASTE AND VENT, WAT = DOMESTIC WATER) MEDICAL GAS ALARM WIRING - TRANSDUCER FIRE SPRINKLER PIPING/SERVICE EQUIPMENT TAG. REFER TO CONNECTIONS SCHEDULE(S) FOR ELECTRICAL CONNECTIONS AND FIRE SPRINKLER HEAD - PENDANT LOAD INFORMATION FOR EQUIPMENT (KITCHEN, ─────── FIRE SPRINKLER HEAD - SIDEWALL SHOP. ETC.) FIRE DEPARTMENT SIAMESE CONNECTION

#### **COORDINATION NOTES**

- 1. COORDINATE REQUIREMENTS FOR INSTALLATION OF SYSTEMS AND EQUIPMENT WITH ALL OTHER TRADES. 2. THE CONTRACTOR SHALL COORDINATE THE ROUTING AND PATH OF ALL SYSTEMS, CONDUITS, PIPES, DUCTS, ETC WITH THE POSITION AND LAYOUT OF THE STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING NECESSARY OFFSETS. TURNS. RISES AND DROPS FOR SYSTEMS AND COMPONENTS AS NEEDED TO INSTALL THE MEP SYSTEMS TO CLEAR STRUCTURE, CEILINGS, ETC AND OTHER SYSTEMS IN POTENTIAL CONFLICT WITH ROUTING.
- 3. COORDINATE WORK WITH OTHER TRADES TO INSTALL SYSTEMS ABOVE CEILING HEIGHTS INDICATED ON ARCHITECTURAL PLANS. 4. CHECK SPACE REQUIREMENTS WITH OTHER TRADES AND STRUCTURE/CONSTRUCTION TO INSURE THAT ALL MATERIALS AND
- EQUIPMENT CAN BE INSTALLED IN THE SPACE ALLOTTED INCLUDING FINISHED SUSPENDED CEILINGS AND OTHER SPACES, CHASES, ETC WITHIN THE BUILDING. MAKE MODIFICATIONS THERETO AS REQUIRED AND 5. TRANSMIT TO OTHER TRADES ALL INFORMATION REQUIRED FOR WORK TO
- BE PROVIDED UNDER THEIR RESPECTIVE SECTIONS IN AMPLE TIME FOR 6. WHEREVER WORK INTERCONNECTS WITH WORK OF OTHER TRADES.
- COORDINATE WITH THOSE TRADES TO INSURE THAT ALL SUBCONTRACTORS HAVE THE INFORMATION NECESSARY SO THAT THEY MAY PROPERLY INSTALL ALL CONNECTIONS AND EQUIPMENT. IDENTIFY ALL ITEMS OF WORK THAT REQUIRE ACCESS SO THAT THE CEILING TRADE WILL KNOW WHERE TO INSTALL ACCESS DOORS AND PANELS 7. COORDINATE, PROJECT AND SCHEDULE WORK WITH OTHER TRADES IN ACCORDANCE WITH THE CONSTRUCTION SEQUENCE. 8. DRAWINGS SHOW THE GENERAL RUNS OF CONDUITS, PIPING AND
- DUCTWORK AND APPROXIMATE LOCATION OF OUTLETS. ANY SIGNIFICANT CHANGES IN LOCATION OF ITEMS NECESSARY IN ORDER TO MEET FIELD CONDITIONS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT/ENGINEER AND RECEIVE HIS APPROVAL BEFORE SUCH ALTERATIONS ARE MADE. ALL SUCH MODIFICATIONS SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER.
- 9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION AND REPAIR OF SURFACES, AREAS AND PROPERTY THAT MAY BE DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES 10. ADJUST LOCATION OF PIPING, DUCTWORK, ETC. TO PREVENT
- INTERFERENCES, BOTH ANTICIPATED AND ENCOUNTERED. DETERMINE THE EXACT ROUTE AND LOCATION OF EACH ITEM PRIOR TO FABRICATION. MAKE OFFSETS TRANSITIONS AND CHANGES IN DIRECTION IN SYSTEMS AS REQUIRED TO MAINTAIN ADEQUATE CLEARANCES AND HEADROOM. 11. WHEREVER THE WORK IS OF SUFFICIENT COMPLEXITY, PREPARE ADDITIONAL COORDINATION DRAWINGS AND ORGANIZE ON-SITE MEETINGS WITH ALL RELATED SUBCONTRACTORS TO COORDINATE THE WORK BETWEEN TRADES . DRAWINGS SHALL CLEARLY SHOW THE WORK AND ITS RELATION TO THE WORK OF OTHER TRADES, AND BE SUBMITTED FOR REVIEW PRIOR TO COMMENCING SHOP FABRICATION OR ERECTION IN THE
- 12. COORDINATE WITH LOCAL UTILITY PROVIDERS FOR THEIR REQUIREMENTS FOR SERVICE CONNECTIONS AND PROVIDE ALL NECESSARY PAYMENTS, MATERIALS, LABOR AND TESTING TO ACCOMPLISH THE WORK.

## GENERAL MECHANICAL NOTES

- 1. COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED VERSION OF THE INTERNATIONAL MECHANICAL CODE, LOCAL AND STATE CODES, AND REQUIREMENTS OF THE AHJ. 2. ANY POWER FOR CONTROL SYSTEMS TO BE PROVIDED BY E/C IS INDICATED ON ELECTRICAL PLANS. ANY ADDITIONAL LINE VOLTAGE OR LOW VOLTAGE POWER
- REQUIRED BY THE M/C OR SUBCONTRACTORS TO HAVE A FULLY FUNCTIONING SYSTEM SHALL BE PROVIDED BY THE M/C CONTRACTOR OR SUBS. 3. ALL EQUIPMENT SHALL BE ADEQUATELY AND PROPERLY SUPPORTED AND FASTENED FROM STRUCTURE. 4. ALL EQUIPMENT AND ACCESSORIES INSTALLED IN CONCEALED SPACES REQUIRING
- ACCESS SHALL BE PROVIDED WITH ACCESS DOORS MEETING ANY FIRE REQUIREMENTS OF THE WALL/CEILING THEY ARE INSTALLED. 5. EACH AIR HANDLING UNIT OVER 2000CFM SHALL BE PROVIDED WITH A SMOKE DETECTOR TO SHUT DOWN THE UNIT PER IMC 606 AS REQUIRED BY AHJ.
- COORDINATE WITH OTHER TRADES. 6. START UP AND ADJUST ALL EQUIPMENT AND VERIFY ALL MECHANICAL SYSTEMS IN OPERATE IN ACCORDANCE WITH THEIR INTENDED PURPOSES. SUBMIT BALANCE AND START UP REPORTS TO THE A/E. REFER TO SPECIFICATIONS FOR ANY ADDITIONAL REQUIREMENTS.

## **GENERAL PLUMBING NOTES**

- 1. COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED VERSION OF THE INTERNATIONAL PLUMBING CODE, LOCAL AND STATE CODES, AND REQUIREMENTS OF THE AHJ. 2. NO PIPING SHALL BE INSTALLED WHERE IT WILL SUBJECT TO FREEZING TEMPERATURES. PIPING IN EXTERIOR WALLS SHALL BE INSTALLED ON THE WARM SIDE OF BUILDING INSULATION, INSULATED AND THE CHASE SHALL BE VENTILATED
- WITH GRILLES ALLOWING INDOOR AMBIENT CONDITIONS TO CIRCULATE THROUGH 3. PROVIDE CLEANOUTS IN THE FOLLOWING LOCATIONS: 1. IN ALL HORIZONTAL DRAINS (WITHIN THE BUILDING) NOT MORE THAN 100 FEET
- 2. IN BUILDING SEWERS LOCATED NO MORE THAN 100 FEET APART MEASURED FROM THE UPSTREAM ENTRANCE OF THE CLEANOUT. 3. EACH CHANGE OF DIRECTION OF THE BUILDING DRAIN OR HORIZONTAL WASTE OR SOIL LINES GREATER THAN 45 DEGREES. WHERE MORE THAN ONE CHANGE OF DIRECTION OCCURS IN A RUN OF PIPING, ONLY ONE CLEANOUT SHALL BE REQUIRED FOR EACH 40 FEET OF DEVELOPED LENGTH OF THE DRAINAGE PIPING. 4. AT THE BASE OF EACH WASTE OR SOIL STACK. 5. NEAR THE JUNCTION OF THE BUILDING DRAIN AND BUILDING SEWER.

## **GENERAL ELECTRICAL NOTES**

- 1. COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED VERSION OF THE NATIONAL ELECTRICAL CODE, LOCAL AND STATE CODES, AND REQUIREMENTS OF THE AHJ. 2. COORDINATE LOCATIONS OF RECEPTACLES, SWITCHES, ETC. WITH ARCHITECTURAL CASEWORK AND ELEVATIONS. 3. REFER TO MOUNTING HEIGHTS DETAIL FOR MOUNTING HEIGHTS OF ALL DEVICES
- 4. PROVIDE ALL EMPTY CONDUITS WITH PULL STRINGS AND BUSHED ENDS. 5. CONTRACTOR SHALL CONCEAL ALL CONDUIT, FITTINGS, AND DEVICES FROM VIEW WHERE REASONABLY POSSIBLE 6. ALL CONDUCTOR SIZES INDICATED ON DRAWINGS ARE FOR COPPER CONDUCTORS UNLESS SPECIFICALLY NOTED OTHERWISE. ALUMINUM CONDUCTORS MAY BE USED

• CONTRACTOR SHALL INCLUDE A DEDUCT ALTERNATE FOR USE OF SAME WITH

NOT INDICATED OTHERWISE.

ONLY UNDER THE FOLLOWING CONDITIONS.

- BIDS. FOR OWNER ACCEPTANCE. • AL CONDUCTORS MAY ONLY BE USED ON FEEDERS 100A OR GREATER - NO ALUMINUM CABLING SHALL BE COMPACTED ALUMINUM (STABILOY). • PROVIDE COMPRESSION-TYPE ONE-HOLE OR TWO-HOLE LUG TERMINATIONS.
- PROVIDE ANTI-OXIDANT COMPOUND AT TERMINATIONS. • CABLE TERMINATIONS SHALL BE MARKED "AL/CU".
- FINAL SIZES OF CONDUCTORS TO BE CONFIRMED BY ENGINEER. ALUMINUM SERVICE CONDUCTORS MUST HAVE "AA-8000" SERIES LABELING ON CABLE JACKETS PER EVERGY REQUIREMENTS - NO EXCEPTIONS. ENGINEER RESERVES FINAL RIGHT TO ACCEPT/DENY USE OF ALUMINUM CONDUCTORS FOR PART OR ALL OF PROJECT.

#### **GENERAL NOTES**

— **+**⊗**+** POST INDICATOR VALVE

1. SOME ROOM NAMES MAY NOT BE SHOWN FOR PURPOSE OF CLARIFYING PLAN. REFER TO ARCHITECTURAL PLANS FOR REFERENCE TO ROOM NAMES NOT SHOWN. 2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AND KEEP AT THE JOB SITE. AN UP TO DATE SET OF "RECORD DRAWINGS" SHOWING ALL CHANGES FROM THE ORIGINAL PLANS. THE CONTRACTOR SHALL DELIVER THE "RECORD DRAWINGS" TO THE ENGINEER AT THE CONCLUSION OF THE PROJECT ELECTRONICALLY. 3. THESE DRAWINGS ARE DIAGRAMMATIC. THE CONTRACTOR

SHEET INDEX

M201 MECHANICAL SCHEDULES AND DETAILS

P301 PLUMBING SCHEDULES AND DETAILS

E301 ELECTRICAL RISER AND SCHEDULES

MEP001 COVER SHEET MEP002 SPECIFICATIONS

MEP101 SITE PLAN

M101 HVAC PLAN

P101 DOMESTIC WATER PLAN

P201 WASTE AND VENT PLAN

E101 LIGHTING PLAN

E201 POWER PLAN

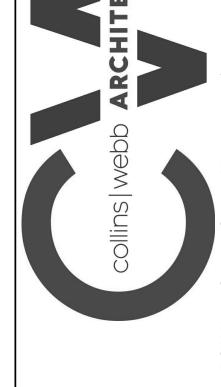
- SHALL VERIFY ALL CONDITIONS (NEW AND EXISTING), DIMENSIONS, AND CLEARANCES PRIOR TO THE COMMENCEMENT OF WORK AND SHALL INCLUDE ALL COSTS. FOUIPMENT MATERIAL ACCESSORIES FTC REQUIRED FOR A FULLY COMPLETE, FUNCTIONAL AND CODE COMPLIANT
- INSTALLATION. 4. FINAL LOCATIONS OF ALL DEVICES, LIGHT FIXTURES, EQUIPMENT ETC SHALL BE INDICATED ON THE ARCHITECTURAL DRAWINGS. ALL DIMENSIONAL INFORMATION
- SHALL BE OBTAINED FROM ARCHITECTURAL PLANS. NO DIMENSIONAL INFORMATION SHALL BE OBTAINED FROM MEP 5. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS, APPROVALS, LICENSES, ETC. AS NEEDED FOR THE COMPLETE INSTALLATION AND PROJECT. THE CONTRACTOR SHALL

## **FIRE SEALING NOTES**

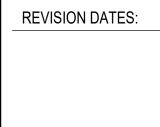
NEEDED FOR THIS.

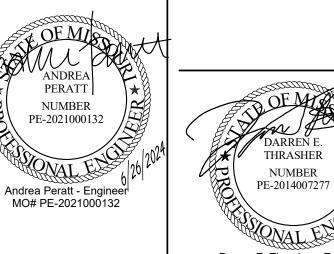
COORDINATE WITH THE OWNER FOR ALL FEES AND DATA

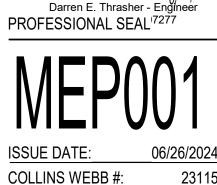
- 1. COORDINATE CONSTRUCTION OF OPENINGS AND PENETRATING ITEMS TO ENSURE THAT THROUGH-PENETRATION FIRESTOP SYSTEMS ARE INSTALLED ACCORDING TO SPECIFIED AND APPLICABLE UL REQUIREMENTS. 2. COORDINATE SIZING OF SLEEVES, OPENINGS, CORE-DRILLED
- HOLES, OR CUT OPENINGS TO ACCOMMODATE THROUGH-PENETRATION FIRESTOP SYSTEMS. 3. DO NOT COVER UP THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATIONS UNTIL EXAMINED BY INSPECTOR. IF REQUIRED BY AUTHORITIES HAVING JURISDICTION.
- 4. COMPATIBILITY: PROVIDE THROUGH-PENETRATION FIRESTOP SYSTEMS THAT ARE COMPATIBLE WITH ONE ANOTHER; WITH THE SUBSTRATES FORMING OPENINGS: AND WITH THE ITEMS. IF ANY, PENETRATING THROUGH-PENETRATION FIRESTOP SYSTEMS, UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY THROUGH-PENETRATION FIRESTOP SYSTEM MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE. 5. PROVIDE COMPONENTS FOR EACH THROUGH-PENETRATION
- FIRESTOP SYSTEM THAT ARE NEEDED TO INSTALL FILL MATERIALS. USE ONLY COMPONENTS SPECIFIED BY THROUGH-PENETRATION FIRESTOP SYSTEM MANUFACTURER AND APPROVED BY QUALIFIED TESTING AND INSPECTING AGENCY FOR FIRESTOP SYSTEMS INDICATED. 6. PROVIDE SLEEVES THROUGH ALL FIRE-RATED WALLS AND FILL
- **VOIDS SURROUNDING SLEEVES AND INTERIOR TO SLEEVES** AROUND PIPING WITH FIRE STOP PUTTY WITH UL LISTED 3 HOUR RATING INSTALLED AS PER MANUFACTURERS RECOMMENDATIONS. 7. FIRE SEAL ALL PIPING, CONDUIT, CABLE, ETC PENETRATIONS
- ROUTED THROUGH FIRE RATED WALLS. 8. PROVIDE FIRE RATED ENCLOSURES OR WRAPS ON LIGHT FIXTURES AND OTHER ITEMS PENETRATING FIRE RATED CEILINGS, FLOOR/CEILING/ CEILING/ROOF ASSEMBLIES TO MAINTAIN UL LISTING FOR CONSTRUCTION.



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specifications. No substitution will be considered prior to receipt of bids unless written request

for approval to bid has been received by engineer at least ten calendar days prior to date for

receipt of bids. Request shall include name of material or equipment for substitution & complete

ingenuity and abilities to perform the work to his and the Owner's best advantage, and to permit

C. Material and equipment installed under this contract shall be first class quality, new, unused and

more manufacturer's brand, model, catalog number and/or other identification. The first named

Engineer. Base bid proposal shall be based only on materials and equipment by manufacturers

quality, adequate in every respect for intended use. Such items shall be submitted to Architect

Architect Engineer whose decision shall be final and without further recourse. Physical size of

technical data including manufacturer's name, model and catalog number, photographs or cuts,

approved equal", & "equal" refer to approval by engineer as an acceptable alternate bid. No

H. No material substitutions shall be considered for approval after to award of contract. Coordinate

& verify w/ other trades whether or not substituted equipment can be installed as shown on

design Include additional costs for architectural & engineering design fees in bid if drawing

A. Equipment to be furnished under this contract, items requiring coordination between contractors

submitted is mutually compatible & suitable for intended use & will fit available space & allow

ample room for maintenance. Engineer's checking & subsequent approval of such shop

members, quantities, omissions of components or fittings; coordination of electrical

& sheet metal ductwork fabrication drawings. Before submitting shop drawings verify equipment

drawings will not relieve contractor from responsibility for errors in dimensions, details, size of

requirements; or for coordinating items w/ actual building conditions. Proceed w/ procurement 8

nstallation of equipment only after receiving approved shop drawings relative to each item.

B. Submittal data shall be neatly organized, identified & indexed. Each item or model number shall

materials, finishes, wiring diagrams & deviations from specified equipment or materials. Mark

D. Contractor's stamp, which shall certify that stamped drawings have been checked by contractor,

E. Transmit submittals as early as required to support project schedule. Allow for two weeks a/e

soon as possible after notice to proceed & before construction starts. Engineer's submittal

F. Final copies shall be furnished to owner as part of O&M documents in hard & electronic

review time, plus duplication of this time for resubmittals, if required. Transmit submittals as

reviews will not relieve contractor from responsibility for errors in dimensions, details, size of

members, or quantities; or for omitting components or fittings; or for not coordinating items w/

A. Collect & compile complete brochure of equipment furnished & installed on this project. Include

lists, approved shop drawings, test & balance reports, & descriptive literature as furnished by

equipment manufacturer. Include an inside cover sheet that lists project name, date, owner,

architect, consulting engineer, general contractor, sub-contractor, & an index of contents.

operational & maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts

Submit three copies of literature bound in 3-ring binders w/ index & tabs separating equipment

until manual is received & deemed complete by architect & engineer. Provide "as-built" drawings

operation & maintenance of equipment provided for this project. Provide training to include but

types to architect at termination of work. Final approval of plumbing systems will be withheld

B. These requirements may shall also be provided to the owner in a well organized pdf electronic

A. Provide factory trained & authorized representative to train owner's designated personnel on

not be limited to an overview of system &/or equipment as it relates to facility as whole:

roubleshooting, servicing, preventive maintenance & appropriate operator intervention; &

architect stating that owner's designated representative has been trained as specified herein

addition to spare set of filters, install new filters prior to testing, adjusting, & balancing work &

A. Material and thickness: multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch

B. Minimum label size: length and width vary for required label content, but not less than 2-1/2 by

C. Minimum letter size: 1/4" for name of units if viewing distance is less than 24 inches, 1/2" for

viewing distances up to 72" & proportionately larger lettering for greater viewing distances.

A. Warrant each system & each element thereof against all defects due to faulty workmanship

design or material for period of 12 months from date of substantial completion unless specific

general conditions & Division 1. Warranties shall include labor & material. Make repairs or

replacements without any additional costs to owner. Perform remedial work promptly, upon

B. At time of substantial completion, deliver to owner all warranties in writing & properly executed

including term limits for warranties extending beyond one year period. Each warranty

A. Perform cutting of walls, floors, ceilings, etc. As required to install work under this section.

Obtain permission from architect prior to cutting. Do not cut or disturb structural members

without prior approval from architect. Cut holes as small as possible. General contractor shall

patch walls, floors, etc. As required by work under this section. Patching shall match original

material & construction. Repair & refinish areas disturbed by work to condition of adjoining

A. Perform necessary excavation to receive work. Provide necessary sheathing, shoring, cribbing,

B. Excavate trenches of sufficient width to allow ample working space, and no deeper than

D. Backfill trenches and excavations to required heights with allowance made for settlement.

Dispose of excess earth, rubble and debris as directed by architect.

Famp fill material thoroughly and moistened as required for specified compaction density

E. When available, refer to test hole information on architectural or civil drawings or specifications

A. Coordinate rough-in w/ general construction & other trades. Conceal piping & conduit rough-in

A. Seal mechanical floor, exterior wall & roof penetrations watertight & weathertight. Seal around

mechanical penetrations w/ 3M CP-25 fire barrier caulk (thickness as required & recommended

by manufacturer) to maintain resistance rating of fire-rated assemblies. Provide prefabricated

roof curbs manufactured by Custom Curb, Pate, Thycurb or approved equal. Provide roof curb

w/ factory installed wood nailer; welded, 18 gauge galvanized steel shell, base plate & flashing;

1-1/2" thick, 3 pound rigid insulation; fully mitered 3-inch raised cant; cover of weather-resistant,

weather-proof material & pipe collar of weather-resistant material w/ stainless steel pipe clamps.

A. Provide motors & starting equipment where not furnished w/ equipment package. Motors shall

characteristics suitable for equipment served. Motors for air handling equipment shall be

selected for quiet operation. Each motor shall be checked for proper rotation after electrical

weather & not in air stream of fan: & totally enclosed fan cooled enclosure for motors exposed

to weather. Motors shall be manufactured by Century, GE, Westinghouse, or approved equal.

"built-in" thermal overload protection, w/ motor starter. Each starter shall be provided w/

Unless noted otherwise, motor starters shall be furnished by Division 22/23 contractor for

stallation & connection by Division 26 contractor. Starters shall be Allen-Bradley, Clark

A. Line voltage wiring shall be provided by Division 26. Line voltage control & interlock wiring for

as required for proper equipment hookup. Coordinate w/ Division 26 contractor actual wire

A. Provide heavy-duty horsepower rated safety switches rated in accordance with NEMA enclosed

mechanical systems shall also be provided by Division 26 contractor. Low voltage control wiring

shall be provided by Division 22/23 contractor. Furnish wiring diagrams to Division 26 contractor

Provide every motor, except fractional horsepower single phase motors w/ an approved type of

overload heaters sized to motor rating, & every three phase motor starter shall have overload

heaters in each phase. Ambient compensated heaters shall be installed wherever necessary.

connection has been completed. Provide dripproof enclosure for locations protected from

have copper windings, class b insulation, & standard squirrel cage w/ starting torque

Make roof penetrations by authorized roofing contractor when required.

tarpaulins, etc. For this operation, and remove it at completion of work. Perform excavation in

accordance with appropriate section of these specifications, and in compliance with osha safety

C. Conduct excavations so no walls or footings are disturbed or injured. Backfill excavations made

architect engineer. Mechanically tamp backfill under concrete and pavings in six inch layers to

under or adjacent to footing with selected earth or sand and tamp to compaction required by

instrument being addressed to owner & stating commencement date & term.

items are noted to carry longer warranty in construction documents or manufacturer's standard

warranty exceeds 12 months. Remedy all defects, occurring within warranty period(s) stated in

Include secondary lettering two-thirds to three-fourths the size of principal lettering.

thick, and having predrilled holes for attachment hardware. Black letters on white background.

representative shall sign certification letter indicating agreement that training has been provided.

review of data included in operation & maintenance manuals. Submit certification letter to

Letter shall include date, time, attendees & subject of training. Contractor & owner's

A Furnish to owner w/ receipt one set of spare filters of each type required for each unit. In

operation & maintenance procedures & schedules related to startup & shutdown,

be clearly marked & accessories indicated. Label catalog data w/ equipment identification

acronym or number as used on drawings & include performance curves, capacities, sizes,

out inapplicable items. Shop drawings will be returned without review if above mentioned

C. Requirements shall be met electronically & submitted as pdf in files less than 10mb.

comply w/ drawings & specifications, & have been coordinated w/ other trades.

construction drawings without modification to associated systems or architectural or engineering

substitute brand shall be no larger than space provided including allowances for access for

installation and maintenance. Requests must be accompanied by complete descriptive and

D. In general, these specifications identify required materials and equipment by naming one or

manufacturer or product is used as the basis for design; other manufacturers named must

furnish products consistent with specifications of first named product as determined by

F. Where materials or equipment are described but not named, provide required items of first

F. Materials and equipment proposed for substitutions shall be equal to or superior to that

physical dimensions, operating characteristics and any other information needed for

G. The burden of proof of merit of proposed substitute is upon proposer. Engineer's decision of

approval or disapproval to bid of proposed substitution shall be final. Terms approved

substitutions will be considered that are not bid as an alternate.

modifications are required because of substituted equipment

12. SHOP DRAWINGS

requirements are not met.

13. OPERATION & MAINTENANCE INSTRUCTIONS

(see Division 1 & general conditions).

before turning system over to owner.

written notice from engineer or owner.

surfaces in manner satisfactory to architect.

95% standard density, reference Division 2.

CUTTING & PATCHING

19. EXCAVATION AND BACKFILL

necessary for installation work.

non-structural elements.

Furnas, Square D, or approved equal

switch standard KS 1 1969 and I98 standard.

25. ELECTRICAL WIRING

16. EQUIPMENT LABELS:

B. Furnish one complete set of belts for each fan.

submission & delivered on a DVD or USB thumbdrive.

Schedule owner training w/ at least 7 days' advance notice.

specified in construction, efficiency, utility, aesthetic design, and color as determined by

description of proposed substitute including drawings, cuts, performance & test data & other

information for evaluation. Statement setting forth changes in other materials, equipment or

B. The intent of these specifications is to allow ample opportunity for Contractor to use his

maximum competition in bidding on standards of materials and equipment required

other work that incorporation of substitute would require shall be included.

named, except as hereinafter provided.

Engineer for review prior to procurement

modifications to water, gas & sewer connections to building as required.

C. All materials shall be new & shall bare UL label where applicable

required by drawings & specifications

D. Visit site & observe conditions under which work will be done. Any discrepancies shall be called to architect's attention. No subsequent allowance will be made in contract for any error or negligence on contractor's part E. Final acceptance of work shall be subject to condition that all systems, equipment, apparatus &

appliances operate satisfactorily as designed & intended. Work shall include required adjustment of systems & control equipment installed under these specifications. . Warrant to owner quality of materials, equipment, workmanship & operation of equipment provided under these specifications for one year from & after completion of building & acceptance of mechanical systems by owner.

G. All materials installed in plenums shall be noncombustible or have flame/smoke index of no more than 25/50 in accordance w/ ASTM e 84. H. Requirements under Division one & general & supplementary conditions of these specifications shall be part of this section. Contractor shall become thoroughly acquainted w/ its contents as to requirements that affect this Division of work required under this section includes material. Equipment, appliances. Transportation. Services. & labor required to complete entire system as

The specifications & drawings for project are complementary, & portions of work described in one, shall be provided as if described in both. In event of discrepancies, notify engineer & request clarification prior to proceeding w/ work involved.

A. Provide MEP systems indicated on drawings, specified or reasonably implied. In addition to specific equipment called out in plans and specifications, provide every device, component, programming, interlocking and accessory necessary for proper operation and completion of totally functional MEP systems

B. In no case will claims for "Extra Work" be allowed for work about which Contractor could have been informed before bids were taker C. Contractor shall become familiar with equipment provided by other contractors that require plumbing connections and controls.

D. Electrical work required to install and control plumbing equipment, which is not shown on plans or specified under Division 26, shall be included in Contractor's base bid proposal. E. All automatic temperature control devices shall be mounted as indicated in automatic temperature control section of specifications. F. The cost of larger wiring, conduit, control and protective devices resulting from installation of

equipment which was not used for basis of design as outlined in specifications shall be paid for by the supplying Contractor at no cost to Owner or Architect Enginee G. Contractor shall be responsible for providing supervision to other trade Contractors to insure that required connections, interlocking and interconnection of MEP equipment is made to attain intended control sequences and system operatior H. Contractor shall obtain complete MEP data on shop drawings and shall list this data on an

approved form that shall be presented on request, to other trade Contractors. Data shall be complete with wiring diagrams received to date and shall contain necessary data on electrical components of plumbing equipment such as HP, voltage, amperes, watts, locked rotor current to allow other trade Contractors to order support or other equipment coordinated as required in **DEFINITIONS** A. Whenever used in these specifications or drawings, following terms shall have indicated

B. Furnish: term "Furnish" is used to mean "supply & deliver to project site. Ready for unloading, unpacking, assembly. Installation & similar operations C. Install: term "Install" is used to describe operations at project site including actual "unloading,

unpacking. Assembly. Erection. Placing. Anchoring. Applying, working to dimension. Finishing, D. Provide: term "Provide" means "to Furnish & Install. Complete & ready for intended use." furnished by owner or furnished by others: item will be furnished by owner or others. It is to be installed & connected under requirements of this Division, complete & ready for operation. including items incidental to work, including services necessary for proper installation & operation. Installation shall be included under guarantee required by this Division. E. Engineer: where referenced in this Division, "Engineer" is engineer of record & design

professional for work under this Division. & is consultant to. & an authorized representative of. architect. As defined in general &/or supplementary conditions. When used in this Division. It means increased involvement by. & obligations to, engineer, in addition to involvement by. & obligations to, "Architect". F. AHJ: local code &/or inspection agency (authority) having jurisdiction over work. G. The terms "Approved equal", "Equivalent". Or "Equal" are used synonymously & shall mean

"accepted by or acceptable to engineer as equivalent to item or manufacturer specified" H. The term "approved" shall mean labeled, listed. Or both. By nationally recognized testing laboratory (e.g. UL. ETL. CSA). & acceptable to AHJ over this project.

A. Provide new material, equipment. & apparatus under this contract unless otherwise stated

herein. Of best quality normally used for purpose in good commercial practice & free from defects. Model numbers listed in specifications or shown on drawings are not necessarily intended to designate required trim, written descriptions of trim govern model numbers. B. Pipe, fittings, specialties & valves shall be manufactured in USA. Work performed under this contract shall provide neat & "workmanlike" appearance when completed to satisfaction of architect & engineer. Workmanship shall be finest possible by experienced mechanics Installations shall comply w/ applicable codes & laws. Complete installation shall function as designed & intended w/ respect to efficiency, capacity, noise level, etc. Abnormal noise caused by rattling equipment, piping, ducts, air devices & squeaks in rotating components will not be acceptable. In general materials & equipment shall be of commercial specification grade in quality. Light duty & residential equipment is not acceptable

C. Remove from premises waste material present from work, including cartons, crating, paper, stickers, &/or excavation material not used. D. Clean equipment installed under this contract to present neat & clean installation at completion. E. Repair or replace public & private property damaged as result of work performed under this contract to satisfaction of authorities & regulations having jurisdiction. COORDINATION

A. Coordinate work w/ other trades so various components of systems will be installed at proper time will fit available space & will allow proper service access for maintenance. Components which are installed without regard to above shall be relocated at no additional cost to owner B. Obtain equipment submittal information for all pieces of equipment to be connected to from other trades that clearly indicates all connection requirements, locations, sizes, and similar requirements. Obtain this information in ample time to coordinate other trade submittals and equipment coordination. Where requirements differ from that on plans or differs from provisions made in the work, immediately notify the architect/engineer. Do not proceed with work that is incompatible with equipment provided

C. Unless otherwise indicated, general contractor will provide chases & openings in building

construction required for installation of systems specified herein. Contractor shall furnish general contractor w/ information where chases & openings are required. D. Keep informed as to work of other trades engaged in construction of project & execute work in manner as to not interfere w/ or delay work of other trades. Figured dimensions shall be taken in E. Contractor shall take his own measurements at building, as variations may occur. Contractor will

be held responsible for errors that could have been avoided by proper checking & inspection. F. Provide materials w/ trim that will properly fit types of ceiling, wall. Or floor finishes actually installed. Model numbers listed in specifications or shown on drawings are not intended to designate required trim. G. Coordinate construction operations included in different sections of the specifications to ensure

efficient and orderly installation of each part of the work. Coordinate construction operations. included in different sections, that depend on each other for proper installation, connection, and H. Each contractor shall coordinate its construction operations with those of other contractors and

entities to ensure efficient and orderly installation of each part of the work. Each contractor shall coordinate its operations with operations, included in different sections, that depend on each other for proper installation, connection, and operation Schedule construction operations in sequence required to obtain the best results where

installation of one part of the work depends on installation of other components, before or after J. Coordinate installation of different components with other contractors to ensure maximum

accessibility for required maintenance, service, and repair. K. Make adequate provisions to accommodate items scheduled for later installation. L. Where availability of space is limited, coordinate installation of different components to ensure

documents or standard printed data. Include the following information, as applicable:

civil, mechanical, and electrical systems

maximum performance and accessibility for required maintenance, service, and repair of all except in unfinished areas & where otherwise shown. components, including mechanical and electrical. 21. STRUCTURAL STEEL M. Prepare coordination drawings if limited space availability necessitates maximum utilization of A. Structural steel used for support of equipment, ductwork & piping shall be new, clean, & conform space for efficient installation of different components or if coordination is required for installation to ASTM a-36. Support mechanical components from building structure. Do not support of products and materials fabricated by separate entities. Content: project-specific information. mechanical components from ceilings, other mechanical or electrical components, & other drawn accurately to scale. Do not base coordination drawings on reproductions of the contract

22. ACCESS DOORS 1) Indicate functional and spatial relationships of components of architectural, structural, A. Provide access doors in ceilings, walls, etc. Where indicated or required for access or maintenance to concealed valves & equipment installed under this section. Provide concealed hinges, screwdriver-type lock, anchor straps; manufactured by Milcor, Zurn, Titus, or equal. Obtain architect's approval of type, size. Location & color before ordering.

23. PENETRATIONS

2) Indicate required installation sequences. 3) Indicate dimensions shown on the contract drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered

N. Meetings: conduct project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences. 1) Attendees: each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with project and authorized to conclude matters relating to the work. Notify

24. MOTORS & STARTERS architect of meeting. 2) Agenda: review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. 3) Combined contractor's construction schedule: review progress since the last coordination meeting. Determine whether each contractor is on time, ahead or behind schedule, in relation to construction schedule. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the contract time. Discuss impact of various contractor schedules upon other contractors

4) Review present and future needs of each contractor present O. After shop drawings have been reviewed and approved by all parties, transmit a set of submittals to each other trade (eg Plumbing, Mechanical, Electrical, Controls, etc) that will interface with installation. Each other contractor shall review the submittal for coordination and return a stamped submittal indicating they have reviewed the submittal for coordination

ARCHITECTURAL VERIFICATION AND RELATED DOCUMENTS A. Contractor shall consult all Architectural Drawings and specifications in their entirety incorporating and certifying all millwork, furniture, and equipment rough-in including utility characteristics such as voltage, phase, amperage, pipe sizes, duct sizes, including height, location and orientation. Shop drawings incorporating these requirements should be submitted to the Architect for approval prior to installation or rough in.

26. <u>DISCONNECT SWITCHES</u> A. Work performed under this contract shall. At minimum, be in conformance w/ applicable national, state & local codes having jurisdiction

standards institute (ANSI), American Society of Testing Materials (ASTM) & other national

C. Where contract documents exceed requirements of referenced codes. Standards, etc., contract

Where required, obtain. Pay for & furnish certificates of inspection to owner. Contractor will be

A. Drawings and specifications indicate minimum construction standard. Should any work indicated

necessary changes can be made. However, if the Contractor proceeds with work knowing it to

be contrary to any ordinances, laws, rules, and regulations, Contractor shall thereby have

assumed full responsibility for and shall bear all costs required to correct non complying work.

A. Store & protect from damage equipment & materials delivered to job site. Cover as required to

installed during construction when not in use to prevent entrance of debris into systems.

Equipment & material that has been damaged by construction activities will be rejected, &

A. The base bid shall include only products from manufacturers specifically named in drawings &

clean from foreign material created during work performed under this contract. Piping,

equipment, etc. Shall have neat & clean appearance at completion.

contractor is obligated to furnish new equipment & material of like kind. Keep premises broom

protect from dirt & damage. Plug or cap open ends of ductwork & piping systems while stored &

Contractor shall promptly notify Architect Engineer in writing before proceeding with work so that

D. Procure & pay for permits & licenses required for accomplishment of work herein described

be sub standard to any ordinances, laws, codes, rules or regulations bearing on work,

standards & codes where applicable

held responsible for violations of law.

PROTECTION OF EQUIPMENT & MATERIALS

STANDARDS

SUBSTITUTIONS

documents shall take precedence.

C. Equivalents by: GE, Eaton, Siemens, Square D. B. Installation work performed under this contract shall be in strict compliance w/ current applicable 27. REFRIGERANT & OIL codes adopted by local AHJ including any amendments & standards as set forth by Nationa Fire Protection Association (NFPA). Underwriters Laboratories (UL), Occupational Safety & Health Administration (OSHA). American Society of Mechanical Engineers (ASME), American Society of Heating, Refrigeration, & Air Conditioning Engineers (ASHRAE). American national

A. Provide full refrigerant & oil charge in refrigeration systems. Maintain for full term of warranty. 28. EQUIPMENT FURNISHED BY OTHERS

sizing amps for submitted mechanical equipment to ensure proper installation

B. Each piece of electrical equipment shall be provided with a disconnecting means.

A. Provide necessary equipment & accessories that are not provided by equipment supplier or owner to complete installation of cooking equipment, washing equipment, etc., furnished by others, in locations as indicated on drawings &/or described in general notes to this contractor. B. Equipment & accessories not provided by equipment supplier may include flues, vents, intakes, associated roof jacks & caps to outdoors, dampers. In-line fans, roof fans, control interlocks, etc.

As required for proper operation of complete system in accordance w/ manufacturer's C. Contractor shall be responsible for correct rough-in dimensions, & shall verify same w/ architect

&/or equipment supplier prior to service installations. 29. <u>SETTING</u>, ADJUSTMENT AND EQUIPMENT SUPPORTS A. Work shall include mounting, alignment and adjustment of systems and equipment. Set equipment level on adequate foundation and provide proper anchor bolts and isolation as shown, specified or required by manufacturers in installation instructions. Level, shim and grout equipment bases as recommended by manufacturer. Mount motors, align and adjust drive shafts and belts according to manufacturer's instructions

B. Equipment failures resulting from improper installation or field alignment shall be repaired or replaced by Contractor at no cost to Owner. C. Provide floor or slab mounted equipment with 3\_1/2" high concrete bases unless specified otherwise. Individual concrete pad shall be no less than 4" wider and 4" longer than equipment. and shall extend no less than 2" from each side of equipment.

level with suitable structural support, platform or carrier in accordance with best-recognized practice. Verify that structural members of buildings are adequate to support equipment and unless otherwise indicated on plans or specified, arrange for their inclusion and attachment to building structure. Provide hangers with vibration isolators. E. Submit details of hangers, platforms and 10 ons together with total weights of mounted

equipment to Architect Engineer for review before proceeding with fabrication or installation

D. Provide each piece of equipment or apparatus suspended from ceiling or mounted above floor

30. VIBRATION ISOLATION A. Provide vibration isolation equipment & materials by single manufacturer. Amber booth, kinetics noise control, mason industries, inc., vibration eliminator co., inc., & vibration mounting & controls. General requirements: select vibration isolators by weight distribution to produce uniform deflection. Isolators shall operate in linear portion of their load versus deflection curves. Spring isolators shall have 50 percent excess capacity without becoming coil bound. Coat vibration isolators w/ factory-applied paint. Coat vibration isolators exposed to weather & corrosion w/ factory-applied protection. Install & adjust isolators in accordance w/ manufacturers

A. General: for penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firesto systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.

A. Contractor shall be responsible for quality of welding and suitability of welding procedures. All welding shall be in accordance with American Welding Society standard B3.0 and ANSI B. Welded pipe joints shall be made by certified welding procedures and welders. Welding

electrodes shall be type and material recommended by electrode manufacturer for materials to be welded. All pipe and fittings ends shall be beveled a minimum of 30 degrees prior to C. Only welders who have successfully passed welder qualifications tests in previous 12 months for type of welding required shall do welding. Each welder shall identify his work with a code list of welders who will work on project listing welders' code, date and types of latest qualification

D. Welded joints shall be fusion welded in accordance with level AR3 of American Welding Society standard AWS D10.9 "Standard For Qualification Of Welding Procedures And Welders For Pipe And Tubing". Welders qualified under national certified pipe welding bureau will be acceptable. E. Bevel all piping and fittings in accordance with recognized standards by flame cutting or mechanical means. Align and position parts so that branches and fittings are set true. Make changes in direction of piping systems with factory made welding fittings. Make branch connections with welding tees or forged weldolet.

END OF GENERAL MEP REQUIREMENTS

31. FIRE BARRIERS

PLUMBING GENERAL REQUIREMENTS A. Refer to GENERAL MECHANICAL, ELECTRICAL AND PLUMBING requirements

2. PIPING & INSULATION A. Water service piping shall be CPVC SDR-11 piping properly bedded and supported. B. Water piping - all water piping over 1" shall be CPVC SDR-11, insulate w/ fiberglass w/ ASJ & PVC covers. Water piping 1" or smaller shall be PEX-a or PEX-b. Insulate w/ elastomeric w/ ASJ & PVC covers. Insulation thickness in accordance w/ ASHRAE 90.1.

stainless steel bands above grade. Sched 40 PVC w/ solvent welds may be used where allowed by local code. PVC not allowed in plenums. D. Gas piping - Provide Sched 40 cont. Weld carbon steel w/ corresponding fittings. Provide threaded fittings. Provide iron body-brass plug gas stops. Provide 2 coats paint on exterior gas

C. Waste & vent piping - CI bell & spigot below grade or hubless CI w/ neoprene gasket fittings w/

**VALVES** A. Equivalent valves listed on current comparison charts of specified valve manufacturers by Milwaukee, Stockham, Powell, Red-White, Crane, Apollo, Mueller, Muessco, Watts, Hays,

B. Ball valves - 2" & under - bronze full port w/ teflon seats, bronze ball & insulated handle. C. Balancing valves - Armstrong model CBV I or CBV II. 125 psi-wp at 250 degrees f., meter connections w/ built-in check valves screwed or flanged ends. Provide polyurethane insulation D. Check valves - 2" & smaller screwed or solder bronze check valve, 200 psi-wog/125 psi-wsp.

teflon or bronze disc & seat ring. 2-1/2" & larger flanged, ASTM 126 iron body, bronze trimmed, 200psi-wog/125 psi-wsp. E. Plug valves - 1" & smaller iron body gas cock, 175 PSI WOG bronze plug washer and nut, screwed ends. 1 1/4" & larger, semi\_steel lubricated plug valve, 175 PSI\_WOG coated plug,

two bolt cover, and short pattern screwed ends. Provide w/ std. pattern cast handle. 1) Install necessary valves within piping systems to provide required flow control, to allow isolation for inspection, maintenance and repair of each piece of equipment or fixture,

on a horizontal run with the handle upright and within 15 degrees of vertical. Butterfly valves shall be installed with the stem in the horizontal position and the handle at 90 degrees from vertical. 3) Valves installed in piping systems shall be compatible with system maximum test

2) Each valve shall be installed so that it is easily accessible for operation, visual inspection,

and maintenance and wherever possible, gate, check and ball valves shall be installed

pressure, pipe materials, pipe joining method, and fluid or gas conveyed in system. A. See schedules for further requirements and specific fixtures.

C. Stainless steel fixtures: Elkay, Just. Moen Commercial D. Fittings & supports: Josam, Smith, Wade, Zurn, Or Jonespec. E. Seats: Church, Olsonite, Bemis Or Beneke, F. Drinking fountains: Halsey Taylor, Elkay, Oasis, Or Haws.

backflow prevents by Watts, Febco, Lawler.

B. Fixtures: American Standard, Kohler, Crane, Zurn, Toto.

G. Trim by Moen, Delta, Eljer, Kohler, American St&Ard, Crane, Sloan. H. Flushvalves: Sloan, Zurn, Toto I. Drains by Watts, Wade, Zurn, Woodford, Smith, Josam.

J. Wall hydrants Josam series 71000 w/ connections for 3/4" pipe & hose. Non-freezing w/ key, vacuum breaker, locking cover. Equivalent by Watts, J.R. Smith, Wade, Woodford or Zurn PLUMBING EQUIPMENT A. See schedules for further requirements and specific equipment.

B. Tank Water heaters - State, Rheem, National, A.O. Smith, Porcelainized glasslined tank, Colo water inlet drop tube. Magnesium anode rods. UL seal, 160 psi, factory temperature & pressure relief valve. NSF. construction. 3 yr warranty C. Recirculation pumps - horizontal, oil-lubricated, all bronze. 125psi. Non-overloading motor D. Provide gas pressure regulators with internal relief and low pressure cut off as manufactured by Fisher Controls or Equimeter. Units shall be of size capable of capacities and pressures as

shown on plans or as required for proper service. Verify capacities and pressures with each piece of equipment served. E. Backflow preventers provide where shown on plans or as required by Code/AHJ the following types of backflow preventers. Provide isolation valve ahead of backflow preventers. Equivalent

1) Reduced pressure zone principle (3/4"-10"): watts series 909 reduced pressure backflow preventer complete with strainers and valves. Provide isolation valve ahead of backflow preventers. Provide with air gap fitting and pipe to floor drain. 2) Double check valve (1/2"-2"): watts series 007 double check valve assembly complete with ball type test cocks, full port ball valve shut offs and strainer.

3) Pressure vacuum breakers (1/2"-2"): watts series 800m4qt pressure vacuum breaker 4) Pressure vacuum breakers (3/8"-1/2"): watts series 008qt pressure vacuum breaker foi anti-spill applications, with integral ball valve shut offs.

5) Atmospheric vacuum breaker (1/4"-3"): watts series 288a atmospheric vacuum breaker 6) Hose bibb vacuum breakers vacuum breakers for hose end connections shall be Watts series 8 non-removable type. F. Domestic hot water expansion tanks be welded steel, diaphragm type tank, and pre-charged to

the minimum operating pressure. Tanks shall be suitable for domestic water service. Provide by Amtrol, Bell & Gossett, Watts. G. Provide thermometers and wells at all water heaters. Provide pressure test plugs and gauges at water/fire services, booster pumps, etc. so that proper testing/ balancing & trouble shooting can be accomplished

 PLUMBING EXECUTION A. Provide unions or flanged joints in each pipe line preceding connections to equipment to allow removal for repair or replacement. Provide all screwed & control valves w/ unions adjacent to each connection. Provide screwed end valves w/ union adjacent to valve unless valve can be otherwise easily removed from line

purpose. Provide clevis hangers, unistrut brackets and pipe clamps and similar systems. Protect integrity of insulation and provide rigid insulation inserts or pipe saddles as necessary C. After piping is in place test lines to insure no leaks. D. All piping & equipment shall be supported properly from structure

B. All piping shall be properly supported with hangers and supports specifically intended for that

E. Escutcheons - provide nickel-brass or chrome plated on all exposed pipes when passing thru wall or ceiling of finished rooms. F. Verify floor materials used from architectural plans & provide proper cleanout tops, where they

occur in carpet, quarry tile, vinyl tile or ceramic tile. G. Provide water hammer arrestors for all plumbing banks w/ fixtures utilizing flush valves in any capacity. Locate arrester between last two fixtures served on branch line END OF DIVISION 220000

**DIVISION 230000 - MECHANICAL** 

 MECHANICAL GENERAL REQUIREMENTS A. Refer to GENERAL MECHANICAL, ELECTRICAL & PLUMBING requirements 2. SHEET METAL WORK

> A. HVAC ductwork shall be galv sheet metal of gauges & joint types specified in SMACNA manual. Provide turning vanes in elbows B. Coordinate routing of ductwork w/ other contractors such that piping, electrical conduit, & associated supports are not routed through ductwork. Construct supply ducts to meet SMACNA positive pressure of 3" WG. Construct return, outdoor & exhaust ductwork upstream of fans to meet SMACNA negative pressure of 1" WG. construct exhaust ductwork downstream of fans to

meet SMACNA positive pressure of 1" WG. C. Seal ductwork w/ heavy liquid sealant, Hardcast Irongrip 601, Design Polymer DP 1010, United McGill duct sealer or approved equal, applied according to sealant manufacturer's instructions.

D. Ducts shall be connected to fans, fan casings & fan plenums 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 flame spread of 25 or less & smoke developed rating not higher than 50. Make airtight joints & install w/ minimum 1-1/2" slack. E. All ductwork must be supported properly from structure.

3. <u>DUCTWORK SPECIALTIES</u>

A. Flexible ducts - Thermaflex or equal sound rated type G-KM insulated. (duct w/o published acoustical attenuation ratings not acceptable). Take off fitting shall be hi-eff style w/ locking damper. Maximum length of flexible ductwork shall be 5'-0' B. Diffusers & grilles - see schedule. Equivalent by Price. Tuttle & Bailey. Titus. Metal-Aire.

Krueger. Coordinate color, mounting w/ duct, ceilings, architect. Select air devices to limit room noise level to no higher than NC-30 unless otherwise shown. Provide devices w/ soft plastic gasket to make an airtight seal against mounting surface. Coordinate final location, frame, & mounting type of air devices w/ 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 w/ specified equipment number. Provide ceiling supply air diffusers & return air grilles of lay-in or surface mounted type as required to be compatible w/ ceiling construction. Provide ceiling diffusers & grilles w/ white enamel finish unless noted otherwise. Provide slot plenums by diffuser manufacturer. Plenums shall be internally insulated C. Louvers - Greenheck type FSK-400 fabricated galvanized steel louver w/ trim flange. Equivalent

by Ruskin, Louvers & Dampers, Greenheck, American Warming & Ventilating, Industrial Louvers, Acme. Coordinate finish w/ architect.

D. Provide balancing dampers, manufactured by Ruskin, Greenheck, Nailor Industries, Cesco, Louvers & Dampers, Pottorff or approved equal, where 'shown on drawings & wherever necessary for complete control of air flow. Splitter dampers shall be controlled by locking quadrants; provide young regulator or ventlok end bearings for damper rod. Rectangular volume dampers shall be opposed blade interlocking type. Round volume dampers shall be butterfly type consisting of circular blade mounted to shaft.

E. Damper leakage for outside air dampers shall not exceed 6.5 cfm/square foot in full closed position at 4" wg pressure differential across damper. Reference manufacturer & model number for outside air dampers is Ruskin model CD-50. 4. <u>DUCT INSULATION WORK</u>

A. Duct insulation & wraps shall meet flame/smoke rating of 25/50 per ASTM E 84. B. Line all low pressure supply & return air ductwork w/ 1/2" liner.

C. Line all transfer boots w/ 1/2" liner. D. Wrap all outside air HVAC ductwork w/ Certainteed 1-1/2" thick insulation w/ vapor barrier in concealed locations. Exposed installations shall use 1-1/2" thick rigid board insulation or lined

PIPING A. Refrigerant piping - copper tube type acr, hard temper nitrogenized refrigerant tube, ASTM b-88. Type L or K. Brazed joints. Insulate w/ Armaflex in thickness per ASHRAE 90.1. Provide UV stabilized exterior rated or coated Armaflex outdoors

B. Condensate piping - copper ASTM b-88. Type L or K. Brazed joints. Insulate w/ Armaflex in 6. MINI-SPLIT SYSTEMS

condensate pan, fan motor(s), filters & controls in insulated casing w/TXV. ARI rated, UL listed B. Approved equivalent manufacturers: Daikin, Mitsibushi, LG.

with all necessary accessories & attachments for operation to -10F.

7. EXHAUST FANS

aluminum fins. w/ TXV.

C. Controls: Install thermostats & humidistats at mounting height of 60 inches above floor. Manufacturer to final size all refrigerant lines, Provide all valves, fittings & any other components as required for refrigerant line lengths indicated by drawings. Provide all refrigerant & oil required for each refrigerant circuit. D. Units serving data closets or other spaces where constant cooling is required shall be provided

A. Equivalent by Cook, Penn, Acme, Greenheck, Jennaire, Captive Air. B. Bearings shall be designed for 200,000 hours operation. Variable pitch motor sheaves shall be

C. Fans shall be furnished with acceptable electrical disconnect & birdscreen. Provide single phase motor equipped fans with motor rated start relay. Provide multiphase motor equipped fans with magnetic motor starter. Provide local disconnect means for all fans. Coordinate location of starter & disconnects with other trades. D. Ceiling & Cabinet Exhaust Fans - Available Manufacturers: Cook, Penn, Acme, Greenheck, Jennaire, Panasonic. Shall bear the AMCA Certified Ratings Seal for sound and air performance. Provide speed controls to be furnished to E/C for mounting at fan. Provide

wall/roof jacks as indicated on plans. 8. FURNACES, EVAPORATORS, & CONDENSING UNITS A. Furnace - Min 95% eff natural gas. AGA cert. Aluminized steel HX. multi-speed direct drive blower motor. Provide 2" or 3" plastic C/A & flue piping complete w/ concentric termination kits. 2" MERV 8 filters. Mount filter in slide rack w/ hinged door & latch in R/A duct work. Coil blow-thru D/X module, fully insulated metal casing w/ drain pan & duct flanges, copper tubes w/

B. Condensing unit - heavy gauge base, scroll compressor(s). Rated seer not less than 10.3. (1)

yr parts & labor system warranty & additional 4 yr compressor only warranty. Anti-short cycle

**ELECTRICAL SPECIFICATIONS** 

SECTION 26000 - ELECTRICAL prevention controls. Provide liquid line anti-migration valve for all systems with lines longer than

evaporator coils. Louvered coil hail guards. 30 deg low ambient.

tampering. Provide w/ all interfaces to other equipment as required.

A. Stages of cooling & heating as required by stages on specified equipment. 7-day programming

B. Thermostats by Honeywell, Johnson Controls, White-Rogers, Trane, Carrier or approved equal

A. Coordinate w/ e/c to provide all wiring between equipment, dampers, thermostats & all other

required controls & devices. M/C is responsible for all control & interlock wiring unless

B. All piping shall be properly supported with hangers & supports specifically intended for that

purpose. Provide clevis hangers, unistrut brackets & pipe clamps & similar systems. Protect

E. Provide ground-mounted units on 4", reinforced concrete base, 6" larger than unit on each side.

F. Provide factory-authorized service start up on equipment. Train owner's maintenance personnel

A. Final system testing. Balancing & adjustments shall be performed by contractor certified by

B. Perform test readings on fans, units, coils, etc. & adjust equipment to deliver specified amounts

of air or water. Prepare testing & balancing report log showing air supply quantities, air entering

& leaving temperatures & pressures, fan & unit test readings, motor voltage & amp draws. etc.,

& submit PDF of final compilation of data to architect for evaluation & approval before final

C. Balance air systems to within plus or minus 10 percent for terminal devices & branch lines &

plus or minus 5 percent for main ducts & air handling equipment of amount of air shown on

D. Balance contractor shall include in report any improperly installed or missing balancing devices

E. Adjust thermostats & control devices to operate as intended. Adjust burners, pumps, fans, etc.

for proper & efficient operation. Certify to architect that adjustments have been made & that

A. Engage a factory-authorized service representative to perform startup service for all equipment

10) Inspect & record performance of interlocks & protective devices; verify sequences.

12) Inspect controls for correct sequencing of heating, mixing dampers, refrigeration, &

13) After startup & performance testing, change filters, vacuum heat exchanger & cooling &

outside coils, lubricate bearings, adjust belt tension, & inspect operation of power vents.

B. Complete installation & startup checks according to manufacturer's written instructions.

Maintain written records of all startup activities & also do the following:

1) Inspect for visible damage to any part, casing or component.

6) Clean all interior and exterior components of construction debris

8) Inspect all rotating components for direction and correct.

9) Start unit according to manufacturer's written instructions.

11) Calibrate thermostats, sensors and similar equipment

14) Provide one spare set of clean filters & deliver to owner

2) Set field-adjustable switches & circuit-breaker trip ranges as indicated.

3) Occupancy adjustments: when requested within 12 months of date of substantial

1) Engage a factory-authorized service representative to train owner's maintenance

personnel to adjust, operate, & maintain all HVAC equipment & system

completion, provide on-site assistance in adjusting system to suit actual occupied

conditions. Provide up to two visits to site outside normal occupancy hours for this

1) Adjust initial temperature & humidity set points.

system is operating satisfactorily. Check proper sequencing of interlock systems, & operation of

dirt or foreign material in them w/ new bearings without additional cost to owner

drawings. Further adjustments shall be made to obtain uniform temperature in spaces. Adjust

equipment to operate as intended by specification. Align bearings & replace bearings that have

specifcally shown on electrical drawings. All electrical work shall comply w/ electrical

integrity of insulation & provide rigid insulation inserts or pipe saddles as necessary.

on startup, shutdown, troubleshooting, servicing, preventive maintenance.

capability w/ 2 occ/unocc periods/day. Auto heat/cool change over. Locking setpoints to prevent

C. Equivalent by Daikin, Trane, Lennox, York, Carrier.

C. All exterior control wiring shall be in conduit.

G. Provide clean filters at time of project turnover.

that would negatively impact system operation.

safety controls. Verify clean filters are installed.

2) Verify that labels are clearly visible.

5) Verify that filters are installed.

3) Verify service clearances are provided.

7) Release and adjust vibration isolators.

normal & emergency shutdown.

purpose, without additional cost

4) Verify that controls are connected & operable.

NEBB, AABC or other approved agence

FINAL TESTING & ADJUSTMENTS

inspection of project.

12. STARTUP SERVICE

C. Adjusting

D. Provide any required interfaces to fire alarm or similar systems.

9. PROGRAMMABLE THERMOSTATS

100 feet. Provide unit with suction line accumulators where condensing units are located below GENERAL ELECTRICAL REQUIREMENTS A. Refer to GENERAL MECHANICAL, ELECTRICAL & PLUMBING requirements.

> B. Wiring of Mechanical Equipment 1) Provide all raceways & power wiring for all division 23 equipment requiring electrical connections, including, but not limited to, pumps, water heaters, & HVAC equipment, & all line voltage control & interlock wiring not provided under division 23. Connect per manufacturers' wiring diagrams. Coordinate with division 23 for disconnects furnished w/ equipment, & provide all disconnect switches as required. After installing wiring, verify that each motor load has correct phase rotation 2) Verify actual "maximum overcurrent protection" (MOCP) device ratings & "minimum

circuit ampacity" (MCA) conductor sizing for mechanical equipment from equipment nameplate. Base electrical installations on actual required amperages, which may vary somewhat from conductor & equipment sizes shown on drawings; however, in no case, reduce size of conductors indicated on drawings without authorization from engineer Provide properly sized electrical wiring & equipment without extra cost to owner. Notify engineer of all changes required in electrical installation due to equipment variances so that effects on feeders, branch circuits, panelboards, fuses & circuit breakers can be checked prior to purchasing & installation. Be responsible for coordinating w/ division 23 to verify actual ampacities & correct sizes of all conductors & overcurrent protective devices for all equipment, & correct overload heaters for all motors, when starters are provided under division 26. C. Wiring of Thermostats. Time, & Temperature Controls

1) Provide all raceways, power wiring, & line-voltage control and interlock wiring not provided under division 23, for all thermostats, temperature control devices, & controls including, but not limited to, night-stats, water heater interlocks, time switches & override timers. See mechanical drawings for locations & temperature control diagrams. Low-voltage conductors for thermostats & temperature control system may be run exposed above finished accessible ceilings, if approved & listed for this purpose, but shall be installed in conduit within walls & where exposed in work areas CONDUIT & CONDUCTORS

A. Follow circuiting shown on plans. Use no conduit smaller than 3/4" & no conductors smaller than #12 ga. Unless noted otherwise B. Conductors #10 and smaller shall be solid C. If no conductor size is indicated on drawings for branch circuit, provide conductors & conduit

sized per NFPA 70 & based on indicated branch circuit overcurrent protective device (OCPD) rating & number of poles. D. Wire shall be in non-flexible metallic conduit (EMT, IMC or RMC) for: 1) All circuits & feeders greater than 30A.

Home runs. E. MC cable acceptable for branch convenience circuits & lighting circuits. Do not daisy chain light

2) Kitchen circuits.

fixtures. Provide cable whips of sufficient lengths to allow for relocating each light fixture within 5-foot radius of its installed location, but not exceeding 6 feet in unsupported lengths. 1) Do not use MC cable for following: homeruns to panelboards, where exposed to view or damage, hazardous locations, in concrete, block walls or wet locations, & when disallowed by local AHJ or landlord. 2) Provide health care rated MC for patient care areas (as defined by the NEC) when not in

F. Lighting & receptacle circuit conductors shall be copper THHN-THWN-2 600 volt. 75 deg c. color coded as described under applicable codes. No romex, plastic flex tubing etc permitted. Light fixture wire insulation shall have temp rating not less than individual fixture manufacturers recommended rating. G. Circuits w/ no. 8 or larger conductors, motor circuits, power & feeder circuits & building service feeders shall be copper THHN-THWN-2 600 volt, 75 deg c.

H. All materials used to terminate, splice or tap conductors: designed for, properly sized for, & UL listed for specific application & conductors involved, & installed in strict accordance w/ nanufacturer's recommendations, using the manufacturer's recommended tools. I. Where wiring is indicated as installed, but connection is indicated "future" or "by other division, trades, or contracts", leave minimum 3-foot "pigtail" at box, tape ends of conductors, & cover

J. Number of conductors in specific raceway "home run" is indicated w/ cross lines (tick marks) on

each "circuit run" on drawings. In general, direction of branch circuit "home run" routing is

indicated on drawings, complete w/ circuit numbers & panelboard designation. Continue all such "home run" wiring to designated panelboard, as though "circuit runs" were indicated in their K. Wiring shall have insulation of proper color to match NEC color code. In larger sizes, where properly colored insulation is not available, use vinyl plastic electrical tape of appropriate color around each conductor at all termination points, junction & pull boxes.

A. Supplement grounded neutral of secondary distribution system w/ equipment grounding system installed so that metallic structures, enclosures, raceways, junction boxes, outlet boxes, cabinets, machine frames, portable equipment & other conductive items operate continuously at ground potential & provide low impedance path for ground fault currents B. System shall comply w/ national electrical code, drawings & as specified. C. Provide equipment ground bus in base of low voltage, switchgear brazed or otherwise

branch circuit panelboard, switchboard, or other distribution equipment.

4. RACEWAY INSTALLATION

adequately connected by an approved method to ground rods. D. Provide in conduit green insulated copper ground conductor to main metallic water service entrance & connect by means of adequate ground clamps E. Equipment grounding conductors for branch circuit home runs shown on drawings shall indicate an individual & separate ground conductor for that branch circuit which shall be terminated at

conductor for each single or three-phase feeder. Single phase 120 volt branch circuits for lighting & power shall consist of phase & neutral conductors & green ground conductor installed in common conduit which shall serve as grounding conductor. G. Grounding conductors shall be as shown on plans or if not specifically shown shall be no smaller than that required by NEC.

A. Install all conductors & cable in raceways continuous without taps or splices. Splice or tap only in approved boxes & enclosures w/ approved solderless connectors, or crimp connectors & terminal blocks for control wiring, & keep to minimum required. Insulate all splices, taps, & joints B. Install all circular raceways concealed above suspended ceilings or concealed in walls or floors wherever possible except where otherwise indicated

sleeves, hangers & supports shall be furnished & set & contractor shall be responsible for proper & permanent locations. 2) Support all conductors & cables in vertical installations, as required by NFPA 70, by installing cable supports or plug-type conduit riser supports, or wire-mesh safety grips. C. Conduit installed below grade shall be Schd. 80 PVC heavy wall plastic conduit meeting NEMA standards & UL listed for underground & exposed use. Provide GRS radius bends & risers as

1) All conduit, junction boxes, etc. Above ceilings shall be supported from structure. Pipe

conduits rise above grade or above floor slab. D. Provide GRS for all conduits run exposed to weather or exposed to other hazardous conditions. Provide any GRS installed below grade w/ corrosion resistant bonded-plastic or approved mastic coating. This shall include 90-degree elbow below grade & entire vertical transition to E. Provide interlocking spacers for multiple runs of UG conduits in same trench.

F. All other raceway may be EMT where approved by local code. Use compression type fittings for EMT, w/ all fittings UL listed for environment in which they are used. G. Use FMC for final connection to each motor & transformer, & to any device that would otherwise transmit motion, vibration, or noise. Use LFMC where exposed to liquids, vapors or sunlight. 1) Provide all FMC & LFMC w/ an insulated bonding conductor. H. Install raceways parallel & perpendicular to building lines.

I. Install raceways to requirements of structure & to requirements of all other work on project Install raceway to clear all openings, depressions, pipes, ducts, reinforcing steel, & other immovable obstacles. Install raceways set in forms for concrete structure in such manner that installation will not affect strength of structure. J. Install raceways continuous between connections to outlets, boxes & cabinets w/ minimum possible number of bends & not more than equivalent of four 90-degree bends between connections. Use manufactured elbows for all 45- & 90-degree bends, unless approved by

engineer in advance. Make other bends smooth & even & without flattening raceway or flaking galvanizing or enamel. Radii of bends shall be as long as possible & never shorter than corresponding trade elbow. Use long radius elbows where necessary, indicated, or both. K. Securely fasten raceways in place w/ approved straps, hangers & steel supports as required. Attach raceway supports to building structure. Hang single raceways for feeders w/ malleable split ring hangers w/ rod & turnbuckle suspension from inserts spaced not over 10 feet apart in L. 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

feeders where required. Add raceway supports within 12 inches of all bends, on both sides of bends. Do not support raceways from suspended ceiling components M. Ream raceway ends, thoroughly clean raceways before installation, & keep clean after installation. Plug or cover openings & boxes as required to keep raceways clean during construction & fish all raceways clear of obstructions before pulling conductors wires. Provide raceways of ample size for pulling of wire & not smaller than code requirements & not less than 3/4", unless indicated otherwise on drawings.

structural steel members attached to structure. Install cable clamps for support of vertical

damaged or moved out of line after roughing-in to meet engineer's approval without additional cost to owner. O. Align & install true & plumb all raceway terminations at panelboards, switchboards, motor control equipment & junction boxes.

N. Protect all raceway installations against damage during construction. Repair all raceways

P. Install approved expansion/deflection fittings where raceways pass through (if embedded) or across (if exposed) expansion joints Q. Install 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. Leave min. 24" slack at each end. R. Make all joints & connections in manner that will ensure mechanical strength & electrical

S. Effectively seal raceways, by installing conduit fitting at boundary of two spaces, & filling it w/ an approved pliable material, after conductors or cables have been installed & tested, whenever raceways pass from non-cooled to cooled spaces or transition from outside facility or enclosure to inside, whether buried or exposed.

A. Rigidly terminate conduits entering sheet metal enclosures to enclosure w/ bushing & locknut on inside & locknut or an approved hub on outside. Conduit shall enter enclosure squarely. B. Provide bushings & locknuts made of galvanized malleable iron w/ sharp, clean-cut threads Where EMT enters box, provide approved EMT compression connectors C. Use insulated, grounding, or combination, bushings wherever connection is subject to vibration or moisture when required by NFPA 70, or both. 6. JUNCTION & OUTLET BOXES

A. All boxes including light fixture, switch, receptacle, & similar outlet boxes: National Electrical,

5. <u>BUSHINGS & LOCKNUTS</u>

nLight.

Appleton, Steel City, Raco, or approved equal, galvanized steel knockout boxes, suitable in design to purpose they serve & space they occupy. Size as required for specific function or as required by NFPA 70, whichever is larger. 1) Lighting fixture boxes in ceilings shall not be less than 4" octagonal knockout type. B. Set all outlet boxes in walls, columns, floors, or ceilings so they are flush w/ finished surface. accurately set & rigidly secured in position. Provide plaster rings, extension rings &/or masonry rings as red'd for flush mounting. Provide approved cast outlet boxes, w/ hubs & weatherproof. covers, in all areas subject to damp, wet, or harsh conditions.

C. Coordinate locations of outlet boxes. Outlets are only approx located on small scale drawings.

Use great care in actual location by consulting various large scale detailed drawings used by

in panels. Where electrical equipment is installed as service entrance equipment, contractor

shall furnish & install nameplate listing the following: Equip Short-Circuit Current Rating in

D. Branch circuits - identify each circuit w/ wire markers when enclosure label & wire colors do not

provide enough information to identify each circuit without tracing. Feeders & branch circuit

C. Provide systems by: Cooper, Hubbell, Leviton, Phillips, Sensor Switch, Watt Stopper, Lutron,

D. All outlets, shall be mounted w/ bottom at 18" AFF & switches w/ bottom at 44" AFF floor unless noted otherwise on plans. Refer to arch for other required elevations & cabinetry coordination 7. ELECTRICAL IDENTIFICATION A. Manufactured labels for each Panelboard & Transformer. Typewritten panel schedules mounted

Amps (RMS SYM), as indicated on the drawings, Whether or not equipment is fully or series-rated, Available Fault Current in Amps. Contractor shall perform available fault current calculation to obtain available fault at Service Equipment, Date fault current calculations were performed. B. Printed tape style label for each receptacle indicating Panel & Ckt #. C. Manufactured labels for all disconnect switches indicating equipment served.

home runs w/ wire marker w/ Panel & Ckt #. Box covers above lav-in ceilings neatly marked w/ indelible marker. 8. DIGITAL LIGHTING CONTROLS A. Provide DLM systems consisting of lighting control panels, room controllers, motion sensors, daylight sensors, & other other controls as necessary to achieve lighting switching & dimming control indicated on the drawings. B. Provide all interconnecting wiring, controls, programming & owner training for the system(s).

D. Execution: 1) Calibrate all sensor time delays & sensitivity for proper detection of occupants & energy savings. Adjust time delays. 2) Provide documentation of room by room system configuration including: sensor parameters, time delays, sensitivities, & daylighting setpoints, sequence of operation 3) Post start-up tuning - 30 days after occupancy contractor shall adjust sensors to mee

owner's requirements. Provide a detailed report to the architect / owner of post start-up

PANELBOARDS A. Branch circuit 208/240v panels shall be capacity shown w/ tin plated copper bussing & braced for minimum of 10,000a aic or as otherwise noted or required (series rated acceptable). Bolt on circuit breakers. 480v panels same except 14,000a aic min, or as otherwise noted. Minimum 20" wide w/ galv steel enclosure w/ hinged door & keyed lock. Coord trim w/ mounting location.

B. Distribution panels shall be capacity shown & shall be Square D I-Line w/ tin plated copper

bussing. 65kaic min or as otherwise noted/req'd. Bolt on circuit breakers (series rated acceptable). Galv steel enclosure. CB's labeled w/ plastic printed labels to load served. C. Equivalent by Square D, Siemens, Cutler Hammer, Or GE. WIRING DEVICES

A. Color of devices as directed by architect B. Convenience outlets

1) Spec grade 20 amp duplex w/ ground & SS wall plates. Other outlets shall be verified w/ equipment suppliers for proper NEMA configurations. Provide GFCI rated devices where indicated & as reg'd per code. 2) Equivalent devices by Cooper/Eaton, Hubbell, Leviton, Pass & Seymour/Legrand

C. Switches: 1) Light switches - spec grade 20 amp toggle switches w/ SS wall plates.

2) Wall motion switches - spec grade, PIR, override.

configuration, all necessary power packs & relays. 4) Wall motion switches (bathroom) - dual relay, spec grade, PIR, 2nd relay for operation of 5) Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters. Continu adjustable slider; with single-pole or three-way switching. Comply with UL 1472. 600W or 1200W as required by load

Incandescent Lamp Dimmers: 120 V; control shall follow square-law dimming curve.

3) For damp locations: UL-listed for wet locations w/ cover(s) closed; die-cast aluminum or

3) Ceiling motion switches - spec grade, dual technology, model as req'd by room

On-off switch positions shall bypass dimmer module. LED Dimmers: Modular: compatible with dimming drivers in fixture(s): if other than 0-10V dimming is provided, verify dimmer is compatible with driver for full range of dimming

6) Equivalent devices by Leviton, Bryant, Hubbell, Wattstopper, Lithonia, Sensor Switch. D. Weatherproof cover plates: 1) Provide GFCI receptacles for weatherproof receptacles. 2) For wet locations: in-use NEMA 3R, UL-labeled plates die cast metal and lockable.

type 302 SS; single-cover for switches & vertically mounted receptacles; double-cover for horizontally mounted receptacles; self-closing covers. 1. DISCONNECT (SAFETY) SWITCHES A. Disconnect (safety) switches: Square D, Siemens, Cutler Hammer, or General Electric fused or non-fused (as indicated on drawings or required) NEMA KS1, heavy duty, externally operated. visible-blade safety switches; NEMA enclosure type indicated on drawings or suitable for

environment in which installed. Based on fusible switch & fuse sizes indicated, include class R, J, or L fuse provisions as applicable. B. Where indicated, provide fusible switches permanently labeled as suitable for use as service

entrance equipment, w/ integral & separate neutral & ground assemblies, suitable for sizes of conductors indicated. Do not double-lug any terminations not specifically listed as suitable for more than one conductor.

C. Provide switches where not furnished w/ starting equipment, at all other points required by NFPA 70. & where indicated on drawings. **LUMINAIRES, LAMPS & BALLASTS** A. Refer to lighting fixture schedule plans for fixture types.

B. Equivalent luminaires by Hubbell, Infinity, Lithonia, Williams, Eaton [Cooper]. 1) Lamps & modules: Philips, General Electric, Osram/Sylvania, Cree, Nichia.

2) LED components, lamps, drivers, and fixtures shall comply with: PCC 47 CFR Part 15; UL 8750; ANSI/NEMA Standards C78.377, NEMA SSL-1, C82.77, IESNA Standards TM-16-05, RP-16, LM-79, LM-80 and TM-21

3) Drivers shall be integral to the fixture unless otherwise shown or specified. D. Emergency ballasts/drivers/batteries/inverters - shall be Bodine, lota. Coordinate voltages and outputs for min. 90 minute operation with fixtures scheduled and controls indicated and E. Execution:

lighting fixtures w/ architect & G/C. Additional fixture supports shall be provided by E/C. Supports shall comply w/ latest edition of NEC. Provide lighting fixture securing clips as required. Consult arch plans for ceiling types & provide surface & recessed lighting fixtures w/ appropriate mounting components & accessories. 2) Fixtures mounted in fire rated ceilings shall be provided & installed w/ fire rated enclosures to maintain ceiling integrity. 3) Poles & support components: comply w/ AASHTO LTS-4. Provide steel poles in color

1) Provide lighting fixtures w/ lamps & accessories reg'd for hanging. Coord mounting of

as specified or selected by architect. Provide bolt covers. Provide concrete base for pole

. ADJUSTING. ALIGNING & TESTING A. Adjust, align, & test all electrical equipment on this project provided under this division & all operation. Test all systems & equipment according to requirements in NETA ATS (latest edition)

B. In following sections. Maintain following on project premises at all times: true RMS reading voltmeter, true RMS reading ammeter, & megohmmeter insulation resistance tester. Provide test data readings as requested or as required by engineer 14. SYSTEM START UP

1) Check all components & devices 2) Lubricate items accordingly. 3) Tighten screws & bolts for connectors & terminals according to manufacturer's published

specified in UL 486a & UL 486b.

A. Prior to starting up electrical systems

& all additional requirements specified

4) Check & record building's service entrance voltage, grounding conditions, grounding resistance, & proper phasing. B. Replace all burned-out lamps & lamps used for temporary construction lighting in permanent C. After all systems have been inspected & adjusted, confirm all operating features required by drawings & specifications & make final adjustments as necessary.

torque-tightening values. If manufacturer's torque values are not indicated, use those

END OF DIVISION 26000 SECTION 27000 - COMMUNICATIONS

GENERAL ELECTRICAL REQUIREMENTS A. Refer to GENERAL MECHANICAL, ELECTRICAL & PLUMBING requirements.

. <u>TELECOMMUNICATIONS SYSTEMS PROVISIONS</u> A. Provide incoming telephone and/or data service raceways as indicated on drawings or as required by serving telecommunications company. B. Provide 3/4-inch thick plywood board, fire-retardant- treated & stamped FRT, securely anchored

C. Provide flush mounted telephone and/or data outlet boxes w/ 3/4-inch EMT stub-up concealed to accessible ceiling space at locations as indicated on drawings. END OF DIVISION 27000

END OF DIVISION 28000

SECTION 28000 - SAFETY & SECURITY 1. GENERAL ELECTRICAL REQUIREMENTS

to wall, at location & of size as indicated on drawings.

A. Refer to GENERAL MECHANICAL, ELECTRICAL & PLUMBING requirements.

EARSON KENT MCKINLEY RAAF ENGINEERS. L

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LENEXA, KS 66215

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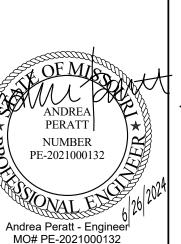
13300 W 98TH STREET

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ARCHITECTURE, LLC

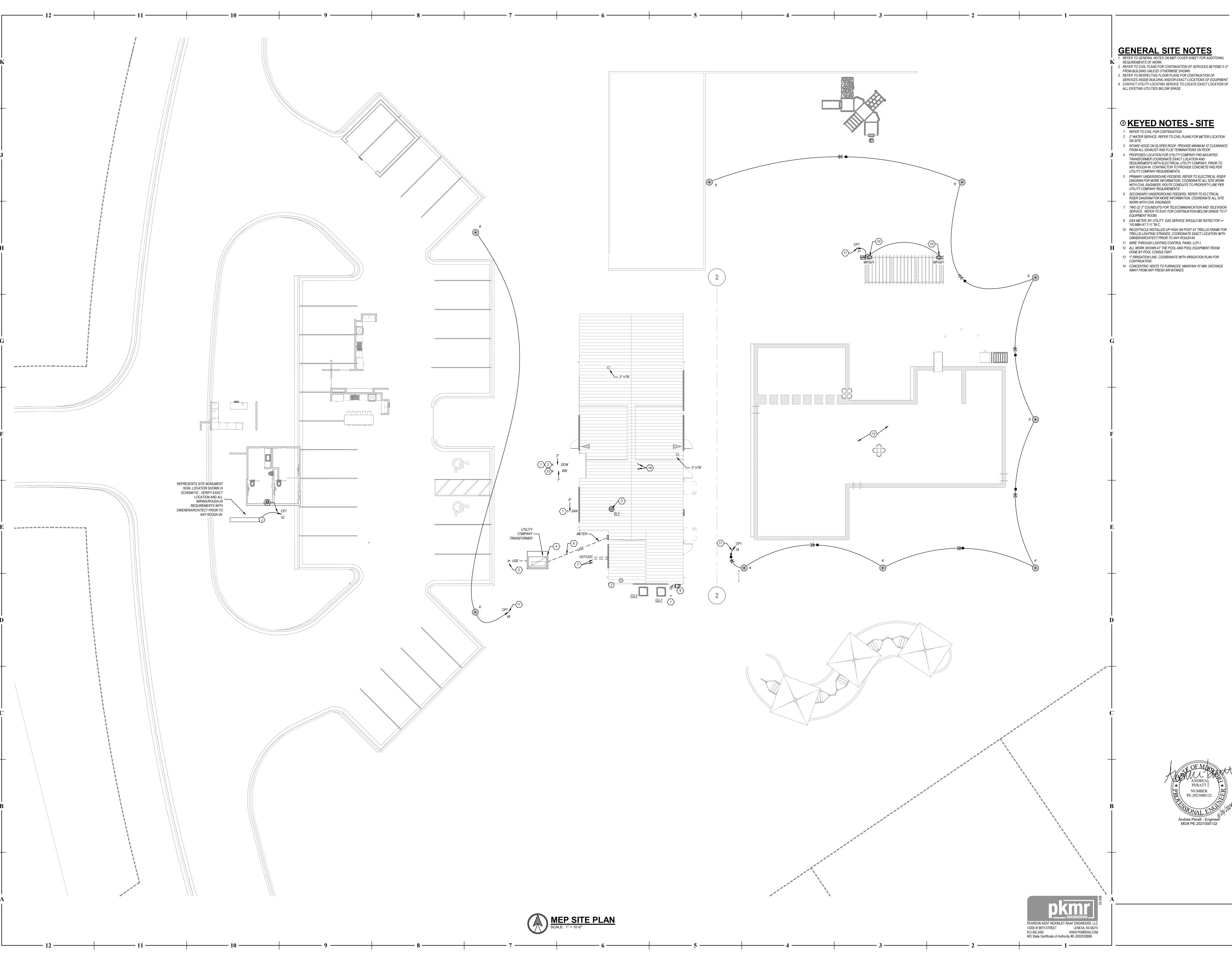
**REVISION DATES:** 

TRUC.





**SPECIFICATIONS** 



**GENERAL SITE NOTES** 

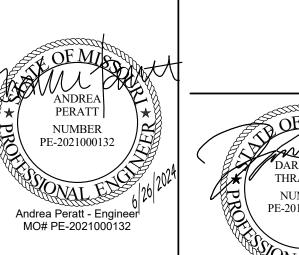
#### **EXECUTE:** WE KEYED NOTES - SITE

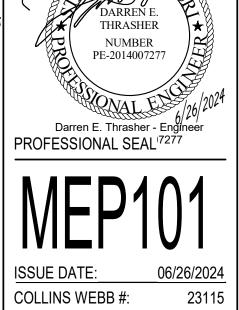
- 3 INTAKE HOOD ON SLOPED ROOF. PROVIDE MINIMUM 10' CLEARANCE FROM ALL EXHAUST AND FLUE TERMINATIONS ON ROOF.
- TRANSFORMER COORDINATE EXACT LOCATION AND
  REQUIREMENTS WITH ELECTRICAL UTILITY COMPANY, PRIOR TO
  ANY ROUGH-IN. CONTRACTOR TO PROVIDE CONCRETE PAD PER
- 5 PRIMARY UNDERGROUND FEEDERS. REFER TO ELECTRICAL RISER DIAGRAM FOR MORE INFORMATION. COORDINATE ALL SITE WORK WITH CIVIL ENGINEER. ROUTE CONDUITS TO PROPERTY LINE PER

- 7 TWO (2) 3" COUNDUITS FOR TELECOMMUNICATION AND TELEVISION SERVICE. REFER TO E201 FOR CONTINUATION BELOW GRADE TO IT
- 9 GAS METER, BY UTILITY. GAS SERVICE SHOULD BE RATED FOR +/100 MBH AT 7-11 "W.C..
- 10 RECEPTACLE INSTALLED UP HIGH ON POST AT TRELLIS FRAME FOR TRELLIS LIGHTING STRANDS. COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT PRIOR TO ANY ROUGH-IN.
- 11 WIRE THROUGH LIGHTING CONTROL PANEL LCP-1.

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REVISION DATES:





SITE PLAN

- GENERAL HVAC NOTES
   REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.
   ROUND BRANCH DUCT RUNOUTS AND FLEXIBLE DUCT SHALL BE THE SAME SIZE AS THE DIFFUSER NECK UNLESS NOTED OTHERWISE.
   MAXIMUM FLEXIBLE DUCT LENGTH SHALL BE 5-0".
   ALL RUNOUTS TO TERMINAL BOXES SHALL BE ONE SIZE LARGER THAN BOX INLETS UNLESS NOTED OTHERWISE.
   ALL AIR DISTRIBUTION DEVICES SHALL HAVE LOCKABLE VOLUME CONTROL

- 5. ALL AIR DISTRIBUTION DEVICES SHALL HAVE LOCKABLE VOLUME CONTROL
- 6. ALL 90 DEGREE TURNING ELBOWS SHALL BE SMOOTH ROUND OR SQUARE WITH
- TURNING VANES.

  7. DUCT SIZES SHOWN ON PLANS ARE INSIDE FREE AREA.

  8. PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE, AND
- SMOKE DAMPERS.

  9. FOR BALANCING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC

## **☑ KEYED NOTES - HVAC**

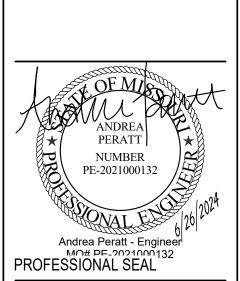
- 1 EXHAUST DUCT TO WALL CAP. WALL CAP SHALL BE PRIMED AND PAINTED TO MATCH EXTERIOR WALL. COORDINATE COLOR AND FINISH WITH ARCHITECTURAL
- 2 FURNACE INTAKE AND EXHAUST UP THROUGH ROOOF. TERMINATE WITH CONCENTRIC ROOF VENT. CONCENTRIC VENT SHALL NOT BE WITHIN 10' OF FRESH AIR INTAKE.
- 3 ROUTE CONDENSATE DRAIN TO NEAREST FLOOR DRAIN.
  4 ROUTE REFRIGERANT LINES THROUGH STRUCTURE TO CORRESPONDING COIL.
  CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE
  OF INSULATED REFRIGERANT PIPING. INSTALL PER MANUFACTURER'S
  RECOMMENDATION. SEAL WALL EXTERIOR PENETRATIONS WATER TIGHT.
- 5 MOTORIZED DAMPER IN 8" DIA. OUTDOOR AIR DUCT. SEE FURNACE DETAIL ON M201.
- 6 MOUNT RETURN AIR GRILLE AT 13'-0" AFF.

7 INSTALL LINEAR SLOT BETWEEN WOOD BEAMS. COORDINATE BEAM LOCATIONS WITH ARCHITECTURAL PLANS.
8 EXHAUST LOUVER SHALL BE INSTALLED WITH BOTTOM OF LOUVER AT 14'0", CENTERED ON WALL. COODRINATE LOUVER COLOR WITH ARCHITECT..

CONSTRUCTION

BAILEY FARMS CLUBHOUSE LEE'S SUMMIT, MO

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ISSUE DATE: 06/26/2024 COLLINS WEBB #: 23115

HVAC PLAN

PEARSON KENT MCKINLEY RAAF ENGINEERS, LLC 13300 W 98TH STREET LENEXA, KS 66215 913.492.2400 WWW.PKMRENG.COM MO State Certificate of Authority #E-2002020886

1 ENERGY-STAR COMPLIANT.

2 CAPACITIES AND AIRFLOWS ARE MANUFACTURER'S VALUES AT RATED CONDITIONS, NOT ACTUAL OPERATING CONDITIONS.

 CFM
 O.A. CFM
 E.S.P. (IN.)
 HP
 COIL TYPE
 NOMINAL CAPACITY
 INPUT
 OUTPUT
 EFFICIENCY
 ΔT
 VOLTAGE
 PHASE

 1,200
 200
 0.500
 1/2
 FULLY CASED
 3.0 ton
 60,000 Btw/h
 58,000 Btw/h
 97.0%
 40 °F
 120
 1

 1,000
 120
 0.500
 1/2
 FULLY CASED
 2.5 ton
 40,000 Btw/h
 38,000 Btw/h
 97.0%
 32 °F
 120
 1

SPLIT SYSTEM FURNACE SCHEDULE MARK MANUFACTURER DESCRIPTION

REFER TO SPECIFICATIONS FOR MORE DETAILED INFORMATION.

LOUVER SCHEDULE

EXTRUDED ALUMINUM LOUVER WITH DRAINABLE BLADES.

DESCRIPTION

**ELECTRIC HEATER SCHEDULE** 

PROVIDE WITH INTEGRAL THERMOSTAT AND DISCONNECT. PROVIDE WITH ALL NECESSARY SUPPORTS, HANDERS, ETC.

4 INSTALL WITH CLEARANCES PER MANUFACTURER'S RECOMMENDATIONS.

PROVIDE WITH WIRE GUARD.

MARKMANUFACTURERMODELTYPEHEIGHTWIDTH%TOTALL-1RUSKINELF375DXDRAINABLE STATIONARY12"18"540.40 SF

CFM KW TEMP. ELECTRICAL RISE VOLTAGE PHASE

PROVIDE WITH WALL CAP AND BIRDSCREEN.

4 UNIT TO RUN CONTINUOUSLY.

3 UNIT CONTROLLED WITH WALL SWITCH - REFER TO ELECTRICAL PLANS.

1 PROVIDE EXTENDED SILL AND MOUNTING FRAME TO MATCH CONSTRUCTION. COORDINATE EXACT LOUVER SIZE TO INSTALL WITHIN WALL

PROVIDE COLOR AS SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLORS.

VENTILATOR SCHEDULE									
MARK	MANUFACTURER	SERVICE	MODEL	HOOD SIZE (IN.)	THROAT SIZE (IN.)	CFM	S.P.D. (IN. W.C.)	REMARKS	
IH-1	COOK	INTAKE	PR	18-1/4"Ø	13.5" x 13.5"	320	0.13 in-wg	1	

SPLIT SYSTEM CONDENSING UNIT SCHEDULE

	HAUST FA	***************************************										
MARK MANUFACTURER	MODEL	DESCRIPTION			FAN DAT	Α	ELECTRICAL		CONTROLS	REMARK		
WAKK	WANUFACTURER	MODEL	DESCRIPTION	CFM	E.S.P. (IN.)	HP	DRIVE	RPM	VOLTAGE	PHASE	CONTROLS	NEWARK
EF-1	COOK	GC-184	CEILING FAN WITH STEEL GRILLE	175	0.250	87W	DIRECT	1100	120	1	WALL SWITCH	1,2,3
EF-2	COOK	GC-184	CEILING FAN WITH STEEL GRILLE	175	0.250	87W	DIRECT	1100	120	1	WALL SWITCH	1,2,3
EF-3	COOK	GC-184	CEILING FAN WITH STEEL GRILLE	100	0.250	87W	DIRECT	1100	120	1	WALL SWITCH	1,2,3
EF-4	COOK	GC-420	CEILING FAN WITH STEEL GRILLE	200	0.250	77W	DIRECT	1145	120	1	CONTINUOUS	1,4
EF-5	COOK	GC-184	CEILING FAN WITH STEEL GRILLE	100	0.250	87W	DIRECT	1100	120	1	WALL SWITCH	1,2,3

COOLING CAPACITY BASED ON A SUCTION TEMPERATURE OF 49°F.

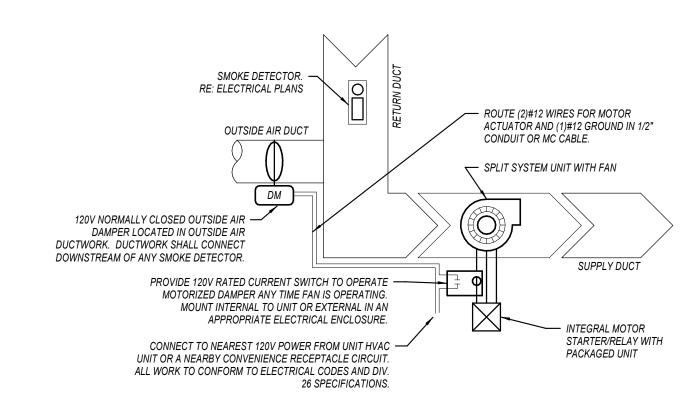
PROVIDE WITH 3-1/2" CONCRETE PAD.

100111		MODEL	DESCRIPTION	BORDER TYPE	FACE SIZE (IN.)	NECK SIZE	VOLUME DAMPER	MATERIAL	FINISH	REMARK
JPPLY					` ,					
S1 TIT	rus	300RL	ADJUSTABLE GRILLE WITH DOUBLE DEFLECTION	SURFACE/WALL	NECK SIZE + 2-1/2"	AS INDICATED	NO	STEEL	WHITE	1,2
S2 TIT	rus	OMNI	SQUARE PLAQUE DIFFUSER	GRID	12x12	AS INDICATED	YES	STEEL	WHITE	1,2
S3 TIT	rus	TBD-30-48-2	PLENUM SLOT DIFFUSER WITH 1" SLOT(S)	GRID	4 x 48	AS INDICATED	NO	STEEL	BLACK	1,2,3
S4 TIT	rus	TBD-30-36-2	PLENUM SLOT DIFFUSER WITH 1" SLOT(S)	GRID	4 x 36	AS INDICATED	NO	STEEL	BLACK	1,2,3
TURN										
R1 TIT	TUS .	350RL	GRILLE WITH 3/4" SPACING AND 35° DEFLECTION	SURFACE/WALL	NECK SIZE + 2-1/2"	AS INDICATED	YES	STEEL	WHITE	1,2

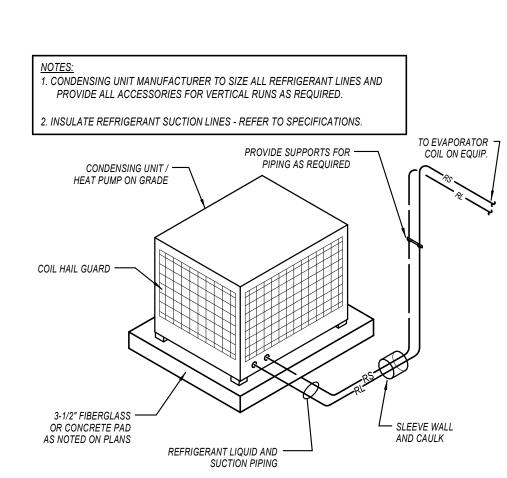
		PIPING		FIELD TEST	ALLOWABLE IN	INSULATION		
SYSTEM	SIZE	MATERIAL	TYPE/SCHED	ACCEPTABLE FITTINGS	PRESSURE/TIME	PLENUMS	TYPE	THICKNESS
CONDENSATE DRAIN - INTERIOR	1/2"-2"	Copper	L	Solder, Pro-Press	10 FT - 1/2 HR	Yes	Fiberglass w/ASJ	1/2" (Plenum Onl
REFRIGERANT LINES	ALL	Copper	ACR	Brazed		Yes	Elastomeric	1"

## **ROOF VENTILATOR** ROOF INSULATION, CANT, FLASHING, AND ROOFING BY GENERAL CONTRACTOR ANCHOR WITH CADMIUM SCREWS AT 6" O.C. PREFABRICATED ROOF CURB BY MECHANICAL CONTRACTOR ROOF DECK STRUCTURE (REFER TO ARCHITECTURAL) / CONNECTION /

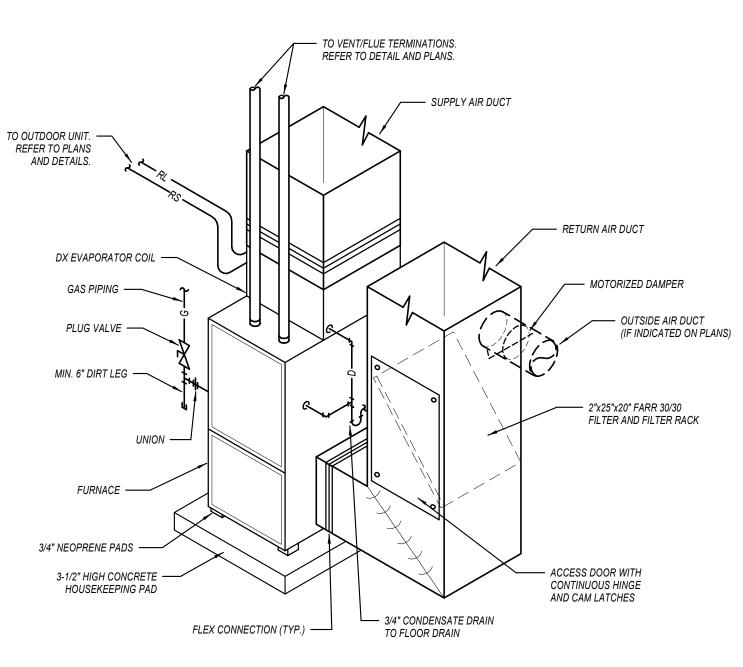
INTAKE/RELIEF VENTILATOR DETAIL
NOT TO SCALE



**OUTSIDE AIR DAMPER WIRING SCHEMATIC** NOT TO SCALE



**CONDENSING UNIT / HEAT PUMP DETAIL** 



**HIGH-EFFICIENCY FURNACE DETAIL** 

<b>DUCTWORK INSUL</b>	ATION SCHEDULE

	L	DUCT		IN.	SULATION		NOTES
PURPOSE	DUTY	LOCATION	STYLE	MATERIAL	APPLICATION	THICKNESS	NOTES
		CONCEALED	RECTANGULAR	FIBERGLASS	LINED	1/2"	
	LOW PRESSURE / VELOCITY	CONCEALED	ROUND	MINERAL FIBER	WRAPPED	1-1/2"	
SUPPLY	LOW PRESSURE / VELOCITY	EXPOSED	RECTANGULAR	FIBERGLASS	LINED	1/2"	
SUPPLY		EXPOSED	ROUND	FIBERGLASS	LINED	1/2"	
	ALL	UNCONDITIONED ATTICS	ALL	MINERAL FIBER	WRAPPED	1-1/2"	1
	ALL	EXTERIOR	ALL	FLEXIBLE ELASTOMERIC	WRAPPED	2"	
		CONCEALED	RECTANGULAR	FIBERGLASS	LINED	1/2"	
		CONCEALED	ROUND	MINERAL FIBER	WRAPPED	1-1/2"	
	LOW PRESSURE / VELOCITY	EXPOSED	RECTANGULAR	FIBERGLASS	LINED	1/2"	
RETURN		EXPOSED	ROUND	FIBERGLASS	LINED	1/2"	
		RETURN/TRANSFER BOOTS	RECTANGULAR	FIBERGLASS	LINED	1/2"	
	ALL	UNCONDITIONED ATTICS	ALL	MINERAL FIBER	WRAPPED	1-1/2"	1
	ALL	EXTERIOR	ALL	FLEXIBLE ELASTOMERIC	WRAPPED	2"	
		CONCEALED	RECTANGULAR	FIBERGLASS	LINED	1/2"	
EXHAUST	LOW DDESSUDE (VELOSITY	CONCEALED	ROUND	FIBERGLASS	LINED	1/2"	2
EXHAUSI	LOW PRESSURE / VELOCITY	EXPOSED	RECTANGULAR	FIBERGLASS	LINED	1/2"	
		EXPOSED	ROUND	FIBERGLASS	LINED	1/2"	2
OUTSIDE AIR	ALL	CONCEALED OR MECH. SPACE	RECTANGULAR	MINERAL FIBER	WRAPPED	1-1/2"	
OUTSIDE AIR	ALL	CONCEALED OR MECH. SPACE	ROUND	MINERAL FIBER	WRAPPED	1-1/2"	

1. IN ADDITION TO OTHER SCHEDULED INSULATION. PROVIDE LINER ONLY WITHIN 10' OF FAN FOR ACCOUSTICS.

1) ALL DUCTWORK, INSULATION AND MATERIALS IN PLENUMS MUST MEET ASTM E84 FLAME/SMOKE RATING OF 25/50.

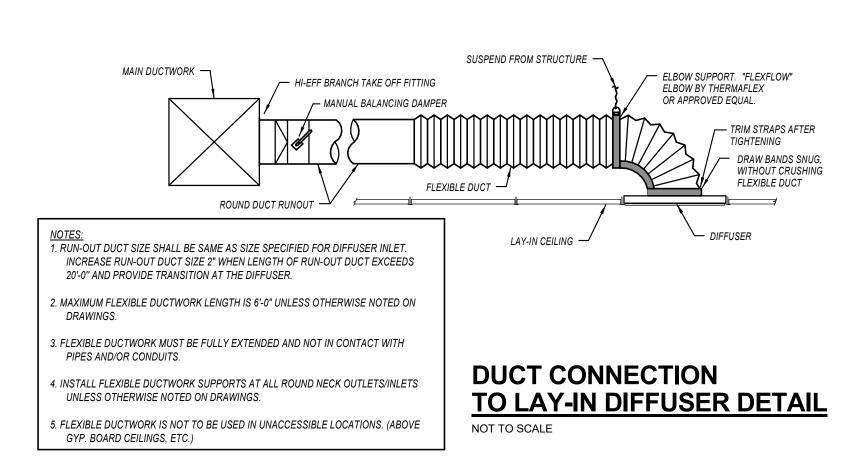
2) ALL INSULATION THICKNESSES SHALL MEET ASHRAE 90.1 - 2010 REQUIREMENTS AT A MINIMUM. 3) REFER TO SPECIFICATIONS FOR MORE DETAILED INFORMATION FOR INSULATION PRODUCTS AND SYSTEMS.

-FLEXIBLE DUCTWORK FLEXIBLE CASING AND WIRE (50'-0" MAX) -RACK & PINION

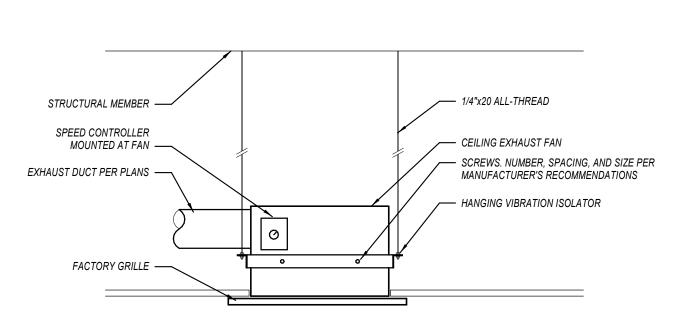
FLEXIBLE REMOTE CABLE CONTROL

DAMPER FOR PLENUM SLOT DIFFUSER

\_\_\_ 12" MIN CLEARANCE ABOVE HIGHEST ANTICIPATED SNOW LEVEL. MAX. 24" ABOVE ROOF. COMBUSTION AIR -ROOF BOOT FLASHING — **CONCENTRIC ROOF VENT** 



NOT TO SCALE



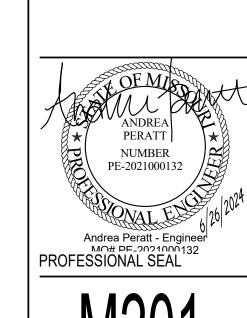
**CABINET EXHAUST FAN MOUNTING DETAIL** 



MECHANICAL SCHEDULES AND DETAILS

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COLLINS WEBB #: 23115

- REFER TO GENERAL PLUMBING NOTES
   REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL
  REQUIREMENTS OF WORK.
   REFER TO PLUMBING FIXTURE / DRAIN SCHEDULES FOR PIPING SIZES FOR
  INDIVIDUAL CONNECTIONS TO FIXTURES AND RISERS NOT SHOWN ON PLANS.
   NO SANITARY OR VENT PIPING BELOW GRADE SHALL BE LESS THAN 2".
   NO DOMESTIC WATER PIPING SHALL BE SMALLER THAN 3/4" UNLESS NOTED
  OTHERWISE
- OTHERWISE.

  5. ALL VENT PIPING SHOWN IS DIAGRAMMATIC. USE APPROPRIATE FITTINGS FOR VENT PIPING BELOW FLOOD RIM OF FIXTURE.
- 6. NOT ALL CLEANOUTS ARE SHOWN FOR DRAWING CLARITY. CONTRACTOR SHALL INSTALL ALL CODE-REQUIRED CLEANOUTS (RE: GENERAL NOTES ON COVER SHEET). COORDINATE EXACT LOCATIONS OF CLEANOUTS WITH ARCHITECT.
- 7. ALL FLOOR DRAIN TRAPS SHALL BE PROTECTED BY ONE OF THE FOLLOWING METHODS, TO BE INSTALLED AT CONTRACTOR'S DISCRETION AND IN
- COMPLIANCE WITH ADOPTED VERSION OF PLUMBING CODE AND/OR AHJ.
  7.1. PROVIDE TRAP SEALS LISTED FOR PROPOSED USE. 7.2. PROVIDE TRAP PRIMERS. 1/2" TRAP PRIMER PIPING TO NEAREST TRAP PRIMER VALVE. PIPING SHALL BE TYPE "K" SOFT COPPER SEAMLESS WITH NO JOINTS FROM VALVE TO DRAIN.

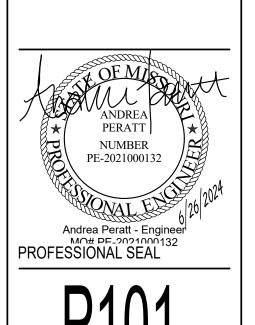
#### **NOTES - DOMESTIC WATER**

- 1 INSTALL WATER HEATER ABOVE JANITORS SINK.
- INSTALL WATER HEATER ABOVE JAINTONS SINK.
   REFER TO CIVIL FOR CONTINUATION
   DCW LINE TO POOL EQUIPMENT ROOM. REFER TO OTHERS FOR SPECIFIC NEEDS.
   PROVIDE SHUT OFF VALVES AND COMPRESSED AIR CONNECTION ON HW AND CW LINES TO ALLOW FOR WINTERIZING OF POOLSIDE RESTROOMS. HW AND CW PIPING SHALL SLOPE FIXTURES FOR DRAINING OF PIPING.
- 5 PROVIDE SHUT OFF AND BALANCING VALVES ON EACH HW RECIRC BRANCH LINES
- (TYP.)

  6 GAS METER BY UTILITY. LOCATE GAS METER BASED ON UTILITY STANDARDS AND MAINTAIN REQUIRED CLEARANCES TO BUILDING OPENINGS. 7 1/2" DCW AND 1/2" DHW DOWN IN FURRED OUT WALL BEHIND REFRIGERATOR.
   ROUTE PIPING TO KITCHEN SINK BELOW COUNTER.
   8 CONCEALED PIPING SHALL FOLLOW THE ROOF SLOPE AND BE INSTALLED BELOW THE INSULATED ROOF.

DRAWINGS CONSTRUCTION

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ISSUE DATE: 06/26/2024 COLLINS WEBB #: 23115

DOMESTIC WATER PLAN

PEARSON KENT MCKINLEY RAAF ENGINEERS, LLC 13300 W 98TH STREET LENEXA, KS 66215 913.492.2400 WWW.PKMRENG.COM MO State Certificate of Authority #E-2002020886

DOMESTIC WATER PLAN
SCALE: 1/4" = 1'-0"

2. REFER TO PLUMBING FIXTURE / DRAIN SCHEDULES FOR PIPING SIZES FOR INDIVIDUAL CONNECTIONS TO FIXTURES AND RISERS NOT SHOWN ON PLANS.

3. NO SANITARY OR VENT PIPING BELOW GRADE SHALL BE LESS THAN 2".

4. NO DOMESTIC WATER PIPING SHALL BE SMALLER THAN 3/4" UNLESS NOTED OTHERWISE. ALL VENT PIPING SHOWN IS DIAGRAMMATIC. USE APPROPRIATE FITTINGS FOR VENT PIPING BELOW FLOOD RIM OF FIXTURE. 6. NOT ALL CLEANOUTS ARE SHOWN FOR DRAWING CLARITY. CONTRACTOR

SHALL INSTALL ALL CODE-REQUIRED CLEANOUTS (RE: GENERAL NOTES ON COVER SHEET). COORDINATE EXACT LOCATIONS OF CLEANOUTS WITH ARCHITECT.

7. ALL FLOOR DRAIN TRAPS SHALL BE PROTECTED BY ONE OF THE FOLLOWING METHODS, TO BE INSTALLED AT CONTRACTOR'S DISCRETION AND IN COMPLIANCE WITH ADOPTED VERSION OF PLUMBING CODE AND/OR AHJ.
7.1. PROVIDE TRAP SEALS LISTED FOR PROPOSED USE.
7.2. PROVIDE TRAP PRIMERS. 1/2" TRAP PRIMER PIPING TO NEAREST TRAP PRIMER VALVE. PIPING SHALL BE TYPE "W" SOFT COPPER SEAMLESS WITH NO JOINTS FROM VALVE TO DRAIN.

## **☑ NOTES - WASTE & VENT**

REFER TO CIVIL FOR CONTINUATION
 2" VENT OWN IN FURRED OUT WALL BEHIND REFRIGERATOR. ROUTE PIPING TO KITCHEN SINK BELOW COUNTER.
 CONCEALED PIPING SHALL FOLLOW THE ROOF SLOPE AND BE INSTALLED BELOW THE INSULATED ROOF.

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| ISSUE DATE: 06/26/2024 | COLLINS WEBB #: 23115

WASTE AND VENT PLAN

PEARSON KENT MCKINLEY RAAF ENGINEERS, LLC 13300 W 98TH STREET LENEXA, KS 66215 913.492.2400 WWW.PKMRENG.COM MO State Certificate of Authority #E-2002020886

WASTE AND VENT PLAN
SCALE: 1/4" = 1'-0"

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**REVISION DATES:** 

ARCHITECTURE, LLC

COLLINS WEBB #: 23115 PLUMBING SCHEDULES AND **DETAILS** 

**WATER HEATER SCHEDULE - ELECTRIC**  
 TANK
 HEATING ELEMENT(S)
 RECOVERY
 ELECTRICAL

 VOLUME
 #
 WATTAGE
 TOTAL KW
 RATE
 RISE
 VOLTAGE
 PHASE

 30 gal
 1
 4,500
 4.5
 21.0 GPH
 100 °F
 240
 1
 MODEL NUMBER DESCRIPTION MARK MANUFACTURER "LOWBOY"-TYPE WATER HEATER. MOUNT ON SHELF. REFER TO DETAIL ON THIS SHEET. GLASS-LINED TANK. ADJUSTABLE WALL BRACE, PAIL HOOK, AND 1/2" INTEGRAL STOPS. CAULK BETWEEN WALL AND RECIRC PUMP SCHEDULE SINGLE-HANDLE BATHROOM SINK FAUCET, BRASS 
 MARK
 MANUFACTURER
 MODEL NUMBER
 GPM
 HEAD (FT. W.C.)
 PUMP HP
 MAX. RPM
 ELECTRICAL VOLTAGE
 PH
 REMARKS

 RP-1
 BELL AND GOSSET
 NFF-22U
 3
 5
 92W
 2940
 120 V
 1
 1,2,3
 CONSTRUCTION, ONE-PIECE, SELF-CONTAINED CERAMIC DISC VALVE, HIGH-TEMPERATURE LIMIT, SINGLE-HOLE, POP-UP DRAIN WITH TAILPIECE, LOW SPOUT DESIGN, 5" SPOUT REACH, STATIONARY 15840LF-BL SINGLE-HANDLE BATHROOM SINK FAUCET, BRASS 1,2,3,4,5 1/2" 1/2" 1 ALL BRONZE CONSTRUCTION. CONSTRUCTION, ONE-PIECE, SELF-CONTAINED PROVIDE WITH AQUASTAT AND TIMER FOR OPERATION OF PUMP. CERAMIC DISC VALVE, HIGH-TEMPERATURE LIMIT, MOUNT PUMP AND ACCESSORIES NEAR WATER HEATER AND NO HIGHER THAN 6' AFF. SINGLE-HOLE. POP-UP DRAIN WITH TAILPIECE, LOW SPOUT DESIGN, 5" SPOUT REACH, STATIONARY DECK-MOUNTED RIGID/SWING GOOSENECK SPOUT WITH PULL DOWN DUAL-PATTTERN SPRAY.SINGLE HOLE METAL LEVER HANDLE WITH CERAMIC MIXING FLOOR DRAIN SCHEDULE CARTRIDGE AND VOLUME CONTROL. BLACK FINISH. SERVICE MANUFACTURER FLOOR DRAIN FLOOR DRAIN ROYAL 186-1.0 EXPOSED URINAL FLUSH VALVE. CHROME-PLATED, METAL OSCILLATING NON-HOLD-OPEN HANDLE. 3/4" I.P.S. SCREWDRIVER BACK-CHECK ANGLE STOP PROVIDE WITH NICKEL BRONZE TOP AND TRAP SEAL. WITH PROTECTIVE CAP. ADJUSTABLE TAILPIECE. PROVIDE WITH HINGED GRATE AND SEDIMENT BUCKET. 1.0 GPF VACUUM BREAKER FLUSH CONNECTION AND SPUD COUPLING FOR 3/4" TOP SPUD PROVIDE WALL AND SPUD FLANGES. MAXIMUM HANDLE NON-HOLD-OPEN HANDLE. 1" I.P.S. SCREWDRIVER BACK-CHECK ANGLE STOP WITH PROTECTIVE CAP.

		PIPING			FIELD TEST	ALLOWABLE IN	INSULATION	
SYSTEM	SIZE	MATERIAL	TYPE/SCHED	ACCEPTABLE FITTINGS	PRESSURE/TIME	PLENUMS	TYPE	THICKNE
DOMESTIC COLD WATER	1-1/4" - 2"	CPVC	SDR-11 (CTS)	Solvent Joined	130 PSI - 1/2 HR	Yes		
DOMESTIC COLD WATER	1/2" - 1"	PEX	PEX-a or PEX-b	Pro-Press / Cold Expansion - Brass or Poly	130 PSI - 1/2 HR	Yes		
DOMESTIC HOT WATER & HW RETURN	1/2" - 1"	PEX	PEX-a or PEX-b	Pro-Press / Cold Expansion - Brass or Poly	130 PSI - 1/2 HR	Yes	Elastomeric	1"
NATURAL GAS	1/2"-2"	Steel - Seemless	Schedule 40	Threaded or Welded	75 PSI - 1 HR	Yes		
NATURAL GAS - BELOW GRADE	All	Polyethylene	SDR-11	Fusion Joints	100 PSI - 1 HR	N/A		
SANITARY WASTE ABOVE GRADE	2"-8"	PVC	Schedule 40	Solvent Joined	10 FT - 1/2 HR	No		
SANITARY WASTE BELOW GRADE	2"-8"	PVC	Schedule 40	Solvent Joined	10 FT - 1/2 HR	N/A		
VENT ABOVE GRADE	1-1/2"-4"	PVC	Schedule 40	Solvent Joined	10 FT - 1/2 HR	No		
DOMESTIC WATER SERVICE BELOW GRADE	1"-3"	HDPE	CTS	Continuous Tubing, Fused	130 PSI - 1/2 HR	No		

TOP/GRATE SIZE SIZE

PAINT ALL PIPING WITH EXTERIOR -RATED RUST INHIBITING ENAMEL PAINT. COORDINATE COLOR WITH ARCHITECT

TO MATCH BUILDING.

ALL INSULATION THICKNESSES SHALL MEET ASHRAE 90.1 - 2007 REQUIREMENTS AT A MINIMUM.

3 REFER TO SPECIFICATIONS FOR MORE DETAILED INFORMATION. 4 WELDED PIPING IS REQUIRED FOR GAS PIPING WHEN: A) PIPING IS AT OR OVER 2PSI; B) WHEN PIPING OF ANY PRESSURE IS ROUTED THROUGH CONCEALED SPACES.

	<ul> <li>PROVIDE CHROME-PLATED BRASS TAILFIELD AND GRID DRAIN.</li> <li>PROVIDE CHROME-PLATED BRASS P-TRAP.</li> <li>PROVIDE HANDLE STOPS AND FLEXIBLE RISERS.</li> <li>PROVIDE CONCEALED ARM TYPE CARRIER WITH SQUARE, TUBULAR STEEL UP-RIGHTS AND BLOCK TYPE BASES.</li> <li>INSULATE EXPOSED TAILPIECE, P-TRAP, AND WATER RISERS. REFER TO SPECIFICATIONS FOR INSULATION METHODS.</li> <li>PROVIDE FLUSH VALVE HANDLE ON WIDE SIDE OF STALL.</li> <li>PROVIDE CHROME-PLATED BRASS TAILPIECE AND BASKET STRAINER.</li> </ul> GENERAL NOTES (APPLICABLE TO ALL FIXTURES): <ul> <li>ALL LAVATORIES AND SINKS USED FOR HAND WASHING SHALL BE PROVIDED WITH AN ANTI-SCALD TEMPERATURE MIXING VALV</li> <li>FIXTURE CONNECTION SIZES SHOWN IN SCHEDULE ARE CONNECTION SIZE AT FIXTURE ON PLANS.</li> <li>COORDINATE FIXTURE REQUIREMENTS SCHEDULED ABOVE WITH OTHER TRADES. VERIFY CABINET SIZES, COUNTERTOP MATE</li> </ul>		3 F 4 V
REFER TO ARCH. DRAWINGS FOR EXACT WALL CONSTRUCTION CLEANOUT COUNTER-SINK SCREW STAINLESS STEEL ACCESS COVER  12" A.F.F.	STAINLESS ADJUSTABLE CLAMPS  MASTIC	ALL CLEANOUTS IN FINISHED FLOOR AREAS SHALL HAVE NICKLE-BRONZE ACCESS COVERS, ADJUSTABLE FRAMES, AND BRONZE PLUGS.  FINISHED FLOOR  DUCTILE IRON, OR CAST IRON, EXTENSION BODY WITH SERRATIONS PROVIDED FOR CUT-OFF ADJUSTMENTS.	PAINT ALL PIPING WITH EXTERIOR RATED RUST INHIBITING ENAMEL PAINT. COORDINATE COLOR WITH ARCHITECT TO MATCH BUILDING.  PROVIDE CONCRETE SUPPORT PAD AND FITTINGS AS REQUIRED BY THE GAS SERVICE COMPANY GAS PRESSURE REGULATOR STOP VALVE (TYP.)  GRADE  BUIL BUIL

1. AS MANUFACTURED BY PATE COMPANY OR

2. VERIFY PROPER FLASHING PROCEDURE

WITH ROOF MEMBRANE MANUFACTURER

APPROVED EQUAL.

MANUFACTURER

JANITOR'S SINK. 24"x24"x10", WHITE, ONE-PIECE MOLDED STONE MOP CHICAGO FAUCET / FIAT 897-CP / 889C, 832AA C.P. SERVICE SINK FITTING WITH VACUUM

DESCRIPTION

BREAKER, 3/4" HOSE THREAD ON SPOUT,

HANGER, AND HOSE RACK

SPOUT, 1.0 GAL/MIN

SPOUT 1.0 GAL/MIN

HEIGHT PER ADA STANDARDS.

CHROME-PLATED, METAL OSCILLATING

ADJUSTABLE TAILPIECE. 1.28 GPF, VACUUM

BREAKER FLUSH CONNECTION AND SPUD COUPLING FOR 1-1/2" TOP SPUD. PROVIDE WALL AND SPUD FLANGES. HANDLE HEIGHT PER MANUFACTURER'S RECOMMENDATIONS AND IN ACCORDANCE WITH ADA GUIDELINES.

CHROME-PLATED, METAL OSCILLATING

NON-HOLD-OPEN HANDLE 1" LPS SCREWDRIVER

BACK-CHECK ANGLE STOP WITH PROTECTIVE CAP

ADJUSTABLE TAILPIECE. 1.28 GPF. VACUUM

BREAKER FLUSH CONNECTION AND SPUD COUPLING FOR 1-1/2" TOP SPUD. PROVIDE WALL AND SPUD FLANGES. HANDLE HEIGHT PER MANUFACTURER'S RECOMMENDATIONS AND IN ACCORDANCE WITH ADA GUIDELINES.

ROYAL 111-1.28 EXPOSED WATER CLOSET FLUSH VALVE.

ROYAL 111-1.28 EXPOSED WATER CLOSET FLUSH VALVE.

**FLOOR CLEANOUT DETAIL** 

**WATER HEATER ON SHELF DETAIL** 

FLANGED FEMALE ADJUSTABLE ARMS WITH

FLANGE WITH GE SILICONE SEALANT. 3" C.I. "P" TRAP. / PROVIDE HOSE AND BRACKET, MOP

PLUMBING FIXTURE SCHEDULE

BIM875

3018UM18

3043.001

2234.001

**ROOF PLUMBING VENT** 

GUY GRAY

SERENITY SINKS

SERENITY SINKS

UR-1 AMERICAN STANDARD

WC-1 AMERICAN STANDARD

WC-2 AMERICAN STANDARD

CHURCH

CHURCH

PROVIDE CHROME-PLATED BRASS TAILPIECE AND GRID DRAIN.

GALVANIZED STEEL REFRIGERATOR OUTLET BOX.

PROVIDE WITH STAINLESS STEEL WALL GUARDS.

AT NO MORE THAN 36" A.F.F.

L-2 AMERICAN STANDARD 0321975.020 ADA-COMPLIANT WALL-HUNG LAVATORY. 20"x18" WHITE VITREOUS

ADA-COMPLIANT, OUTDOOR, DUAL-HEIGHT, BARRIER-FREE, DRINKING FOUNTAIN. MOUNT WITH MIN. 27" KNEE CLEARANCE AND LOWER SPOUT

FROST-PROOF, AUTOMATIC DRAINING WALL HYDRANT WITH 1/2 IN. HOSE

BASIN. UNIT SHALL BE ONE HOMOGENOUS PIECE. STAINLESS STEEL

UNDERCOUNTER-MOUNTED LAVATORY. 21" X 14 1/2". WHITE VITREOUS

CHINA BOWL WITH 4" BACK FOR USE WITH CONCEALED ARM HANGER. FAUCET HOLES COORDINATED WITH FAUCET AND TRIM. PROVIDE

30-1/2" X 18-1/2" SINGLE COMPARTMENT STAINLESS STEEL SINK. BOWL

DIMENSIONS OF 28L X 16W X 10D UNDERMOUNT WITH 1-3/4 IN. RADIUS

COVED CORNERS. SEAMLESS #18 GAUGE, TYPE 302 NICKEL-BEARING

STAINLESS STEEL. LK-6K-H SATIN FINISH. FULLY UNDERCOATED.

FURNISH WITH INSINKERATOR "BADGER 5" GARBAGE DISPOSAL.

CONTINUOUS FEED, 1/2 HP MOTOR, STAINLESS STEEL 360° SWIVEL

LUGS, GALVANIZED STEEL CONSTRUCTION AND GRINDING ELEMENTS,

ERMANENTLY LUBRICATED BEARINGS. PROVIDE WITH STAINLESS

ADA-COMPLIANT WALL-HUNG URINAL. WHITE VITREOUS CHINA. 3/4" TOP

SPUD. 1.0 GALLON SIPHON JET FLUSHING ACTION. MOUNT FIXTURE RIM

PROVIDE FLOOR-MOUNTED, HEAVY-DUTY TUBULAR STEEL UPRIGHTS,

ADJUSTABLE CARRIER, PLATED HANGER, AND ALL OTHER REQUIRED

ADA-COMPLIANT, 1.28 GALLON, FLOOR-MOUNTED FLUSH VALVE WATER

CLOSET. TOP SPUD AND FLAT BOLT COVERS. WHITE VITREOUS CHINA

NTEGRAL BUMPERS. EXTERNALCHECK HINGES WITH STAINLESS STEEL

WHITE, SOLID PLASTIC, OPEN-FRONT SEAT FOR ELONGATED BOWL.

1.28 GALLON, FLOOR-MOUNTED FLUSH VALVE WATER CLOSET. TOP

WHITE, SOLID PLASTIC, OPEN-FRONT SEAT FOR ELONGATED BOWL.

SPUD AND FLAT BOLT COVERS. WHITE VITREOUS CHINA ELONGATED

INTEGRAL BUMPERS. EXTERNALCHECK HINGES WITH STAINLESS STEEL

BREAKER. 3/4 IN. HOSE CONNECTION. LOCKING, STAINLESS STEL BOX.

MINIMUM 36" CABINET SIZE REQUIRED

STEEL SINK FLANGE AND STOPPER.

ELONGATED BOWL. 16-1/2" HIGH.

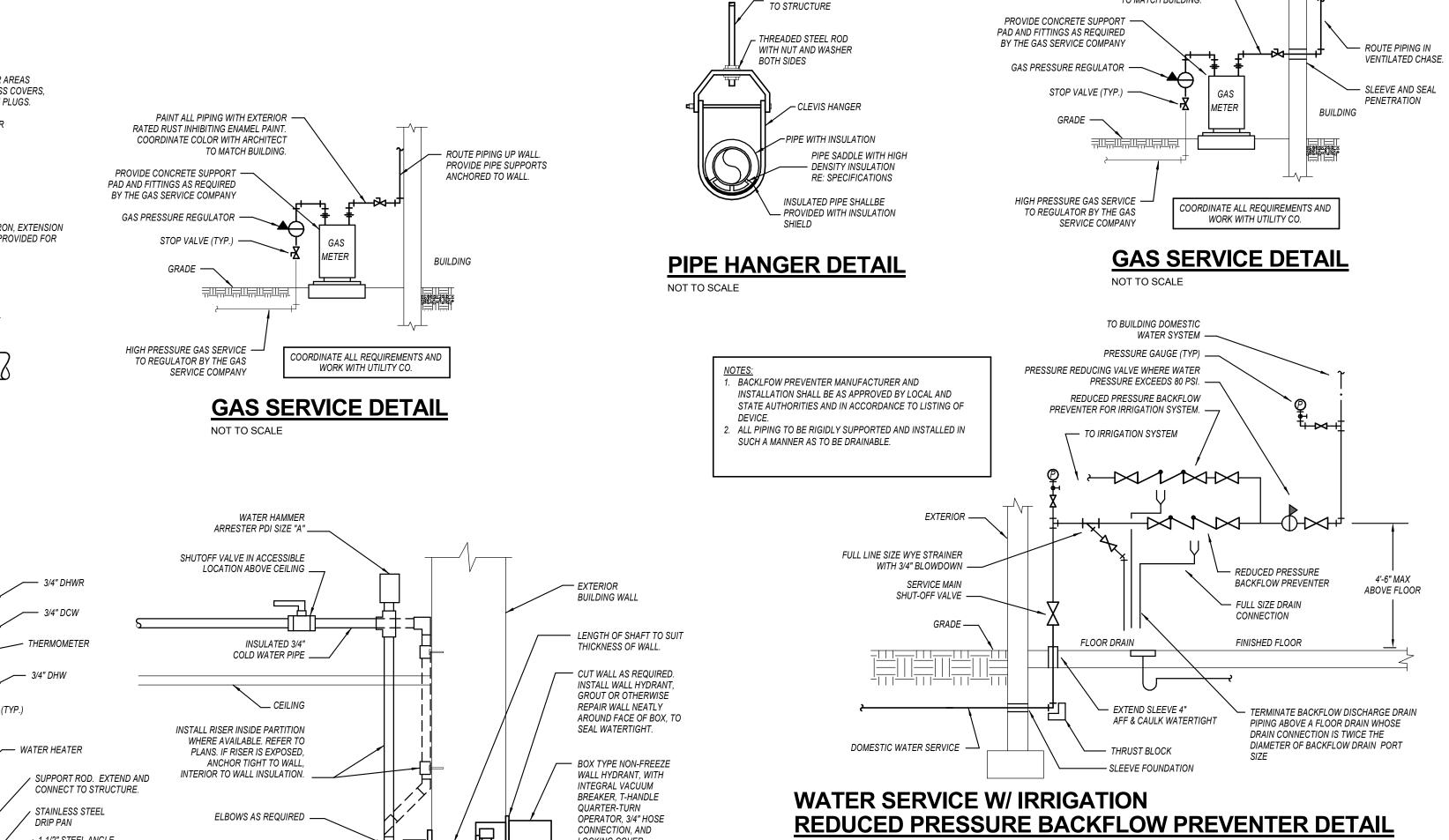
MOUNTING HARDWARE.

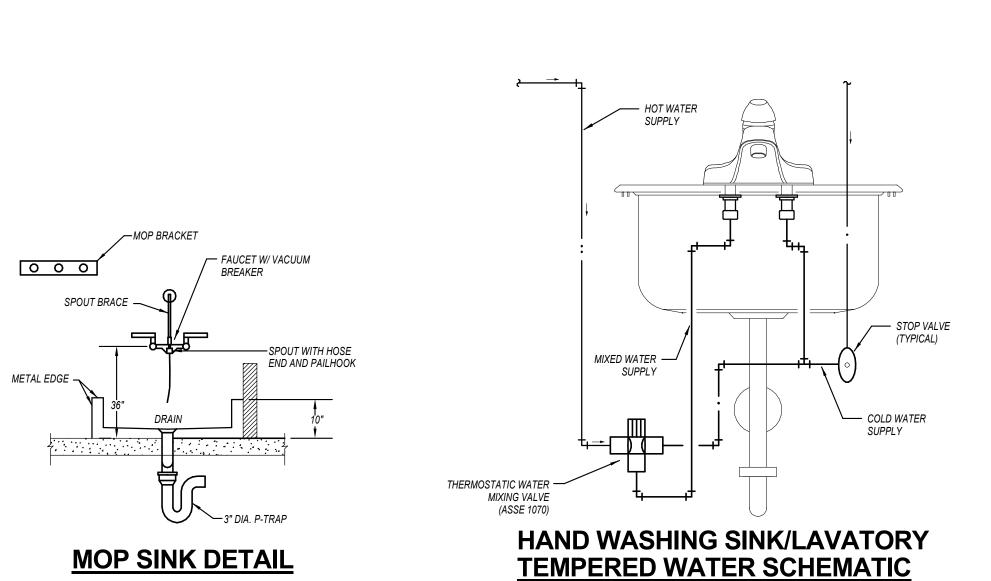
BOWI 15" HIGH

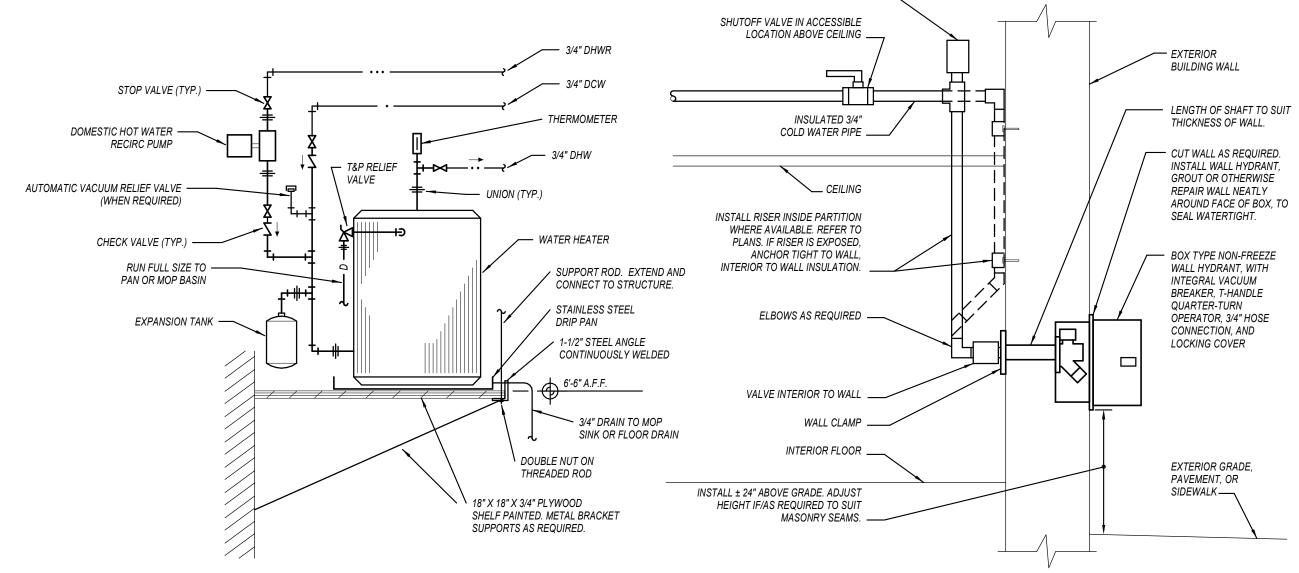
CONCEALED ARM CARRIER. MOUNT TOP OF RIM AT 34" A.F.F.

CHINA. UNGLAZED RIM WITH FRONT OVERFLOW. SUPPLY WITH

INTEGRAL DRAIN BODY WITH CAULKED CONNECTION FOR 3" PIPE.







**NON-FREEZE WALL HYDRANT DETAIL** 

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1/8 BEND AT END — OF LINE CLEANOUT

**WALL CLEANOUT DETAIL** 

NIGHT LIGHTS UNLESS SPECIFICALLY SHOWN SWITCHED.

## 1 WIRE CIRCUIT THROUGH LIGHTING CONTROL PANEL LCP-1. THEN HOMERUN TO

PANELBOARD. REFER TO LIGHTING CONTROL PANEL SCHEDULE AND SCHEMATIC WIRING DETAIL 1/E401 FOR MORE INFORMATION. 2 PHOTOCELL FOR LIGHTING CONTROL SYSTEM INSTALLED AS HIGH AS POSSIBLE AT THE PEAK. ORIENT TO THE NORTH. 3 WIRE THROUGH ROOM CONTROLLER RC-1 AT MECHANICAL ROOM. REFER TO DETAIL 2/3401. PROVIDE 0-10V WIRING BETWEEN ROOM CONTROLLER AND LIGHT

FIXTURES (NOT SHOWN FOR CLARITY). 4 WALL-MOUNT ROOM CONTROLLERS AT 96" ABOVE FINISH FLOOR IN AN ACCESSIBLE LOCATION. EXTEND LOW-VOLTAGE WIRING BETWEEN ROOM CONTROLLER, OCCUPANCY SENSORS AND LOW-VOLTAGE SWITCHES PER MANUFACTURER'S REQUIREMENTS. REFER TO DETAIL 2/E401 FOR ADDITIONAL NOTES.

5 WIRE THROUGH ROOM CONTROLLER RC-2 AT MECHANICAL ROOM. REFER TO DETAIL 2/E401. PROVIDE 0-10V WIRING BETWEEN ROOM CONTROLLER AND LIGHT FIXTURES (NOT SHOWN FOR CLARITY). 6 WALL-MOUNTED VACANCY SENSOR MOUNTED AT 120" AFF. DO NOT MOUNT ON

COLUMN. LOCATE AS CLOSE TO THE CORNER AS POSSIBLE. AIMED TO COVER ROOM PER MANUFACTURER'S RECOMMENDATION. 7 LOW-VOLTAGE LIGHTING CONTROL PANEL SWITCHES FOR CONTROL OF THE

TRELLIS LIGHTING. LOCATION SHOWN IS SCHEMATIC - VERIFY EXACT LOCATION WITH OWNER PRIOR TO ANY ROUGH-IN. PROVIDE LABEL FOR SWITCH INDICATING 'TRELLIS' AND 'GRILLE TRELLIS' LIGHTING.

AND LIGHT FIXTURES THE WIRING AND/OR TIC MARKS SHOWN BELOW ARE NOT SHOWN ON THE PLANS FOR CLARITY. PROVIDE WIRING FROM JUNCTION BOX(ES) TO SWITCHES/CONTROLLERS AND LIGHT FIXTURES AS SHOWN BELOW FOR EACH ROOM/AREA. LINE VOLTAGE STANDARD WALL SWITCHES STANDARD SWITCH OR MOTION SENSOR - - \$ \\ \( \) \\ \( \) TO PANELBOARD OR OTHER - PROVIDE 'HOT' CONDUCTOR ROOMS AS SHOWN ON PLANS WHERE FIXTURE IS SHOWN (TYPICAL) —— TO HAVE EM BATTERY/BALLAST **3-WAY WALL SWITCHES** — 4-WAY SWITCH(ES) (WHERE SHOWN) \_\_\_ LIGHT FIXTURE(S) TO PANELBOARD OR OTHER └─ PROVIDE 'HOT' CONDUCTOR ROOMS AS SHOWN ON PLANS WHERE FIXTURE IS SHOWN (TYPICAL) —— TO HAVE EM BATTERY/BALLAST LINE VOLTAGE CEILING SENSORS OVERRIDE SWITCH (WHERE SHOWN) -TO PANELBOARD OR OTHER PROVIDE 'HOT' CONDUCTOR ROOMS AS SHOWN ON PLANS WHERE FIXTURE IS SHOWN (TYPICAL) ----TO HAVE EM BATTERY/ BALLAST **ROOM CONTROLLERS / POWER PACKS** JUNCTION BOX (NOT SHOWN ON PLANS FOR CLARITY) — LOW VOLTAGE WIRING

— LIGHT FIXTURE(S) TO SWITCH(ES) AND

LIGHT FIXTURE(S) - PROVIDE 'HOT' CONDUCTOR WHERE FIXTURE IS SHOWN (IF SHOWN ON PLANS) — TO HAVE EM BATTERY/ BALLAST (TYPICAL) SECOND RELAY (IF SHOWN)

TYPICAL WIRING OF CONTROLS

SENSOR(S). REFER TO DETAILS FOR WIRING OF SAME. ——

TO OTHER ROOM CONTROLLERS

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NUMBER PE-2014007277 Darren E. Thrasher - Engineer

MO# PF\_2014007277

PROFESSIONAL SEAL

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**COLLINS WEBB** 

REVISION DATES:

**DRAWINGS** 

CONSTRUCTION

LIGHTING PLAN

COLLINS WEBB #: 23115

LIGHTING CONTROL DEVICE SCHEDULE LMDC-100 DIGITAL DUAL-TECHNOLOGY CEILING SENSOR. 24V OPERATION WITH CAT5 CONNECTION. LMSW-100 DIGITAL DECORA PUSHBUTTON SWITCH WITH LED PILOT LIGHT. CAT5 CONNECTION TO CONTROLLER. # REFERS TO QUANTITY OF BUTTONS ON LMDM-101 DIGITAL DECORA DIMMING SWITCH WITH LED PILOT AND INDICATING LIGHTS. CATS CONNECTION TO CONTROLLER. DSW-100 DUAL-TECHNOLOGY WALL SENSOR. LINE VOLTAGE.
DSW-200 DUAL-TECHNOLOGY DUAL RELAY WALL SENSOR. LINE VOLTAGE.

## LIGHTING CONTROLS

REFER TO SCHEDULES FOR SPECIFIC INFORMATION ON DEVICES. UNLESS NOTED OTHERWISE, WHERE "#" IS USED BELOW IT REFERS TO THE DEVICE IDENTITY IN THE RESPECTIVE SCHEDULE.

1)

UPPER CASE LETTER

ADJACENT TO FIXTURES

REPRESENT THE LIGHT

FIXTURE TYPE FROM

THE LIGHTING FIXTURE

SCHEDULE (TYPICAL)

LOWER CASE LETTER

FIXTURES REPRESENT

SWITCHING ZONE FOR THIS ROOM (TYPICAL)

ADJACENT TO

STANDARD SENSORS/CONTROLLERS \$<sub>M#</sub> WALL-MOUNTED SENSOR

\$<sub>MR#</sub> WALL-MOUNTED SENSOR - DUAL-RELAY (♣) CORNER-MOUNTED (ON CEILING) MOTION SENSOR

CORNER-MOUNTED (ON WALL) MOTION SENSOR CEILING-MOUNTED MOTION

DIGITAL LIGHTING MANAGEMENT SENSORS/CONTROLLERS \$<sub>MD#</sub> DIGITAL WALL-MOUNTED SENSOR

\$<sub>MDR#</sub> DIGITAL WALL-MOUNTED SENSOR - DUAL-RELAY DIGITAL CORNER-MOUNTED (ON WALL) MOTION SENSOR

MDX DIGITAL CEILING-MOUNTED MOTION SENSOR  $_{I \pm}$  DIGITAL ON/OFF SWITCH (# INDICATES NO. OF BUTTONS)

 $$_{LD\#}$$  DIGITAL DIMMING SWITCH (# INDICATES NO. OF BUTTONS) ■ RC# DIGITAL ON/OFF ROOM CONTROLLER

■ RD# DIGITAL DIMMING ROOM CONTROLLER LIGHTING CONTROL PANEL SYSTEMS

\$<sub>S#</sub> LIGHTING CONTROL PANEL SWITCH LIGHTING CONTROL PANEL

## TRAINING AND PROGRAMMING

PROVIDE FACTORY REPRESENTATIVE TRAINING TO OWNER FOR EACH LIGHTING CONTROL SYSTEM UTILIZED, INCLUDING PROGRAMMING FOR SCHEDULING AND OPERATION OF EACH ROOM PER OWNER DIRECTION. PROVIDE RECORD OF TIME DELAY SETTINGS ON ALL SENSOR DEVICES FOR

SENSOR ADJUSTMENTS AND SETTINGS: SYSTEMS SHALL BE SET/PROGRAMMED TO OPERATE TYPICALLY IN MANUAL ON/AUTO OFF MODE. SET WALL MOUNTED MOTION SENSOR TO MANUAL ON MODE.
 SET POWER PACKS AND ROOM CONTROLLERS CONTROLLED BY MOTION SENSORS TO MANUAL ON AND CONTROL WITH MOMENTARY WALL PROVIDE FINAL SETTINGS/ADJUSTMENTS PER OWNER'S DIRECTION.

CONTROLS SEQUENCES

<u>WALL-MOUNTED LINE VOLTAGE SENSORS:</u>
- TURN ON LIGHTS IN ROOM/AREA UPON BUTTON ON SENSOR BEING ACTIVATED BY OCCUPANT. TURN OFF LIGHTS AFTER NO MOTION IS DETECTED AND DELAY EXPIRES.

MANUAL ON AND DIMMING CONTROL OF LIGHTING VIA DIMMING SWITCHES. TURN OFF LIGHTS AFTER NO MOTION IS DETECTED BY WALL MOUNTED SENSOR AND DELAY EXPIRES. PROVIDE SWITCHES AT EACH DOOR.

WHERE MULTIPLE SWITCH LOCATIONS ARE SHOWN, EACH SWITCH IS TO

FUNCTION AS A THREE-WAY SWITCH IN CONJUNCTION WITH THE SWITCH SERVING SAME LOAD AT THE OTHER DOOR IN THE ROOM. DIM AND CONTROL ROOM ZONES INDIVIDUALLY FOR PENDANTS AND DOWNLIGHTS. PUBLIC RESTROOMS (MULTI OCCUPANT):
TURN ON LIGHTS AUTOMATICALLY UPON SENSING MOTION.

TURN OFF LIGHTS AFTER NO MOTION IS DETECTED AND DELAY EXPIRES. INTERLOCK VIA RELAY TO CONTROL EXHAUST FANS WHERE SHOWN. PUBLIC RESTROOMS (SINGLE OCCUPANT):

SAME AS GENERAL WALL-MOUNTED LINE VOLTAGE SENSOR SEQUENCES, OPERATE EXHAUST FAN VIA SECOND RELAY FROM WALL MOUNTED SWITCH

AND SET DELAY FOR 5 MIN AFTER LIGHTS TURN OFF.

CONFERENCE/FLEX ROOM: MANUAL ON/OFF AND DIMMING CONTROL OF LIGHTING VIA DIMMING TURN OFF LIGHTS AFTER NO MOTION IS DETECTED AND DELAY EXPIRES.

PROVIDE SWITCHES AT EACH DOOR
DIM AND CONTROL ROOM ZONES INDIVIDUALLY FOR CONFERENCE TABLE AND PERIMETER AREAS. EACH SWITCH IS TO FUNCTION AS A THREE-WAY SWITCH IN CONJUNCTION WITH THE SWITCH SERVING SAME LOAD AT THE OTHER DOOR IN THE ROOM.

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

PANELBOARD PP1

— REMOTE HEADS FOR EXTERIOR EGRESS LIGHTING. CONNECT TO EXIT SIGNS. (TYP.).

EQUIPMENT WITH EXACT EQUIPMENT BEING FURNISHED.

3. EXACT MECHANICAL EQUIPMENT LOCATIONS MAY NOT BE SHOWN FOR CLARITY. COORDINATE EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT, DUCT DETECTORS, ETC. WITH MECHANICAL DRAWINGS AND CONTRACTOR. 4. COORDINATE EXACT LOCATIONS OF SMOKE DETECTORS WITH CEILING FANS, HVAC DIFFUSERS, SPRINKLER HEADS, ETC. PER NFPA REQUIREMENTS.

COLLINS WEBB #: 23115 POWER PLAN

**ELECTRICAL FLOOR DEVICE SCHEDULE** COVER

DESCRIPTION MODEL # DESCRIPTION

FBMPREC / (2) OPENINGS FOR DUPLEX RECEPTACLES FBMP6KS AND (2) FACEPLATES FOR (6) KEYSTONE JACKS OR FLUSH AV CONNECTORS.

COVER

DESCRIPTION

COVER

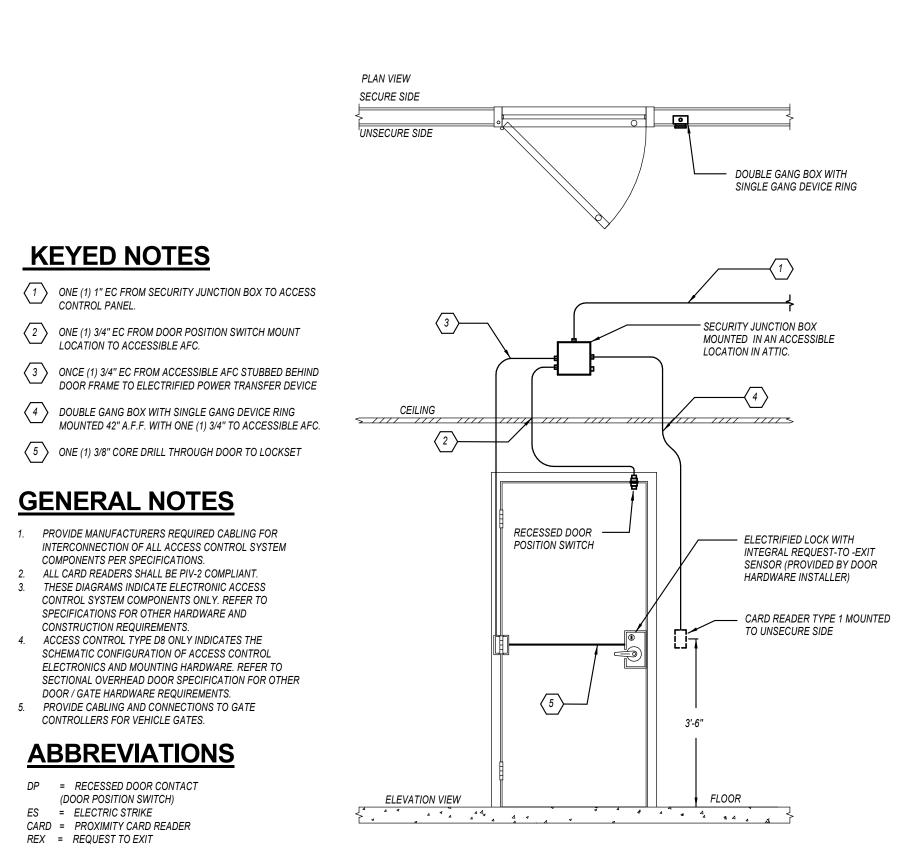
ACST ALUMINUM RECESSED COVER
ASSEMBLY. BLACK FINISH. MARK MANUFACTURER MODEL DESCRIPTION HIFFB-2 HUBBELL CFB4G30RCI 4-GANG RECESSED FLOOR BOX

COORDINATE FINISH COLORS WITH ARCHITECT/OWNER PRIOR TO ORDERING. 2 CONTRACTOR TO FURNISH/INSTALL DEVICES AS SHOWN. 3 LOW VOLTAGE DEVICES BY OWNER/OTHERS.

4 HINGED DOORS OPEN 180°. SCREWS ALLOW EACH DOOR TO BE SECURED SHUT.

DIS	CON	NEC	T SW	ITCH SCH	IEDULE			
MARK	SWITCH RATING	POLES	TYPE	DESCRIPTION	ENCLOSURE TYPE	LOCATION	EQUIPMENT SERVED	N
DS-1	30	2	NON-FUSIBLE	HEAVY-DUTY DISCONNECT SWITCH	NEMA 3R		CU-1	
DS-2	30	2	NON-FUSIBLE	HEAVY-DUTY DISCONNECT SWITCH	NEMA 3R		CU-2	
DS-3	30	2	NON-FUSIBLE	HEAVY-DUTY DISCONNECT SWITCH	NEMA 1	STORAGE 103	WH	

MAINTAIN ALL REQUIRED CLEARANCES ABOUT DISCONNECT AND/OR EQUIPMENT. MOUNT AT 36" TO BOTTOM OF DISCONNECT ABOVE ROOF/GRADE.



2 ACCESS CONTROL DETAIL
NOT TO SCALE

**KEYED NOTES** 

CONSTRUCTION REQUIREMENTS.

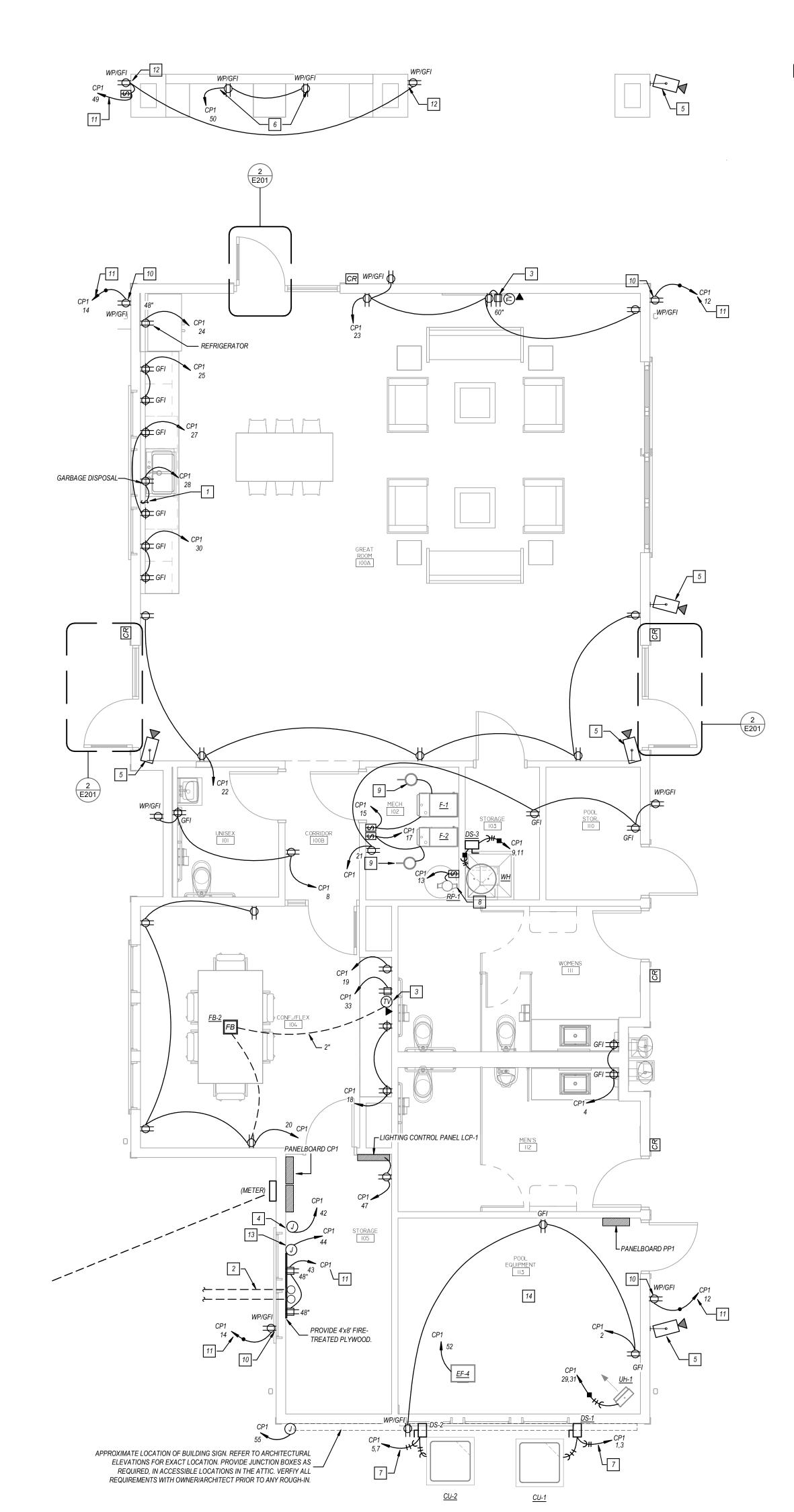
CONTROLLERS FOR VEHICLE GATES.

DP = RECESSED DOOR CONTACT (DOOR POSITION SWITCH)

ES = ELECTRIC STRIKE

CARD = PROXIMITY CARD READER

REX = REQUEST TO EXIT



#### **KEYED NOTES - POWER**

- 1 SWITCH ABOVE COUNTER FOR GARBAGE DISPOSAL. GANG WITH RECEPTACLE
- 2 TWO (2) 3" COUNDUITS FOR TELECOMMUNICATION AND TELEVISION SERVICES. STUB UP TO 12" ABOVE FINISH FLOOR WITH BUSHED ENDS. COORDINATE WITH SERVICE
- 3 RECEPTACLE, TELEVISION AND DATA OUTLETS INSTALLED BEHIND WALL-MOUNTED TELEVISION. REFER TO ARCHITECTURAL ELEVATIONS. VERIFY EXACT MOUNTING HEIGHT AND LOCATION WITH OWNER/ARCHITECT, AND ADJUST DEVICE LOCATIONS BASED ON ACTUALLY-PROVIDED TELEVISION AND MOUNTING BRACKET. FOR THE TELEVISION OUTLET, PROVIDE HBL260, 4"x4"x3.25" BACK BOX WITH 2" CONDUIT KNOCKOUT. AT THE CONFERENCE ROOM, EXTEND 2" CONDUIT FROM BOX DOWN TO
- BELOW GRADE AND EXTEND TO FLOOR BOX 4 ROUGH-IN AND CONNECT TO SECURITY PANEL PROVIDED BY OTHERS. COORDINATE EXACT REQUIREMENTS AND LOCATION WITH SECURITY PANEL PROVIDER. ROUGH-IN FOR SECURITY CAMERA BY OTHERS. COORDINATE EXACT LOCATION AND NUMBER OF CAMERAS REQUIRED WITH SECURITY CAMERA PROVIDER AND OWNER. EXTEND (1) 3/4" CONDUIT ABOVE/UP ACCESSIBLE CEILING BACK TO MAIN SECURITY
- 6 RECEPTACLES FOR GRILLE LOCATION. COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT PRIOR TO ANY ROUGH-IN.
- (2) #6 WIRE AND (1) #10 GROUND WITH 3/4" CONDUIT. 8 WIRE PUMP THROUGH AQUASTAT FOR CONTROL. COORDINATE ALL REQUIREMENTS
- WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN. 9 MOTORIZED DAMPER ON OUTSIDE AIR DUCT. EXTEND WIRING TO FURNACE AND PROVIDE RELAY FOR OPEN/CLOSE CONTROL PER THE OUTSIDE AIR DAMPER WIRING SCHEMATIC ON SHEET M201. DAMPER SHALL OPEN WHEN FURNACE IS ON AND CLOSE WHEN OFF. COORDINATE ALL WORK WITH MECHANICAL CONTRACTOR.
- 10 RECEPTACLE INSTALLED AS HIGH AS POSSIBEL BELOW THE ROOF EAVE,
  COONCEALED FROM VIEW AS MUCH AS POSSIBLE, FOR CHRISTMAS LIGHTING.
  LOCATION SHOWN IN APPROXIMATE VERIFY EXACT LOCATION AND ALL REQUIREMENTS WITH OWNER/ARCHITECT PRIOR TO ANY ROUGH-IN. 11 WIRE THROUGH LIGHTING CONTROL PANEL LCP-1.
- 12 RECEPTACLE INSTALLED UP HIGH ON POST AT TRELLIS FRAME FOR TRELLIS LIGHTING STRANDS. COORDINATE EXACT LOCATION WITH OWNER/ARCHITECT PRIOR TO ANY 13 PROVIDE 4-POLE LIGHTING CONTACTOR FOR POOL LIGHTING CIRCUITS. WIRE COIL OF
- CONTACTOR THROUGH LIGHTING CONTROL PANEL LCP-1 FOR TIMECLOCK CONTROL. 14 ALL POOL EQUIPMENT PROVIDED, AND ASSOCIATED ELECTRICAL EQUIPMENT AND WIRING BY POOL CONSULTANT.

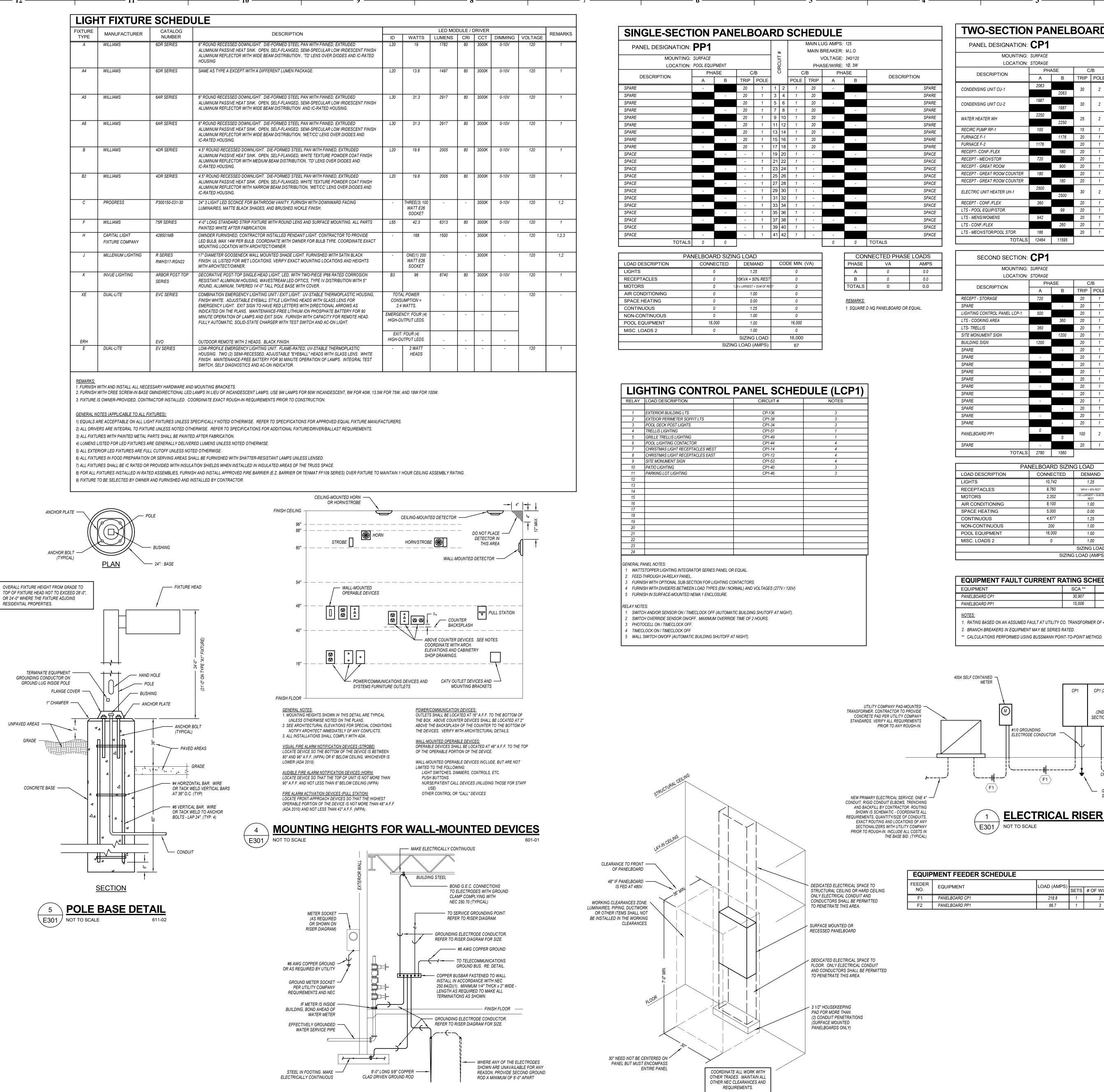
POWER PLAN
SCALE: 1/4" = 1'-0"

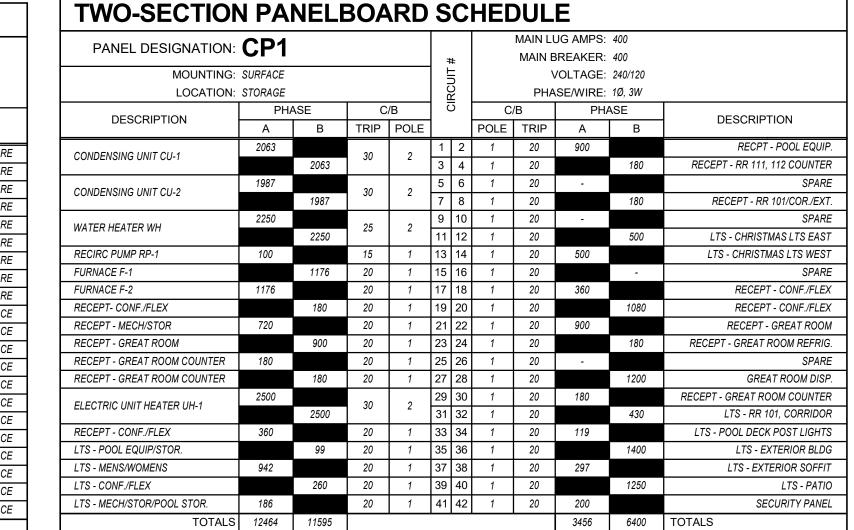
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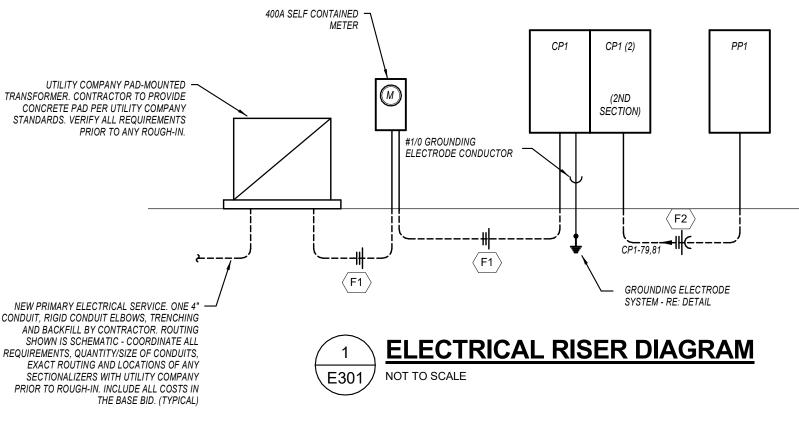


SECOND SECTION:	SECOND SECTION: CP1						MAIN LUG AMPS: 400  MAIN BREAKER: -						
MOUNTING:	SURFACE					=		V	OLTAGE:	240/120			
LOCATION:	STORAGE				[	CIRCUII #		PHA	SE/WIRE:	1Ø, 3W			
DECODIDATION	PH	ASE	С	/B	7	5	C	/B	PHA	ASE	DECODIDATION		
DESCRIPTION	Α	В	TRIP	POLE			POLE	TRIP	Α	В	DESCRIPTION		
RECEPT - STORAGE	720		20	1	43	44	1	20	100		POOL LIGHTING CONTACTOR		
SPARE		-	20	1	45	46	1	20		34	LTS - PARKING LOT		
LIGHTING CONTROL PANEL LCP-1	500		20	1	47	48	1	20	1005		LTS - GREAT ROOM		
LTS - COOKING AREA		360	20	1	49	50	1	20		360	RECPET - COOKING AREA		
LTS- TRELLIS	360		20	1	51	52	1	15	77		EXHAUST FAN (EF-5)		
SITE MONUMENT SIGN		1200	20	1	53	54	1	20		-	SPARE		
BUILDING SIGN	1200		20	1	55	56	1	20	-		SPARE		
SPARE		-	20	1	57	58	1	20		-	SPARE		
SPARE	=		20	1	59	60	1	20	-		SPARE		
SPARE		-	20	1	61	62	1	20		-	SPARE		
SPARE	=		20	1	63	64	1	20	-		SPARE		
SPARE		-	20	1	65	66	1	20		-	SPARE		
SPARE	-		20	1	67	68	1	-	-		SPACE		
SPARE		-	20	1	69	70	1	-		-	SPACE		
SPARE	-		20	1	71	72	1	-	-		SPACE		
SPARE		-	20	1	73	74	1	-		-	SPACE		
SPARE	-		20	1	75	76	1	-	-		SPACE		
SPARE		-	20	1	77	78	1	-		-	SPACE		
PANELBOARD PP1	0		100	2	79	80	1	-	-		SPACE		
FANLLDOARD FFT		0	100		81	82	1	-		-	SPACE		
SPARE	-		20	1	83	84	1	-	-		SPACE		
TOTALS	2780	1560		•					1182	394	TOTALS		

				_				
	PANELBOARD SIZIN	G LOAD			CON	NECTED PHASE	ECTED PHASE LOADS	
LOAD DESCRIPTION	CONNECTED	DEMAND	CODE MIN. (VA)		PHASE	VA	AMPS	
LIGHTS	10,742	1.25	13,428		Α	19,882	165.7	
RECEPTACLES	8,760	10KVA + 50% REST	8,760		В	19,949	166.2	
MOTORS	2,352	1.25 x LARGEST + SUM OF REST	2,646		TOTALS	39,831	166.0	
AIR CONDITIONING	8,100	1.00	8,100	1				
SPACE HEATING	5,000	0.00	0	1	<u>REMARKS:</u>			
CONTINUOUS	4,677	1.25	5,846		1. SQUARE D	NQ PANELBOARD OR I	EQUAL.	
NON-CONTINUOUS	200	1.00	200	1	2. PANELBOA	RD SHALL BE SUITABL	E FOR USE	
POOL EQUIPMENT	16,000	1.00	16,000		SERVICE EN	TRANCE EQUIPMENT.		
MISC. LOADS 2	0	1.00	0					
		SIZING LOAD:	54,980	1				

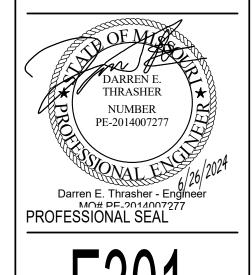
SIZING LOAD (AMPS):

	TOTALS	39,831	166.0									
·												
	<u>REMARKS:</u>											
	1. SQUARE D NQ PANELBOARD OR EQUAL.											
		ARD SHALL BE SUITABL ITRANCE EQUIPMENT.	E FOR USE AS									



EQUIPMENT FEEDER SCHEDULE											
FEEDER	EQUIPMENT	LOAD (AMPS)			CONDUIT						
NO. EQUIPMENT	EQUI MENT	LOAD (AWI O)	SETS	# OF WIRES	SIZE	GROUND	MATERIAL	SIZE	TYPE		
F1	PANELBOARD CP1	218.8	1	3	500 MCM	-	COPPER	3"	RNC-40		
F2	PANELBOARD PP1	66.7	1	3	#1	#8	COPPER	1-1/2"	EMT		

AD (AMPS)   SETS	SETS # OF WIRES SIZE GROUND MATERIAL SIZE TYPE
	218.8 1 3 500 MCM - COPPER 3" RNC-40
66.7 1 3 #1 #8 COPPER 1-1/2" EMT	
	66.7 1 3 #1 #8 COPPER 1-1/2" EMT



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COLLINS WEBB #: 23115

ELECTRICAL RISER AND SCHEDULES

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**ELECTRICAL SERVICE GROUNDING DETAIL** NOT TO SCALE

E301

**TYPICAL PANELBOARD INSTALLATION DETAIL** E301