The Medical Center of Aurora

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

ISSUE DATE: AUGUST 05, 2016
PROJECT #: 16-018

ISSUE FOR CONSTRUCTION

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Hospital Corporation of America

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MPE

WSP + CCRD
A WSP | PARSONS BRINCKERHOFF COMPANY

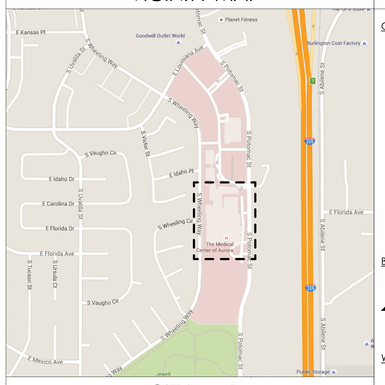
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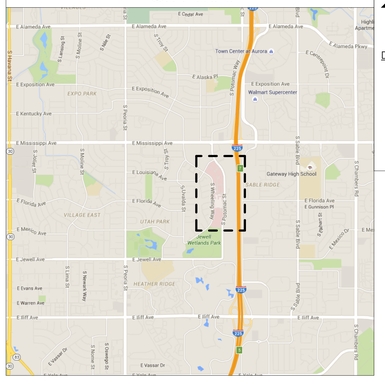
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VICINITY MAP



CITY MAP



City of Aurora Building Division
Project: *3rd Floor Remodel*
Address: *1501 S Potomac 3rd Flr*
Occupancy Group: *IBC I-2*
Construction Type: *IBC TYPE 1A-SPK*
RSN: *1142126*
Permit: *16-1162585*

GENERAL SYMBOLS LEGEND

COLUMN GRID DESIGNATION

NEW GRID

EXISTING GRID

BUILDING SECTION TAG

SECTION DESIGNATION
SHEET NUMBER

WALL SECTION TAG

SECTION DESIGNATION
SHEET NUMBER

DETAIL CALLOUT TAG

SECTION DESIGNATION
SHEET NUMBER

NOTE TAGS

NOTE BY NUMBER
SPECIFICATION NOTE

DOOR TAG

GL-X GLAZING DESIGNATION PER SPECIFICATIONS

GLAZING TAG

GLAZING DESIGNATION PER SPECIFICATIONS

ARCHITECTURAL WOODWORK

CABINET WIDTH
CABINET TYPE

EXTERIOR ELEVATION TAG

ELEVATION DESIGNATION
SHEET NUMBER

INTERIOR ELEVATION TAG

SHEET NUMBER
ELEVATION DESIGNATION

ENLARGED PLAN / CALLOUT TAG

PLAN/DETAIL DESIGNATION
SHEET NUMBER

GENERAL PROJECT NOTES

1. REFER TO COMPLETE SET OF ISSUED CONTRACT DOCUMENTS FOR APPLIACABLE NOTES, ABBREVIATIONS, AND SYMBOLS
2. DO NOT SCALE THE DRAWING. IF DIMENSIONS ARE IN QUESTION, OBTAIN CLARIFICATION FROM THE ARCHITECT BEFORE CONTINUING.
3. DIMENSIONS SHOWN ON THE FLOOR PLANS FOR NEW CONSTRUCTION ARE TO THE FACE OF FINISH OF INTERIOR WALLS, TO CENTER LINE OF COLUMNS, AND TO FACE OF CONCRETE OR MASONRY WALLS, UNLESS OTHERWISE INDICATED. DIMENSIONS IN RENOVATED AREAS ARE FROM FINISH FACE OF EXISTING WALLS AND TO FINISH FACE OF NEW STUD WALLS, UNLESS OTHERWISE INDICATED.
4. FIELD MEASURE AND CONFIRM DIMENSIONS FOR OWNER PROVIDED EQUIPMENT AND FURNISHINGS. COORDINATE WITH THE OWNER ON DELIVERY AND INSTALLATION OR OF/CI EQUIPMENT. MINIMUM REQUIRED OPENINGS AND ACCESSIBLE ROUTES TO THE INSTALLATION AREA SHALL BE COORDINATED WITH THE SUPPLIER.
5. FINISH FLOOR ELEVATIONS ARE TO TOP OF FINISHED FLOORING PRODUCT, OFTEN NOTED BY AFF (ABOVE FINISH FLOOR) UNLESS OTHERWISE NOTED.
6. COORDINATE EXACT SIZE AND PLACEMENT OF EQUIPMENT BASE AND HOUSEKEEPING PADS WITH EQUIPMENT TO BE PROVIDED.
7. WHERE NEW GYPSUM BOARD PARTITIONS ARE A CONTINUTION OF AN EXISTING PARTITION OR COLUMN ENCASEMENT, THE FACE OF THE NEW GYPSUM BOARD SHALL BE ALIGNED WITH THE FACE OF THE EXISTING SURFACE. WHERE A ONE HOUR PARTITION IS SHOWN AS A CONTIUNATION OF A TWO-HOUR PARTITION OR COLUMN ENCASEMENT, THE FACE OF THE GYPSUM BOARD SHALL BE OFFSET AS REQUIRED TO PROVIDE FACE ALIGNMENT OF GYPSUM BOARD ON BOTH SIDES.
8. LEVEL FLOORS SO THAT THEY DO NOT EXCEED A 1/4" VARIANCE IN A 10'-0" RADIUS.
9. PIPING LOCATED ABOVE GRADE AND INSIDE THE BUILDING SHALL BE CONCEALED IN FURRED SPACES WITH THE EXCEPTION OF PIPING IN STAIRWAYS, EQUIPMENT ROOMS, AND POWERHOUSE. COORDINATE WITH OTHER TRADES TO PROVIDE FURRING FOR PIPING INSTALLED IN FINISHED AREAS.
10. PARTITION TYPES AND FIRE RESISTIVE RATINGS INDICATED ON A WALL ARE TO BE CONTINUOUS FOR THE LENGTH AND HEIGHT OF A PARTITION.
11. APPROVE FLOOR OUTLET LOCATIONS WITH ARCHITECT AND BUILDING MANAGEMENT PRIOR TO CORE DRILLING.
12. OPENING IN A RATED WALL, FLOOR, CEILING, AND ROOF ASSEMBLIES SHALL BE SEALED WITH A FIRE RESISTANT JOINT SYSTEM OR PROTECTED WITH A FIRE RATED CHASE.
13. EXIT SIGNS AND SMOKE DETECTORS LOCATED IN CEILINGS SHALL BE POSITIONED AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
14. WHERE MATERIALS ARE APPLIED TO, OR ARE IN DIRECT CONTACT WITH WORK INSTALLED BY ANOTHER SUBCONTRACTOR, COMMENCEMENT OF WORK IMPLIES ACCEPTANCE OF THE SUBSTRATE AS SUITABLE FOR THE APPLICATION INTENDED.
15. ISOLATE DISSIMILAR METALS TO PREVENT GALVANIC CORROSION.
16. SEALANTS EXPOSED TO VIEW SHALL BE CUSTOM COLOR AS SELECTED BY THE ARCHITECT.
17. COORDINATE LOCATION OF SEALANT AND COMPATIBILITY OF SEALANTS WITH ADJACENT WORK, INCLUDING MATERIALS AND OTHER CONTIGUOUS SEALANTS
18. CAULK AT JUNCTURE OF INTERIOR FACES OF DOOR FRAMES, VIEW WINDOW FRAMES, EXTERIOR WINDOW FRAMES, AND CABINET WORK WITH ADJACENT MATERIALS. MAINTAIN THE FIRE RATING OF CONSTRUCTION AROUND CABINETS, PANELS, AND BOXES RECESSED IN FIRE RATED WALL, FLOOR, AND CEILING ASSEMBLIES.
19. ACCESSORIES SUCH AS GRAB BARS, TOWEL BARS, PAPER DISPENSERS AND SOAP DISHES INSTALLED WITHIN 2' OF A URINAL, WATER CLOSET, SINK OR LAVATORY SHALL BE MOISTURE SEALED.

ABBREVIATIONS LEGEND

ACC	ACCESSIBLE
AFF	ABOVE FINISHED FLOOR
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
B.O.__	BOTTOM OF __
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED, OWNER INSTALLED
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COORD	COORDINATE
CORR	CORRIDOR
DBL	DOUBLE
DEMO	DEMOLISH, DEMOLITION
EA.	EACH
ELEC	ELECTRIC(AL)
ELEV	ELEVATOR
EQ	EQUAL
(E). EXST	EXISTING
FF	FINISH FACE
FF EL	FINISHED FLOOR ELEVATION
FLR	FLOOR
FO	FINISHED OPENING
FP	FIRE PROTECTION
FV	FIELD VERIFY
GALV	GALVANIZED
GYP BD	GYPSUM BOARD
GYP PLAS	GYPSUM PLASTER
INSUL	INSULATION
LAV	LAVATORY
LVR	LOUVER
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OPP	OPPOSITE
PERP	PERPENDICULAR
PLBG	PLUMBING
PLYWD	PLYWOOD
RE:	REFER TO ___
REF	REFRIGERATOR
REINF	REINFORCE, REINFORCING
RO	ROUGH OPENING
ROW	RIGHT OF WAY
SCHED	SCHEDULE
SF	SQUARE FOOT(FEET)
SIM	SIMILAR
SPEC	SPECIFICATION
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
T	TREAD
T&G	TONGUE & GROOVE
TEMP	TEMPORARY
T.O.__	TOP OF ___
TOPO	TOPOGRAPHY, TOPOGRAPHIC
TYP	TYPICAL
UL	UNDERWRITER'S LABORATORIES
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
X	BY

ALTERNATES

DEDUCTIVE ALTERNATES
ALTERNATE #1: PROVIDE 3M PR90X TO THE EXTERIOR OF ALL THE WINDOWS IN THE UNIT.

ALTERNATE #2: REPLACE ALL LIGHTING, ACT, GRILLS, REGISTERS AND DIFFUSERS IN THE CORRIDORS LEADING TO THE PEDIATRIC UNIT. REFER TO D.223 AND MECHANICAL AND ELECTRICAL DRAWINGS FOR REFERENCE.

ALTERNATE #3: PROVIDE DEDUCTIVE ALTERNATE TO UTILIZE INTEGRAL BLINDS AT PICU DOORS IN LIEU OF CHROMATIC SWITCHING GLASS.

PROJECT DESCRIPTION

THE MEDICAL CENTER OF AURORA IS SEEKING TO RENOVATE THEIR PEDIATRIC UNIT AND CONVERT TWO ROOMS TO FUNCTION AS PEDIATRIC INTENSIVE CARE ROOMS. THE TOTAL UNIT RENOVATION CARRYING A MIX OF COSMETIC AND FULL RENOVATION. THE PROJECT CONSISTS OF APPROXIMATELY 4,500 SF ON THE THIRD FLOOR WITH ADDITIONAL FINISH SCOPE EXTERNAL TO ADJACENT COORIDORS.

PROJECT DATA

- **ADOPTED CODES / LAWS:**

CITY OF AURORA:
2015 INTERNATIONAL BUILDING CODE (IBC)
2015 INTERNATIONAL EXISTING BUILDING CODE
2014 NATIONAL ELECTRICAL CODE (NEC)
2015 INTERNATIONAL MECHANICAL CODE
2015 INTERNATIONAL PLUMBING CODE
2015 INTERNATIONAL FIRE CODE
2015 INTERNATIONAL FUEL AND GAS CODE
2015 INTERNATIONAL ENERGY CONSERVATION CODE
2009 ICC/ANSI A117.1 ACCESSIBLE USABLE BUILDINGS AND FACILITIES

STATE OF COLORADO:
2012 NFPA 101 - LIFE SAFETY CODE
2009 CO DEPARTMENT OF HEALTH AND ENVIRONMENT - HOSPITAL LICENSING RULES

FEDERAL:
2010 AMERICANS WITH DISABILITIES ACT GUIDELINES

- **OCCUPANCY CLASSIFICATION:**
2015 IBC - GROUP I-2 (SECTION 308)
CMS - 2012 NFPA 101 - NEW HEALTHCARE OCCUPANCY (CHAPTER 18)
STATE OF COLORADO - 2012 NFPA 101 - NEW HEALTHCARE OCCUPANCY CHAPTER 18
- **PRINCIPAL OCCUPANCY TYPE:** HEALTHCARE
- **CONSTRUCTION TYPE:**

EXISTING: SBC - TYPE 1A, UNRESTRAINED, FULLY SPRINKLERED

NEW: 2015 IBC - TYPE 1A, FULLY SPRINKLERED

This plan was reviewed for adopted codes and **NOT** for compliance with **ADA** or **FHA** accessibility requirements. Contact 800-949-4232 (**ADA**) and 303-894-7822 x 325 (**FHA**) for federal accessibility requirements that apply to your project.

DRAWING NUMBER KEY

DISCIPLINE
A ARCHITECTURAL
C CIVIL
L LANDSCAPE
M MECHANICAL
E ELECTRICAL
P PLUMBING
S STRUCTURAL
K KITCHEN
R RADIOLOGY

XX/A.XXX

NUMBER OF PLAN, DETAIL, ETC., ON SHEET

DRAWING SERIES

This work must also comply with **2015 IECC.**

Structural plan review is limited to a general survey for code compliance. No review is implied nor was undertaken to verify structural adequacy.

Field Inspection consultation is available upon request. Call 303-739-7420 to request a consultation

Failure to follow approved plans may result in an hourly fee to review the field changes for code compliance.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

STATE OF COLORADO
JOHN MENNO MARTIN
401729
LICENSED ARCHITECT
08/05/16

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Consultant Team

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Greenwood Village, CO 80111
ph: 303.694.4755

No.	Description	Date

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	SW
Checked by	JMN

Sheet Title:
COVER & DRAWING INDEX

Sheet Number
G.101

8/8/16 12:34:50 PM

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SECTION 011000 - SUMMARY

1.1 PROJECT INFORMATION
A. Project Identification: Peds 3rd floor Renovation, The Medical Center of Aurora, Aurora, Colorado, Architect's Project No. 16-003 MCOA Cath Lab Renovation.
1. 1501 S Potomac St, Aurora, CO, 80012.
B. Owner: The Medical Center of Aurora.
C. Architect: PATH21 Architecture, 2245 Curtis Street, Suite 100, Denver, Colorado 80205.

1.2 WORK COVERED BY CONTRACT DOCUMENTS
A. This project is renovation of existing pediatric unit and convert two rooms to function as pediatric intensive care rooms. Renovation includes mix of cosmetic and full renovation as well as additional finish scope in adjacent corridors. Scope of project 4,500 SF.
B. Project will be constructed under a single prime contract.
C. Owner Furnished Products: Refer to Drawings.

1.3 ACCESS TO SITE
A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Limits: Confine construction operations to areas indicated.
2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.4 COORDINATION WITH OCCUPANTS
A. Full Owner Occupancy: Owner will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.
B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.
1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.5 WORK RESTRICTIONS
A. Work Restrictions, General: Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.
1. Patient Areas of Medical Care Facilities: 24 hours per day, seven days a week.
2. Weekend Hours: 8:00 a.m. to 5:00 p.m.
3. Early Morning or Late Night Hours: Coordinate with Owner.
4. Hours for Utility Shutdowns: Coordinate with Owner.
5. Hours for Noisy Activities: Coordinate with Owner.
C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
1. Notify Owner not less than three days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.
D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
1. Notify Owner not less than three days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.
E. Nonsmoking Building: Smoking is not permitted on this campus.
F. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.
G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.
H. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
1. Maintain list of approved screened personnel with Owner's representative.
I. Refer to Owner's "Requirements for Contractors Performing Construction" attached to this section.

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

1.1 SUMMARY
A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
1. General project coordination procedures.
2. Administrative and supervisory personnel.
3. Coordination drawings.
4. Requests for Information (RFIs).
5. Project meetings.
B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

1.1 COORDINATION
A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work.
1. Schedule construction operations in sequence required where installation of one part of the Work depends on installation of other components.
B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work.
1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-Installation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.
10. Structural Penetrations: Indicate penetrations and openings required for all disciplines.

1.2 REQUESTS FOR INFORMATION (RFIs)
A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI. All RFIs should be sent directly to the Architect via email.
B. RFI Forms: Software-generated form acceptable to Architect. Sketches or other necessary documents should be attached to email in PDF format.
C. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow 7 business days for Architect's response for each RFI.
D. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties.

1.3 PROJECT MEETINGS
A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
B. Pre-construction Conference: Schedule and conduct a pre-construction conference before starting construction but no later than 15 days after execution of the Agreement.
C. Pre-Installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.
D. Progress Meetings: Conduct progress meetings at agreed upon intervals.
E. Coordination 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 pre-installation conferences.

SECTION 013300 - SUBMITTAL PROCEDURES

1.1 SUBMITTAL ADMINISTRATIVE REQUIREMENTS
A. Architect's Digital Data Files: Electronic copies of CAD Drawings will be provided by Architect for Contractor's use in preparing coordination submittals.
B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals. Submittals received after 1:00 pm will be considered to have been received the following day.
1. Allow 10 business days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
D. Identification and Information: Identify and incorporate information in each electronic submittal file.
1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
E. Options: Identify options requiring selection by the Architect.
F. Deviations: Identify deviations from the Contract Documents on submittals.
G. Use for Construction: Use only final submittals that are marked with 'Reviewed' , 'Furnish as Corrected' notation from Architect's action stamp. , or with approval notation from alternate reviewer.
1.2 SUBMITTAL PROCEDURES
A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
1. Email or upload electronic submittals as PDF electronic files directly to Architect.
H. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
I. Shop Drawings: Prepare Project-specific information, drawn accurately to scale.
J. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
K. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
L. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
M. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
1.3. CONTRACTOR'S REVIEW
B. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
N. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
1.4 ARCHITECT'S ACTION
C. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
O. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
1. Reviewed
2. Revise and Resubmit
3. Rejected
4. Furnish As Corrected
5. No Action Taken.
P. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
Q. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
R. Incomplete submittals are not acceptable, will be considered non-responsive, and will be returned without review.
S. Submittals not required by the Contract Documents may not be reviewed and may be discarded.
T. Material safety data sheets shall not be submitted to the architect for review.

SECTION 013516 – ALTERATION PROJECT PROCEDURES

1.1 MATERIALS
A. Type and Quality of Existing Products: Use products or types of construction that exist in structure, as needed to patch, extend, or match existing Work.
1. Generally, Contract Documents do not define products or standards of workmanship present in existing construction.
2. Determine by inspecting and testing products where necessary, referring to existing work as quality standard.
B. New Materials: Comply with Specifications for each product involved.
1. Match existing products and work for patching existing work.
C. Materials for Temporary Fire-Rated Partitions: Comply with provisions of Division 01 Section "Temporary Facilities and Controls."
D. Salvaged Materials: Salvage sufficient quantities of cut or removed material to replace damaged Work of existing construction, when material is not readily obtainable on current market.
1. Store salvaged items in dry, secure place on site.

1.2 EXAMINATION
A. Verify that areas are ready for alteration and remodeling.
B. Discrepancies: Verify dimensions and elevations indicated in layout of existing work.
1. Prior to commencing work, carefully compare and check Contract Documents for discrepancies in locations or elevations of work to be executed.
2. Refer discrepancies among Drawings and existing conditions to Architect for adjustment before work affected is performed.

1.3 PREPARATION
A. Construct temporary fire-rated partitions to separate existing occupied areas from construction and alteration areas. Comply with provisions of Division 01 Section "Temporary Facilities and Controls."
B. Cut, move, or remove items as necessary for access to alteration and renovation Work.
1. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, deteriorated masonry and concrete, and other deteriorated materials. Replace materials as specified for finished Work.
2. Remove debris and abandoned items from area and from concealed spaces.
C. Cutting and Removal: Perform cutting and removal work to remove minimum necessary, and in manner to avoid damage to adjacent work. Cut finish surfaces such as masonry, tile, plaster, or metals by methods to terminate surfaces in straight line at natural point of division.
D. Prepare surface and remove surface finishes as necessary to provide for proper installation of new materials and finishes.
E. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.

1.4 INSTALLATION
A. Coordinate Work of alterations and renovations to expedite completion and to accommodate Owner occupancy.
B. Remove, cut, and patch Work in manner to minimize damage and to provide means of restoring products and finishes to specified condition.
1. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes.
C. Install products as specified in individual Specification sections.
D. Where new Work abuts or aligns with existing, perform smooth and even transition to match existing adjacent surface in texture and appearance.
1. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and request instructions from Architect as to method of making transition.

1.5 ADJUSTMENTS
A. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to provide smooth plane without breaks, steps, or soffits.
B. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
C. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections. Repair substrate prior to application of finishes.

1.6 FINISHES
A. Finish new surfaces as specified in individual Specification sections.
B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.
1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

SECTION 013543 – ENVIRONMENTAL PROJECT PROCEDURES

1.1 SUMMARY
A. Environmental goals for project.
B. Waste management procedures.
C. Indoor air quality procedures.

1.2 DEFINITIONS
A. Waste Materials: Large and small pieces of materials indicated which are excess to contract requirements and generally include materials salvaged from existing construction and items of trimmings, cuttings, and damaged goods resulting from new installations which cannot be effectively used in Work.
B. Type A Finishes: Material and finishes with potential for short-term levels of off gassing from chemicals inherent in their manufacturing process, or which are applied in form requiring vehicles or carriers for spreading which release high level of particulate matter in process of installation and/or curing. Type A finishes include but are not limited to:
1. Composite wood products, specifically including particleboard from which millwork, wood paneling, doors, or furniture may be fabricated.
2. Adhesives, sealants, and glazing compounds, specifically those with petrochemical vehicles or carriers.
3. Wood preservatives, finishes, and paint.
4. Control and/or expansion joint fillers.
5. Hard finishes requiring adhesive installation.
6. Gypsum board and associated finish processes.
C. Type B Finishes: Fuzzy material and finishes which are woven, fibrous, or porous in nature and tend to adsorb chemicals off-gassed by Type A finishes or may be adversely affected by particulates. These materials become "sink" for deleterious substances which may be released much later, or collectors of contaminants that may promote subsequent bacterial growth. Type B Finishes include but are not limited to:
1. Carpeting and padding.
2. Fabric wallcovering.
3. Insulation exposed to air stream.
4. Acoustic ceiling materials.
5. Fabric covered acoustic wall panels.
6. Upholstered furnishings.
7. Materials that can be categorized as both Type A and Type B.

1.3 SYSTEM DESCRIPTION
A. Project Environmental Goals: Owner's Goal: Construct project using sustainable design principles, including following:
1. Pollution Prevention: Use recycled materials and materials from sustainably managed forests, minimize construction waste taken to landfill sites, and limit pollutants emitted into air, soil, and waterways.
2. Energy Conservation: Minimize use of energy to construct and operate project including construction of efficient enclosures and use of energy efficient equipment and fixtures.
3. Indoor Air Quality: Minimize air concentrations of certain pollutants in completed project at time of occupancy.
B. Indoor Air Quality: Indoor occupied spaces of facility shall comply with following standards:
1. Carbon Monoxide: Not exceed 9 PPM.
2. Carbon Dioxide: Not exceed 800 PPM.
3. Airborne Mold and Mildew: Simultaneous indoor and outdoor readings.
4. Maximum Air Concentration Standards: Indoor room air concentration levels, emission rates, and qualities of contaminants shall not exceed following limits at time of substantial completion prior to occupancy of facility and installation of office furniture, occupants, and occupant activities:

Indoor Contaminants	Allowable Air Concentration Levels
Formaldehyde concentrations	<20 μg/m3 above outside air
Total Volatile Organic Compounds (TVOC) concentrations	>200 μg/m3 above outside air
4 Phenyl Cyclohexene (4~PC)	>3 μg/m3
Total Particulates (PM)	>20 μg/m3
Regulated Pollutants	>NAAQS

1.4 INFORMATIONAL SUBMITTALS
A. Construction Waste Management Plan. Submit revisions to plan at time of revisions.
B. Indoor Air Quality Plan. Submit revisions to plan at time of revisions.
C. Passive Indoor Air Quality Test results.
D. Based on results of passive indoor air quality testing, Owner reserves right to require active indoor air quality testing.

1.5 QUALITY ASSURANCE
A. Regulatory Requirements: Comply with applicable codes, laws, rules, and regulations of authorities having jurisdiction concerning waste management and indoor air quality.
1. Disposal Sites, Recyclers, and Waste Materials Processors: Properly permitted by authorities having jurisdiction.
B. Certifications: Contractor's certification that construction waste materials have been recycled and disposed of in accordance with Contractor's submitted waste management plan.

1.6 PROJECT CONDITIONS
A. Environmental Requirements: Comply with requirements of other sections as appropriate.

1.7 SEQUENCING AND SCHEDULING
A. General: Sequence and schedule work in accordance with Section 01 11 00 and other sections as appropriate.

1.8 SYSTEM STARTUP
A. Starting of Systems: Comply with Section 01 91 13 "General Commissioning Requirements."

1.9 INDOOR AIR QUALITY TESTING EQUIPMENT
A. Passive Testing Equipment: Passive monitoring test kit to measure formaldehyde levels and total VOC levels, list three primary VOCs detected, and identify mold and other particulates collected. Include analysis and written report of tested air.
1. Acceptable Product: IAQ Test Kit, Air Quality Sciences, Atlanta, GA, 770-933-0638.

1.10 PREPARATION
A. Waste Management Plan: Before start of construction, prepare construction waste management plan on procedures to collect, segregate, and dispose of construction wastes and debris.
1. Identify materials by categories to be recycled and corresponding recycling facilities.
2. Include education and training procedures for construction personnel.
3. Include procedures to enforce conformance to plan.
B. Indoor Air Quality Plan: Prepare indoor quality plan to ensure indoor air quality to comply with specified requirements.
1. Identify Type A and Type B finishes in project.
2. Schedule and sequence installation of Type A and Type B finishes.
3. Describe method, rate, and schedule of ventilation during construction operations.

1.11 WASTE MANAGEMENT
A. General: Maximize salvage and recycling of waste materials from construction operations.
1. Implement waste management from start of construction through to final completion.
2. Comply with requirements of submitted waste management plan.
B. Construction Waste Materials for Recycling: Include salvage and recycling of following:
1. Land clearing debris such as stumps and trees.
2. Concrete, Masonry, and Other Inert Fill Material: Concrete; brick; rock; clean soil not intended for other on-site use; broken up asphalt pavement containing no ABC stone, clay, concrete, or other contaminants; and other inert material.
3. Concrete and Masonry: Separate reinforcement and other metals.
4. Metals: Metal scrap including iron, steel, stainless steel, galvanized sheet steel, zinc, lead, copper, brass, bronze, and aluminum.
5. Separate metals by type.
6. Untreated Wood: Unpainted, untreated dimensional lumber, plywood, oriented strand board, hardboard, particleboard, and wood shipping pallets.
7. Gypsum Board Scrap: Excess drywall construction materials including cuttings, other scrap, and excess materials.
8. Roofing materials.
9. Salvaged Materials: Reusable lumber, fixtures, and building materials.
10. Cardboard: Clean, corrugated cardboard such as used for packaging, etc.
11. Paper: Discarded office refuse such as unwanted files, correspondence, etc.
12. Plastic Buckets: Containers for various liquid and semi-solid or viscous construction materials and compounds.
13. Beverage Containers: Aluminum, glass, and plastic containers.
14. Other Mixed Construction and Demolition Waste: Solid waste resulting solely from construction, remodeling, repair, or demolition operations on pavement, buildings, or other structures exclusive of waste materials listed in this section including roofing materials, insulation materials, floor finishes, wall finishes, ceiling finishes.
C. Non-Recyclable Construction Waste Materials: Collect and segregate non-recyclable waste for delivery to permitted landfill site:
1. Mixed Solid Waste: Solid waste usually collected as municipal service, exclusive of waste materials listed above.
2. Hazardous Waste: Comply with applicable codes, laws, rules, and regulations.

1.12 INDOOR AIR QUALITY
A. General: Schedule and sequence construction and provide ventilation during construction to maximize indoor air quality after occupancy.
1. Schedule and sequence application of finishes to:
a. Install Type A Finishes that off-gas significant quantities of deleterious material during curing.
b. Ensure dissipation of emissions from Type A Finishes before installation of Type B Finishes.
c. Install Type B Finishes (adsorptive materials).
d. Avoid adsorption of Type A Finish emissions by Type B Finishes.
e. Avoid subsequent release of unwanted substances in indoor spaces and mechanical systems after facility occupancy.
2. Provide 100 percent fresh air ventilation at such rates and for such times during construction period as required to achieve indoor air quality standards specified at time of Substantial Completion.
a. Temporary Heating and Ventilating: Comply with Section 01 50 00 "Temporary Facilities and Controls."

1.13 FIELD QUALITY CONTROL
A. Indoor Air Quality Testing Conditions: Facility has achieved Substantial Completion except for indoor air quality testing.
1. Final Cleaning: Completed. Comply with Division 1 requirements.
2. HVAC Systems: Started, tested, balanced, cleaned, and operating normally as specified. Comply with Section 01820 Demonstration and Training.
3. Facility: Not occupied and Owner provided furnishings and equipment not yet installed.
B. Passive Indoor Air Quality Testing: Provide and install Passive Indoor Air Quality Testing Equipment in spaces to be occupied at one location per floor as directed by Owner and in accordance with testing equipment manufacturer's recommendations.
1. Conduct passive test for 7days with facility operating at specified HVAC rates and conditions.
2. Include analysis and written report of tested air by testing equipment provider.
3. If initial test results do not indicate compliance with specified indoor air quality standards, provide additional ventilation and take additional measures as required and accepted by Owner to achieve compliance.
C. Cost of Subsequent Passive Testing Required Because of Failure to Comply with Specified Standards: By Contractor.

SECTION 014000 – QUALITY REQUIREMENTS

1.1 CONFLICTING REQUIREMENTS
A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.2 QUALITY ASSURANCE
A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
E. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
F. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
G. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
H. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish indicated in the technical specifications.
1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Demonstrate the proposed range of aesthetic effects and workmanship.
3. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
4. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
5. Demolish and remove mockups when directed, unless otherwise indicated.

1.3 QUALITY CONTROL
A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
B. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
C. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in pre-installation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.
E. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.4 REPAIR AND PROTECTION
A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."
B. Protect construction exposed by or for quality-control service activities.
C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

SECTION 017300 – EXECUTION

1.1 SECTION INCLUDES
A. Installation of the Work.
B. Cutting and patching.
C. Progress cleaning.
D. Protection of installed construction.

1.1 DEFINITIONS
A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.2 QUALITY ASSURANCE
A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from the Architect before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

1.3 INSTALLATION
A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
G. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

1.4 CUTTING AND PATCHING
A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
B. Temporary Support: Provide temporary support of work to be cut.
C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
D. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements of Division 01 Section "Summary."
E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.
G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
b. Restore damaged pipe covering to its original condition.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or re-hang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather-tight condition.
H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

1.5 PROGRESS CLEANING
A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
4. Utilize containers intended for holding waste materials of type to be stored.
5. Coordinate progress cleaning for joint-use areas where more than one installer has worked.
B. Site: Maintain Project site free of waste materials and debris.
C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls." Division 01 Section "Construction Waste Management and Disposal."
H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

1.6 PROTECTION OF INSTALLED CONSTRUCTION
A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
B. Comply with manufacturer's written instructions for temperature and relative humidity.

1.7 CORRECTION OF THE WORK
A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
B. Restore permanent facilities used during construction to their specified condition.
C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

SECTION 017700 – CLOSEOUT PROCEDURES

1.1 SUBSTANTIAL COMPLETION
A. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.1 FINAL COMPLETION
A. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected. Include cost for re-inspection based on incomplete work of the Contractor.

1.2 LIST OF INCOMPLETE ITEMS (PUNCHLIST)
A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A attached or form provide by Contractor and approved by Architect.

1.3 WARRANTIES
A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1.4 FINAL CLEANING
A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

SECTION 017823 – OPERATION AND MAINTENANCE DATA

1.1 CLOSEOUT SUBMITTALS
A. Manual Content: Operations and maintenance manual content is specified in individual specification sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1.1 MANUALS
A. Emergency manuals.
B. Operation Manuals.
C. Product maintenance manuals.
D. Systems and equipment maintenance manuals.

SECTION 017839 – PROJECT RECORD DOCUMENTS

1.1 CLOSEOUT SUBMITTALS
A. Record drawings.
B. Record specifications.
C. Record product data.
D. Miscellaneous record submittals.

1.1 SUBMITTALS
A. Provide product record documents in electronic format.

SECTION 024129 – SELECTIVE DEMOLITION

1.1 SECTION INCLUDES
A. Demolition and removal of selected portions of building or structure.
B. Salvage of existing items to be reused or recycled.

1.1 MATERIALS OWNERSHIP
A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.2 FIELD CONDITIONS
A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
B. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
C. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
1. Maintain fire-protection facilities in service during selective demolition operations.

1.3 PERFORMANCE REQUIREMENTS
A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.4 EXAMINATION
A. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
B. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
2. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.
C. Survey of Existing Conditions: Record existing conditions by use of measured drawings and preconstruction photographs or preconstruction videos.
1. Comply with requirements specified in Section 01 32 33 "Photographic Documentation."
2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

1.5 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS
A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

1.6 PREPARATION
A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1.7 SELECTIVE DEMOLITION
A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations.
B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.
F. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight.

1.8 DISPOSAL OF DEMOLISHED MATERIALS
A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

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

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Erick B.
Date: Aug 31, 2016
2015 INTERNATIONAL CODES & 2014 NEC

RSN: 1142126
Permit #: 16-1162585

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No.	Description	Date

STATE OF COLORADO
JOHN MENNO NAP
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
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Checked by	JMN

Sheet Title:
PROJECT SPECIFICATIONS

Sheet Number
G.201

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SECTION 061053 – MISCELLANEOUS ROUGH CARPENTRY

1.1 WOOD PRODUCTS, GENERAL
A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
   1. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
   2. Provide dressed lumber, S4S, unless otherwise indicated.

1.1 WOOD-PRESERVATIVE-TREATED MATERIALS
A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground.
B. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
   1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.
C. Application: Treat miscellaneous carpentry unless otherwise indicated.

1.2 FIRE-RETARDANT-TREATED MATERIALS
A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
   1. Use treatment that does not promote corrosion of metal fasteners.
   2. 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.
   3. 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 exterior type is not indicated.
C. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
   1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.
D. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.
E. Application: Treat items indicated on Drawings, and the following:
   1. Framing for raised platforms.
   2. Concealed blocking.
   3. Roof framing and blocking.
   4. Wood cants, nailers, curbs, equipment support bases, blocking, and similar members in connection with roofing.
   5. Plywood backing panels.

1.1 MISCELLANEOUS LUMBER
A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
   1. Blocking.
   2. Nailers.
   3. Rooftop equipment bases and support curbs.
B. For items of dimension lumber size, provide No. 2 grade lumber and any of the following species:
   1. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
C. For blocking not used for attachment of other construction, Utility, Stud, or No. 2 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

1.3 PLYWOOD BACKING PANELS
A. Equipment Backing Panels: DOC PS 1, Exterior, AC, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

1.4 INSTALLATION
A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
B. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
C. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.]
E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
F. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
   1. 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 close furred spaces.
   2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal thickness.
   3. 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 partitions.
G. Securely attach carpentry work to substrate by anchoring and fastening

SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

1.1 SUMMARY
A. This Section includes the following:
   1. Plastic-laminate cabinets.
   2. Plastic-laminate countertops.
   3. Shop finishing of interior woodwork.
   4. Cabinet hardware.
   5. Interior finish carpentry including standing and running trim.
B. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.1 QUALITY ASSURANCE
A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance. Shop is a certified participant in AWI's Quality Certification Program.
B. Installer Qualifications: Certified participant in AWI's Quality Certification Program.
C. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1.2 DELIVERY, STORAGE, AND HANDLING
A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.3 PROJECT CONDITIONS
A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.4 COORDINATION
A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.5 MATERIALS
A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
B. Wood Products: Comply with the following:
   1. Hardboard: Tempered, AHA A135.4.
   2. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.
      a. Type A (standard): MDF, MR10 – ANSI A208.2, Grade 130.
      b. Type B (where additional moisture resistance is needed): MDF, MR30 – ANSI A208.2, Grade 155.
      c. Type C (near sinks, splashes, and other high humidity locations): MDF, MR50 – ANSI A208.2, Grade 150
   3. Softwood Plywood: DOC PS 1, Medium Density Overlay.
C. Thermoset Decorative Laminate (melamine): Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
   1. Provide PVC or polyester edge banding complying with LMA EDG-1 on components with exposed or semi-exposed edges. Color to match face material.
D. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.

1.6 CABINET HARDWARE AND ACCESSORIES
A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 08 Section "Door Hardware (Scheduled by Describing Products)."
B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 135 degrees of opening, self-closing.
C. Back-Mounted Pulls: BHMA A156.9, B02011.
   1. Subject to compliance with requirements, provide "DP3 series, 3-inch" by Doug Mockett & Company, Inc.
D. Wire Pulls: Back mounted, solid metal, 5 inches 127 mm long, 2-1/2 inches 63.5 mm deep, and 5/16 inch 8 mm in diameter.
E. Elbox Latches: BHMA A156.9, B02023.
F. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.
G. Shelf Rests: BHMA A156.9, B04013; metal, equal to Hafele 282.04.711.
H. Drawer Slides: BHMA A156.9, B05091.
   1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides.
   2. File Drawer Slides: Grade 1HD-100; for drawers more than 6 inches 150 mm high or 24 inches 600 mm wide.
   3. Pencil Drawer Slides: Grade 2; for drawers not more than 3 inches 75 mm high and 24 inches 600 mm wide.
I. Door Locks: BHMA A156.11, E07121.
   1. Basis of Design
      a. National CAM door lock #C8053-14A w/elbow catch at 2-door cabinet.
J. Drawer Locks: BHMA A156.11, E07041.
K. Grommets for Cable Passage through Countertops: 2-inch OD, black, molded-plastic grommets and matching plastic caps with slot for wire passage.
   1. Product: Subject to compliance with requirements, provide "EDP series" by Doug Mockett & Company, Inc.
L. Grommets for High Finish Areas: 2 inch OD, grommets and match caps with slot for wire passage.
   1. Subject to compliance with requirements, provide "MM3 series" by Doug Mockett & Company, Inc
M. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated, unless noted otherwise.
   1. Satin Stainless Steel: BHMA 630.
N. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

1.7 MISCELLANEOUS MATERIALS
A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.
B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.
C. Adhesives, General: Do not use adhesives that contain urea formaldehyde.
D. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Wood Glues: 30 g/L.
   2. Contact Adhesive: 250 g/L.
E. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.
   1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

1.8 FABRICATION, GENERAL
A. Interior Woodwork Grade: Unless otherwise indicated, provide Custom -grade interior woodwork complying with referenced quality standard.
B. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
   1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 Inch 19 mm Thick or Less: 1/16 inch1.5 mm.
   2. Edges of Rails and Similar Members More Than 3/4 Inch Thick: 1/8 inch.
   3. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch.
C. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
   1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
   2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
D. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
   1. Seal edges of openings in countertops with a coat of varnish.

1.9 PLASTIC-LAMINATE CABINETS
A. Grade: Custom.
B. AWI Type of Cabinet Construction: Flush overlay.
C. Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
   1. Horizontal Surfaces Other Than Tops: Grade HGS.
   2. Post-formed Surfaces: Grade HGP.
   3. Vertical Surfaces: Grade VGS.
   4. Edges: Grade HGS.
D. Materials for Semi-exposed Surfaces:
   1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, Grade CLS.
      a. Edges of Plastic-Laminate Shelves: PVC tape, 0.018-inch minimum thickness, matching laminate in color, pattern, and finish.
      b. For semi-exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, Grade CLS.
   2. Drawer Sides and Backs: Solid-hardwood lumber.
   3. Drawer Bottoms: Hardwood plywood, ¼ inch thick.
E. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.
F. Colors, Patterns, and Finishes: As scheduled.
G. Provide dust panels of 1/4-inch 6.4-mm plywood or tempered hardboard above compartments and drawers, unless located directly under tops.
H. Edgebanding for Plastic Laminate Clad Cabinets: Rigid PVC extrusions, through color with satin finish, 3 mm thick at counter tops, doors, drawer fronts, and exposed shelving on front and back edges (front edge only for fixed shelving); and 1 mm thick elsewhere, including edges of shelving within cabinets.
I. Edges exposed at glazed openings in cabinet shall receive laminate edges.

1.10 PLASTIC-LAMINATE COUNTERTOPS
A. Grade: Custom.
B. High-Pressure Decorative Laminate Grade: HGS.
C. Grain Direction: Parallel to cabinet fronts.
D. Edge Treatment: Same as laminate cladding on horizontal surfaces.
E. Core Material: Medium density fiberboard.
F. Backer Sheet: Provide plastic-laminate backer sheet, Grade BKL, on underside of countertop substrate.
G. Paper Backing: Provide paper backing on underside of countertop substrate.

1.11 CLOSET AND UTILITY SHELVING
A. Grade: Custom.
B. Shelf Material:
   1. For spans up to 30 inches: ¾ inch medium-density fiberboard with solid lumber edge.
   2. For spans up to 42 inches: 1 inch medium-density fiberboard with solid-lumber edge.
C. Cleats: 3/4-inch solid lumber.

1.12 PREPARATION
A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

1.13 INSTALLATION
A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
F. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.
   1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base if finished.
   2. Install wall railings on indicated metal brackets securely fastened to wall framing.
   3. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.
G. Paneling: Anchor paneling to supporting substrate with splined connection strips. Do not use face fastening, unless otherwise indicated.
   1. Install flush paneling with no more than 1/16 inch in 96-inch vertical cup or bow and 1/8 inch in 96-inch horizontal variation from a true plane.
H. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
   1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
   2. Maintain veneer sequence matching of cabinets with transparent finish.
   3. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking, or hanging strips or No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.
I. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
   1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
   2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
   3. Secure backsplashes to walls with adhesive.
   4. Calk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."
J. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

SECTION 078413 - PENETRATION FIRESTOPPING

1.1 QUALITY ASSURANCE
A. Installer Qualifications: A firm experienced in installing penetration firestopping similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. .
B. Fire-Test-Response Characteristics: Comply with the following requirements:
   1. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:
      a. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.
      b. Classification markings on penetration firestopping correspond to designations listed by the following:
      c. UL in its "Fire Resistance Directory."
      d. Intertek ETL SEMKO in its "Directory of Listed Building Products."
C. Products shall be provided by one manufacturer only.

1.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Grace Construction Products.
   2. Hilti, Inc.
   3. Nelson Firestop Products.
   4. RectorSeal Corporation.
   5. Specified Technologies Inc.
   6. 3M Fire Protection Products.

1.2 PENETRATION FIRESTOPPING
A. Provide penetration firestopping that is 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. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
   1. Fire-resistance-rated walls include fire walls smoke-barrier walls and fire partitions.
   2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
   C. Penetrations in Horizontal Assemblies: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
      1. Horizontal assemblies include floors floor/ceiling assemblies and ceiling membranes of roof/ceiling assemblies.
      2. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
      3. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
   D. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.
      1. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at 0.30-inch wg at both ambient and elevated temperatures.
   E. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
   F. VOC Content: Provide penetration firestopping that complies with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
      1. Architectural Sealants: 250 g/L.
      2. Sealant Primers for Nonporous Substrates: 250 g/L.
      3. Sealant Primers for Porous Substrates: 775 g/L.
   G. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.

1.3 INSTALLATION
A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

1.4 PENETRATION FIRESTOPPING SCHEDULE
A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.
B. Where Intertek ETL SEMKO-listed systems are indicated, they refer to design numbers in Intertek ETL SEMKO's "Directory of Listed Building Products" under "Firestop Systems."
C. Where FM Global-approved systems are indicated, they refer to design numbers listed in FM Global's "Building Materials Approval Guide" under "Wall and Floor Penetration Fire Stops."
D. Firestop Systems with No Penetrating Items (FS-1): Comply with the following:
   1. Pipes, plastic or metal, conduit in vertical runs, installed through cast-in-place firestop devices.
      a. Acceptable UL-Classified Systems with FA 1000 Series Systems equivalent to, but not limited to, the following:
      b. FA1016, FA1017, FA2053, FA2054 by Hilti.
      c. CP 680 Cast-in Firestop Device by Hilti.
      d. CP653 Speed Sleeve by Hilti.
E. Firestop Systems with No Penetrating Items (FS-2): Comply with the following:
   1. Acceptable UL-Classified Systems with CAJ 0000 Series Systems equivalent to, but not limited to, the following: CAJ0055, CAJ0070 by Hilti or CAJ0012, CAJ0102 by Grace.
   2. Type of Fill Materials: One or more of the following:
      a. Latex sealant.
      b. Silicone sealant.
      c. Acrylic sealant.
      d. Intumescent putty.
      e. Mortar.
      f. Preformed intumescent blocks.
      g. Pillows/Bags
F. Firestop Systems for Metallic Pipes, Conduit, or Tubing (FS-3): Comply with the following:
   1. Acceptable UL-Classified Systems with CAJ, WL, or FC 1000 Series Systems, equivalent to, but not limited to, the following: CAJ1184, CAJ1291, CAJ1277, CAJ1382, CAJ1388, WL1054, WL1249, FC1009 by Hilti or CAJ1403, CAJ1235, CAJ1406, WL1152, WL1207, FC1020 by Grace.
   2. Type of Fill Materials: One or more of the following:
      a. Latex sealant.
      b. Silicone sealant.
      c. Acrylic sealant.
      d. Intumescent putty.
      e. Mortar.
      f. Polyurethane firestop foam.
G. Firestop Systems for Nonmetallic Pipe, Conduit, or Tubing (FS-4): Comply with the following:
   1. Acceptable UL-Classified Systems with CAJ, FA, or WL 2000 Series Systems, equivalent to, but not limited to, the following: CAJ2109, FA2053, WL2078, WL2128 by Hilti or CAJ2212, CAJ2171, CAJ2210, WL2167, WL2185, WL2170, WL2259 by Grace.
   2. Type of Fill Materials: One or more of the following:
      a. Intumescent sealant.
      b. Intumescent putty.
      c. Intumescent wrap strips.
      d. Firestop device.
      e. Firestop sleeve device.
      f. Latex sealant.
H. Firestop Systems for Electrical Cables (FS-5): Comply with the following:
   1. Acceptable UL-Classified Systems with CAJ, FC, or WL 3000 Series Systems, equivalent to, but not limited to, the following: CAJ3095, FC3012, WL3065, WL3112 by Hilti or CAJ3185, CAJ3199, CAJ3234, FC3018, FC3060, WL3179 by Grace.
   2. Type of Fill Materials: One or more of the following:
      a. Intumescent sealant.
      b. Latex Sealant
      c. Pillows/bags
      d. Intumescent putty.
      e. Silicone foam.
I. Firestop Systems for Cable Trays (FS-6): Comply with the following:
   1. Acceptable UL-Classified Systems with CAJ or WL 4000 Series Systems equivalent to, but not limited to, the following: CAJ4035, CAJ4054, WL4011, WL4034 by Hilti or CAJ4035, CBJ4023, WL4025, WL4030 by Grace.
   2. Type of Fill Materials: One or more of the following:
      a. Intumescent sealant.
      b. Intumescent putty.
      c. Silicone foam.
      d. Pillows/bags.
      e. Foam blocks.
      f. Firestop mortar.
      g. Polyurethane firestop foam.
J. Firestop Systems for Insulated Pipes (FS-7): Comply with the following:
   1. Acceptable UL-Classified Systems with CAJ or WL 5000 Series Systems, equivalent to, but not limited to, the following: CAJ5091, WL5029 by Hilti or CAJ5222, WL5171 by Grace.
   2. Type of Fill Materials: One or more of the following:
      a. Intumescent sealant.
      b. Silicone foam.
      c. Intumescent wrap strips.
      d. Pre-formed intumescent blocks.
      e. Latex sealant.
K. Firestop Systems for Miscellaneous Electrical Penetrants (FS-8): Comply with the following:
   1. Acceptable UL-Classified Systems with CAJ 6000 Series Systems equivalent to, but not limited to, the following: CAJ6006, CAJ 6017 by Hilti or CAJ6012, CAJ6013, CAJ6027 by Grace.
   2. Type of Fill Materials: One or more of the following:
      a. Intumescent sealant.
      b. Latex sealant
      c. Intumescent putty.
      d. Mortar.
L. Firestop Systems for Miscellaneous Mechanical Penetrations (FS-9): Comply with the following:
   1. Acceptable UL-Classified Systems with CAJ 7000 Series Systems equivalent to, but not limited to, the following: CAJ7046, CAJ7051, CAJ7040, CAJ7021 by Hilti or CAJ7067, CAJ7075, CAJ7082 by Grace.
   2. Type of Fill Materials: One or both of the following:
      a. Intumescent sealant.
      b. Latex sealant.
      c. Mortar.
      d. Acrylic sealant.
      e. Silicone sealant.
M. Firestop Systems for Groupings of Penetrations (FS-10): Comply with the following:
   1. Acceptable UL-Classified Systems with CAJ or WL 8000 Series Systems, equivalent to, but not limited to, the following: CAJ8056, CAJ8096, WJ8007, WL8014, WL8019 by Hilti or CAJ8042, CAJ8101, CAJ8133, WL8007 by Grace.
   2. Type of Fill Materials: One or more of the following:
      a. Latex sealant.
      b. Mortar.
      c. Intumescent wrap strips.
      d. Firestop device.
      e. Intumescent composite sheet.
      f. Pre-formed intumescent blocks.

END OF SECTION

SECTION 078446 – FIRE-RESISTIVE JOINT SYSTEMS

1.1 SECTION INCLUDES
A. Joints in or between fire-resistance-rated constructions.
B. Joints at exterior curtain-wall/floor intersections.
C. Joints in smoke barriers.

1.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following without substitution:
   1. Hilti, Inc.

1.2 FIRE-RESISTIVE JOINT SYSTEMS
A. Where required, provide fire-resistive joint 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 assemblies in or between which fire-resistive joint systems are installed. Fire-resistive joint systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
B. Joints in or between Fire-Resistance-Rated Construction: Provide fire-resistive joint systems with ratings determined per ASTM E 1966 or UL 2079:
   1. Joints include those installed in or between fire-resistance-rated walls floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies.
   2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of construction they will join.
C. Joints at Exterior Curtain-Wall/Floor Intersections: Provide fire-resistive joint systems with rating determined by ASTM E 119 based on testing at a positive pressure differential of 0.01-inch wg or ASTM E 2307.
   1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the floor assembly.
D. Joints in Smoke Barriers: Provide fire-resistive joint systems with ratings determined per UL 2079.
   1. L-Rating: Not exceeding 5.0 cfm/ft of joint at 0.30 inch wg at both ambient and elevated temperatures.
E. VOC Content: Provide fire-resistive joint systems that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Architectural Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.
F. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install fill materials and to maintain ratings required. Use only components specified by fire-resistive joint system manufacturer and approved by the qualified testing agency for systems indicated.

1.3 INSTALLATION
A. General: Install fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
B. Install forming materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
C. Install fill materials for fire-resistive joint systems by proven techniques.

SECTION 079200 – JOINT SEALANTS

1.1 SECTION INCLUDES
A. Sealants and joint backing.
B. Pre-compressed foam sealers.

1.2 SUBMITTALS
A. Product Data: Provide data indicating sealant chemical characteristics.

1.3 WARRANTY
A. Correct defective workmanship within a five year period after Date of Substantial Completion.
B. Correct defective materials for 5 years for urethane sealants and 20 years for silicone sealants.
C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

1.4 MANUFACTURERS
A. Silicone Sealants:
   1. Bostik Inc: www.bostik-us.com.
   2. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
   3. Pecora Corporation: www.pecora.com.
   4. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
   5. Tremco Global Sealants: www.tremcosealants.com.
B. Polyurethane Sealants:
   1. Bostik Inc: www.bostik-us.com.
   2. Pecora Corporation: www.pecora.com.
   3. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
C. Acrylic Sealants (ASTM C920):
   1. Tremco Global Sealants: www.tremcosealants.com.
D. Acrylic Emulsion Latex Sealants:
   1. Bostik Inc: www.bostik-us.com.
   2. Pecora Corporation: www.pecora.com.
   3. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
   4. Tremco Global Sealants: www.tremcosealants.com.
E. Preformed Compressible Foam Sealers:
   1. EMSEAL Joint Systems, Ltd: www.emseal.com.
   2. Sandell Manufacturing Company, Inc: www.sandellmfg.com.
   3. Dayton Superior Corporation: www.daytonsuperior.com.
   4. Tremco Global Sealants: www.tremcosealants.com.

1.5 SEALANTS
A. Type S-GP - Silicone Sealant: ASTM C 920, Grade NS, Class 25, Uses NT, A, G, M, O; single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding.
   1. Color: Standard colors matching finished surfaces.
   2. Product: 795 manufactured by Dow Corning.
   3. Movement Capability: Plus and minus 25 percent.
   4. Service Temperature Range: -65 to 180 degrees F.
   5. Shore A Hardness Range: 15 to 35.
B. Type S-S - Silicone Sealant: ASTM C 920, Grane NS, Class 25, Uses NG, A, G, M, O; single component, non-sagging, non-staining, sanitary.
   1. Color: Standard colors matching finished surfaces.
   2. Product: 786 manufactured by Dow Corning.
   3. Service Temperature Range: -65 to 180 degrees F.
   4. Shore A Hardness Range: 15 to 35.

1.6 ACCESSORIES
A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
B. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width .
C. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

1.7 PREPARATION
A. Remove loose materials and foreign matter that could impair adhesion of sealant.
B. Clean and prime joints in accordance with manufacturer's instructions.
C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
D. Protect elements surrounding the work of this section from damage or disfigurement.

1.8 INSTALLATION
A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
B. Perform installation in accordance with ASTM C1193.
C. Perform acoustical sealant application work in accordance with ASTM C919.
D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer , except where specific dimensions are indicated.
E. Install bond breaker where joint backing is not used.
F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
H. Tool joints concave.
I. Pre-compressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

1.9 SCHEDULE
A. Exterior Joints for Which No Other Sealant Type is Indicated: Type S-GP.
B. Interior Wall Expansion Joints: Type U-NS.
C. Exterior Wall Expansion Joints: Type S-GP.
D. Joints Between Concrete Panels and Between Panels and Adjacent Work: Type S-SP.
E. Control, Expansion, and Soft Joints in Masonry, and Between Masonry and Adjacent Work: Type S-GP.
F. Lap Joints in Exterior Sheet Metal Work: Type S-GP.
G. Joints Between Exterior Metal Frames and Adjacent Work: Type S-GP.
H. Under Exterior Door Thresholds: Type G-GP.
I. Interior Joints for Which No Other Sealant is Indicated: Type AL.
J. Control and Expansion Joints in Interior Concrete Slabs and Floors: Type U-SL.
K. Joints Between Plumbing Fixtures and Walls and Floors, and Between Countertops and Walls: Type S-S.
L. In STC-Rated Walls, Between Metal Stud Track/Runner and Adjacent Construction: Type AL-A.
M. Beneath Exterior Stud Walls at Foundations: Type PF.

END OF SECTION

SECTION 079210 – INTERIOR JOINT SEALANTS

1.1 PRECONSTRUCTION TESTING
A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
   1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
   2. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

1.1 WARRANTY
A. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: 20 years from date of Substantial Completion for silicone sealants.

1.2 MATERIALS, GENERAL
A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
B. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Part 59, Subpart D (EPA Method 24):
   1. Architectural Sealants: 250 g/L.
   2. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Sealant Primers for Porous Substrates: 775 g/L.
C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
   1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.
D. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
E. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

1.3 SILICONE JOINT SEALANTS
A. Mildew-Resistant, Single-Component, Acid-Curing Silicone Joint Sealant(S-S:) ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. BASF Building Systems; Omniplus.
      b. Dow Corning Corporation; 786 Mildew Resistant.
      c. GE Advanced Materials - Silicones; Sanitary SCS1700.
      d. Tremco Incorporated; Tremsil 200 Sanitary.

1.4 LATEX JOINT SEALANTS
A. Latex Joint Sealant (AL): Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. BASF Building Systems; Sonolac.
      b. Bostik, Inc.; Chem-Calk 600.
      c. May National Associates, Inc.
      d. Pecora Corporation; AC-20+.
      e. Tremco Incorporated; Tremflex 834.

1.5 ACOUSTICAL JOINT SEALANTS (AC)
A. Acoustical Joint Sealant: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Pecora Corporation; AC-20 FTR .
      b. USG Corporation; SHEETROCK Acoustical Sealant.

1.6 PREPARATION
A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

1.7 INSTALLATION OF JOINT SEALANTS
A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
   4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
F. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations.

1.8 FIELD QUALITY CONTROL
A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
   1. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
      a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
   2. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

1.9 CLEANING
A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

1.10 JOINT-SEALANT SCHEDULE
A. Sealant Schedule:
   1. Interior Joints:
      a. Wall and ceiling joints subject to movement: Designation U-MC.
      b. Wall and ceiling joints not subject to movement: Designation AL.
      c. Wall and ceiling joints between frames and their rough opening: Designation AL.
      d. Wall and ceiling joints between frames and adjoining surfaces: Designation AL.
      e. Interior Sanitary Joints; Joints Between Plumbing Fixtures and Adjoining Floor, Wall, and Ceiling Surfaces; Joints Between Shower Door Enclosure Components and Adjacent Finish Surfaces; Joints in Dietary and Food Preparation Areas, Kitchens, Food Storage Areas, and Areas Subject to Frequent Wet Cleaning, including joints between walls and floors, Joints Between Back Splashes and Wall Substrates: Designation S-S.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Erick B.
Date: Aug 31, 2016
2015 INTERNATIONAL CODES & 2014 NEC

RSN: 1142126
Permit #: 16-1162585

SECTION 081113 – HOLLOW METAL DOORS AND FRAMES

1.1 SUMMARY
A. Section includes standard hollow metal doors and frames.

1.1 QUALITY ASSURANCE
A. Source Limitations: Obtain hollow metal doors and frames from single source manufacturer.
B. 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 NFPA 252 and UL10C, embossed labels are acceptable on standard 3 sided door frames.
   1. Temperature-Rise Limit At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.
C. 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 or UL 9. Label each individual glazed lite.
D. Smoke-Control Door Assemblies: Comply with NFPA 105.

1.2 STANDARD HOLLOW METAL DOORS
A. General: Provide 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.
   1. Design: Flush panel.
   2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.
      a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
      b. Steel-stiffened door at interior and exterior shipping and receiving locations.
      c. Thermal-Rated (Insulated) Doors: Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than 11.when tested to ASTM C518 calculated and 3.0 when tested to ASTM C1363 operable.
         1) Locations: All exterior doors, and as indicated on Door Schedule..
   3. Vertical Edges for Single-Acting Doors:
      a. Beveled Edges: 1/8 inch in 2 inches.
         1) At meeting edges of pairs of doors bevel edge at active leaf, square edge at inactive leaf.
         2) Universal hinge preps for reverse swinging of doors are not acceptable.
   4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch radius.
   5. Top and Bottom Edges: Closed with flush or inverted 0.042-inch-thick, end closures or channels of same material as face sheets.
   6. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
   7. Provide hollow metal doors with at least 30 percent total recycled; 10 percent post-consumer content.
B. Exterior Doors: Face sheets fabricated from metallic-coated steel sheet. 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:
   1. Level 3 and Physical Performance Level A (Extra Heavy Duty), Model 1 (Full Flush)).
C. Interior Doors: Face sheets fabricated from cold-rolled steel sheet unless metallic-coated sheet is indicated. 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:
   1. Level 3 and Physical Performance Level B (Heavy Duty), Model 2 (Full Flush).
D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
E. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

1.3 STANDARD HOLLOW METAL FRAMES
A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
B. Exterior Frames: Fabricated from metallic-coated steel sheet.
   1. Fabricate frames with mitered or coped corners.
   2. Fabricate frames as face welded joints and back weld joints continuously, unless otherwise indicated.
   3. Frames for Level 3 Steel Doors: (14 gage) thick steel sheet.
C. Interior Frames: Fabricated from cold-rolled steel sheet unless metallic-coated sheet is indicated.
   1. Fabricate frames with mitered or coped corners.
   2. Fabricate frames as full profile and face welded unless otherwise indicated.
   3. Frames for Level 3 Steel Doors: (16 gage) - thick steel sheet.
   4. Frames 48-inches and wider in opening width are required to me min. 14 gage thick steel sheet.
   5. Frames for Wood Doors: (16 gage) thick steel sheet.
   6. Frames for Borrowed Lights: (16 gage) thick steel sheet.
D. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.
E. Knock down frames are acceptable only where indicated or scheduled.

1.4 FRAME ANCHORS
A. Jamb Anchors:
   1. Stud Anchors: Welded frames for installation in stud partitions shall be provided with welded in steel anchors of suitable design, not less than 18 gage thickness, secured inside each jamb as follows:
      a. Frames up to 60-inch height: 2 anchors.
      b. Frames greater than 60 inches up to 90 inches 4 anchors.
      c. Frames greater than 90 inches up to 96 inches: 5 anchors.
      d. Frames greater than 96 inches: 5 anchors plus one for each 24 inches or fraction thereof over 96 inches spaced at 24 inches maximum between anchors.
B. Floor Anchors: Formed from same material as frames, not less than 0.067 inch thick, and as follows:
   1. Monolithic Concrete Slabs: Floor anchors shall be provided with two holes for fasteners and shall be fastened inside jambs with at least four spot welds per anchor.

1.5 STOPS AND MOLDINGS
A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch thick, fabricated from same material as door face sheet in which they are installed.
B. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch high unless otherwise indicated.
C. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch thick, fabricated from same material as frames in which they are installed. Field cuts are not acceptable.
D. Cut-off (Sanitary) Stops (for healthcare environments only): Where indicated on door schedule/frame type, terminate stops 6 inches above finish floor with a 45 degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.

1.6 FABRICATION
A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
B. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.
C. Hollow Metal Doors:
   1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
   2. Glazed Lites: Factory cut openings in doors.
   3. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (beyond edge of door on which astragal is mounted.
   4. Continuous Hinge Reinforcement: Provide continuous 12 gage strap tack welded to door edge for continuous hinges specified in hardware sets in Div. 8 Door hardware, unless door has continuous steel channel for hinge reinforcement.
   5. Electrical Raceways: Provide raceways to accommodate up to twelve (12) wires as required for electrified door hardware specified in hardware sets in Div. 8 Door Hardware.
   6. Seamless Edge (Model 2): Provide seamless edge on hollow metal doors by intermittently tack welding seam, grinding smooth and finishing edge free from defects and blemishes.
D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
   1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
   2. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
   3. Equal Rabbet Frames: Provide frames with equal rabbet dimensions unless glazing and removable stops require wider dimension on glass side of frame.
   4. Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 42-inch and wider with mortise/butt type hinges at top hinge location to deter against hinge reinforcement sag; required at all openings with automatic openers.
   5. Continuous Hinge Reinforcement: Provide continuous 12 gage strap tack welded to frame stop for continuous hinges specified in hardware sets in Div. 8 Door hardware.
   6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
   7. Provide A60 Galvannealed coating at frames in restrooms with showers/ Jacuzzi, clean areas such as surgery rooms and surgical suites, clean rooms, and soil rooms.
   8. Electrical Knock Out Boxes: Factory weld 18 gage electrical knock out boxes to frame for electrical hardware preps; included to electrical thru wire hinges, electrical raceways, door position switches, electric strikes, jamb mount card readers, and magnet locks as noted in door hardware sets in Division 8 Door Hardware and security prints.
   9. Electrical knock out boxes are required at door position switches, electric strikes, card readers, and middle hinge locations for all exterior locations regardless of electrical hardware specified in Division 8 Door Hardware and security prints.
      a. Provide electrical knock out boxes with a dual 1/2-inch and 3/4-inch knockouts.
      b. Conduit to be factory installed for electric hardware preps. Frames with factory installed conduit to have weld in place anchors.
      c. Electrical knock out boxes to comply with NFPA requirements and fit electrical door hardware as specified in hardware sets in Division 8 Door Hardware and security prints.
      d. Electrical knock out boxes for continuous hinges should be located in the center of the vertical dimension on the hinge jamb, coordinate with hardware supplier
      e. Provide conduit for standardized plug connectors to accommodate up to (12) wires for electrified door hardware specified in hardware sets in Division 8 Door Hardware and security prints.
   10. Door Silencers: Except on weather-stripped or gasketed doors, drill stops to receive door silencers as follows. Keep holes clear during construction. Silencers to be supplied by frame manufacturer regardless if specified in Div. 8 Door Hardware.
      a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

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No.	Description	Date

STATE OF COLORADO
JOHN MENNO NAP
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	MD
Checked by	JMN

Sheet Title:

PROJECT SPECIFICATIONS

Sheet Number
G.202

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b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

E. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.

F. Hardware Preparation: Factory prepare hollow metal work to receive templated 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 Hardware."
1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-templated, mortised and surface-mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

G. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide loose stops and moldings on inside of hollow metal work.
5. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.
6. Gap for butted or mitered joints in glass stop should not exceed .0625-inch.

1.7 STEEL FINISHES
A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
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; compatible with substrate and field-applied coatings despite prolonged exposure.

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

SECTION 081216 – ALUMINUM FRAMES

1.1 SUBMITTALS
A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, fire-resistance rating, and finishes.
B. Shop Drawings: Frame details for each frame type, including dimensioned profiles and metal thicknesses.
C. Schedule: For interior aluminum frames. Use same designations indicated on Drawings. Coordinate with door hardware schedule and glazing.

1.1 QUALITY ASSURANCE
A. Fire-Rated 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 NFPA 252 or UL 10C.
B. Smoke- and Draft-Control Assemblies: At corridors, smoke barriers, smoke partitions, and elsewhere as indicated, provide assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft.at the tested pressure differential of 0.3-inch wg of water.

1.2 MANUFACTURERS
A. Manufacturers:
1. Frameworks Manufacturing.
2. Interior Components Inc.
3. RACO Interior Products, Inc.
4. Versatrac.
5. Wilson Partitions.

1.3 COMPONENTS
A. Aluminum Framing: ASTM B 221, Alloy 6063-T5 or alloy and temper required to suit structural and finish requirements, not less than 0.062 inchthick.
B. Door Frames: Extruded aluminum, reinforced for hinges, strikes, and closers. Refer to Drawings for frame types.
1. 90-Minute Fire-Protection Rating (where indicated in schedule): Fabricate aluminum frame assemblies with a cold-formed, primed, interior steel liner.
C. Glazing Frames: Extruded aluminum, for glazing thickness indicated.
D. Trim: Extruded aluminum, not less than 0.062 inchthick, with removable snap-in glazing stops and door stops without exposed fasteners.

1.4 ACCESSORIES
A. Fasteners: Aluminum, nonmagnetic, stainless-steel or other non-corrosive metal fasteners compatible with frames, stops, panels, reinforcement plates, hardware, anchors, and other items being fastened.
B. Door Silencers: Manufacturer's standard continuous mohair, wool pile, or vinyl seals.
C. Smoke Seals: Intumescent strip or fire-rated gaskets.
D. Glazing Gaskets: Manufacturer's standard extruded or molded plastic, to accommodate glazing thickness indicated .

1.5 FABRICATION
A. Provide concealed corner reinforcements and alignment clips for accurately fitted hairline joints at butted or mitered connections.
B. Factory prepare interior aluminum frames to receive templated mortised hardware; include cutouts, reinforcements, mortising, drilling, and tapping.
C. Fabricate frames for glazing with removable stops to allow glazing replacement without dismantling frame.
D. Fabricate components to allow secure installation without exposed fasteners.

1.6 ALUMINUM FINISHES
A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

1.7 EXAMINATION
A. Examine walls, floors, and ceilings, with Installer present, for conditions affecting performance of the Work.
B. Verify that wall thickness does not exceed standard tolerances allowed by throat size indicated.
C. Proceed with installation only after unsatisfactory conditions have been corrected.

1.8 INSTALLATION
A. General: Install interior aluminum frames plumb, rigid, properly aligned, and securely fastened in place; comply with manufacturer's written instructions.
B. Set frames accurately in position and plumbed, aligned, and securely anchored to substrates.
1. At fire-protection-rated openings, install interior aluminum frames according to NFPA 80.
C. Install frame components in the longest possible lengths; components up to 96 inches long must be one piece.
1. Fasten to suspended ceiling grid on maximum 48-inch centers, using sheet metal screws or other fasteners approved by frame manufacturer.
2. Use concealed installation clips to produce tightly fitted and aligned splices and connections.
3. Secure clips to extruded main-frame components and not to snap-in or trim members.
4. Do not leave screws or other fasteners exposed to view when installation is complete.

SECTION 081420 – HIGH-IMPACT-RESISTANT WOOD DOORS

1.1 SUMMARY
A. This Section includes the following: High-impact-resistant wood doors.
1.2 SUBMITTALS
A. Product data, schedule indicating location, size, hardware sets, swing, elevation and construction details not included in product data.
1.3 QUALITY ASSURANCE
A. Comply with WDMA Industry Standard (I.S. 1A-04 "Architectural Wood Flush Doors").
1. Meet performance attributes for the following performance duty level: Extra Heavy Duty.
2. Tolerances for warp, telegraphing, squareness and prefitting dimensions as per the latest edition of WDMA I.S.1A-04.
B. Where fire rated doors are required, provide doors labeled by Intertek/Warnock Hersey. Construction details and hardware application shall be as approved by the labeling agency.
1.4 WARRANTY
A. Solid-Core Interior Doors: Provide manufacturer's limited lifetime written warranty guarantee against warpage, delamination and defects in materials and workmanship.
1. Life of installation.
1.5 MANUFACTURER AND PRODUCT
A. Construction Specialties, Inc.; Acrovyn Door Systems.
1.6 MATERIALS
A. Door Construction
1. Non Fire Rated Doors and 20-minute interior flush wood doors conforming to WDMA I.S.1A-04 and the following:
a. Thickness: 1-3/4 inch, plus or minus 1/16 inch.
b. Core: Solid, bonded core.
c. Crossbanding: FSC certified 0.125-inch tempered hardboard.
d. Fixed Vertical Door Stiles: 1-3/8 inch, before trimming, fixed hardwood interior stile bonded to core.
e. Replaceable Vertical Door Stiles: 3/4-inch replaceable custom hardwood stiles; field removable for easy replacement if damaged.
f. Replaceable Vertical Edges: Fully wrapped door edge; replaceable, exclusive of fasteners to improve appearance.
g. Horizontal Edges: Hardwood rails bonded to core.
h. WDMA I.S.1A-04 Performance Duty Level: Extra Heavy Duty.
i. Durability Performance: Cycle Slam WDMA TM-7, 1990 Extra Heavy Duty - 2,000,000 cycles to ensure durability of entire door construction.
2. Fire-Rated, 45 and 60-minute: Interior flush fire-rated doors conforming to WDMA I.A. 1-A and the following:
a. Thickness: 1-3/4 inch, plus or minus 1/16 inch.
b. Cores: Solid, bonded, non-combustible mineral composite
c. Crossbanding: FSC certified 0.125-inch tempered hardboard.
d. Fixed Vertical Door Stiles: 1-1/2 inch, before trimming, fixed mineral composite, fixed interior stile bonded to core.
e. Replaceable Vertical Door Stiles: ¾-inch replaceable custom stiles; field removable for easy replacement if damaged.
f. Replaceable Vertical Edges: Fully wrapped door edge; replaceable, exclusive of fasteners to improve appearance.
g. Horizontal Edges: Hardwood/mineral composite bonded to core.
h. WDMA I.S.1A-04 Performance Duty Level: Extra Heavy Duty
i. Durability performance: Cycle Slam WDMA TM-7, 1990 - 1,000,000 cycles to insure durability of entire door construction.
B. Door Faces:
1. Door faces to be high impact resistant Acrovyn finish:
a. Acrovyn base color integral throughout to eliminate discoloration caused by scratching.
2. Face Veneer Wear Index - Abrasion Resistance Testing - ASTM D4060-90: 28,000 cycles to prove out resistant to scuffing and scratching.
3. Face Veneer Impact Resistance – ASTM D 4226: 86 in/lb. to confirm impact resistance of face finish.
C. Door stiles to meet or exceed the following performance testing to ensure hardware fastener holding strength:
1. WDMA TM-8 "Hinge Loading Resistance" Extra Heavy Duty.
2. WDMA TM-10 Screw Holding Capacity" Extra Heavy Duty.
D. Door Edges:
1. Finish: Same as door faces.
2. Edges are to fully wrap the door vertical stiles to eliminate banded edges thus improving durability and impact resistance.
3. Door edges shall be exclusive of fasteners to improve appearance.
4. Edges must be flush with face of door thus eliminating raised edges that could be torn off.
5. Edges to include 1/4-inch radius edges to improve impact deflection. Square edges shall not be permitted.
6. Edges to be provided as part of the construction of the door from single source manufacturer.
E. Adhesives
1. Crossbanding to core adhesives shall be urea formaldehyde free Type II to improve structural integrity of door.
2. Door faces are to be applied to the crossbanded core using Type I urea formaldehyde free adhesives to eliminate delamination.
F. Cores
1. Non Rated Doors: Particleboard grade LD-2, 32 lb/ft3 density, CARB Phase I compliant.
2. 20-minute Doors: Particleboard grade LD-2, 32 lb/ft3 density, CARB Phase I compliant.
3. Fire-Rated Doors: Non-combustible mineral core construction 25-32 lb/ft3 density - no added urea formaldehyde content.

1.7 FABRICATION, GENERAL
A. Doors shall be prefit and beveled at the factory to fit the openings to reduce handling an onsite labor costs. Prefit tolerances shall be in accordance with the requirements of WDMA I.S.1A-04, latest edition.
B. For fire rated doors comply with clearance requirements of referenced quality standard for fitting in accordance with requirements listed in NFPA 80.
C. Coordinate measurements of hardware mortises in metal frames. Contractor or door distributor to verify dimensions and alignment before factory machining.
D. Factory machine doors for hardware that is not surface applied. Comply with final hardware schedules, door frame shop drawings, and hardware templates.
E. Light openings must be cut by the manufacturer or by a certified machining distributor.
F. To ensure proper fit of the doors bevel on both strike and hinge edges to be 1/8 inch in 2 inches.
G. Top and bottom rails shall be factory sealed with an approved wood sealer to eliminate moisture from entering into core thus eliminating warpage.
H. Blocking: provide blocking approved for use in doors of fire ratings indicated as needed to eliminate through-bolting for surface applied hardware.

1.8 ACCESSORIES
A. Glazing Stops
1. Non Rated: Metal vision frames.
2. Fire Rated: Metal vision frames.
B. Glass: Refer to Division 08 Section "Glazing" for glass types.

1.9 INSTALLATION
A. Adjust frames to plumb condition before door installation. Tolerances for warp, squareness, and pre-fitting dimensions shall be as per latest edition of WDMA I.S.1A-04.
B. Handle doors in accordance with recommendations of WDMA I.S.1A-04 "Care and Installation at Job Site."
C. Condition doors to average temperature and humidity in area of installation for not less than 48 hours prior to installation.
D. Install doors to comply with manufacturer's written instructions, referenced quality standard and as indicated.
1. Install fire rated doors in corresponding fire-rated frames according to NFPA-80 and ITS/WH requirements.
E. Factory fitted doors: Align in frames for uniform clearance at each edge.
F. Set doors plumb, level, square and true.
G. In the field trimming:
H. Trim door height by cutting door bottom edges to a maximum of 3/4 inch per NFPA 80.
I. Trimming of fire rated doors in width can only be done by the manufacturer or a certified machining distributor under special guidance of the manufacturer.
J. Drill pilot holes for screws and bolts using templates provided by hardware manufacturer.
K. Exercise caution when drilling pilot holes and installing hinges so that pilot holes are not over drilled and screws are not over torqued. Follow manufacturer's installation instructions.
L. Reseal exposed tops and bottom rails of any doors that required site alteration with an approved wood sealer.
M. Hardware installation: See Division 08 Section "Door Hardware."
N. Clean prefinished doors with a rag in concert with water or a household cleaner such as Fantastik, Formula 409, or a comparable product approved by door manufacturer. Following use of the cleaner, the cleaned surface should be "rinse wiped" with clean water and wiped dry to remove any remaining residue.
O. ADJUSTING
P. Operating: Re-hang or replace doors that do not swing or operate freely.
Q. Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.
R.

END OF SECTION

SECTION 087100 - DOOR HARDWARE

1.1 QUALITY ASSURANCE
A. Door Hardware Installer Qualifications: An experienced and factory trained Installer who has completed both standard and electrified builders hardware and integrated access control installations similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
B. Door Hardware Supplier Qualifications: Door hardware supplier with warehousing facilities in Project's vicinity which is not more then a half day of travel from the jobsite and who employs a qualified Architectural Hardware Consultant or equivalent experience available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
C. Architectural Hardware Consultant Qualifications: A person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant (AHC) and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.
D. Source Limitations: Obtain each type and variety of aluminum, steel and wood door hardware from the same single source manufacturer and supplier, unless otherwise indicated.
E. Fire-Rated Door Assemblies: Furnish door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 (neutral pressure at 40" above sill) or UL-10C.
1. Test Pressure: Positive pressure labeling.

1.1 WARRANTY
A. General Warranty: 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 made by Contractor under requirements of the Contract Documents.
B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of standard, electrified hardware and access control hardware that fails in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
C. Warranty Period: Two year from date of Substantial Completion, unless otherwise indicated.
D. Special Warranty Periods:
1. Five years for mortise locksets.
2. Five years for exit devices.
3. Ten years for manual door closers.
4. One year for electromechanical door hardware.
5. Five years for Thresholds, Door Sweeps, Gasketing, Perimeter Weatherstripping.
E. Extended Warranty: As requested by either the Owner furnish a separate optional extended warranty and maintenance contract for access control system and power assist operated openings. Version upgrades and "fix" releases to the software, beyond the general warranty time period, are available at no extra charge only if the end user is under a valid extended warranty and maintenance contract.

1.2 MAINTENANCE SERVICE
A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools to Owner and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
B. Maintenance Service: Beginning at Substantial Completion, furnish six months' full maintenance by skilled employees of door hardware suppliers and installers. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Furnish parts and supplies as used in the manufacture and installation of original products.

1.3 HINGES
A. Standards: BHMA Certified products complying with the following:
1. Butts and Hinges: BHMA A156.1.
2. Continuous Geared Hinges: BHMA A156.26.
3. Pivots: BHMA A156.4.
4. Template Hinge Dimensions: BHMA A156.7.
5. Self-Closing Hinges: BHMA A156.17.
6. Floor Hinges: BHMA A156.4.
B. Quantity: Furnish the following, unless otherwise indicated:
1. Two Hinges: For doors with heights up to 60 inches
2. Three Hinges: For doors with heights 61 to 90 inches
3. Four Hinges: For doors with heights 91 to 120 inches
4. For doors with heights more than 120 inches, furnish 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
C. Hinge Size: Furnish the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
D. Hinge Weight and Base Material: Unless otherwise indicated, furnish the following:
1. Exterior Doors: Heavy weight, non-ferrous, ball bearing hinges.
2. Interior Doors: Heavy weight, ball bearing hinges unless Hardware Sets indicate standard weight.
a. Standard weight hinges can be used at Mechanical, Electrical, IDF, Data, and Offices with out closers openings, regardless of specified hinge weight in hardware sets.
E. Hinge Height Clarifications: Where uneven door leafs occur, the widest door leaf in the pair determines the height and weight of the hinges on the inactive and active door leafs; to ensure equal size hinges on opening.
F. Hinge Weight Clarification: If heavy weight hinges are specified in hardware sets for interior aluminum frames then standard weight hinges can be used. If aluminum frame opening has a door 42 inches or greater then provide an additional hinge in lieu of heavy weight or 5 inch hinges.
G. Hinge Options: Comply with the following where indicated in the Door Hardware Schedule or on Drawings:
1. Non-removable Pins: Furnish set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
a. Out-swinging exterior doors.
b. Out-swinging access controlled doors.
2. Electric Hinges: Furnish electric transfer hinges with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Furnish sufficient number of concealed wires to accommodate electric function of specified hardware.
H. Continuous-Geared Hinges (Aluminum): Minimum 0.120-inch thick, hinge leaves with minimum overall width of 4 inches; fabricated to full height of door and frame. Fabricate hinges non-handed and to template screw locations. Continuous hinges guaranteed for the life of the opening.
I. Continuous Barrel Hinges (Stainless Steel): Hinges to be made of 14 GA. type 304 Stainless Steel with concealed Teflon-coated stainless steel pin, and twin self-lubricated nylon bearings at each 2 inch knuckle. Fabricate hinges non-handed and to template screw locations.
J. Accessible Electrical Transfer Continuous Hinges: Furnish electric transfer continuous hinges with a 12" removable hinge modification accessible without de-mounting door from the frame and standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Furnish sufficient number of concealed wires to accommodate electric function of specified hardware.
K. Electrical Power Transfer: Furnish EPT where it is required per exit device manufactures requirements and warranty for more then 1 amp of inrush for latch retraction of exit device bolt. Furnish prep in door, frame, and continuous hinge. Furnish a secure and unobtrusive means of channeling electrical wiring from the door frame into the door itself by concealing internal wires for low voltage electrified door hardware. Furnish an Electrical Power Transfer fully manufactured with metal.
1. Acceptable Manufacturers:
a. Securitron Door Controls (SN) – EL-CEPT-12/22 series
b. Von Duprin (VO) – EPT-10 Series
L. Furnish mortar guard enclosure on frames at each electrical hinge location specified.

1.4 DOOR BOLTS
A. Standards: Comply with the following:
1. Surface Bolts: BHMA A156.16.
2. Automatic and Self-Latching Flush Bolts: BHMA A156.3.
3. Manual Flush Bolts: BHMA A156.16.
B. Surface Bolts and Flush Bolts: BHMA Certified Grade 1.
C. Furnish bolts with top rod of sufficient length to allow bolt location approximately six feet from the floor regardless if detailed as such in hardware sets. Furnish dust proof strikes for bottom bolts. Surface bolts to be 8" in length, unless otherwise noted and U.L. listed for labeled fire doors.
D. Furnish Self-Latching flush bolts as follows:
1. Access control inactive door leaf.
2. Uneven inactive door leaf.
E. Bolt Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:
1. Mortise Flush Bolts: Minimum 3/4-inch throw.

1.5 LOCKS AND LATCHES
A. Standards: Comply with the following:
1. Mortise Locks and Latches: BHMA A156.13.
2. Bored Locks and Latches: BHMA A156.2.
3. Interconnected Locks and Latches: BHMA A156.12.
4. Auxiliary Locks: BHMA A156.5.
B. Mortise Locks: BHMA Certified Grade 1, Series 1000.
C. Bored Locks: BHMA Certified Grade 1, Series 4000.
D. Interconnected Locks: BHMA Certified Grade 2, Series 5000.
E. Auxiliary Locks: BHMA Certified Grade 1.
F. Lock Trim: Match the following design style:
1. Levers:
a. Best Access System (BE) – 15H/15D
b. Corbin Russwin Hardware (CR) - NSA/NZD
c. Sargent Manufacturing (SA) – LNL/LL
d. Schlage (SC) – 06A/RHO
G. Lock Functions: Function numbers and descriptions indicated in the Door Hardware Schedule comply with the following:
1. Mortise Locks: BHMA A156.13.
2. Bored Locks: BHMA A156.2.
3. Interconnected Locks: BHMA A156.12.
H. Lock Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:
1. Mortise Locks: Minimum 3/4-inchlatchbolt throw, with stainless steel bolt.
2. Bored Locks: Minimum 1/2-inchlatchbolt throw, 3/4" latchbolt throw at fire rated pairs.
3. Deadbolts: Minimum 1-inch bolt throw.
I. Backset: 2-3/4 inchesunless otherwise indicated.

1.6 CYLINDERS AND KEYING
A. Furnish Patented, High, Security cylinders utilizing a unique factory code pattern that is both geographically and time zoned protected. A letter of authorization under the letterhead of the End User must accompany purchases of any products which involve patented cylinders, keys and accessories. Manufacturers of patented security cylinders to allow the ability for both security and conventional cylinders to be used together under the same facility master or grandmaster key system. The End User is required to have the ability for on-site cylinder pinning and original key cutting.
B. Standards: Comply with the following:
1. Cylinders: BHMA A156.5.
2. Key Control System: BHMA A156.5.
C. Cylinder Grade: BHMA Certified Grade 1.
D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
1. Removable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.
E. Construction Keying: Comply with the following:
1. Construction Master keying: Furnish temporary construction master keyed cores that are replaceable by permanent cores. Furnish construction master keys in quantity as required by project Contractor.
F. Keying System: Unless otherwise indicated, furnish for a keying system complying with the following requirements:
1. New Grand Master Key System: Cylinders are factory keyed operated by a change key, master key, and a grand master key. Conduct keying meeting with End User to define and document keying system instructions and requirements.
G. Keys: Furnish nickel-silver keys complying with the following:
1. Stamping: Permanently inscribe each key with a visual key control number and as directed by Owner.
2. Quantity: Furnish the following:
a. Cylinder Change Keys (Per Key Set): Four.
b. Master Keys (Per Level): Five.
c. Grand Master Keys: Two.
d. Construction Control Keys: Two.
e. Permanent Control Keys: Two.
f. Extra Keyed Permanent Cores: Ten.
g. Extra Blank Keys: Fifty.
H. Key Registration List: Furnish keying transcript list to Owner's representative for lock cylinders.
I. Key Control System: Furnish one lockable cabinet for key control and storage for up to 150 percent capacity, type and model to be determined in the keying meeting with the owner. Furnish End User with one copy of "Key Wizard" key management software program.

1.7 STRIKES
A. Standards: Comply with the following:
1. Strikes for Bored Locks and Latches: BHMA A156.2.
2. Strikes for Mortise Locks and Latches: BHMA A156.13.
3. Strikes for Interconnected Locks and Latches: BHMA A156.12.
4. Strikes for Auxiliary Deadlocks: BHMA A156.5.
5. Dustproof Strikes: BHMA A156.16.
6. Electric Strikes: BHMA A156.5.
B. Strikes: Furnish 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 indicated, and as follows:
1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Furnish manufacturer's special strike box fabricated for aluminum framing.
C. Furnish electrified products with an in-line power controller that enables the hardware to operate from 12 to 32 volts. On board safety features shall include an in-line fuse to protect the hardware and host system from any possible reverse current surges. The controller shall regulate current to furnish continuous duty operation without the typical heat build up. Adding the in-line power controller with electrified products furnishes unlimited lifetime warranty of electrified products.

1.8 MULTI-POINT DEVICES
A. Standard: BHMA A156.3.
B. Multi-Point (Exit) Devices: BHMA Certified Grade 1.

1.9 ACCESSORIES FOR PAIRS OF DOORS
A. Standards: Comply with the following:
1. Coordinators: BHMA A156.3.

1.10 CLOSERS and POWER OPERATORS
A. Standards: Comply with the following:
1. Closers: BHMA A156.4.
2. Power Operators: BHMA A156.19.
B. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Furnish non-handed, factory-sized closers adjustable to meet field conditions and requirements for opening force.
C. Closer Options: As indicated in hardware sets, furnish door closer options including: delayed action, hold open arms, extra duty parallel arms, positive stop/hold open arms, compression stop/hold open arms, special mounting brackets, spacers and drop plates. Through bolt type mounting is required as indicated in the door hardware sets. Where through bolts are used, coordinate the color of bolt on opposite of device with BHMA finish color similar to the color of door finish surface.
1. Furnish Delayed Action (DA) feature in closers at Laboratories, Shipping and Receiving doors and where cart traffic is active.
2. Furnish shock absorbing arm such as Spring or Rubber Cushion at exterior outswing openings.
D. Power assist operators as surface mounted, electric low energy type conforming to ANSI A156.19 requirements and capable of meeting ANSI A117.1 guidelines. Outputs and relays required to be on board in the operator to allow for coordination of exit device latch retraction, electric strikes, magnetic locks, card readers, safety and motion sensors and specified auxiliary contacts.
1. Outputs and relays on board the operator allow for coordination of exit device latch retraction, electric strikes, magnetic locks, card readers, safety and motion sensors and specified auxiliary contacts.
2. Electronic Controls to be microprocessor controlled unit shall control the operation and switching of the swing power operator. The electronic control furnished with low voltage power supply for all means of actuation. Electronic encoder to determine absolute open and close position.

1.11 OPERATING and PROTECTIVE TRIM UNITS
A. Standard: Comply with BHMA A156.6.
B. Materials: Fabricate protection plates from the following:
1. Brass/Bronze and Stainless Steel: .050 inchesthick, beveled four sides (B4E) with countersunk screw holes.
C. Push-Pull Design: 1" Round with 10" Centers. Furnish 90 degree offset pulls at exterior openings.
D. Fasteners: Furnish manufacturer's designated fastener type as indicated in door hardware sets.
E. Furnish protection plates sized 2 inchesless than door width (LDW) on push side and 1 inch less door width on pull side by height specified in door hardware sets.
F. Coordinate stainless steel hinges, door edges, kickplates and armor plates with less then .09375 inches between meeting edges, regardless of specified sizes in hardware sets.

1.12 STOPS AND HOLDERS
A. Standards: Comply with the following:
1. Stops and Bumpers: BHMA A156.16.
2. Electromagnetic Door Holders: BHMA A156.15.
3. Combination Overhead Holders and Stops: BHMA A156.8.
4. Door Silencers: BHMA A156.16.
B. Stops and Bumpers: BHMA Certified Grade 1.
C. Provide Overhead Concealed stops at public spaces such as conference, corridors, and office spaces where wall or floor stops are not applicable condition.
D. Provide Overhead Surface stops at non-public spaces such as mechanical, electrical, storage spaces.
E. Floor Stops: For doors, unless wall or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic.
1. Where floor or wall stops are not appropriate, furnish overhead stops.
F. Silencers for Metal Door Frames: BHMA Grade 1; neoprene or rubber, minimum diameter 1/2 inchfabricated for drilled-in application to frame. Furnish (3) per single door and (2) per paired door frame if applied gasketing is not specified in Hardware Sets.

1.13 DOOR, GASKETING
A. Standard: Comply with BHMA A156.22.
B. General: Furnish continuous weatherstrip seal on exterior doors and smoke, light, or sound gasketing on interior doors where specified. Furnish non-corrosive fasteners for exterior applications.
1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame. Install header seal before mounting door closer arms.
2. Meeting Stile Astragals: Fasten to meeting stiles, forming seal when doors are closed.
3. Door Sweep: Apply to bottom of door, forming seal with threshold when door is closed.
C. Basic Sound Seal Requirement: Whether indicated on the drawings or not, furnish gasketing MCKS88BL at sound rated wall types and at the following areas for limiting of sound transmission: private offices, exams, conference, private toilets, corridor openings, rooms and similar sound sensitive area.
D. 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.
1. Furnish smoke labeled perimeter gasketing at all smoke labeled openings.
E. 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 indicated, based on testing according to UL-10C.
1. Intumescent Seals and Gasketing: Furnish concealed, Category A type gasketing systems on assemblies where an intumescent seal is required to meet IBC and UL-10C positive pressure labeling.
F. Provide Meeting Edges and Astragals at Pairs of Doors:
1. Meeting Edge Astragal Pair (Set) with Exit Devices and Cross Corridor Doors, and fire rated pairs:
a. Pemko Manufacturing (PE): 18041CNB
2. Meeting Edge Overlapping Astragal at with Doors with Bolts:
a. Pemko Manufacturing (PE): 355CPK

1.14 POWER SUPPLIES
A. Power Supplies: Furnish Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Modular unit in NEMA ICS 6, Type 4 enclosure. Furnish the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment. Third party listed and labeled for use with fire alarm systems. Power supply shall be furnished with a minimum of four (4) 4 Amp/hour batteries providing battery back up. An integral battery charging circuit shall be standard. Furnish key locking cover to prevent tampering. Furnish all control boards and relay panels to sufficiently operate the opening as described and intended per hardware sets. Subject to compliance with requirements, furnish products by one of the following:
1. Boxed Power Supplies:
a. Securitron Door Controls (SE) - BPS Series.

1.15 FABRICATION
A. Fasteners: Furnish door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Furnish screws according to manufacturers recognized installation standards for application intended.
1. Furnish manufactures templated and approved stainless steel screws and fasteners for stainless steel hardware specified in the hardware sets.
B. Mounting Accessories: Furnish drop plates, filler brackets, extended length screws, through bolts, and accessories for complete mounting with door, frame, light kits, applied molding and special applications as part of the base bid with complete installation per manufactures recommendations.
1. In healthcare facilities install surface mount magnetic locks on the pull side of the doors when specified in hardware sets and located on openings in corridors. Furnish all mounting brackets with finish and beauty covers.

1.16 FINISHES
A. Standard: Comply with BHMA A156.18.
B. Furnish 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 specified by referenced standards for the applicable units of hardware.
C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable and temporary protective covering before shipping to jobsite.
D. Finishes on locksets, latchsets and exit devices to incorporate an FDA recognized antimicrobial coating (MicroShield™) listed for use on medical and food preparation equipment that will suppress the growth and spread of a broad range of bacteria, algae, fungus, mold and mildew.
E. Furnish clear powder coat finish at exit devices located on exterior openings such as gates and at pool exit doors.

1.17 EXAMINATION
A. Examine doors and frames, 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. Examine roughing-in for electrical source power to verify actual locations of wiring connections before electrified door hardware installation.
C. Proceed with installation only after unsatisfactory conditions have been corrected.
D. 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.

1.18 INSTALLATION
A. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."
3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
B. Install each door hardware item to comply with manufacturer's 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 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
C. Furnish and coordinate concealed wood blocking for wall mount stops as detailed in Door Hardware Schedule.
D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

1.19 FIELD QUALITY CONTROL
A. The Contractor shall comply with AIA A201 1997 section 3.3.1 which reads as follows: "The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the contract Documents give other specific instructions concerning these matters."
B. Field Inspection: Supplier and Door Hardware Manufacturer will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

SECTION 088000 - GLAZING

1.1 PERFORMANCE REQUIREMENTS
A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

1.1 QUALITY ASSURANCE
A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.
B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
C. Source Limitations for Glass: Obtain insulating glass from single source from single manufacturer for each glass type.

1.2 WARRANTY
A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
1. Warranty Period: 10 years from date of Substantial Completion.
B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
1. Warranty Period: 10 years from date of Substantial Completion.

1.3 GLASS PRODUCTS, GENERAL
A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
1. Minimum Glass Thickness for Exterior Lites: Not less than 6.0 mm.
2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.
B. Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. For monolithic-glass lites, properties are based on units with lites 6.0 mm thick.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
4. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
5. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

1.4 GLASS PRODUCTS
A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.
B. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.
1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
2. For uncoated glass, comply with requirements for Condition A.
3. For coated vision glass, comply with requirements for Condition C (other coated glass).

1.5 FIRE-PROTECTION-RATED GLAZING
A. Fire-Protection-Rated Glazing, General: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252 for door assemblies.

1.6 GLAZING GASKETS
A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:

1.7 GLAZING SEALANTS
A. General:
1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. VOC Content: For sealants used inside of the weatherproofing system, not more than 250 g/L when calculated according to 40 CFR 59, Subpart D.
4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
a. Dow Corning Corporation; 790.
b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
c. Pecora Corporation; 890.
d. Tremco Incorporated; Spectrem 1.
C. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
a. Dow Corning Corporation; 795 .
b. GE Advanced Materials - Silicones; SilGlaze II SCS2800.
c. Pecora Corporation; 864 .
d. Tremco Incorporated; Spectrem 2.
D. Glazing Sealants for Fire-Rated Glazing Products: Products that are approved by testing agencies that listed and labeled fire-resistant glazing products with which they are used for applications and fire-protection ratings indicated.

1.8 GLAZING TAPES
A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 804.3 tape, where indicated.
2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

1.9 GLAZING, GENERAL
A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

SECTION 088838 - ELECTROCHROMIC SWITCHABLE PRIVACY GLASS

PART 1 - GENERAL
1.1 SUMMARY
A. Section Includes: Electrically activated, switchable privacy glass in framing assembly.
B. System Description: Electrochromic glazing consisting of polymer dispersed liquid crystal (PDLC) sandwiched between two transparent conductive films, laminated between two pieces of glass. When in powered state, panels are clear allowing full view and daylight to pass through. When unpowered, view is completely obscured with an appearance of frosted white.
1.2 ACTION SUBMITTALS
A. Product Data: For each product.
B. Shop Drawings: Show details of each type of glazing in conjunction with the appropriate framing system; indicate type of glass, sizes, shapes, glazing material, and quantity. Include details indicating glazing thickness, bite on glass, glass edge clearance, and depth of rabbet.
C. Samples for Verification: For each type of glass product and glazing material, in the form of 12 in (300 mm) square sample for glass (except clear) and of 12 in (300 mm) long samples for glazing materials.
1.3 INFORMATIONAL SUBMITTALS
A. Product Test Reports: Written reports based on evaluation of comprehensive tests performed by qualified testing agency indicating that each product complies with requirements.
B. Field Quality Control Reports: Written report of testing and inspection required by "Field Quality Control".
C. Qualification Data:
1. For firms and persons specified in "Quality Assurance" to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.
D. Warranty:
1. Provide manufacturer's written warranty covering materials stating obligations, remedies, limitations and exclusions.
2. Provide installer's written warranty covering installation stating obligations, remedies, limitations and exclusions.
E. Maintenance Data: To include in maintenance manuals.
1.4 QUALITY ASSURANCE
A. Manufacturer Qualifications: Manufacturer with not less than 5 years experience with successful production of products and systems similar to scope of this Project, with a record of successful in-service performance and completion of projects for a period of not less than 5 years, and with sufficient production capability, facilities, and personnel to produce required Work.
B. Installer Qualifications:
1. Experience: Installer's personnel with not less than 5 years experience in performing specified Work similar to scope of this Project, with a record of successful in-service performance and completion of projects for a period of not less than 5 years, and with sufficient production capability, facilities, and personnel to produce required Work.
2. Supervision: Installer shall maintain a competent supervisor who is at Project during times specified Work is in progress, and, who is experienced in installing systems similar to type and scope required for Project.
3. Manufacturer Acceptance: Installer shall be certified, approved, licensed, or acceptable to manufacturer to install products.
C. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. Laminated Glass: GANA Publications "Glazing Manual" and "Laminated Glazing Reference Manual".
D. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
1. Complying with CSPC 16 CFR 1201, Category II.
E. Structural Requirements: Design glass partition system to withstand live loads in accordance with applicable Building Code. Do not exceed maximum deflection recommended by partition manufacturer.
F. Single Source Responsibility: Furnish each type of product from single manufacturer. Provide secondary materials only as recommended by manufacturer of primary materials.
G. Pre-Installation Conference: Before Work begins, conduct conference at Project site.
1.5 DELIVERY, STORAGE, AND HANDLING
A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
1.6 COORDINATION
A. Coordinate installation of products and systems with interfacing and adjoining construction to provide a successful installation without failure.
1.7 WARRANTY
A. Manufacturer's Warranty: Furnish manufacturer's written material and labor warranty signed by an authorized representative using manufacturer's standard form agreeing to furnish materials and labor required to repair or replace work which exhibits material defects caused by manufacture or design of product. "Defects" are defined to include but not limited to deterioration or failure to perform as required.
1. Coverage of warranty includes but is not limited to the following: Electrical failure and delamination of materials, including failure in workmanship.
2. Warranty Period: Manufacturer shall warrant the products to be free from material and labor Defects for a period of 3 years from date of Substantial Completion
B. Installer's Warranty: Furnish installer's written workmanship warranty signed by an authorized representative using installer's standard form agreeing to provide labor required to repair or replace work which exhibits workmanship defects. "Defects" is defined to include but not limited to deterioration or failure to perform as required.
1. Warranty Period: Installer shall warrant the installation to be free from workmanship Defects for a period of 2 years from date of Substantial Completion.

PART 2 - PRODUCTS
2.1 MANUFACTURERS
A. Acceptable Manufacturers and Products: Subject to compliance with requirements, provide products by one of following:
1. Innovative Glass Corporation; LC Privacy Glass.
2. Lumivisions, Electric Smart Glass
2.2 GLASS PRODUCTS
A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
1. Minimum Glass Thickness for Exterior Lites: Not less than 6.0 mm.
B. Strength: Provide Kind HS heat-treated float glass or Kind FT heat-treated float glass, unless otherwise indicated.
C. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.
D. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.
1. Kind FT (fully tempered) where indicated, where recommended by manufacturer to comply with performance requirements or required for safety glazing.
2. Class 1 (clear) unless otherwise indicated
2.3 LAMINATED GLASS FABRICATION
A. Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
2.4 ELECTRICAL DEVICES AND CONNECTIONS
A. Power Supply or Transformer
1. For each fixed panel installation, provide a separate power supply/transformer for each 60 square feet or fraction thereof or panel surface. Power source of 120 VAC electricity must be supplied from a minimum 15A GFI circuit (20A dedicated circuit recommended). Connect power supply/transformer to an accessible standard double junction box connected to ground continuity.
2. Limitation: Not more than 18 panels per 20 A circuit
B. Wall Switch: Standard single pole switch
C. Timer: As recommended by the manufacturer to cycle power supply for continued proper operation of the system. Opaque (power off) and clear (power on) cycling is required for the period recommended by the manufacturer.
D. Hinged or Sliding Doors Power Transfer: Power supply location near the hinged side of door or window jamb and as required by Manufacturer recommendations.
2.5 FRAMING
A. Aluminum Framing: ASTM B 221, Alloy 6063-T5 or alloy and temper required to suit structural and finish requirements, not less than 0.062 inch thick. Billets shall be composed of at least 33% recycled aluminum.
B. Door Frames: Extruded aluminum, reinforced for hinges, strikes, and closers. Refer to Drawings for frame types.
1. 90-Minute Fire-Protection Rating (where indicated in schedule): Fabricate aluminum frame assemblies with a cold-formed, primed, interior steel liner.
C. Glazing Frames: Extruded aluminum, for glazing thickness indicated.
D. Ceiling Tracks: Extruded aluminum.
E. Trim: Extruded aluminum, not less than 0.062 inch thick, with removable snap-in glazing stops and door stops without exposed fasteners.
2.6 GLAZING SEALANTS
A. General:
1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
1. Manufacturers and Products: As recommended by partition manufacturer.
2.7 MISCELLANEOUS GLAZING MATERIALS
A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
2.8 FABRICATION OF GLAZING UNITS
A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
B. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION
3.1 EXAMINATION
A. Acceptance of Surfaces and Conditions: Examine substrates to receive products and systems and associated work for compliance with requirements and other conditions affecting performance. Proceed only when unsatisfactory conditions have been corrected in a manner complying with Contract Documents. Starting work within a particular area will be construed as acceptance of surface conditions.
B. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Minimum required face and edge clearances.
3. Effective sealing between joints of glass-framing members.
C. Proceed with installation only after unsatisfactory conditions have been corrected.
3.2 INSTALLATION, GENERAL
A. Installation Quality Standards: In addition to standards listed elsewhere, perform Work according to following, unless otherwise specified:
1. Respective manufacturer's written installation instructions.
2. Accepted submittals.
3. Contract Documents.
B. Glass Installation: Set glass in a manner which produces the greatest possible degree of uniformity in appearance.
1. Installations of the glass in dynamic frames such as operable windows and sliding doors must meet architectural specifications in section 088000.
2. Glazing to the exterior and wet interior conditions must be wet-sealed and impervious to moisture with provisions to allow for weeping of condensation that may infiltrate the system.
3. Pressure glazing systems without positive positioning stops are not to be used with this glass.
4. Place electrical connections properly to allow access by electrician.
5. Electrical connections must exit at the head condition of any framing system in wet environment applications.
C. Special Glazing Requirements
1. Interior Butt Glazing: Panels can be butt glazed using a minimum 7/16" thickness panel. A standard neutral cure structural silicone sealant may be used to close the joint. A minimum of a 1/4 inch separation between panels is recommended.
2. Swinging and Sliding Doors: Door package will be supplied complete with door header, door leaf, power transfer device, and all other hardware.

3.3 PREPARATION
A. General: Comply with manufacturer's instructions, recommendations, and specifications for cleaning and surface preparation. Surfaces shall have no defects, contaminants, or errors which would result in poor or potentially defective installation or would cause latent defects in Work.
B. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

3.4 GLAZING, GENERAL
A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
D. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
E. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
F. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

3.5 FIELD QUALITY CONTROL
A. Manufacturer's Field Service: Manufacturer's qualified technical representative shall periodically inspect Work to ensure installation is proceeding in accordance with manufacturer's designs, recommendations, instructions, and warranty requirements. Representative shall submit written reports of each visit indicating observations, findings, and conclusions of inspection.
1. Manufacturer's Technical Representative Qualifications: Direct employee of technical services department of manufacturer with experience in providing recommendations, observations, evaluations, and problem diagnostics.

3.6 CLEANING AND PROTECTION
A. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
B. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.
C. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Erick B.
Date: Aug 31, 2016
2015 INTERNATIONAL CODES & 2014 NEC

RSN: 1142126
Permit #: 16-1162585

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No.	Description	Date

STATE OF COLORADO
JOHN MENNO NAP
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	MD
Checked by	JMN

Sheet Title:
PROJECT SPECIFICATIONS

Sheet Number
G.203

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SECTION 092216 - NON-STRUCTURAL METAL FRAMING

1.1 PERFORMANCE REQUIREMENTS
A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.
B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

1.1 FRAMING SYSTEMS
A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
2. Protective Coating: ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized unless otherwise indicated.
B. Studs and Runners: Comply with ASTM C 645.
1. Steel Studs and Runners: Minimum base-metal thickness:
a. 25 gage unless indicated otherwise on Drawings or below.
b. Interior Metal Stud/Gypsum Board Assemblies, Typical Locations: Withstand lateral loading (air pressure) of 5 psf with deflection limit not more than L/240 of partition height.
c. Interior Metal Stud/Gypsum Board Assemblies at Atriums, Lobbies, Service Corridors, Exit Corridors, Elevator Lobbies, Vertical Shafts, and walls receiving plaster veneer: Withstand lateral loading (air pressure) of 7.5 psf with deflection limit not more than L/360 of partition height
d. Interior Metal Stud/Gypsum Board Assemblies at Locations with Ceramic Tile or Other Hard Surface Finishes: Withstand typical lateral loading (air pressure) with deflection limit not more than L/360 of partition height
e. Where wall mounted equipment, woodwork, and casework items are indicated or elsewhere as shown on Drawings, provide minimum 16 gage studs
f. At partitions scheduled to receive tile backing panels or ceramic tile finish, provide minimum 22 gage studs
g. At jambs of openings provide two minimum 20 gage studs
h. Refer to Division 5 for stud framing for studs carrying heavy vertical loads (manufactured stone masonry, stone tile thicker than ¾ inch, etc)
i. Depth: As indicated on Drawings.
C. Head Joints: Provide one of the following at all partitions that extend to underside of structure:
1. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
a. Products: Subject to compliance with requirements, provide one of the following:
b. Manufacturer's standard deep leg track for non fire rated partitions.
c. Dietrich Metal Framing; SLP-TRK Slotted Deflection Track (for non-rated partitions)
d. Fas Track, CEMCO (for fire rated partitions only).
D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
1. Minimum Base-Metal Thickness: 0.012 inch.
E. Cold-Rolled Channel Bridging: Steel, 0.053-inch minimum base-metal thickness, with minimum 1/2-inch- wide flanges.
1. Depth: As indicated on Drawings.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.
F. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
1. Minimum Base-Metal Thickness: 0.018 inch.
2. Depth: 7/8 inch
G. Resilient Furring Channels: 1/2-inch- deep, steel sheet members designed to reduce sound transmission.
1. Configuration: Asymmetrical.
H. Cold-Rolled Furring Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch- wide flanges.
1. Depth: 3/4 inch
2. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum uncoated-steel thickness of 0.0312 inch
3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

1.2 SUSPENSION SYSTEMS
A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.
B. Hanger Attachments to Concrete:
1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E 488 by an independent testing agency.
a. Type: Post-installed, expansion anchor.
2. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E 1190 by an independent testing agency.
C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.1055 inch in diameter.
D. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch and minimum 1/2-inch- wide flanges, ASTM A653-A (653M), G40 hot dipped galvanized coating.
1. Depth: 2-1/2 inches
E. Furring Channels (Furring Members):
1. Cold-Rolled Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch- wide flanges, 3/4 inch deep.
2. Hat-Shaped, Rigid Furring Channels: ASTM C645, 7/8 inch deep.
a. Minimum Base-Metal Thickness: 0.018 inch
3. Resilient Furring Channels: 1/2-inch- deep members designed to reduce sound transmission.
a. Configuration: Asymmetrical.
F. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.
1. Products: Subject to compliance with requirements, provide one of the following:
a. Armstrong World Industries, Inc.; Drywall Grid Systems.
b. Chicago Metallic Corporation; Drywall Grid System.
c. USG Corporation; Drywall Suspension System.

1.3 AUXILIARY MATERIALS
A. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
B. Isolation Strip at Exterior Walls: Provide the following:
1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

1.4 INSTALLATION, GENERAL
A. Installation Standard: ASTM-C754.
1. Gypsum Board Assemblies: Also comply with requirements in ASTM-C840 that apply to framing installation.
B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
C. Install bracing at terminations in assemblies.
D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

1.5 INSTALLING FRAMED ASSEMBLIES
A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
1. Unless indicated otherwise by assembly type, framing spacing shall be 16" O.C.
2. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

1.6 INSTALLING SUSPENSION SYSTEMS
A. Install suspension system components according to spacing indicated, but not greater than spacing required by referenced installation standards for assembly types.
1. Hangers: 48 inches o.c.
2. Carrying Channels (Main Runners): 48 inches o.c.
3. Furring Channels (Furring Members): 16 inches o.c.
B. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
C. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
D. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION

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SECTION 092900 - GYPSUM BOARD

1.1 PERFORMANCE REQUIREMENTS
A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119, UL, or by an independent testing agency as indicated on Drawings.
B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency as indicated on Drawings.

1.1 GYPSUM BOARD, GENERAL
A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

1.2 INTERIOR GYPSUM BOARD
A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. USG Corporation.
B. Gypsum Board, Type X: ASTM C 1396/C 1396M.
1. Thickness: 5/8 inch.
2. Long Edges: Tapered.
C. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces
1. Core: 5/8 inch, Type X or as otherwise indicated on partition type Drawings.
2. Long edges tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274

1.3 TILE BACKING PANELS
A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.
1. Products: Subject to compliance with requirements, provide one of the following:
a. USG Fiberrock Aqua-Tough Tile Backer Board.
2. Core: 5/8 inch, Type X.
3. Mold Resistance: ASTM D 3273, score of 10.

1.4 TRIM ACCESSORIES
A. Interior Trim: ASTM C 1047.
1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
B. Specialty Aluminum Trim: Extruded accessories of profiles and dimensions indicated.
1. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.

1.5 JOINT TREATMENT MATERIALS
A. General: Comply with ASTM C 475/C 475M.

1.6 AUXILIARY MATERIALS
A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
1. Laminating adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inchthick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
D. Acoustical Joint Sealant: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
1. Products: Subject to compliance with requirements, provide one of the following:
a. USG Corporation; SHEETROCK Acoustical Sealant.
2. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1.7 APPLYING AND FINISHING PANELS, GENERAL
A. Comply with ASTM C840, GA-216-2007

1.8 APPLYING INTERIOR GYPSUM BOARD
A. Install interior gypsum board in the following locations (unless noted otherwise):
1. Type X: Vertical surfaces unless otherwise indicated.
2. Flexible Type: Apply in double layer as required by project conditions at curved assemblies.
3. Abuse-Resistant Type: As indicated on Drawings.
4. Moisture- and Mold-Resistant Type: Within 36" of and surrounding damp locations where tile backer board is not used.
5. Glass-Mat Interior Type: at damp locations such as tub, individual shower, kitchens and utility rooms. Cement Backer Board: At critical areas of high humidity, including hot tubs, steam rooms, indoor pools, saunas, and gang showers.

1.9 APPLYING TILE BACKING PANELS
A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions. Install with 1/4-inch gap where panels abut other construction or penetrations.

1.10 INSTALLING TRIM ACCESSORIES
A. Control Joints: Install control joints at locations indicated on Drawings, and according to ASTM C 840 and in specific locations approved by Architect for visual effect, and as follows:
B. Wall: Control joints shall be installed where a wall or partition runs in an uninterrupted straight plane exceeding 30 linear feet, or 900 ft2
C. Ceiling with Perimeter relief: Control joints in interior ceilings with perimeter relief shall be installed so that linear dimensions between control joints do not exceed 50 ft or 2500 sq. ft
D. Ceiling, without perimeter relief: Control joints in interior ceilings without perimeter relief shall be installed so that linear dimensions between control joints do not exceed 30 ft
E. At acoustical or fire rated walls: Where a control joint occurs in an acoustical or fire rated system, blocking shall be provided behind the control joint by using a backing material such as 5/8 in. type X gypsum panel products, mineral fiber, or other tested equivalent
F. Interior Trim: Install in the following locations:
1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.
3. L-Bead: Use where indicated.
4. Curved-Edge Cornerbead: Use at curved openings.
G. Aluminum Trim: Install in locations indicated on Drawings.

1.11 FINISHING GYPSUM BOARD
A. Prefill open joints, rounded or beveled edges, and damaged surface areas.
B. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
C. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Warehouse storage areas.
3. Level 3: Beneath wall covering.
4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
a. Primer and its application to surfaces are specified in other Division 09 Sections.
5. Level 5: Where indicated on Drawings.
a. Primer and its application to surfaces are specified in other Division 09 Sections.

END OF SECTION

SECTION 093000 – TILING

1.1 SECTION INCLUDES
A. Tile for floor and wall applications.
B. Ceramic trim.
C. Non-ceramic trim.

1.2 SUBMITTALS
A. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
B. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
C. Samples: Mount tile and apply grout on two plywood panels, minimum 18 x 18 inches in size illustrating pattern, color variations, and grout joint size variations.
D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. Extra Tile: 1 percent of each size, color, and surface finish combination , but not less than 1 box of each type.

1.3 QUALITY ASSURANCE
A. Installer Qualifications: Company specializing in performing tile installation, with minimum of 5 years of documented experience.

1.4 DELIVERY, STORAGE, AND HANDLING
A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.5 FIELD CONDITIONS
A. Maintain ambient and substrate temperature of 50 degrees F during installation of mortar materials.

1.6 TILE
A. As scheduled.

1.7 TRIM AND ACCESSORIES
A. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
1. Applications: Use in the following locations:
a. Open Edges: Bullnose.
b. Inside Corners: Jointed.
c. Floor to Wall Joints: Cove base.
2. Manufacturer: Same as for tile.
B. Non-Ceramic Trim: Anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.
1. Manufacturers and Products: As scheduled.
C. Metal Edge Strips: L-shaped profile with 1/8 inch wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
1. Material and Finish:
a. E - Stainless Steel Type 304 = V2A
2. Height: Match tile and setting bed thickness.
3. Basis of Design: Schluter; SCHIENE.
4. At all Shower and wet locations, provide Schluter Deitre Membrane throughout for installation of floors and walls.

1.8 SETTING MATERIALS
A. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
1. Application(s): Use this type of bond coat where indicated and where no other type of bond coat is indicated.
2. Products:
a. Custom Building Products; MegaLite: www.custombuildingproducts.com.
b. LATICRETE International, Inc ; LATICRETE 254 Platinum: www.laticrete.com.
c. ProSpec, an Oldcastle brand ; Permalastic System: www.prospec.com.

1.9 GROUTS
A. Manufacturers:
1. Custom Building Products: www.custombuildingproducts.com.
2. LATICRETE International, Inc: www.laticrete.com.
3. MAPEI Corporation: www.mapei.com.
B. Standard Grout: ANSI A118.6 standard cement grout.
1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color(s): As scheduled.

1.10 THIN-SET ACCESSORY MATERIALS
A. Underlayment at Floors: Specifically designed for bonding to thin-set setting mortar; not primarily a waterproofing material and having the following characteristics:
1. Crack Isolation: Comply with ANSI A118.12.
2. Uncoupling Function: Allow for separation between membrane and the mortar adhering tile to the membrane when subjected to excessive substrate movement.
3. Do Not Use: Gypsum or cementitious based self-leveling underlayment.
4. Products:
a. Custom Building Products; SpiderWeb Uncoupling Mat: www.custombuildingproducts.com.
b. LATICRETE International, Inc ; LATICRETE Hydro Ban: www.laticrete.com.

1.11 EXAMINATION
A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.
D. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.
E. Verify that required floor-mounted utilities are in correct location.

1.12 PREPARATION
A. Protect surrounding work from damage.
B. Vacuum clean surfaces and damp clean.
C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

1.13 INSTALLATION - GENERAL
A. Install tile and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and The Tile Council of North America (TCNA) Handbook recommendations.
B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
E. Form internal angles square and external angles bullnosed.
F. Install non-ceramic trim in accordance with manufacturer's instructions.
G. Install thresholds where indicated.
H. Sound tile after setting. Replace hollow sounding units.
I. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
K. Grout tile joints. Use standard grout unless otherwise indicated.
L. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

1.14 INSTALLATION - FLOORS - THIN-SET METHODS
A. Over interior concrete substrates, install in accordance with The Tile Council of North America Handbook Method F125A, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
1. Use uncoupling membrane under all tile unless other underlayment is indicated.

1.15 INSTALLATION - WALL TILE
A. Over coated glass mat backer board on studs, install in accordance with The Tile Council of North America Handbook Method W245.

1.16 CLEANING AND PROTECTION
A. Clean tile and grout surfaces.
B. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 095113 – ACOUSTICAL PANEL CEILINGS

1.1 QUALITY ASSURANCE
A. Source Limitations:
1. Acoustical Ceiling Panel: Obtain each type through one source from a single manufacturer.
2. Suspension System: Obtain each type through one source from a single manufacturer.
B. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.
C. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:
1. Surface-Burning Characteristics: Provide acoustical panels with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:
a. Smoke-Developed Index: 450 or less.

1.1 ACOUSTICAL PANELS, GENERAL
A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface per ASTM E 795.
B. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.
C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

1.2 METAL SUSPENSION SYSTEMS, GENERAL
A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.
B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.
C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
1. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.
D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- diameter wire.
E. Hold-Down Clips: Where indicated, and at exterior locations, and with 10 feet of an exterior door, provide manufacturer's standard hold-down clips spaced 24 inches o.c. on all cross tees.
F. Clean-Room Gasket System: Where indicated in schedule, provide manufacturer's standard system, including manufacturer's standard gasket and related adhesives, tapes, seals, and retention clips, designed to seal out foreign material from and maintain positive pressure in clean room.

1.3 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING
A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
1. Armstrong World Industries, Inc.
2. Certainteed.
3. Chicago Metallic Corporation.
4. USG Interiors, Inc.
B. Unless noted otherwise in schedule, provide Wide-Face, Double-Web,Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 coating designation, with prefinished 15/16-inch- wide metal caps on flanges.
1. Structural Classification: Intermediate -duty system.
2. End Condition of Cross Runners: Override (stepped) or butt-edge type.
3. Face Design: Flat, flush.
C. Aluminum Grid: For use in MRI rooms.

1.4 ACOUSTICAL SEALANT
A. Products: Subject to compliance with requirements, provide one of the following:
1. Acoustical Sealant for Exposed and Concealed Joints:
a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
b. USG Corporation; SHEETROCK Acoustical Sealant.
B. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard non-sag, paintable, non-staining latex sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
C. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, non-hardening, non-skinning, non-staining, gunnable, synthetic-rubber sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), recommended for sealing interior concealed joints to reduce airborne sound transmission.

1.5 INSTALLATION
A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

1.1 RESILIENT BASE
A. Resilient Base Standard: ASTM F 1861.
1. Material Requirement: Type TS (rubber, vulcanized thermoset).
2. Manufacturing Method: Group I (solid, homogeneous).
3. Style: Cove (base with toe) at hard surfaces; straight (flat or toeless) at carpet.
B. Minimum Thickness: 0.125 inch.
C. Lengths: Coils in manufacturer's standard length.
D. Outside Corners: Job formed.
E. Inside Corners: Job formed.
F. Finish: Satin.

1.1 RESILIENT MOLDING ACCESSORY
A. Description: Cap for cove resilient floor covering, Carpet edge for glue-down applications, Reducer strip for resilient floor covering, Joiner for tile and carpet, Transition strips.
B. Material: Rubber.

1.2 INSTALLATION MATERIALS
A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
a. Cove Base Adhesives: Not more than 50 g/L.
b. Rubber Floor Adhesives: Not more than 60 g/L.
C. Floor Polish: Provide protective liquid floor polish products as recommended by resilient stair tread manufacturer.

1.3 RESILIENT BASE INSTALLATION
A. Comply with manufacturer's written instructions for installing resilient base.
B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

1.4 RESILIENT ACCESSORY INSTALLATION
A. Comply with manufacturer's written instructions for installing resilient accessories.

1.5 CLEANING AND PROTECTION
A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.
B. Perform the following operations immediately after completing resilient product installation:
1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.
C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from resilient stair treads before applying liquid floor polish.
1. Apply two coat(s).
E. Cover resilient products until Substantial Completion.

SECTION 096516 - RESILIENT SHEET FLOORING

1.1 QUALITY ASSURANCE
A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor covering installation and seaming method indicated.
1. Engage an installer who employs workers for this Project who are trained or certified by floor covering manufacturer for installation techniques required.

1.1 VINYL SHEET FLOOR COVERING
A. Unbacked Vinyl Sheet Floor Covering: ASTM F 1913, 0.080 inchthick, as indicated by product designations.
B. Vinyl Sheet Floor Covering with Backing: ASTM F 1303, as indicated by product designations.
1. Type (Binder Content): Type I, minimum binder content of 90 percent.
2. Wear-Layer Thickness: Grade 1.
3. Overall Thickness: As standard with manufacturer.
C. Wearing Surface: Smooth.
D. Sheet Width: As standard with manufacturer.
E. Seaming Method: Heat welded.

1.2 INSTALLATION MATERIALS
A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
B. Adhesives: Water-resistant type recommended by manufacturer to suit floor covering and substrate conditions indicated.
1. Use adhesives that have a VOC content of not more than 50 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
C. Seamless-Installation Accessories:
1. Heat-Welding Bead: Manufacturer's solid-strand product for heat welding seams.
1) Color: Match floor covering.
D. Integral-Flash-Cove-Base Accessories: As indicated in Master Schedule.
1. Cove Strip: 1-inch radius provided or approved by manufacturer.
2. Cap Strip: Square metal, vinyl, or rubber cap provided or approved by manufacturer.
3. Corners: Metal inside and outside corners and end stops provided or approved by manufacturer.
E. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer.

1.3 PREPARATION
A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of floor coverings.
B. Concrete Substrates: Prepare according to ASTM F 710.
1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft.in 24 hours.
b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
D. Do not install floor coverings until they are same temperature as space where they are to be installed.
1. Move floor coverings and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
E. Sweep and vacuum clean substrates to be covered by floor coverings immediately before installation.

1.4 FLOOR COVERING INSTALLATION
A. Comply with manufacturer's written instructions for installing floor coverings.
B. Extend floor coverings into toe spaces, door reveals, closets, and similar openings.
C. Install floor coverings on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of floor coverings installed on covers and adjoining floor covering. Tightly adhere floor covering edges to substrates that abut covers and to cover perimeters.
D. Adhere floor coverings to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
E. Seamless Installation:
1. Heat-Welded Seams: Comply with ASTM F 1516. Rout joints and use welding bead to permanently fuse sections into a seamless floor covering. Prepare, weld, and finish seams to produce surfaces flush with adjoining floor covering surfaces.
F. Integral-Flash-Cove Base: Cove floor coverings up vertical surfaces a dimension as indicated. Support floor coverings at horizontal and vertical junction by cove strip. Butt at top against cap strip.
1. Install metal corners at inside and outside corners.

1.5 CLEANING AND PROTECTION
A. Comply with manufacturer's written instructions for cleaning and protection of floor coverings.
B. Perform the following operations immediately after completing floor covering installation:
1. Remove adhesive and other blemishes from floor covering surfaces.
2. Sweep and vacuum floor coverings thoroughly.
3. Damp-mop floor coverings to remove marks and soil.
C. Protect floor coverings from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor covering before applying liquid floor polish. Apply two coats.

SECTION 096519 - RESILIENT TILE FLOORING

1.1 SOLID VINYL FLOOR TILE
A. Tile Standard: ASTM F 1700.
1. Class: As indicated by product designations.
2. Type: Type A, smooth surface.
B. Thickness: 0.080 inch minimum.
C. Size: As scheduled.
D. Seaming Method: Standard.

1.1 RUBBER FLOOR TILE
A. Tile Standard: ASTM F 1344, Class I-A, homogeneous rubber tile, solid color.
B. Hardness: Not less than 85 as required by ASTM F 1344, measured using Shore, Type A durometer per ASTM D 2240.
C. Wearing Surface: Smooth.
1. Molded-Pattern Figure: As scheduled.
D. Thickness: 0.125 inch
E. Size: As scheduled.
F. Seaming Method: Standard.

1.2 VINYL COMPOSITION FLOOR TILE
A. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.
B. Wearing Surface: Smooth.
C. Thickness: 0.125 inch.
D. Size: 12 by 12 inches.

1.3 VINYL PLANKS
A. Vinyl Plank Flooring: Meeting ASTM F 1700.
1. Class: As indicated by product designations.
2. Type: Type B, embossed surface.
3. Thickness: 0.080 inch minimum.
4. Size: 3 by 36 inches.

1.4 INSTALLATION MATERIALS
A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
B. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.
1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
a. VCT and Asphalt Tile Adhesives: Not more than 50 g/L.
b. Rubber Floor Adhesives: Not more than 60 g/L.
C. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer.

1.5 PREPARATION
A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
B. Concrete Substrates: Prepare according to ASTM F 710.
1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft.in 24 hours.
b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75% relative humidity level measurement.
C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
D. Do not install floor tiles until they are same temperature as space where they are to be installed.
1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

1.6 FLOOR TILE INSTALLATION
A. Comply with manufacturer's written instructions for installing floor tile.
B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
1. Lay tiles in pattern indicated on Drawings..
C. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
D. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

1.7 CLEANING AND PROTECTION
A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.
B. Perform the following operations immediately after completing floor tile installation:
1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.
C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor tile surfaces before applying liquid floor polish.
1. Apply per manufacturer's recommendation.
E. Cover floor tile until Substantial Completion.

SECTION 098116 – ACOUSTICAL BLANKET INSULATION

1.1 QUALITY ASSURANCE
A. Source Limitations: Obtain each type of building insulation through one source.
B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
1. Surface-Burning Characteristics: ASTM E 84.
2. Fire-Resistance Ratings: ASTM E 119.
3. Combustion Characteristics: ASTM E 136.

1.1 ACOUSTICAL INSULATION
A. Unfaced Mineral-Fiber Blanket Insulation (in walls): ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
B. Unfaced, Flexible Glass-Fiber Board Insulation (above ceilings): ASTM C 612, Type IA; ASTM C 553, Types I, II, and III; or ASTM C 665, Type I; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively; and of the following properties:
1. Nominal density of 1.0 lb/cu. ft., thermal resistivity of 3.7 deg F x h x sq. ft./Btu x in. at 75 deg F.
2. Nominal density of not less than 1.5 lb/cu. ft. nor more than 1.7 lb/cu. ft., thermal resistivity of 4 deg F x h x sq. ft./Btu x in. at 75 deg F.
3. Combustion Characteristics: Passes ASTM E 136.

1.2 INSTALLATION
A. Install mineral-fiber blankets in cavities formed by framing members according to the following requirements:
1. Use blanket widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
2. Place blankets in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping stapling flanges to flanges of metal studs.

SECTION 099100 - PAINTING

1.1 QUALITY ASSURANCE
A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with 3 years experience.
B. Applicator: Company specializing in commercial painting and finishing with 2 years experience.
C. Product Labels: Include manufacturer's name, type of paint, stock number, color and label analysis on label of containers.

1.1 REGULATORY REQUIREMENTS
A. Conform to applicable building code for flame spread/fuel contribution/smoke development rating requirements for finishes.
B. Comply with applicable city, county, state, and federal requirements and ordinances regarding maximum VOC (Volatile Organic Compound) content of all coatings.

1.2 TESTS
A. Provide periodic testing with Wet Film Thickness gage to verify that proper thickness of finish coatings are being applied.

1.3 FIELD SAMPLES
A. Provide field sample panel, 96 inches long by 96 inches wide, illustrating each coating color, texture, and finish intended for use.
B. Locate where directed.
C. Accepted sample may remain as part of the Work.

1.4 MANUFACTURERS
A. Acceptable Manufacturers: Subject to compliance with requirements indicated, provide products of one of the following:
1. Basis of Design: Sherwin-Williams.
B. Materials selected for coating systems for each type surface shall be product of a single manufacturer unless otherwise specified. Secondary products such as linseed oil, turpentine and shellacs shall be first quality products of a reputable manufacturer.

1.5 MATERIALS
A. Coatings: Ready mixed. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating with good flow and brushing properties; capable of drying or curing free of streaks or sags.
B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.
C. Patching Materials: Latex filler.

1.6 INTERIOR PAINT SCHEDULE
A. Gypsum Board:
1. Sherwin-Williams Latex, Semi-gloss finish.
a. Primer: Sherwin Williams ProMar 200 0-VOC Interior Latex Primer
b. Second Coat: Sherwin Williams ProMar 200 0-VOC Interior Latex Semi-gloss
c. Third Coat: Same as second.
B. Shop Primed Ferrous Metal: (Interior door and Window Casings)
1. Sherwin-Williams; Pro Classic Interior Acrylic Latex, Semi-gloss.
a. Primer: Sherwin Williams Pro Classic Interior Acrylic Latex Semi-Gloss
b. Second Coat: Sherwin Williams Pro Classic Interior Acrylic Latex Semi-Gloss
c. Top Coat: Same as second.

1.7 PREPARATION
A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.
B. Correct minor defects and clean surfaces which affect work of this Section. Remove existing coatings which exhibit loose surface defects.
C. Shellac and seal marks which may bleed through surface finishes.
D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
E. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.
F. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
G. Concrete Floors: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid- alkali balance is achieved. Allow to dry.
H. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.
I. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
J. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
K. Plaster Surfaces: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
L. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
M. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
N. Aluminum with Alodine Finish: Clean by lightly scuff with sandpaper. Remove all dust.
O. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
P. Interior Wood Items Schedule to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.
Q. Shop Finished Items: Finish in accordance with AWI standards and guide lines.
R. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

1.8 SURFACE PREPARATION OF PREVIOUSLY COATED SURFACES
A. General:
1. Remove cracked and deteriorated sealants and calking.
2. Remove chalk deposits and loose, blistered, peeling, scaling, or crazed finish to bare base material or sound substrate by scraping and sanding.
3. Wash surfaces with solution of TSP to remove wax, oil, grease, and other foreign material; rinse, and allow to dry. Exercise caution that TSP solution does not soften existing coating.
4. Abrade glossy surfaces by sanding or wiping with liquid de-glosser.
5. Remove mildew as specified above.
6. Test compatibility of existing coatings by applying new coating to small, inconspicuous area. If new coatings lift or blister existing coatings, request recommendation from Architect.
7. Apply specified primer to surfaces scheduled to receive coatings.
B. Gypsum Wallboard:
1. Fill cracks and voids with spackling compound.
2. Apply primer over bare surfaces and newly applied texture coatings.
C. Metal:
1. Remove rust from surfaces to bare metal in accordance with SP3 "Power Tool Cleaning".
2. Exercise care not to remove galvanizing.
3. Complete preparation as specified for new work.

1.9 APPLICATION
A. The intent of these Specifications is to produce the highest quality appearance of paint and finish surfaces. Employ skilled mechanics only. The proper preparation of all surfaces will be strictly enforced and wherever finished surfaces show any defects due to improper preparation, workmanship, etc., the defects shall be removed and the work refinished at the expense of the Contractor.
B. Apply products in accordance with manufacturer's instructions. Final finish coats shall have visual evidence of solid hiding and uniform appearance, and shall be free and smooth of brush marks, streaks, sags, runs, laps, or skipped areas.

1.10 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT
A. Paint shop primed equipment. Paint shop prefinished items where exposed to view in finished spaces. In mechanical rooms, repair shop pre-finished coatings which have been scratched or otherwise damaged with identical touch-up paint. Sand prior to touching up as required.
B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
C. Paint grilles, registers, diffusers, and speaker grilles to match adjacent wall and ceiling surfaces, except that factory pre-finished items need not be painted if installed in a suspended acoustical ceiling system where the acoustical panels match the mechanical or electrical item color.
D. In finished spaces, prime and paint exposed pipes, conduit, boxes, ducts, hangers, brackets, collars and supports. Paint to match adjacent surfaces.
E. Repair or replace identification markings on mechanical or electrical equipment when painted accidentally.
F. Paint interior surfaces of air ducts and convectors that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector to match face panels.
G. Paint surfaces of plywood backboards for electrical and telephone equipment before installing equipment.
H. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.
I. Paint exposed air handlers, roof ventilators, goose necks, exhaust fans and other items on the roof with 2 coats exterior enamel. Prepare surfaces in accordance with the base metal or primer as specified herein.
J. Paint concrete support bases with gray floor deck enamel.
K. Pipe hangers and other supports need not be painted except where installed in crawl spaces, where they shall be painted with a thick coat of asphaltic paint.

SECTION 102600 - WALL AND DOOR PROTECTION

PART 1 - GENERAL
1.1 SUMMARY
A. Section Includes:
1. Corner guards.
2. Protective wall coverings.
1.2 QUALITY ASSURANCE
A. Surface-Burning Characteristics: Provide impact-resistant, plastic wall protection units with surface-burning characteristics as determined by testing identical products per ASTM E 84, NFPA 255, or UL 723 by UL or another qualified testing agency.

PART 2 - PRODUCTS
2.1 MATERIALS
A. PVC Plastic: ASTM D 1784, Class 1, textured, chemical- and stain-resistant, high-impact-resistant PVC or acrylic-modified vinyl plastic with integral color throughout; extruded and sheet material, thickness as indicated.
1. Impact Resistance: Minimum 25.4 ft-lbf/in. of notch when tested according to ASTM D 256, Test Method A.
2. Chemical and Stain Resistance: Tested according to ASTM D 543.
3. Self-extinguishing when tested according to ASTM D 635.
4. Flame-Spread Index: 25 or less.
5. Smoke-Developed Index: 450 or less.
B. Polycarbonate Plastic Sheet: ASTM D 6098, S-PC01, Class 1 or 2, abrasion resistant; with a minimum impact-resistance rating of 15 ft-lbf/in. of notch when tested according to ASTM D 256, Test Method A.
C. Fasteners: Aluminum, nonmagnetic stainless-steel, or other non-corrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.
D. Adhesive: As recommended by impact-resistant plastic wall protection manufacturer and with a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2.2 CORNER GUARDS
A. Surface-Mounted, Resilient, Plastic Corner Guards [Insert drawing designation]: Assembly consisting of snap-on plastic cover installed over continuous retainer; including mounting hardware; fabricated with 90- or 135-degree turn to match wall condition.
1. Cover: Extruded rigid plastic, minimum 0.100-inch wall thickness; as follows:
a. Profile, Color, Texture, Height: As scheduled.
b. Basis of Design: As scheduled.
2. Retainer: Minimum 0.060-inch- thick, one-piece, extruded aluminum.
3. Retainer Clips: Manufacturer's standard impact-absorbing clips.
4. Top and Bottom Caps: Prefabricated, injection-molded plastic; color matching cover; field adjustable for close alignment with snap-on cover.
B. Surface-Mounted, Metal Corner Guards: Fabricated from one-piece, formed or extruded metal with formed edges; with 90- or 135-degree turn to match wall condition.
1. Material: Stainless steel, Type 304.
a. Thickness: Minimum 0.0500 inch.
b. Finish: Directional satin, No. 4.
2. Wing Size: Refer to Finish Legend.
3. Corner Radius: 1/8 inch.
4. Mounting: Flat-head, countersunk screws through factory-drilled mounting holes.
2.3 IMPACT-RESISTANT WALL COVERINGS
A. Impact-Resistant Sheet Wall Covering: Fabricated from plastic sheet wall-covering material.
1. Size: 48 by 120 inches for roll.
2. Sheet Thickness: 0.060 inch.
3. Color, Texture, Height: As scheduled.
4. Trim and Joint Moldings: Extruded rigid plastic that matches sheet wall covering color.
5. Mounting: Adhesive.
2.4 FABRICATION
A. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

PART 3 - EXECUTION
3.1 INSTALLATION
A. General: Install impact-resistant wall protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
1. Install impact-resistant wall protection units in locations and at mounting heights indicated on Drawings.
B. Impact-Resistant Wall Covering: Install top and edge moldings, corners, and divider bars as required for a complete installation.

END OF SECTION

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Erick B.
Date: Aug 31, 2016
2015 INTERNATIONAL CODES & 2014 NEC

RSN: 1142126
Permit #: 16-1162585

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No.	Description	Date

STATE OF COLORADO
JOHN MENNO NAP
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	MD
Checked by	JMN

Sheet Title:

PROJECT SPECIFICATIONS

Sheet Number
G.204

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

1.1 SECTION INCLUDES
A. Accessories for toilet rooms, bathrooms, and utility rooms.

1.2 ADMINISTRATIVE REQUIREMENTS
A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.3 SUBMITTALS
A. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.
B. All accessories shall be facility standard systems where applicable.

1.4 MATERIALS
A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
B. Keys: Provide 2 keys for each accessory to Owner; master key all lockable accessories.
C. Stainless Steel Sheet: ASTM A666, Type 304.
D. Stainless Steel Tubing: ASTM A269, Type 304 or 316.
E. Mirror Glass: Float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
F. Adhesive: Two component epoxy type, waterproof.
G. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof , security type.
H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

1.5 FINISHES
A. Stainless Steel: No. 4 satin brushed finish, unless otherwise noted.

1.6 TOILET ROOM AND SHOWER ACCESSORIES
A. As scheduled.

1.7 INSTALLATION
A. Install accessories in accordance with manufacturers' instructions.
B. Install plumb and level, securely and rigidly anchored to substrate.
C. Mounting Heights and Locations: As required by accessibility regulations and as indicated on drawings

END OF SECTION

SECTION 123661 – SIMULATED STONE COUNTERTOPS

1.1 SECTION INCLUDES
A. Countertops

1.2 QUALITY ASSURANCE
B. Fabricator Qualifications: Company specializing in fabricating engineered stone surfacing material with minimum 5 years experience.
C. Fire-Test-Response Characteristics: Provide surfacing material with the following surface-burning characteristics (if required by code) as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
   1. Class 1 per ASTM E 84 including:
      a. Flame Spread: 25 or less.

1.3 WARRANTY
D. Manufacturer's 10 year warranty for materials and labor to repair or replace defective materials.

1.4 MATERIALS
E. Solid Surfacing: Nonporous surfacing material composed of a unique blend of natural minerals and high-performance acrylic meeting the following criteria:
   1. Wear and Cleanability: Passes per ASI Z124.3.
   2. Abrasion Resistance: No loss of pattern per NEMA LD3-3.01 and ANSI Z 124.3: weight loss, 1,000 cycles, 0.2 gm; wear, 10,000 cycles, 0.008 inches.
   3. Boiling Water Surface Resistance: No change per NEMA LD3-3.05.
   4. High Temperature Resistance: No change per NEMA LD3-3.06.
   5. Conductive Heat Resistance: No change per NEMA LD3-3.08.
   6. Impact Resistance, Notched Izod: 0.28 ft-lbs/in of notch per ASTM D 256, Method A.
   7. Impact Resistance, Ball Drop: 3/4 inch thick sheet, 36 inches with 1/2 pound ball, no failure per NEMA LD3-3.03.
   8. Stain Resistance: Passes, Rating-41, modified with additional stains used, per ANSI Z124.3.
   9. Weatherability: No change, 1000 hours, per ASTM D 1499.
   10. Fungi and Bacteria: No attack per ASTM G 21, G 22.
   11. Water Absorption: 3/4 inch sheet, 0.04 percent after 24 hours, 0.94 percent long term, per ASTM D 570.
   12. Flammability: Solid colors per ASTM E 84.
      a. Flame Spread: Less than 5.
      b. Smoke Developed: Less than 15.
      c. Class Rating: 1.
   13. Thickness: 1/2 inch unless noted or scheduled otherwise.
   14. Colors, Sheen, and Basis of Design: As scheduled.

1.5 MISCELLANEOUS MATERIALS
F. Adhesives and Cements: Non-staining, type as recommended by engineered stone manufacturer.
   1. Waterproof, permanent material which will not induce mildew and fungus growth.
G. Joint Sealants: Two part color matched polyester knife grade adhesive.

1.6 FABRICATIONS
H. Assemble work at shop and deliver to job ready for installation. Manufacture in largest practical lengths with seams in least conspicuous locations.
I. Fabricate work square and to required lines.
J. Recess and conceal fasteners, connections, and reinforcing.
K. Design construction and installation details to allow for expansion and contraction of materials. Properly frame material with tight, hairline joints held rigidly in place.
L. Comply with adhesive manufacturer's recommendations for adhesive shelf life, pot life, working life, mixing, spreading, assembly time, time under pressure and ambient temperatures.
M. Fabricate countertops with backsplash and side splashes to profiles indicated or detailed.
N. Fabricate items to profiles shown with connections and supports as detailed or as required for proper installation per manufacturer's recommendations.
O. Provide cut-outs for plumbing fixtures and trim, washroom accessories, appliances, and related items. Confirm layout with manufacturer's cut-outs templates before beginning work. Round corners of cut outs and sand edges smooth.
P. Do not exceed manufacturer's recommended unsupported overhang distances.
Q. Finish exposed surfaces smooth and polish to a sheen indicated.
R. Radius corners and edges.

1.7 INSTALLATION
S. Install in accordance with manufacturer's printed instructions and approved shop drawings. Provide templates and rough in measurements.
T. Install surfacing true in line and plane, level, rigid and solidly adhered to substrate.
U. Pre-fit items: Adjust supports to make fit. Align joints over support framing.
   1. Provide intermediate supports to that material will not span more than 3 feet in any direction.
   2. Cantilevers shall not exceed 12 inches without supplementary support.
V. Apply dabs of mastic on supports; place items on supports and attach.
W. Install with minimum number of joints practical, using full-length pieces from maximum lengths available. Cope at returns and square at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Radius cutouts with minimum 3/8 inch corner radius.
X. Install splashes using adhesive. Apply adhesive to back surface only. Place thin bead of seam adhesive along edge where splashes seat.

1.8 TOLERANCES
Y. Variation in Component Size: Plus or minus 1/8 inch over 10'-0" length.
Z. Location of Openings: Plus or minus 1/8 inch from indicated location.
AA. Install countertops level to within 1/8 inch in 10 feet.
AB. Allow minimum 1/16 inch clearance between edges of countertops and adjacent walls.
AC. Maximum Offset From True Position: 1/8 inch.

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No.	Description	Date

STATE OF COLORADO
JOHN MENNO MAST
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

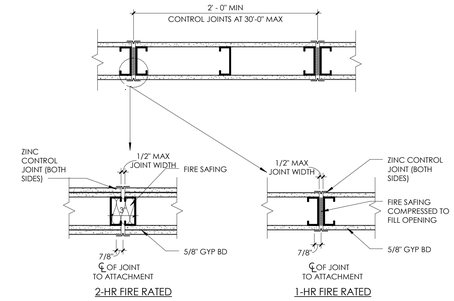
Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
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PROJECT SPECIFICATIONS

Sheet Number
G.205

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
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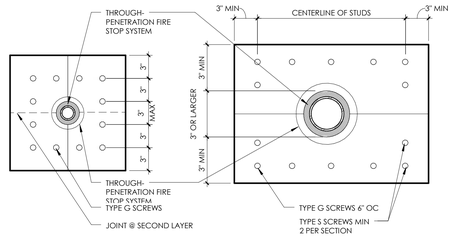
RSN: *1142126*
Permit #: *16-1162585*



2-HR FIRE RATED

1-HR FIRE RATED

9 - DETAILS OF JOINTS IN RATED GYP BD PARTITIONS
1 1/2" = 1'-0"



PENETRATION UP TO 3" DIA

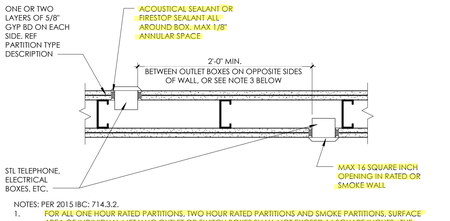
PENETRATION OVER 3" DIA



TYP SECTION

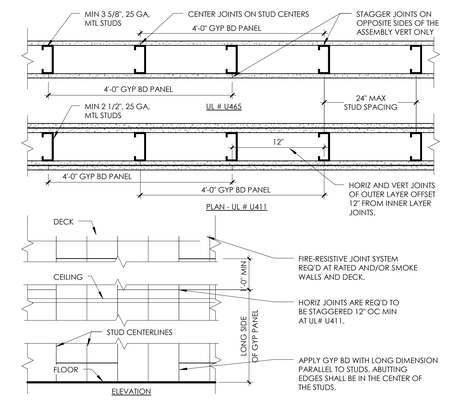
NOTES:
1. APPLY PATCH TO BOTH SIDES OF PARTITION.
2. FOR ABOVE CEILING AND "BACK OF HOUSE" LOCATIONS.

2 - OVERSIZED HOLES IN RATED PARITION
1 1/2" = 1'-0"

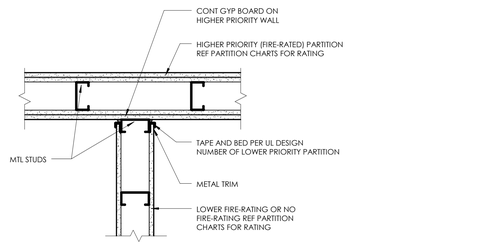


NOTES: PER 2015 IBC: 714.3.2.
1. FOR ALL ONE HOUR RATED PARTITIONS, TWO HOUR RATED PARTITIONS AND SMOKE PARTITIONS, SURFACE AREA OF INDIVIDUAL METALLIC OUTLET OR SWITCH BOXES SHALL NOT EXCEED 16 SQUARE INCHES. THE AGGREGATED SURFACE OF ALL BOXES SHALL NOT EXCEED 100 SQUARE INCHES PER 100 SQUARE FEET OF WALL AREA. BOXES WHICH EXCEED THESE STANDARDS SHALL BE RECESSED AS SHOWN IN "RECESSED WALL CABINET DETAIL". BOXES < 16 SQ IN AND LOCATED ON OPPOSITE SIDES OF RATED FIRE SMOKE PARTITIONS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF 24 INCHES MINIMUM.
2. REFER TO THE A.500 SERIES FOR SOUND ATTENUATION DETAIL.
3. WHERE WALL CAVITY IS FILLED WITH MINERAL FIBER INSULATION, BOXES SHALL BE OF ANY MATERIAL AND SEPARATED BY NOT LESS THAN THE DEPTH OF THE WALL CAVITY.
4. MEMBRANE PENETRATIONS FOR LISTED ELECTRICAL OUTLETS ARE PERMITTED PROVIDED THEY HAVE BEEN TESTED FOR USE IN FIRE-RESISTANT RATED ASSEMBLIES.
5. UL DESIGN TESTED MOLDABLE PUTTY PADS MAY BE USED IN LIEU OF SEPARATING THE BOXES BY 24" AND TO PROTECT > 16" SQ BOXES.

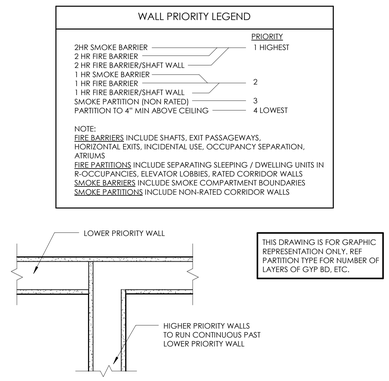
6 - BACK TO BACK ELECTRICAL OUTLETS
1 1/2" = 1'-0"



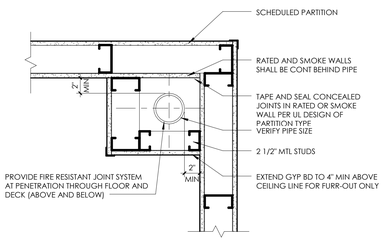
5 - LOCATION OF JOINTS IN RATED GYP BD PARTITION
1 1/2" = 1'-0"



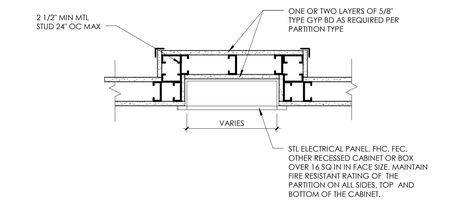
8 - INTERSECTION OF RATED WALL
1 1/2" = 1'-0"



3 - PARTITION PRIORITY LEGEND
1 1/2" = 1'-0"



7 - FURR OUT @ RAIN WATER LEADER
1 1/2" = 1'-0"



NOTES: PER 2015 IBC: 714.3.2.
1. MAINTAINING FIRE RATING AROUND A GREATER THAN 16 SQ IN CABINET IS NOT NECESSARY IF THE BOX HAS BEEN TESTED FOR USE IN A FIRE-RESISTANT RATED ASSEMBLY.
2. REFER TO THE A.500 SERIES FOR SOUND ATTENUATION DETAIL.

1 - RECESSED CABINETS IN RATED WALL
1 1/2" = 1'-0"

RSN: *1142126*
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No.	Description	Date

STATE OF COLORADO
JOHN MENNO MAY
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
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Checked by	JMN

Sheet Title:
CODE COMPLIANCE DETAILS

Sheet Number
G.301

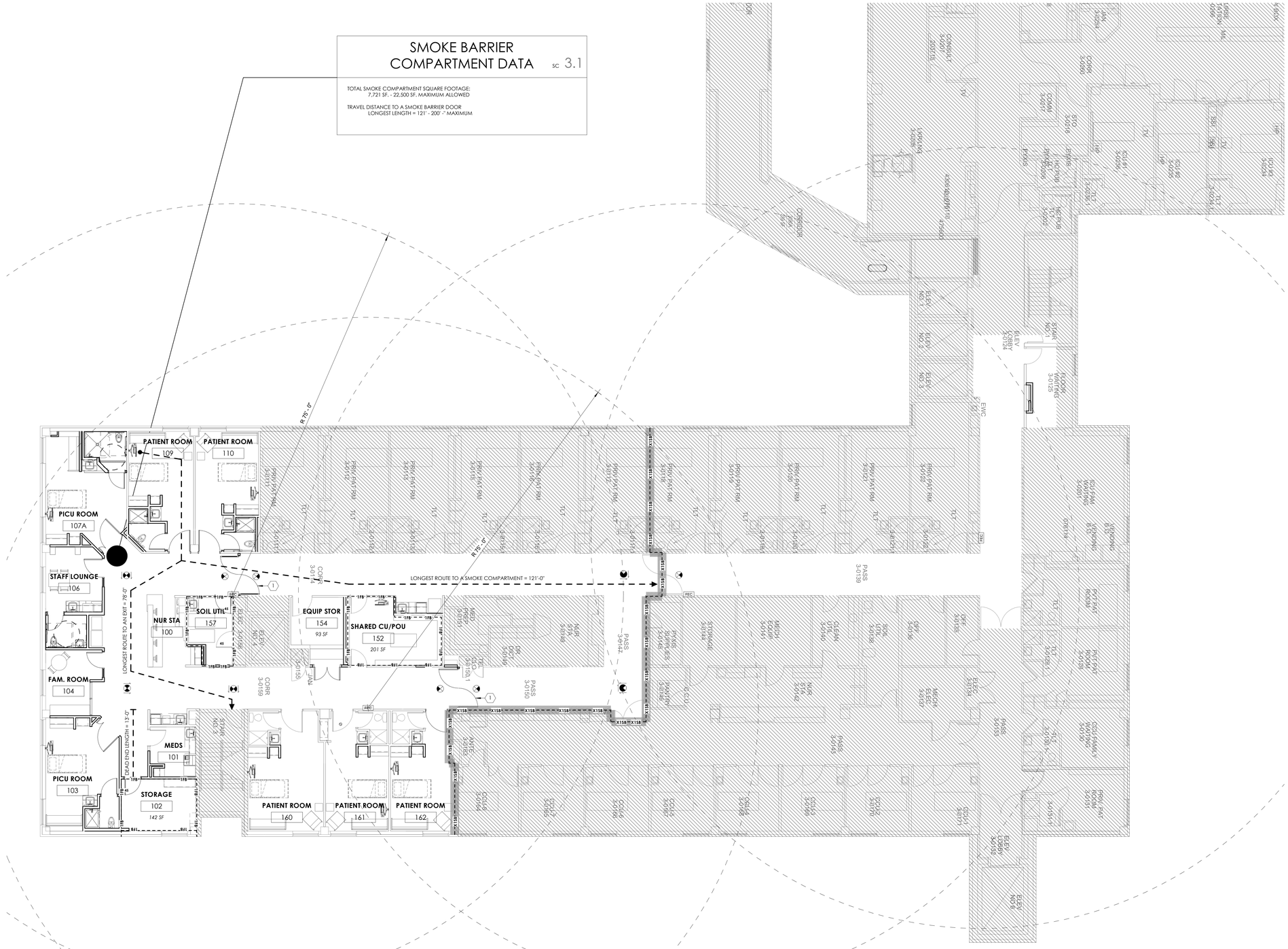
CONTRACT & SPECIFICATIONS ARCHITECTURE

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SMOKE BARRIER COMPARTMENT DATA SC 3.1

TOTAL SMOKE COMPARTMENT SQUARE FOOTAGE:
7,721 SF. - 22,500 SF. MAXIMUM ALLOWED

TRAVEL DISTANCE TO A SMOKE BARRIER DOOR
LONGEST LENGTH = 121' - 200' -" MAXIMUM



01 - CODE COMPLIANCE PLAN - LEVEL 03
1/8" = 1'-0"

8/8/16 12:28:01 PM

CODE COMPLIANCE PLAN GENERAL NOTES

1. EXISTING WALLS SHOWN WITH NEW LIFE SAFETY RATINGS ARE TO BE UPGRADED TO THE NEW RATING, THE UPGRADING INCLUDES PROTECTING ALL OPENINGS IN THE PARTITION.
2. REFER TO ELECTRICAL DRAWINGS FOR LOCATION AND QUANTITY OF SMOKE DETECTORS.
3. DOORS IN CORRIDOR PARTITIONS SHALL BE INSTALLED TO RESIST THE PASSAGE OF SMOKE UNLESS NOTED OTHERWISE.
4. REFER TO THE G.300 SERIES FOR FIRE EXTINGUISHER CABINET DETAIL.
5. VERIFY THAT ALL EXISTING DOORS IN RATED WALLS ARE LABELED WITH THE APPROPRIATE MARK WITHIN THE SMOKE COMPARTMENTS THAT ARE IN THE SCOPE OF THIS WORK.
6. VERIFY THAT ALL EXISTING WALLS WITHIN MODIFIED SMOKE COMPARTMENTS THAT ARE LABELED AS FIRE RATED OR SMOKE TIGHT MEET THE REQUIREMENTS OF THE LABELING.
7. SMOKE COMPARTMENTS IN AREAS OUTSIDE OF THIS PROJECT SCOPE OF WORK ARE SHOWN FOR REFERENCE ONLY.
8. ALL CANOPIES WHERE VEHICLES SIT UNDER OR PASS THRU MUST BE SPRINKLERED PER NFPA.

OCCUPANT LOAD CALCULATIONS FOR LEVEL 03

OCCUPANCY LOADS HAVE NOT BEEN CHANGED FOR SCOPE OF WORK.

EXIT NUMBER & ARRANGEMENT FOR LEVEL 03

IBC TABLE 1014.3: COMMON PATH OF EGRESS TRAVEL	100'-0" ALLOWED	30' SHOWN
IBC TABLE 1016.2: EXIT ACCESS TRAVEL DISTANCE	200'-0" ALLOWED	121' SHOWN
NFPA 101: GREATEST TRAVEL DISTANCE TO AN EXIT (FROM AN EXIT ACCESS DOOR)	150'-0" ALLOWED	78' SHOWN
IBC 1021: NUMBER OF EXITS REQUIRED	X REQUIRED	NO NEW PROVIDED
IBC SECTION 1018.4: MAXIMUM DEAD END LENGTH	20'-0" MAXIMUM	13'-0" SHOWN

CODE COMPLIANCE LEGEND

- ××X158××X158×× EXISTING SMOKE BARRIER FOR COMPARTMENTATION, 1-HOUR FIRE RATING UNLESS OTHERWISE SHOWN ON PLANS.
- --1FB---1FB--- 1-HOUR FIRE BARRIER
- NEW PARTITION
- EXISTING PARTITION
- EXIT SIGN W/ DIRECTION
- FEC FIRE EXTINGUISHER & CABINET RECESSED (SCREENED IF EXISTING)
- 36" EXIT LOCATION AND WIDTH (IN INCHES)(SCREENED IF EXISTING)
- OUT OF SCOPE
- LONGEST ROUTE TO AN EXIT

CODE COMPLIANCE KEYNOTES

1 ACCESS CONTROL DOORS

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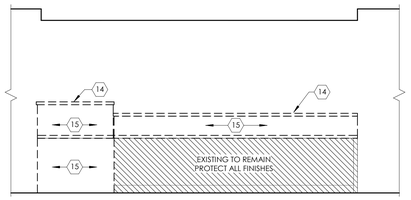
1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	SW
Checked by	JMN

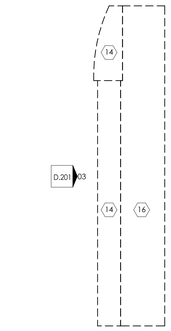
Sheet Title:
CODE COMPLIANCE PLANS

Sheet Number
G.401

CONTRACT & SPECIFICATIONS INFORMATION



03 - DEMOLITION NURSE STATION - WEST
3/8" = 1'-0"



02 - DEMOLITION NURSE STATION - LEVEL 03
3/8" = 1'-0"



01 - DEMOLITION PLAN - LEVEL 03
3/16" = 1'-0"

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DEMOLITION GENERAL NOTES

1. REFER TO SPECIFICATIONS FOR INTERIM LIFE SAFETY MEASURES.
2. CONSTRUCT TEMPORARY PARTITIONS AS REQUIRED BY PHASING TO MINIMIZE THE SPREAD OF DUST AND NOISE.
3. THESE DRAWINGS HAVE BEEN DEVELOPED FROM EXISTING DRAWINGS WHICH MAY NOT REFLECT ACTUAL FIELD CONDITIONS. VERIFY THESE DRAWINGS WITH EXISTING FIELD CONDITIONS AND NOTIFY THE ARCHITECT IMMEDIATELY OF INCONSISTENCIES BETWEEN THEM AND ACTUAL CONDITIONS BEFORE PROCEEDING WITH CONSTRUCTION.
4. REPAIR ANY DAMAGED FIRE RATED ASSEMBLIES TO THEIR ORIGINAL SPECIFICATION.
5. REMOVE EXISTING CONSTRUCTION AS INDICATED. TYPICAL WALL REMOVAL INCLUDES FINISHES AND MECHANICAL PLUMBING AND ELECTRICAL SYSTEMS CONTAINED THEREIN. REMOVE DOORS, CASEWORK, WINDOWS, FRAMES, AND OTHER FIXTURES AS REQUIRED. AFTER REMOVAL OF PIPE CHASES, PATCH HOLES IN EXISTING FLOORS OR WALLS TO REMAIN TO MEET ORIGINAL FIRE PROTECTION AND STRUCTURAL REQUIREMENTS. PATCH ADJOINING WALLS.
6. WHERE NEW FINISHES ARE TO BE INSTALLED ON EXISTING SURFACES, REMOVE THE EXISTING FINISH AND PREPARE SURFACE TO RECEIVE THE NEW FINISH.
7. COORDINATE WITH THE OWNER ANY ITEMS TO BE STORED AND/OR RELOCATED.
8. SEE MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR DEMOLITION OF UTILITIES.
9. FOR EXTENT AND LOCATION OF CHANNELING OF EXISTING FLOOR SLABS REFER TO MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS. IF EXISTING PIPING OR CONDUIT WORK (OTHER THAN THE DESIRED CONNECTION) IS ENCOUNTERED WHILE CHANNELING, NOTIFY THE ARCHITECT BEFORE CONTINUING.
10. VERIFY THAT CONSTRUCTION OF EXISTING WALLS WITHIN THE AREA OF RENOVATION (SMOKE COMPARTMENT) MEETS THE FIRE PROTECTION RATINGS DESIGNATED ON THE LIFE SAFETY PLANS. MAKE ANY REPAIRS OR MODIFICATIONS NECESSARY TO BRING EXISTING WALLS, DOORS, DUCTS, ETC. UP TO THE PROPER FIRE PROTECTION RATING. DOORS AND/OR FRAMES SHALL HAVE THE PROPER LABELING.
11. VERIFY THAT EXIT EGRESS IS MAINTAINED FOR ALL OCCUPIED AREAS OF THE BUILDING THROUGHOUT CONSTRUCTION.
12. DEMOLITION WORK SHALL BE EXECUTED IN CONFORMANCE WITH ALL CODES AND AS SET FORTH BY ALL GOVERNING AUTHORITIES.
13. BRACE ALL EXISTING STRUCTURES OR STRUCTURAL ELEMENTS AS NECESSARY DURING DEMOLITION.
14. DO NOT CUT ANY STRUCTURAL WORK WITHOUT PRIOR APPROVAL FROM THE DESIGN TEAM.
15. REPLACE OR REPAIR ANY EXISTING TO REMAIN FINISHES WHICH ARE DAMAGED DURING DEMOLITION (I.E. - CEILING GRID, CEILING TILE, WALL COVERING, FLOOR COVERING, ETC.
16. NOTIFY THE ARCHITECT IMMEDIATELY IF THE REMOVAL OF MECHANICAL EXISTING TO REMAIN ELECTRICAL, PLUMBING SYSTEMS OR COMPONENTS WILL ADVERSELY AFFECT THE OPERATION OF MEP SYSTEM OUTSIDE THE LIMIT OF EXISTING TO BE REMOVED - RE: NOTE 5 OF DEMOLITION GENERAL NOTES.
17. SCHEDULE ALL DEMOLITION WITH THE OWNER.

DEMOLITION LEGEND

- EXISTING PARTITION TO REMAIN
- EXISTING PARTITION TO BE REMOVED
- EXISTING FLOOR FINISH TO BE REMOVED WITHIN AREA INDICATED
- REMOVE TILE FLOORING AND PLYWOOD WALL BACKING. PREPARE FLOOR TO RECEIVE NEW FLOORING.
- OUT OF SCOPE

DEMOLITION KEYNOTES

1. SALVAGE DOOR AND HARDWARE. RETAIN HARDWARE FOR REUSE AT FUTURE DOORS. RETURN DOOR TO FACILITY STOCK.
2. SALVAGE AUTOMATIC OPENER
3. REMOVE MEDICAL GAS SHUT OFFS AND RELOCATE PER PLUMBING PLANS.
4. NOT USED.
5. REMOVE DRINKING FOUNTAIN AND CAP PLUMBING. RETURN PARTS TO FACILITY
6. SALVAGE BIN STORAGE AND PANELS
7. REMOVE SECTION OF WALL TILE. PREPARE EXISTING FRAMING FOR NEW GYPSUM BOARD.
8. SALVAGE CABINETS FOR REUSE. REFER TO A.561 FOR NEW LOCATIONS. RETURN UNUSED SECTIONS TO FACILITY AT FACILITY DISCRETION.
9. SALVAGE COUNTER TOP FOR REUSE. REFER TO A.561 FOR NEW USAGE LOCATIONS.
10. SALVAGE LOCKERS REFER TO A.203
11. SALVAGE DOOR #1, REUSE @ PATIENT ROOM 162
12. SALVAGE DOOR #2, REUSE @ FAMILY ROOM 106
13. SALVAGE DOOR #3, REUSE @ STAFF LOUNGE 107
14. REMOVE TRANSACTION TOP
15. REMOVE FINISH, PREPARE FOR NEW SOLID SURFACE
16. REMOVE COUNTER TOP
17. GIND DOWN FLOORING BY 3/16" TO ACCOMODATE THICKER FLOOR MATERIAL. REFER TO INTERIOR FLOOR PLAN FOR EXACT LOCATION OF MATERIALS.
18. RETURN EXISTING DOORS AND HARDWARE TO FACILITY
19. RELOCATE DOOR AND HARDWAR TO NEW MED ROOM
20. RELOCATE DOOR AND HARDWARE TO NEW SOILD ROOM LOCATION

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LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

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Project Number	16-018
Drawn by	SW
Checked by	JMN

Sheet Title:
DEMOLITION PLANS

Sheet Number
D.201

CONTRACT & SPECIFICATIONS CONFIDENTIAL



01 - DEMOLITION REFLECTED CEILING PLAN - LEVEL 03
3/16" = 1'-0"

DEMOLITION REFLECTED CEILING PLAN NOTES

1. REFER TO SPECIFICATIONS FOR INTERIM LIFE SAFETY MEASURES.
2. THESE DRAWINGS HAVE BEEN DEVELOPED FROM EXISTING DRAWINGS WHICH MAY NOT REFLECT ACTUAL FIELD CONDITIONS. VERIFY THESE DRAWINGS WITH EXISTING FIELD CONDITIONS AND NOTIFY THE ARCHITECT IMMEDIATELY OF INCONSISTENCIES BETWEEN THEM AND ACTUAL CONDITIONS BEFORE PROCEEDING WITH CONSTRUCTION.
3. REPAIR ANY DAMAGED FIRE RATED ASSEMBLIES TO THEIR ORIGINAL SPECIFICATION.
4. REPLACE OR REPAIR ANY EXISTING TO REMAIN FINISHES WHICH ARE DAMAGED DURING DEMOLITION, SUCH AS CEILING GRID, CEILING TILE, WALL COVERING, FLOOR COVERING, ETC.
5. REMOVE EXISTING CONSTRUCTION AS INDICATED. TYPICAL WALL CEILING INCLUDES FINISHES, MECHANICAL, PLUMBING AND ELECTRICAL SYSTEMS CONTAINED THEREIN. REMOVE CEILING TILES, GRID, AND OTHER FIXTURES AS REQUIRED. AFTER REMOVAL OF PIPE CHASES, PATCH HOLES IN EXISTING FLOORS, WALLS, AND CEILINGS TO REMAIN TO MEET ORIGINAL FIRE PROTECTION AND STRUCTURAL REQUIREMENTS.
6. WHERE NEW FINISHES ARE TO BE INSTALLED ON EXISTING CEILING SURFACES, REMOVE THE EXISTING FINISH AND PREPARE SURFACE TO RECEIVE THE NEW FINISH.
7. COORDINATE WITH THE OWNER ANY ITEMS TO BE STORED AND/OR RELOCATED.
8. SEE MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR DEMOLITION OF APPLICABLE UTILITIES.
9. VERIFY THAT CONSTRUCTION OF EXISTING WALLS WITHIN THE AREA OF RENOVATION (SMOKE COMPARTMENT) MEETS THE FIRE PROTECTION RATINGS DESIGNATED ON THE LIFE SAFETY PLANS.
10. VERIFY THAT EXIT EGRESS IS MAINTAINED FOR ALL OCCUPIED AREAS OF THE BUILDING THROUGHOUT CONSTRUCTION.
11. DEMOLITION WORK SHALL BE EXECUTED IN CONFORMANCE WITH ALL CODES AND AS SET FORTH BY ALL GOVERNING AUTHORITIES.
12. BRACE ALL EXISTING STRUCTURES OR STRUCTURAL ELEMENTS AS NECESSARY DURING DEMOLITION.
13. DO NOT CUT ANY STRUCTURAL WORK WITHOUT PRIOR APPROVAL FROM THE DESIGN TEAM.

DEMOLITION REFLECTED CEILING PLAN LEGEND

- EXISTING PARTITION TO REMAIN
- EXISTING PARTITION TO BE REMOVED
- REMOVE ALL CEILING (GRID TO REMAIN). ASSIGN COSTS TO ALTERNATE #2. REFER TO MPE FOR ADDITIONAL SCOPE.
- OUT OF SCOPE
- EXISTING SUPPLY DIFFUSER TO BE REMOVED
- EXISTING RETURN DIFFUSER TO BE REMOVED
- EXISTING LIGHT FIXTURE TO BE REMOVED
- EXISTING LIGHT FIXTURE TO BE RELOCATED

DEMOLITION REFLECTED CEILING PLAN NOTES

1. REMOVE CEILING GRID, TILE AND LIGHTS.
2. EXISTING TO REMAIN.
3. KEEP CEILING GRID. REMOVE ACT AND PREPARE FOR NEW TILES.
4. NOT USED
5. DEMOLISH GYPSUM CEILING.
6. REPLACE FIXTURE IN PLACE.

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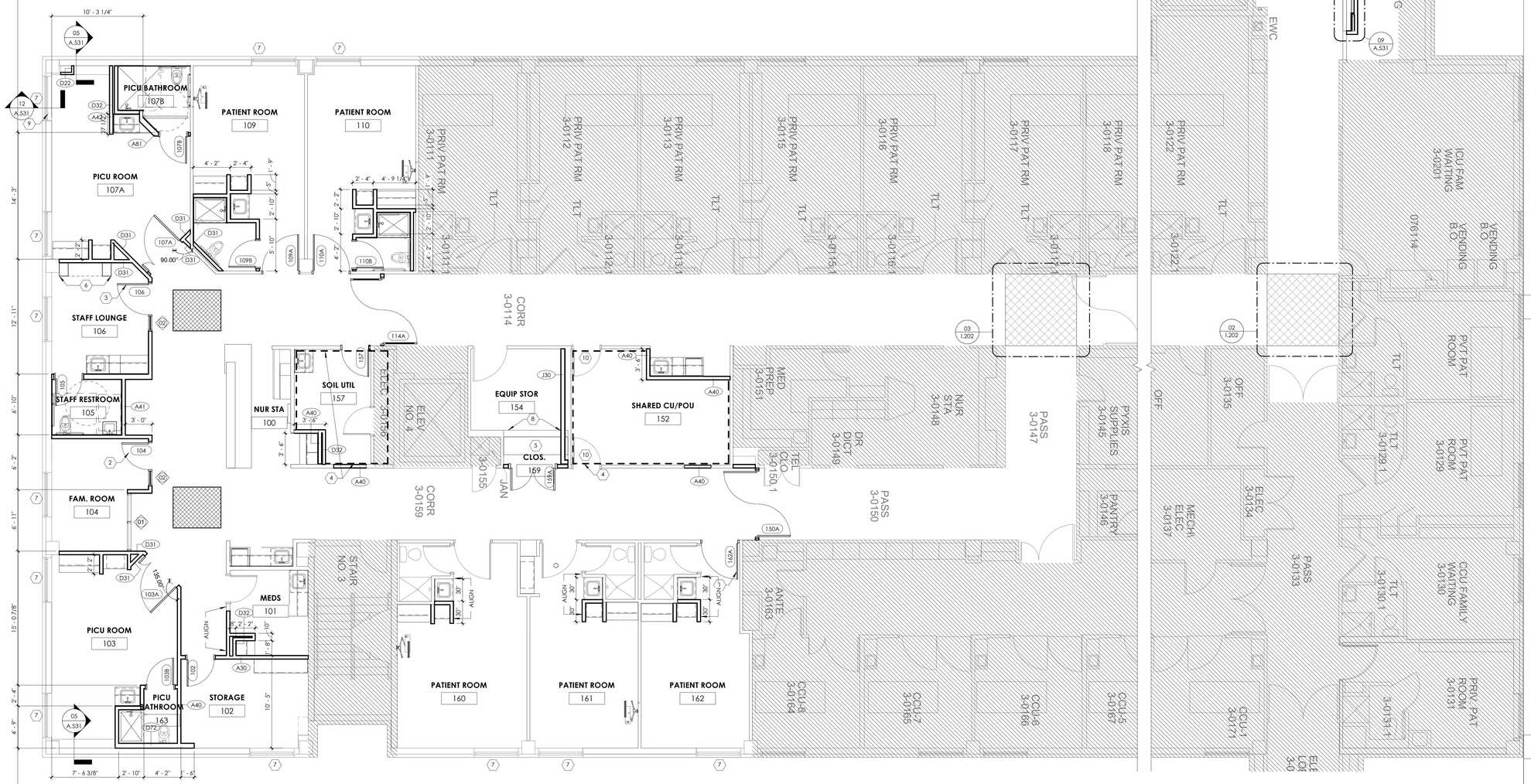
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AUG 31, 2016 12:34:56 PM

Provide a sign stating "EXIT" in raised, visual characters and braille adjacent to each door in an area of refuge, an exterior area for assisted rescue, an exit stairway or ramp, an exit passageway and the exit discharge.
2015 IBC 1013.4

This plan was reviewed for adopted codes and **NOT** for compliance with **ADA** or **FHA** accessibility requirements. Contact 800-949-4232 (**ADA**) and 303-894-7822 x 325 (**FHA**) for federal accessibility requirements that apply to your project.

Structural plan review is limited to a general survey for code compliance. No review is implied nor was undertaken to verify structural adequacy.



01 - FLOOR PLAN - LEVEL 03
3/16" = 1'-0"

Code violations that are found during inspection are required to be corrected. Permit issuance does not grant approval of a code violation.

Field Inspection consultation is available upon request. Call 303-739-7420 to request a consultation

Failure to follow approved plans may result in an hourly fee to review the field changes for code compliance.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: ***Aug 31, 2016***
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

FLOOR PLAN GENERAL NOTES

1. PARTITION TYPES ARE SCHEDULED IN THE A.500 SERIES. RE: G.300 SERIES "CODE COMPLIANCE PLANS" FOR GRAPHIC EXTENT OF FIRE RATED PARTITIONS. REFER TO PARTITION TYPE SCHEDULE FOR LOCATION OF SOUND ATTENUATION BLANKETS.
2. REFER TO SHEET G.101 FOR ADDITIONAL GENERAL NOTES.
3. ALL PARTITIONS ARE TYPE "A41" UNLESS OTHERWISE NOTED.
4. DIMENSIONS SHOWN ON THE FLOOR PLANS FOR NEW CONSTRUCTION ARE TO THE FACE OF FINISH OF INTERIOR WALLS, TO CENTER LINE OF COLUMNS AND TO THE FACE OF CONCRETE OR MANSONRY WALLS, UNLESS OTHERWISE INDICATED. DIMENSIONS IN RENOVATED AREAS ARE FROM FINISH FACE OF EXISTING WALLS TO FINISH FACE OF NEW STUD WALL, UNLESS OTHERWISE INDICATED.
5. WHERE NEW GYPSUM BOARD PARTITIONS ARE A CONTINUATION OF AN EXISTING PARTITION OR COLUMN ENCASEMENT, THE FACE OF THE NEW GYPSUM BOARD SHALL BE ALIGNED WITH THE FACE OF THE EXISTING SURFACE. WHERE A ONE HOUR PARTITION IS SHOWN AS A CONTINUATION OF A TWO-HOUR PARTITION OR COLUMN ENCASEMENT, THE FACE OF THE GYPSUM BOARD SHALL BE ALIGNED. STUDS SHALL BE OFFSET AND ADDITIONAL LAYERS OF GYPSUM BOARD SHALL BE PROVIDED AS REQUIRED TO PROVIDE FACE ALIGNMENT OF GYPSUM BOARD.
6. CLINICAL SINKS SHALL BE MOUNTED SO THAT THE CENTERLINE OF THE SINK IS 1'-6" MINIMUM TO THE FACE OF THE ADJACENT FIXED EQUIPMENT, SIDEWALL CASEWORK, ETC.
7. ALL PATIENT CORRIDORS AND PASSAGEWAYS SHALL BE 8'-0" MINIMUM CLEAR WIDTH.
8. SEE ARCHITECTURAL ENLARGED PLANS FOR TYPICAL MOUNTING HEIGHTS OF PLUMBING FIXTURES AND TOILET ACCESSORIES.
9. LAVATORIES AND SINKS SHALL BE ACCOMPANIED BY A PAPER TOWEL DISPENSER "TA2/3" AND SOAP DISPENSER "TA8" UNLESS OTHERWISE NOTED ON THE FLOOR PLANS. OFCI.
10. REFER TO THE A.530 SERIES FOR MISCELLANEOUS DETAILS.
11. PROVIDE MINIMUM 1'-0" CLEAR FLOOR SPACE AT THE PUSH SIDE OF EVERY DOOR WITH A CLOSER. PROVIDE MINIMUM 1'-6" CLEAR AT THE PULL SIDE OF EVERY DOOR (EXCLUDING PATIENT BEDROOMS), UNLESS SPECIFICALLY DIMENSIONED, NOTED OR SHOWN OTHERWISE.
12. PROVIDE A 1'-4" WIDE CHASE BEHIND SINGLE SIDED TOILETS, AND A 1'-8" WIDE CHASE BETWEEN BACK TO BACK TOILETS, FOR WALL HUNG FIXTURES. FOR FLOOR MOUNTED FIXTURES PROVIDE A 6" STUD, MINUMUM.
13. REFER TO THE A.210 SERIES, "EQUIPMENT PLANS" FOR WALL PROTECTION LOCATIONS.

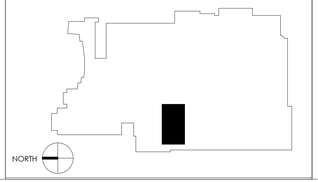
FLOOR PLAN LEGEND

- NEW CONSTRUCTION
- EXISTING TO REMAIN
- (1) INTERIOR WINDOW TAG REF: A.XXX FOR SCHEDULE
- (XXX) DOOR TAG REF. A.541 FOR DOOR SCHEDULE
- (A41) PARTITION TAG REF. A.501 FOR TYPE CHARTS
- SHOWER CURTAIN TRACK
- REPLACE FLOORING WITH FIELD TILE AND JOCKIMO LIQUID LAVA TILE. RE: I.202 FLOOR PATTERNS. PROVIDE FLOOR FLOAT FOR LEVEL FLOORING SYSTEM FOLLOWING GRINDING OF FLOOR.
- OUT OF SCOPE

FLOOR PLAN KEYNOTES

1. REINSTALL SALVAGED DOOR #1
2. REINSTALL SALVAGED DOOR #2
3. REINSTALL SALVAGED DOOR #3
4. SEAL ALL PENETRATIONS ABOVE CEILING. ENSURE TOP OF WALL IS CONSTRUCTED IN ACCORDANCE OF U465 UL WALL ASSEMBLY. ALL PENETRATIONS TO BE RATED FOR 1 HOUR FIRE PROTECTION. SEAL ACCORDING TO SPECIFIED AND LISTED UL ASSEMBLIES
5. INTALL NEW SHELVING, CFCI
6. CONTRACTOR TO RELOCATE AND REINSTALL LOCKERS FROM STAFF LOUNGE
7. INSTALL 3M PR90X FILM TO THE EXTERIOR OF ALL THE WINDOWS IN THE UNIT.
8. INFILL AREA WHERE TILE WAS REMOVED WITH GYPSUM BOARD. ALIGN WITH ADJACENT FINISH FACE.
9. EXTEND DUCTWORK AND SCREEN THROUGH EXTERIOR METAL PANEL. COORDINATE WITH MECHANICAL FOR SIZE OF OPENING. SEE ALSO DETAILS
10. VERIFY EXISTING DOORS ARE RATED FOR 45 MINUTES. IF NOT RATED ACCEPTABLY, REPLACE DOOR SLAB WITH MATCHING ACROWYN DOOR SYSTEM AND REUSE EXISTING HARDWARE FROM PREVIOUS DOOR SET.

KEY PLAN



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ph: 303.694.4755

No.	Description	Date

STATE OF COLORADO
JOHN MENNO MAY
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

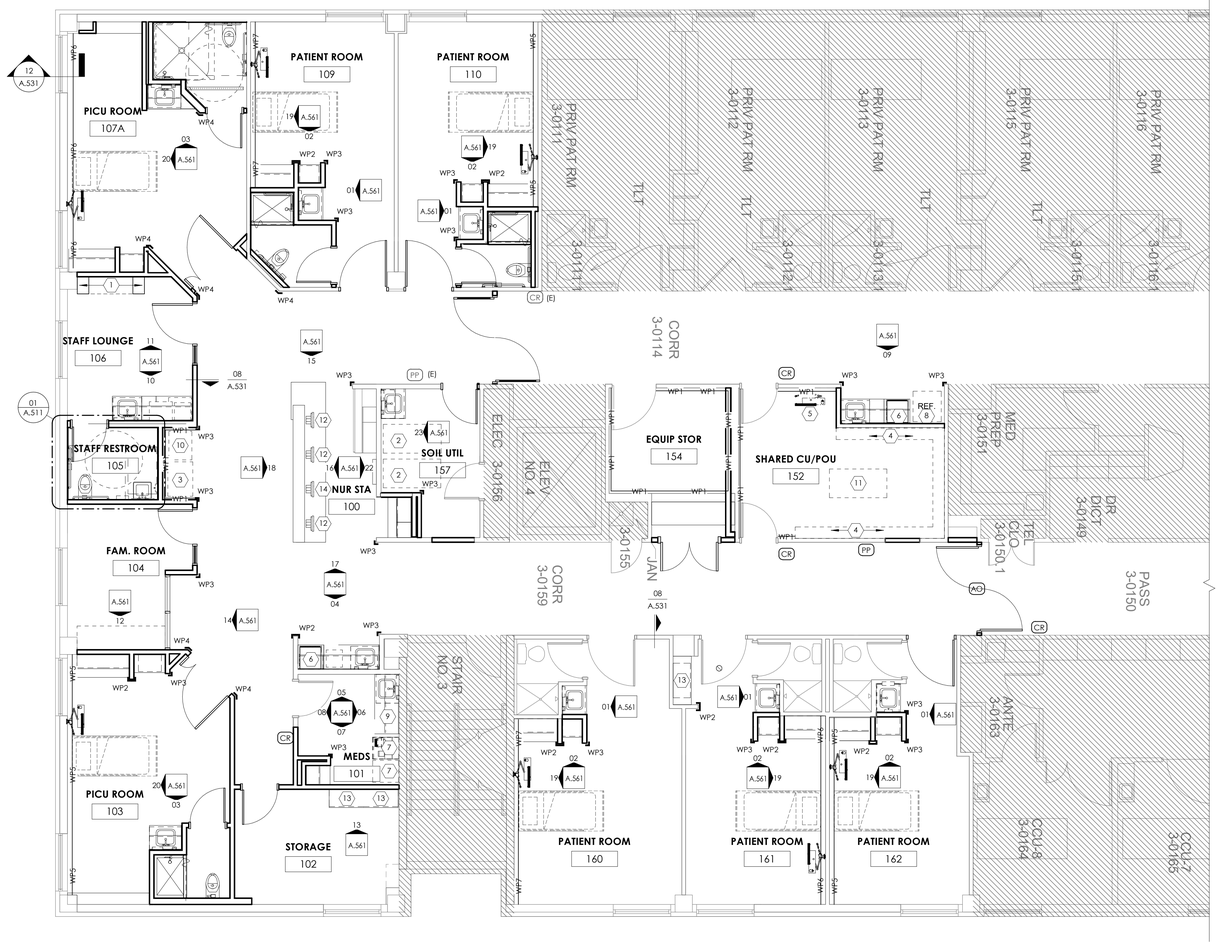
Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	SW
Checked by	JMN

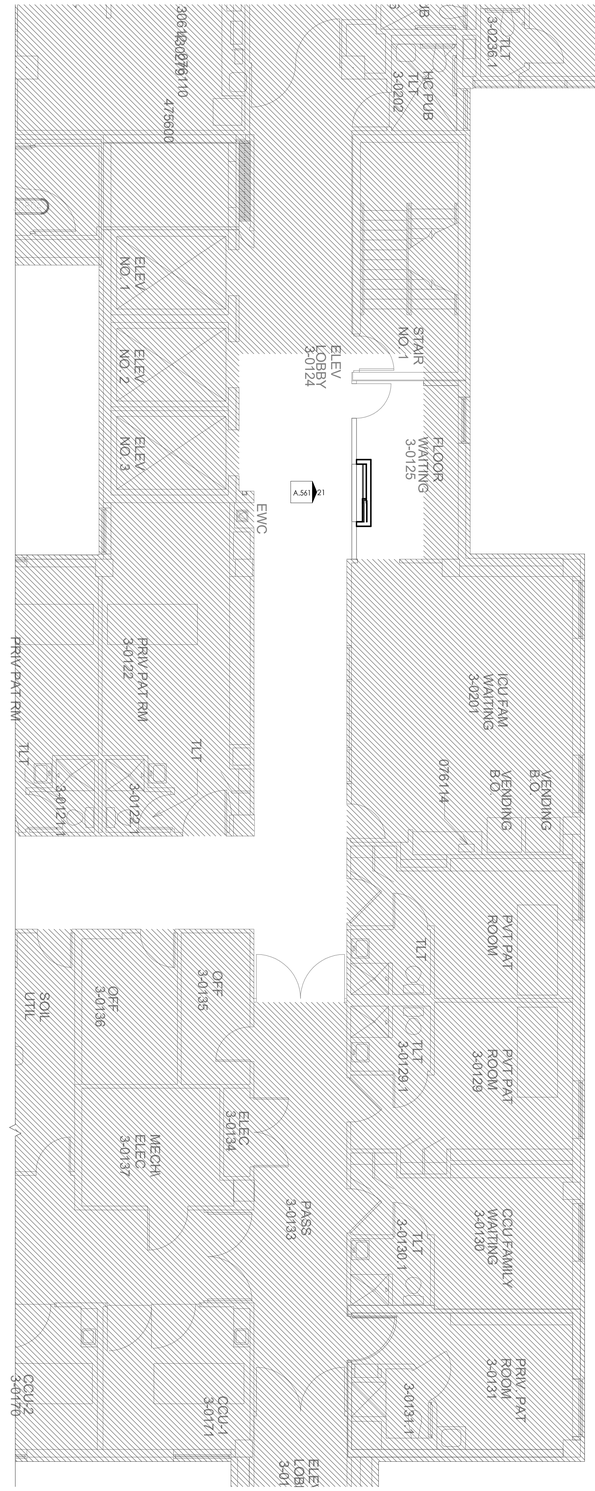
Sheet Title:
FLOOR PLANS

Sheet Number
A.203

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01 - EQUIPMENT PLAN - LEVEL 03
3/16" = 1'-0"

EQUIPMENT PLAN GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY AND COORDINATE CLEAR DIMENSIONS REQUIRED FOR OWNER FURNISHED EQUIPMENT THAT IS LOCATED WITHIN OR ADJACENT TO BUILT IN CABINETS.
2. ALL GLOVE DISPENSERS ARE TO BE OWNER FURNISHED CONTRACTOR INSTALLED.
3. CONTRACTOR SHALL PROVIDE BLOCKING/STRAPPING FOR ALL MOUNTING BRACKETS OF WALL HUNG EQUIPMENT. COORDINATE FURNISHED EQUIPMENT REQUIREMENTS AND VENDOR DRAWINGS.
4. ALL SINKS ARE TO RECEIVE TA3 PAPER TOWEL DISPENSER AND A TA8 SOAP DISPENSER UNLESS NOTED OTHERWISE.
5. ALL CEILING AND/OR WALL MOUNTED EQUIPMENT SHALL BE MOUNTED AT 80" CLEAR ABOVE FINISH FLOOR.
6. CONTRACTOR SHALL COORDINATE WITH THE OWNER ON THE DELIVERY AND INSTALLATION OF OWNER FURNISHED EQUIPMENT.
7. ALL KEYBOARD TRAYS SHALL BE CONTRACTOR FURNISHED CONTRACTOR INSTALLED. COORDINATE VENDOR AND MODEL WITH OWNER.
8. REFER TO THE EQUIPMENT RESPONSIBILITY MATRIX IN THE PROJECT MANUAL FOR CLARIFICATION OF RESPONSIBLE PARTY.

EQUIPMENT PLAN LEGEND

- OUT OF SCOPE
- CONTRACTOR FURNISHED EQUIPMENT/ITEM
- OWNER FURNISHED EQUIPMENT/ITEM
- WP1—WP1 SHEET/RAIL WALL PROTECTION RE: DETAILS ON SHEET I.101
- WP2—WP2 SHEET/RAIL WALL PROTECTION RE: DETAILS ON SHEET I.101
- WP3—WP3 SHEET/RAIL WALL PROTECTION RE: DETAILS ON SHEET I.101
- WP4—WP4 SHEET/RAIL WALL PROTECTION RE: DETAILS ON SHEET I.101
- WP5—WP5 SHEET/RAIL WALL PROTECTION RE: DETAILS ON SHEET I.101
- WP6—WP6 SHEET/RAIL WALL PROTECTION RE: DETAILS ON SHEET I.101
- WP7—WP7 SHEET/RAIL WALL PROTECTION RE: DETAILS ON SHEET I.101
- WP3 WALL PROTECTION CORNER GUARD RE: DETAILS ON SHEET I.101
- 1 A.100 1 INTERIOR ELEVATION TAG
- CR CARD READER
- AO AUTO OPENER
- PP PUSH PLATE

EQUIPMENT PLAN KEYNOTES

1. RELOCATED STAFF LOCKERS, OFCI
2. SOILED CART, OFOI
3. CRASH CART, OFOI
4. STORAGE BINS, OFOI
5. WALL MOUNTED COMPUTER, OFCI
6. ICE / WATER MACHINE, OFCI UNIT IS RELOCATED FROM EXISTING STOCK.
7. PYXIS MEDS, OFOI
8. REFRIGERATOR, OFCI
9. UNDER COUNTER MEDS REFRIGERATOR, OFCI
10. PROCEDURE CART, OFOI
11. LINEN CART, OFOI
12. COMPUTER MONITOR, OFOI
13. RELOCATED CABINET FROM PATIENT ROOM 160, OFCI PROVIDE FILLER STRIPS AS REQUIRED TO MEET REQUIRED SPACE.
14. PATIENT MONITORING SYSTEM, OFOI. COORDINATE CONDUIT REQUIREMENTS WITH VENDOR.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: ***Aug 31, 2016***
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
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No.	Description	Date

STATE OF COLORADO
JOHN MENNO MA
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

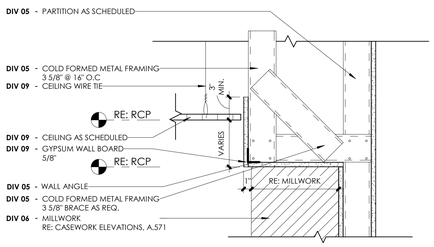
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Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	SW
Checked by	JMN

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EQUIPMENT PLANS

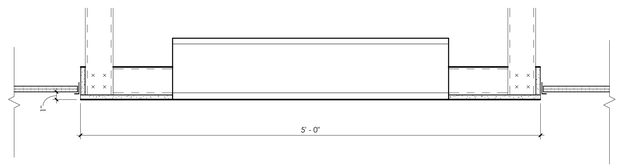
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CONTRACT & SPECIFICATIONS DOCUMENTS

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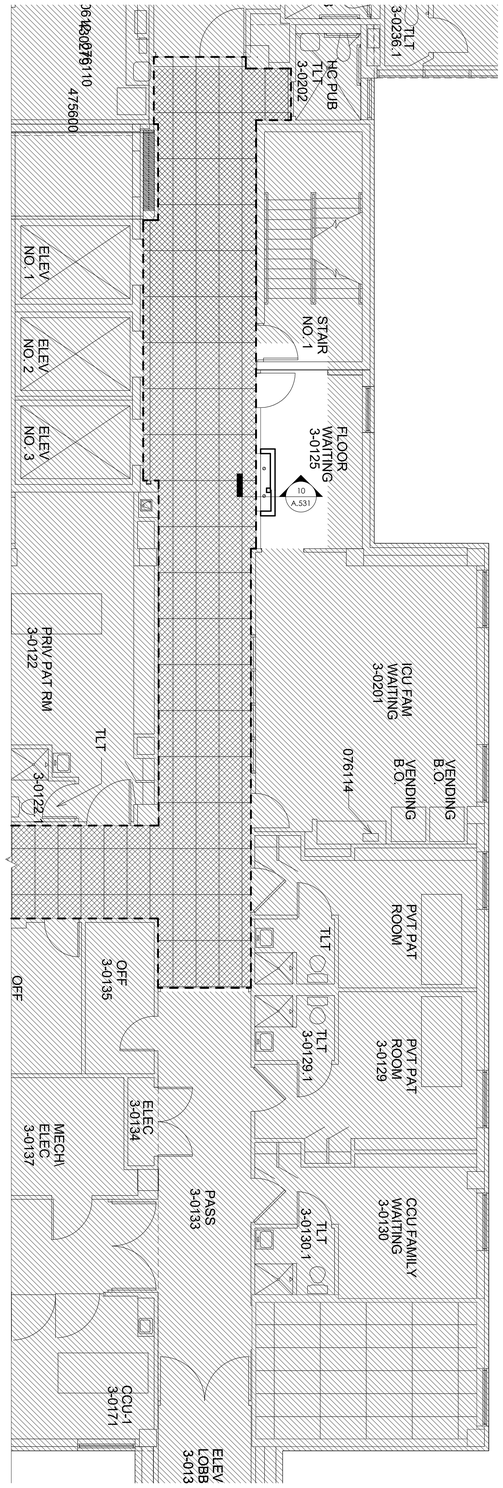
03- DETAIL @ FURR DOWN
1 1/2" = 1'-0"



02- CIRCULAR GYPSUM SOFFIT
1 1/2" = 1'-0"



01 - REFLECTED CEILING PLAN - LEVEL 03
3/16" = 1'-0"



REFLECTED CEILING PLAN GENERAL NOTES

1. THE CONTRACTOR SHALL COMPARE THIS REFLECTED CEILING PLAN WITH ELECTRICAL LIGHTING PLANS, MECHANICAL SUPPLY, RETURN, AND EXHAUST PLANS. THE CONTRACTOR SHALL REPORT ANY OMISSIONS OR INCONSISTENCIES TO THE ARCHITECT.
2. SEE ELECTRICAL DRAWINGS FOR THE LOCATIONS OF CEILING MOUNTED SMOKE DETECTORS, SPEAKERS, EXIT SIGNAGE, FIRE ALARM DEVICES, WALL MOUNTED EXIT LIGHTS, ETC.
3. FOR FURTHER DIMENSIONS SEE ENLARGED PLANS, SECTIONS, ELEVATIONS, AND DETAILS.
4. COORDINATE GYPSUM BOARD FURR DOWN HEIGHTS WITH FULL HEIGHT CABINETS AND INTERIOR ELEVATIONS.
5. SPRINKLER HEAD LOCATIONS ARE NOT SHOWN ON ARCHITECTURAL REFLECTED CEILING PLANS.
6. 18" MINIMUM VERTICAL CLEARANCE SHALL BE MAINTAINED BETWEEN THE BOTTOM OF EXTENDED SPRINKLER HEADS AND THE TOP OF ANY FILES, SHELVING, LOCKERS, ETC.
7. THE CONTRACTOR SHALL VERIFY THAT ACCESS PANELS OF TYPE SPECIFIED ARE INSTALLED IN NON-ACCESSIBLE TYPE CEILINGS WHERE SERVICE OR ADJUSTMENT TO MECHANICAL, PLUMBING, OR ELECTRICAL ITEMS MAY BE REQUIRED. ACCESS PANELS SHALL BE THE FIRE RATED TYPE EQUAL TO THE RATING OF THE CEILING IN WHICH THEY OCCUR.
8. PRE-MANUFACTURED SHOWER UNITS ARE PROVIDED WITH LIGHT FIXTURES (REF: ELECTRICAL DRAWINGS FOR CONNECTION.)
9. RELOCATE SUPPLY DRAIN AND VENT PIPES TO MAINTAIN SCHEDULED CEILING HEIGHTS. COORDINATE RELOCATIONS WITH MEP ENGINEERS.
10. WHERE EXISTING LAY-IN CEILINGS ARE TO REMAIN, THE CONTRACTOR SHALL REPLACE ANY TILE THAT HAS BEEN DAMAGED WITH MATERIALS THAT MATCH THE EXISTING FOR COLOR, TEXTURE, PATTERN, ETC. IF UNIFORMITY CANNOT BE ACHIEVED, THE CONTRACTOR SHALL REPLACE THE ENTIRE CEILING WITHIN THE SPACE WITH NEW MATERIAL.

REFLECTED CEILING PLAN LEGEND

- SUSPENDED 2' x 2' ACOUSTICAL CEILING SYSTEM
- SUSPENDED 2' x 4' ACOUSTICAL CEILING SYSTEM
- GYPSUM WALL BOARD CEILING
- GYPSUM BOARD FURR DOWN OVER WALL CABINET OR LOCKER
- OUT OF SCOPE
- REPLACE ALL CEILING TILE WITH NEW CEILING TILE PER FINISH PAGES. GRID TO REMAIN. COORDINATE WITH MPE TO UPDATE FIXTURES AND DEVICES AS REQUIRED TO MEET ALTERNATE #2 REQUIREMENTS.
- CEILING TYPE 1' - 0" AFF — CEILING HEIGHT DESIGNATION
- NEW RECESSED FLUORESCENT LIGHT FIXTURE
- R — RECESSED FLUORESCENT LIGHT FIXTURE TO BE RELOCATED
- EXISTING RECESSED FLUORESCENT LIGHT FIXTURE TO REMAIN
- SUPPLY AIR GRILLE REF: MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION
- RETURN AIR GRILLE REF: MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION
- EXHAUST AIR GRILLE REF: MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION
- ACCESS PANEL
- SHOWER CURTAIN TRACK
- WALL MOUNTED LIGHT FIXTURE
- CEILING MOUNTED PENDANT LIGHT
- RECESSED CAN LIGHT FIXTURE
- UNDER CABINET LED PUCK LIGHTS
- EXIT SIGN W/ DIRECTION

REFLECTED CEILING PLAN KEYNOTES

1. LUMENWERX, POP ROUND 36 LED RECESSED CEILING LIGHT. RE: ELECTRICAL
2. TIE INTO EXISTING CEILING GRID, MATCH EXISTING ACT CONNECTIONS AND EXTENSIONS.
3. BASIS OF DESIGN: BARCLAY SHOWER CURTAIN ROD. RE 1.201 FINISH LEGEND

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
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CONTRACT & SPECIFICATIONS CONFIDENTIAL

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No.	Description	Date

STATE OF COLORADO
JOHN MENNO MEES
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TMCA - 3rd Floor Peds Renovation

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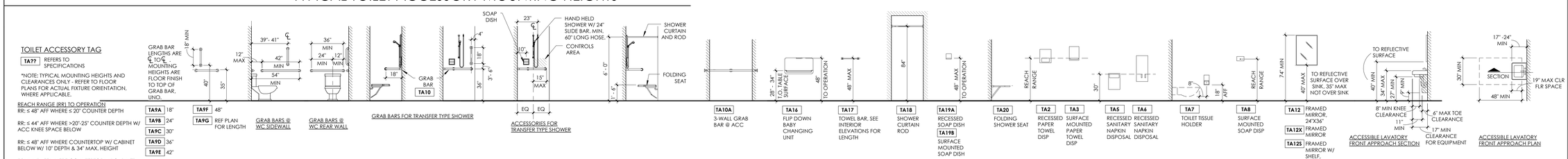
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Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	Author
Checked by	Checker

Sheet Title:
REFLECTED CEILING PLANS

Sheet Number
A.223

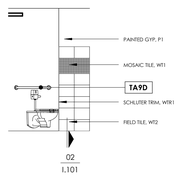
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TYPICAL TOILET ACCESSORY MOUNTING HEIGHTS

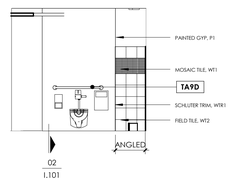


ICC/ANSI A117.1-2009
606.4 FAUCETS. Faucets shall comply with Section 309. Hand-Operated metering faucets shall remain open for 10 seconds minimum.
606.6 EXPOSED PIPES AND SURFACES. Water supply and drainpipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks.
606.2 CLEAR FLOOR SPACE. A clear floor space complying with Section 305.3 positioned for forward approach, shall be provided. Knee and toe clearance complying with Section 306 shall be provided. The dip of the overflow shall not be considered in determining knee and toe clearance.
606.3 HEIGHT. The front of lavatories and sinks shall be 34 inches maximum above the floor, measured to the higher of the rim or counter surface.

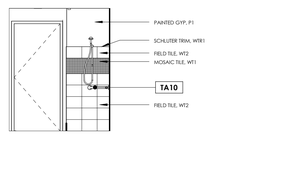
ICC A117.1 2009 803.2--TURNING SPACE. A turning space complying with Section 304 shall be provided within the room.
*A 60-inch diameter turning circle or a 60-inch T-turn space is required somewhere within the dressing, fitting or locker room.
ICC A117.7 2009 803.3--DOOR SWING. Doors shall not swing into the room unless a clear floor space complying with Section 305.3 is provided within the room, beyond the arc of the door swing.



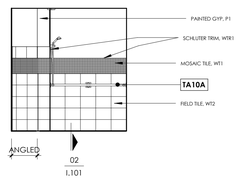
21 - RM 109 RESTROOM - WEST
1/4" = 1'-0"



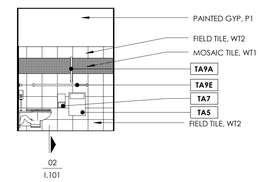
20 - RM 109 RESTROOM - SOUTHWEST
1/4" = 1'-0"



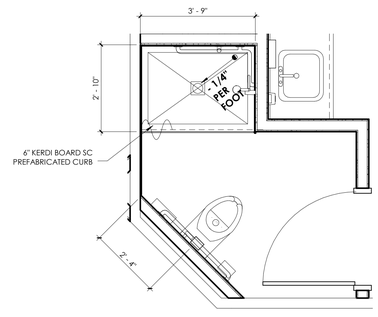
15 - RM 110 RESTROOM - WEST
1/4" = 1'-0" RM 103 MIRROR OPPOSITE



10 - PICU RESTROOM - WEST
1/4" = 1'-0"

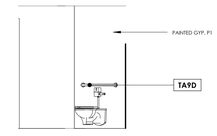


05 - STAFF LOUNGE RESTROOM- WEST
1/4" = 1'-0"

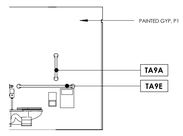


24 - RM 109 RESTROOM
1/2" = 1'-0"

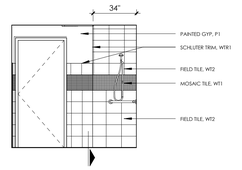
This plan was reviewed for adopted codes and **NOT** for compliance with **ADA** or **FHA** accessibility requirements. Contact 800-949-4232 (**ADA**) and 303-894-7822 x 325 (**FHA**) for federal accessibility requirements that apply to your project.



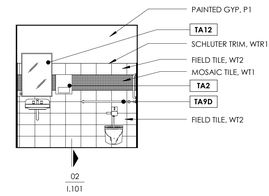
19 - RM 109 RESTROOM - SOUTH
1/4" = 1'-0"



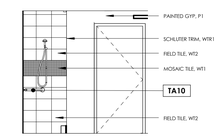
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1/4" = 1'-0" RM 103 MIRROR OPPOSITE



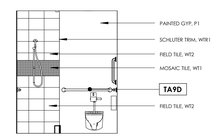
09 - PICU RESTROOM - SOUTH
1/4" = 1'-0"



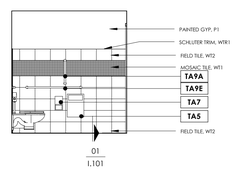
04 - STAFF LOUNGE RESTROOM- SOUTH
1/4" = 1'-0"



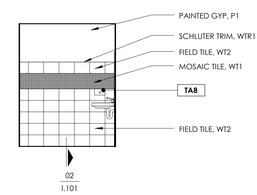
18 - RM 109 RESTROOM - EAST
1/4" = 1'-0"



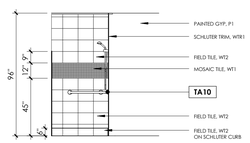
13 - RM 110 RESTROOM - EAST
1/4" = 1'-0" RM 103 MIRROR OPPOSITE



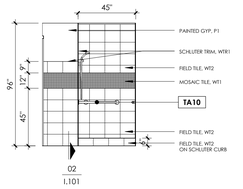
08 - PICU RESTROOM - EAST
1/4" = 1'-0"



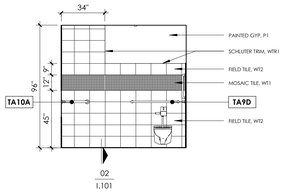
03 - STAFF LOUNGE RESTROOM- EAST
1/4" = 1'-0"



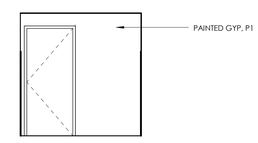
17 - RM 109 RESTROOM - NORTH
1/4" = 1'-0"



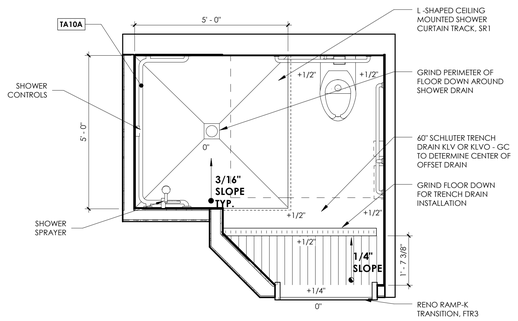
12 - RM 110 RESTROOM - NORTH
1/4" = 1'-0" RM 103 MIRROR OPPOSITE



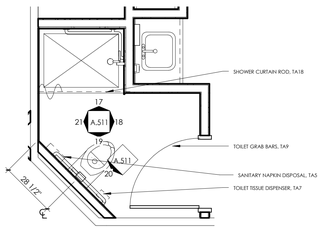
07 - PICU RESTROOM - NORTH
1/4" = 1'-0"



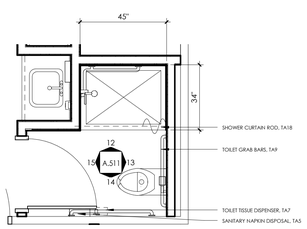
02 - STAFF LOUNGE RESTROOM - NORTH
1/4" = 1'-0"



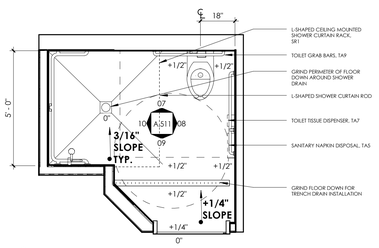
22 - PICU RESTROOM - FLOOR SLOPE PLAN
1/2" = 1'-0"



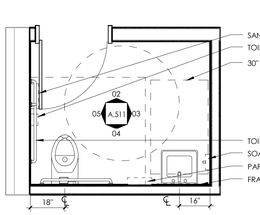
16 - RM 109 RESTROOM
3/8" = 1'-0"



11 - RM 110 RESTROOM
3/8" = 1'-0" RM 103 MIRROR OPPOSITE



06 - PICU RESTROOM
3/8" = 1'-0"



01 - ADA STAFF LOUNGE RESTROOM
3/8" = 1'-0"

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CONTRACT & SPECIFICATIONS DOCUMENTS

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No.	Description	Date

STATE OF COLORADO
JOHN MENNO HAM
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

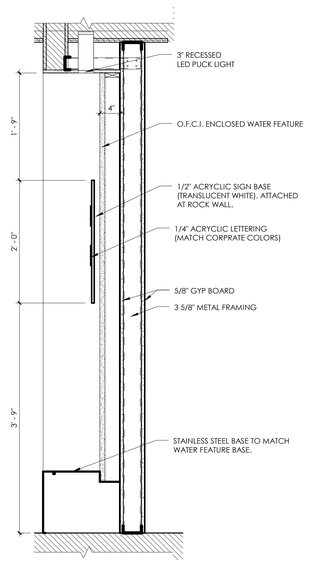
Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	Author
Checked by	Checker

Sheet Title:
TYPICAL TOILET & ACC. PLANS

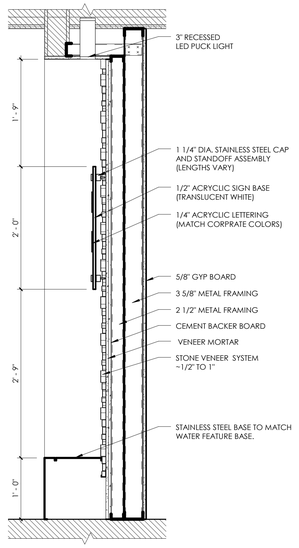
Sheet Number
A.511

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: ***Aug 31, 2016***
2015 INTERNATIONAL CODES & 2014 NEC
RSN: *1142126*
Permit #: *16-1162585*

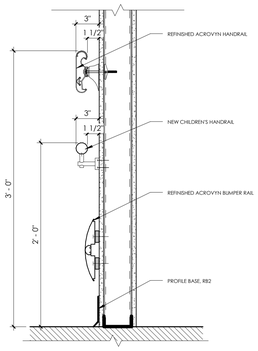
8/8/16 12:34:36 PM



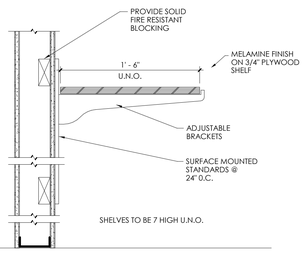
11 - BUBBLE WALL
1" = 1'-0"



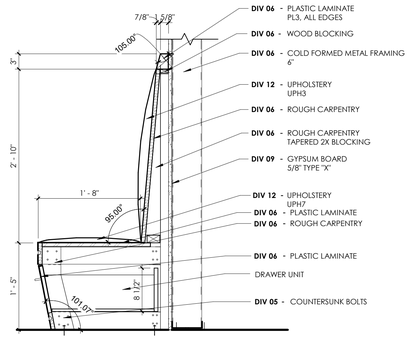
10 - ROCK WALL
1" = 1'-0"



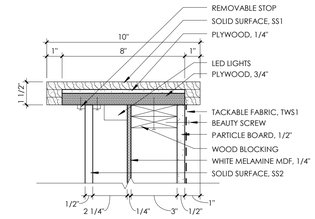
08 - CORRIDOR HANDRAIL
1 1/2" = 1'-0"



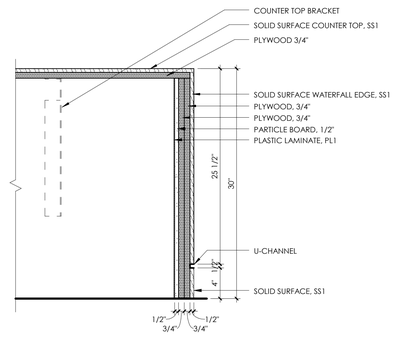
07 - DETAIL - ADJUSTABLE SHELVES
1 1/2" = 1'-0"



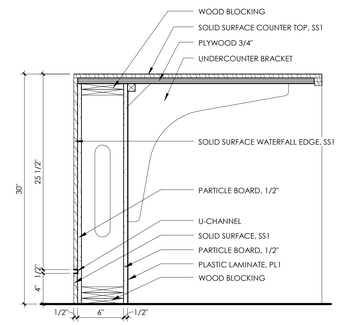
06 - ADA BENCH WITH DRAWERS
1" = 1'-0"



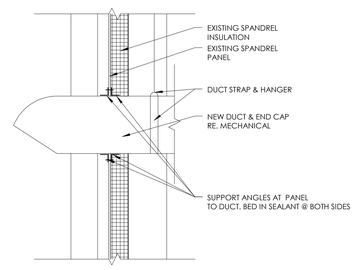
04 - TRANSACTION TOP
3" = 1'-0"



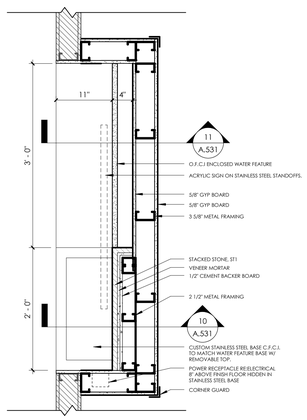
03 - SECTION AT COUNTER TOP END PANEL
1 1/2" = 1'-0"



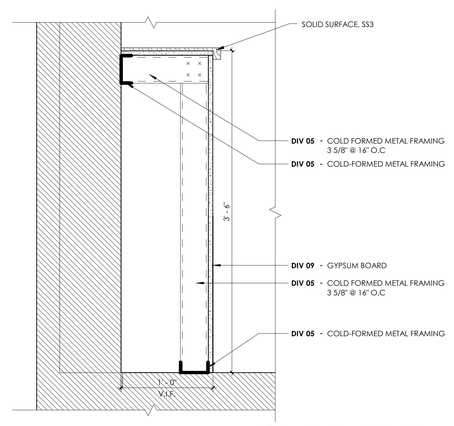
02 - SECTION AT COUNTER TOP
1 1/2" = 1'-0"



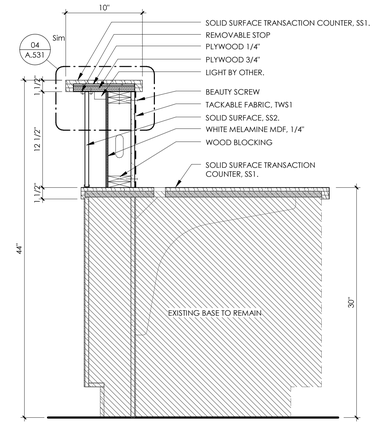
12 - DUCT PENATRATION @ EXTERIOR METAL PANEL
1 1/2" = 1'-0"



09 - PLAN DETAIL - BUBBLE WALL
1" = 1'-0"



05 - WINDOW BUILT IN
1 1/2" = 1'-0"



01 - SECTION AT TRANSACTION TOP1
1 1/2" = 1'-0"

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

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No.	Description	Date

STATE OF COLORADO
JOHN MENNO HAM
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	Author
Checked by	Checker

Sheet Title:
INTERIOR DETAILS

Sheet Number
A.531

CONTRACT & SPECIFICATIONS ARCHITECTURE

8/8/16 12:34:38 PM

DOOR SCHEDULE

DOOR NO	ROOM NAME	DOOR SIZE W	DOOR SIZE HT	DOOR SIZE THK	DOOR TYPE	DOOR MTL	DOOR FINISH	DOOR GLZ	FRAME TYPE	FRAME MTL	FRAME DETAILS HEAD	FRAME DETAILS JAMB	FIRE RATING	HARDWARE HDWR NO (REF SPECS)	REMARKS
102	STORAGE	3' - 0"	7' - 0"	0' - 1 3/4"	N	WD	ACR	CG	A	HM	01/A.541	02/A.541	45	2.01	4
103A	PICU ROOM	5' - 0"	7' - 0"	0' - 1 3/4"	F	WD	ACR	SEE NOTES	D	HM	05/A.541	06/A.541	-	4.01	1, 2, 3, 5
103B	PICU BATHROOM	3' - 0"	7' - 0"	0' - 1 3/4"	F	WD	ACR	-	A	HM	01/A.541	02/A.541	-	5.01	6
104	FAM. ROOM	3' - 0"	7' - 0"		REL.	(E)	(E)	-	A	HM	01/A.541	02/A.541	-		7, 8
105	STAFF RESTROOM	3' - 0"	7' - 0"	0' - 1 3/4"	F	WD	ACR	-	A	HM	01/A.541	02/A.541	-	5.01	9
106	STAFF LOUNGE	3' - 6"	7' - 0"		REL.	(E)	(E)	+	A	HM	01/A.541	02/A.541	-		7, 8
107A	PICU ROOM	5' - 0"	7' - 0"	0' - 1 3/4"	F	WD	ACR	SEE NOTES	D	HM	05/A.541	06/A.541	-		1, 2, 3, 5
107B	PICU BATHROOM	3' - 0"	7' - 0"	0' - 1 3/4"	F	WD	ACR	-	A	HM	01/A.541	02/A.541	-	5.01	6
109A	PATIENT ROOM	4' - 0"	7' - 0"	0' - 1 3/4"	F	WD	ACR	-	A	HM	01/A.541	02/A.541	-	4.01	10
109B	PATIENT ROOM	3' - 0"	7' - 0"	0' - 1 3/4"	F	WD	ACR	-	A	HM	01/A.541	02/A.541	-	5.01	11
110A	PATIENT ROOM	4' - 0"	7' - 0"	0' - 1 3/4"	F	WD	ACR	-	A	HM	01/A.541	02/A.541	-	4.02	10
110B	PATIENT ROOM	3' - 0"	7' - 0"	0' - 1 3/4"	F	WD	ACR	-	A	HM	01/A.541	02/A.541	-	5.01	11
114A	CORRIDOR	7' - 4"	7' - 0"	0' - 1 3/4"	FG	WD	ACR	RP-1	B	HM	03/A.541	04/A.541	20	7.01	15
150A	CORRIDOR	7' - 4"	7' - 0"	0' - 1 3/4"	N	WD	ACR	-	B	HM	03/A.541	04/A.541	SR	7.01	16
157	SOIL UTIL	3' - 0"	7' - 0"	0' - 1 3/4"	F	(E)	(E)	-	A	HM	01/A.541	02/A.541	45	SEE NOTES	7, 13, 14
159A	CLOS.	5' - 0"	7' - 0"	0' - 2"	F	WD	ACR	-	E	HM	05/A.541	06/A.541	-	2.02	17
162A	PATIENT ROOM	4' - 0"	7' - 0"	0' - 1 3/4"	F	WD	ACR	-	A	HM	01/A.541	02/A.541	-		7, 13, 14
Grand total: 17															

NOTES:
1. 48/12 LEAF SET.
2. CHROMATIC GLASS INSET FOR LARGE DOOR LEAF.
3. DEDUCTIVE ALTERNATE 3: DOOR SET SHALL BE ACROVYN DOORS WITH FULL LIGHT INTEGRAL BLINDS (DUAL OPERATION) IN LARGE LEAF. HARDWARE SHALL BE MODIFIED TO ALTERNATE HARDWARE PACKAGE FOR THIS DOOR.
4. REUSE EXISTING INVENTORY OF KEYPAD LOCKSET, HINGES AND CLOSER SALVAGED FROM FORMER CLEAN SUPPLY DOOR. .
5. REUSE EXISTING HL HARDWARE FOR ACTIVE LEAF. REUSE NORMAL HINGES FROM EXISTING STOCK SALVAGED.
6. REUSE EXISTING DOOR HADWARE SALVAGED FROM PREVIOUS BATHROOM DOOR SERVING THIS ROOM
7. RELOCATED SALVAGED DOOR. SEE DEMO D.201
8. NEW DOOR FRAME AND SIDELIGHT
9. REUSE HARDWARE FROM FORMER STAFF LOUNGE TOILET
10. REUSE HARDWARE SERVING DOOR TO THIS ROOM.
11. REUSE HARDWARE SERVING BATHROOM FROM THIS ROOM.
12. REUSE EXISTING HARDWARE INCLUDING ELECTRIC STRIKE AT DOOR FRAME.
13. PREP NEW FRAME TO RECEIVE EXISTING HARDWARE.
14. REUSE EXISTING HARDWARE FROM RELOCATED DOOR.
15. TWO EQUAL 44" LEAVES - FULL GLASS BOTH LEAVES.
16. TWO EQUAL 44" LEAVES.
17. TWO EQUAL 30" LEAVES.

DOOR SCHEDULE ABBREVIATIONS

MATERIAL:

HM - HOLLOW METAL

HC - HOLLOW CORE

WD - (INSERT SPECIES) DOOR

SR - SMOKE RESISTANT

EXT - EXTERIOR

(E) - EXISTING

NA - NOT APPLICABLE

GL-1 - GLAZING 1. REFER TO SPECIFICATIONS FOR MORE INFORMATION

FINISH:
*REFER TO FINISH LEGEND FOR MORE INFORMATION.

AL1 - ANODIZED ALUMINUM

AL2 - BRONZED ALUMINUM

PNT - PAINTED FINISH

SST - STAINLESS STEEL FINISH

PL - PLASTIC LAMINATE

ACR - ACROVYN

HARDWARE MANUFACTURERS:

IVE - IVES

SCH - SCHLAGE

LCN - LCN

NGP - NATIONAL GUARD PRODUCTS

MCK - MCKINNEY

GLY - GLYNN-JOHNSON

RIX - RIXSON

SU - SECURITRON

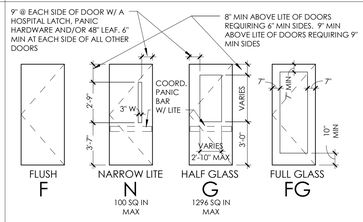
VON - VON DUPRIN

BEST - BEST

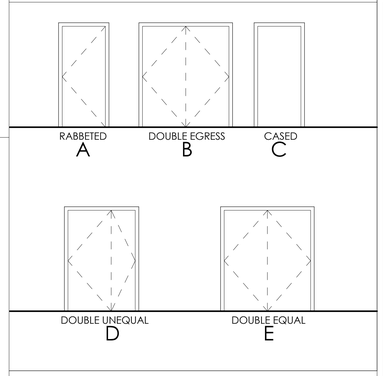
PEM - PEMKO

ME - MATCH EXISTING

DOOR TYPES



DOOR FRAME TYPES



DOOR HARDWARE

GENERAL HARDWARE NOTES:
1) FACILITY STANDARD KEYWAY: KABA PEAKS Z50 (SFIC)*
2) CLOSERS TO BE MOUNTED ON THE INTERIOR SIDE OF DOORS SO THAT THEY ARE NOT VISIBLE FROM THE CORRIDOR.

HARDWARE GROUP: 2.01 - STOREROOM

NOTES:				
3 EA	HINGE	ES	NA	NA
1 EA	KEYPAD	ES	NA	NA
1 EA	CLOSER	ES	NA	NA
1 EA	WALL STOP	WS407/CVX	619	IVE
1 EA	SMOKE SEAL	50SB	BLK	PEM

HARDWARE GROUP: 2.02 - STOREROOM DOUBLE UNEQUAL DOORS

NOTES:				
6 EA	HINGE	ES	NA	NA
1 EA	KEYPAD	ES	NA	NA
2 EA	CLOSER	4041R	619	LCN
1 EA	AUTO FLUSH BOLT	FB41	619	IVE
6 EA	SILENCER	SR64	GRY	IVE
1 EA	COORDINATOR	1700-USP	BLK	ROC

HARDWARE GROUP: 4.01 - PASSAGE SET

NOTES: REUSE HL LATCH SET AND HINGES FROM EXISTING DOOR				
2 EA	HINGE	ES	NA	NA
3 EA	SPRING HINGE	HD 4.5 X 4.5 BB	619	IVE
1EA	EPT HINGE	TW8	619	IVE
1 EA	HOSPITAL LATCH	ES	NA	NA
1EA	AUTO FLUSH BOLT	FB41	619	IVE
1EA	MECHANICAL HOLD	WS20	619	IVE
1EA	WALL STOP	WS407/CVX	619	IVE
1EA	SMOKE SEAL	50SB	BLK	PEM

HARDWARE GROUP: 4.01 - PASSAGE SET - ALTERNATE

NOTES: REUSE HL LATCH SET AND HINGES FROM EXISTING DOOR				
3 EA	HINGE	ES	NA	NA
3 EA	SPRING HINGE	HD 4.5 X 4.5 BB	619	IVE
1 EA	HOSPITAL LATCH	ES	NA	NA
1EA	AUTO FLUSH BOLT	FB41	619	IVE
1EA	MECHANICAL HOLD	WS20	619	IVE
1EA	WALL STOP	WS407/CVX	619	IVE
1EA	SMOKE SEAL	50SB	BLK	PEM

HARDWARE GROUP: 4.02 - PASSAGE SET

NOTES: REUSE HL LATCH SET AND HINGES FROM EXISTING DOOR				
3 EA	HINGE	ES	NA	NA
1 EA	HOSPITAL LATCH	ES	NA	NA
1EA	WALL STOP	WS407/CVX	619	IVE
1EA	SMOKE SEAL	50SB	BLK	PEM

HARDWARE GROUP: 5.01 - PRIVACY SET

NOTES:				
3 EA	HINGE	ES	NA	NA
1 EA	PRIVACY LOCKSET	ES	NA	NA
1EA	WALL STOP	WS407/CVX	619	IVE
1EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP: 7.01 - DELAYED EGRESS SET

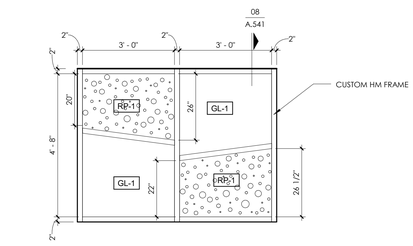
NOTES: UTILIZE EXISTING CONTACT POINTS AND WIRING TO MAGNET POINTS ON DOOR. INTEGRATE EXISTING AUTO OPENER INTO SECURITY SYSTEM SEQUENCE OF OPERATIONS. INTEGRATE SECURITY SYSTEM INTO INFANT PROTECTION SYSTEM.

2 EA	CONTINUOUS HINGE	112 HD	619	IVE
2 EA	DOOR PULL	8103 12"		
2 EA	DOOR PUSH	8302 4X12		
2 EA	MAGNETIC HOLD	DEL DSM		
2 EA	PAIRED AUTO OPENER	ES		
1 EA	PUSH PLATE ACUTATOR	ES		
1 EA	CARD READER	ES		
1 EA	POWER SUPPLY	ES		

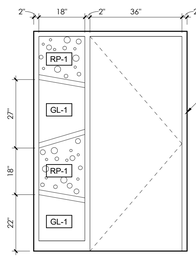
GLAZING LEGEND

GL-1 — 1 3/8" TEMPERED GLASS

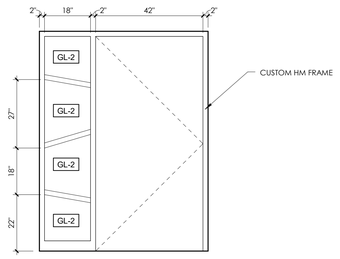
GL-2 — 1/4" TEMPERED GLASS



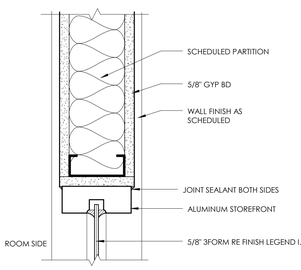
11 - CHALKBOARD NOOK WINDOW
1/2" = 1'-0"



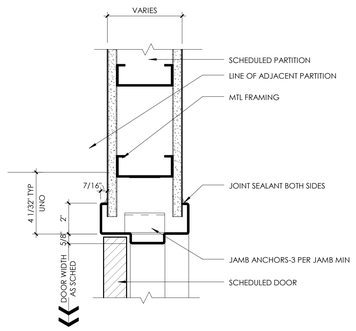
10 - DOOR AND SIDELIGHT - 104
1/2" = 1'-0"



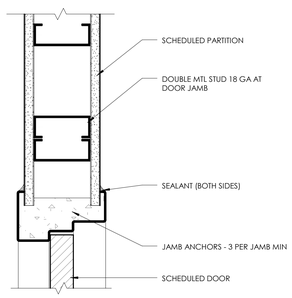
09 - DOOR AND SIDELIGHT - 106
1/2" = 1'-0"



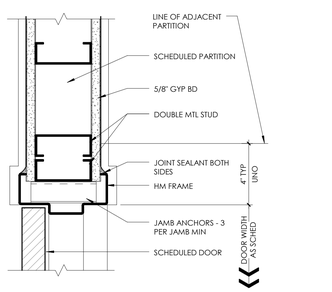
08 - HEAD & SILL DETAIL AT STOREFRONT
3" = 1'-0"



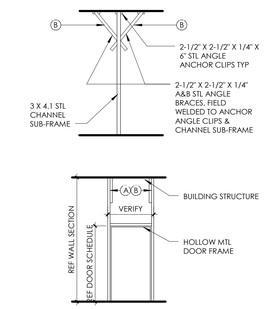
06 - JAMB DETAIL
3" = 1'-0"
@ PAIR OF DOORS



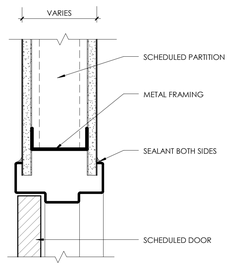
04 - JAMB DETAIL
3" = 1'-0"
@ DOUBLE EGRESS DOORS



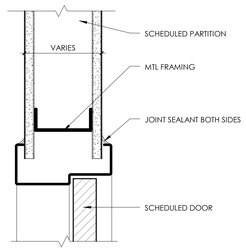
02 - JAMB DETAIL
3" = 1'-0"
@ TYP RATED/ NON-RATED DOOR



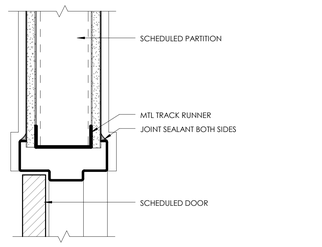
07 - CHANNEL SUPPORTS
3" = 1'-0"
IN DOORS GREATER 5' WIDE & LEAD DOORS



05 - HEAD DETAIL
3" = 1'-0"
@ PAIR OF DOORS



03 - HEAD DETAIL
3" = 1'-0"
@ DOUBLE EGRESS DOORS



01 - HEAD DETAIL
3" = 1'-0"
@ TYP RATED/ NON-RATED DOORS

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

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Greenwood Village, CO 80111
ph: 303.694.4755

No.	Description	Date

STATE OF COLORADO JOHN MENNO HEIN 401729 LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

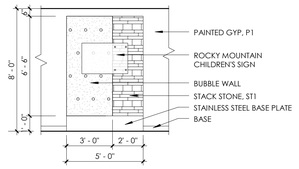
Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	Author
Checked by	Checker

Sheet Title:
DOOR SCHEDULE & DETAILS

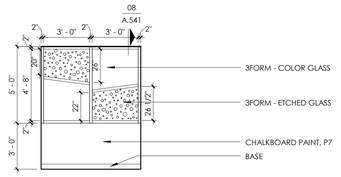
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A.541

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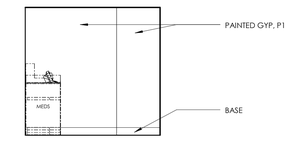
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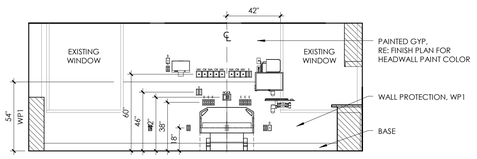
21 - BUBBLE WALL
1/4" = 1'-0"



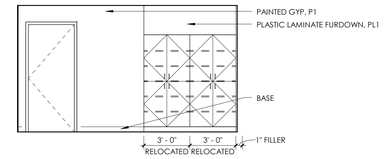
14 - CHALKBOARD NOOK
1/4" = 1'-0"



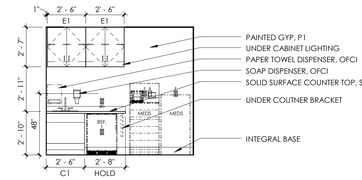
07 - MEDS ROOM - SOUTH
1/4" = 1'-0"



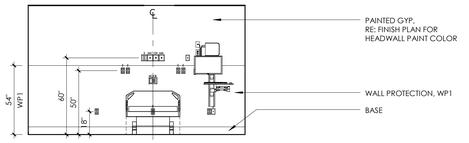
20 - PEDIATRIC I.C.U. HEADWALL, TYP.
1/4" = 1'-0"



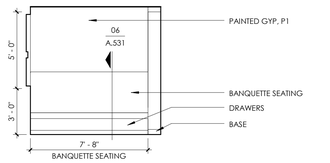
13 - STORAGE ROOM - NORTH
1/4" = 1'-0"



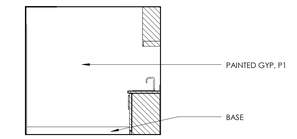
06 - MEDS ROOM - EAST
1/4" = 1'-0"



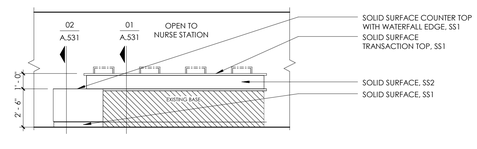
19 - PATIENT ROOM HEADWALL, TYP.
1/4" = 1'-0"



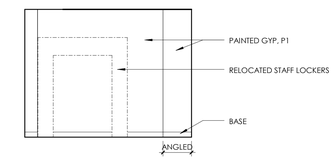
12 - FAMILY ROOM - SOUTH
1/4" = 1'-0"



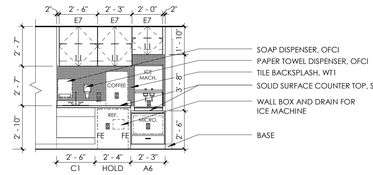
05 - MEDS ROOM - NORTH
1/4" = 1'-0"



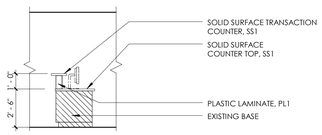
12 - FAMILY ROOM - SOUTH
1/4" = 1'-0"



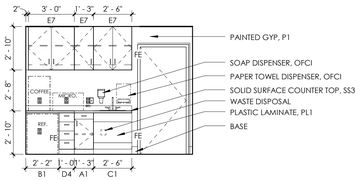
05 - MEDS ROOM - NORTH
1/4" = 1'-0"



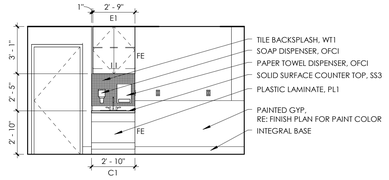
18 - NURSE STATION - WEST
1/4" = 1'-0"



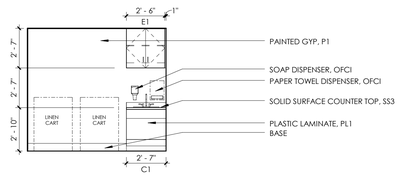
11 - STAFF LOUNGE - NORTH
1/4" = 1'-0"



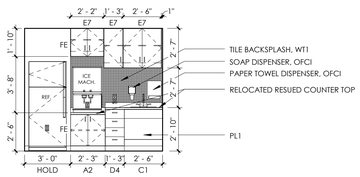
04 - NOURISHMENT ALCOVE - NURSE STATION 102
1/4" = 1'-0"



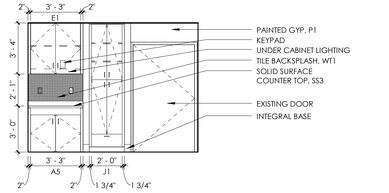
17 - NURSE STATION - SOUTH
1/4" = 1'-0"

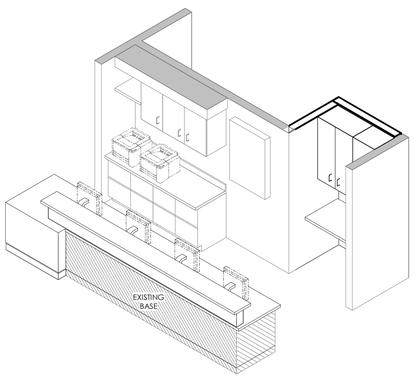


10 - STAFF LOUNGE SOUTH
1/4" = 1'-0"



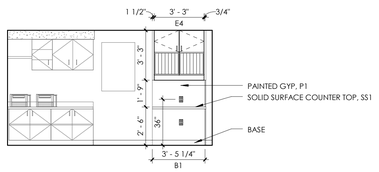
03 - TYPICAL PICU SINK
1/4" = 1'-0"



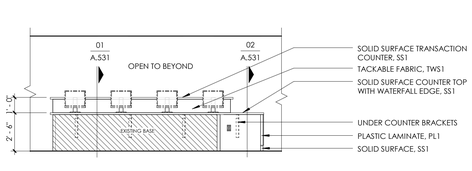


29 - NURSE STATION ISOMETRIC

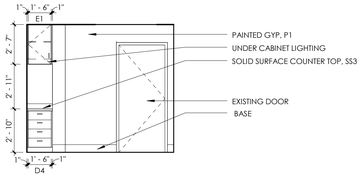
23 - SOILED ROOM - WEST
1/4" = 1'-0"



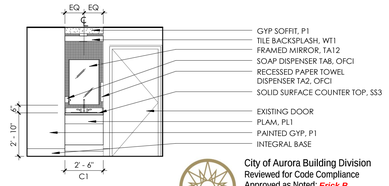
16 - NURSE STATION -EAST
1/4" = 1'-0"



09 - NOURISHMENT ALCOVE - CORRIDOR 3-0114
1/4" = 1'-0"

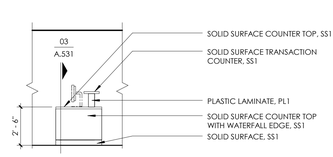


02 - TYPICAL PATIENT CABINET
1/4" = 1'-0"



22 - NURSE STATION INTERIOR - WEST
1/4" = 1'-0"

15 - NURSE STATION - NORTH
1/4" = 1'-0"



08 - MEDS ROOM - WEST
1/4" = 1'-0"

01 - TYPICAL PATIENT SINK
1/4" = 1'-0"

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

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ph: 303.694.4755

No.	Description	Date

STATE OF COLORADO
JOHN MENNO HAP
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

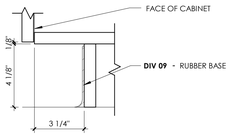
Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	SW
Checked by	Checker

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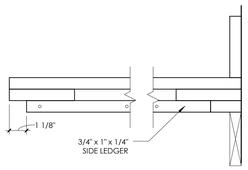
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A.561

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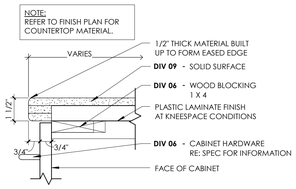
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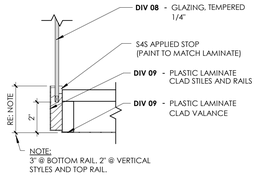
19 - SECTION DETAIL - TOEKICK
3" = 1'-0"



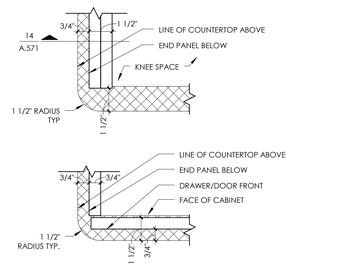
16 - SECTION DETAIL - LEDGER AT COUNTER
3" = 1'-0"



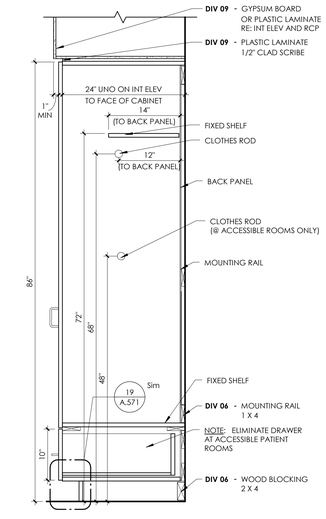
18 - SECTION DETAIL - SOLID SURFACE MAT.
3" = 1'-0"



15 - SECTION DETAIL - GLASS DOOR
3" = 1'-0"



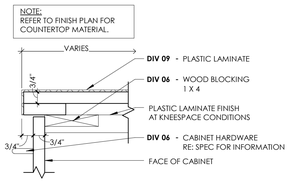
12 - PLAN DETAIL COUNTER TOP CORNER
3" = 1'-0"



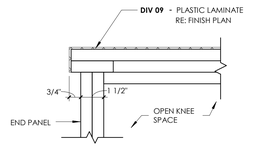
NOTE: REFER TO THIS TYPICAL DETAIL J1 FOR MATERIALS, DIMENSIONS AND DETAIL ENLARGEMENTS OF TYPE "J" WARDROBE CABINETS.

10 - J1 - FULL HEIGHT CABINET
1" = 1'-0"

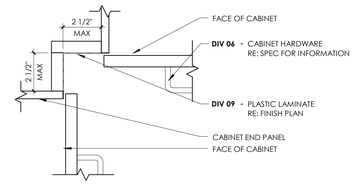
WARDROBE



17 - SECTION DETAIL - PLASTIC LAMINATE
3" = 1'-0"



14 - SECTION DETAIL - FINISHED END PANEL
3" = 1'-0"



11 - PLAN DETAIL - INSIDE CORNER
3" = 1'-0"

ARCHITECTURAL CASEWORK GENERAL NOTES

ALL CASEWORK:

1. ALL SECTION DETAILS ON THIS SHEET MAY NOT APPLY TO THIS PROJECT.
2. ARCHITECTURAL WOODWORK TYPES, WIDTHS, AND HEIGHTS ARE INDICATED ON THE A.560 SERIES SHEETS.
3. FIELD VERIFY EXISTING DIMENSIONS PRIOR TO FABRICATION. NOTIFY ARCHITECT OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO FABRICATION.
4. VERIFY AND COORDINATE CLEAR DIMENSIONS REQUIRED FOR OWNER-FURNISHED EQUIPMENT LOCATED WITHIN OR ADJACENT TO ANY CABINETS.
5. COORDINATE INSTALLATION OF SINKS WITH ASSOCIATED PIPING AND FITTINGS PLUS WITH INSTALLATION OF ACCESSIBLE COVER PANELS.
6. REQUIRED SCRIBES AND FILLER PIECES SHALL BE INSTALLED TO ALLOW PROPER OPERATION OF DRAWERS/DOORS. THEY SHALL BE EVENLY DISTRIBUTED AND OF EQUAL WIDTH ALONG A SINGLE RUN OF CABINETS. THEY SHALL BE 3" WIDE, MAXIMUM EXCEPT INSIDE CORNER FILLERS SHALL BE 2 1/2" WIDE MINIMUM. REF TO TYP. CASEWORK DETAILS ON SHEET A.571, INSIDE CORNER DETAIL.
7. WHERE BASE CABINETS INTERSECT AT INSIDE CORNER CONDITION PROVIDE WALL MOUNTED LEDGERS TO SUPPORT COUNTERTOP AT CORNERS. WHERE UPPER CABINETS INTERSECT AT INSIDE CORNER CONDITIONS PROVIDE HORIZONTAL FILLER PANEL FLUSH WITH BOTTOM OF CABINETS.
8. PROVIDE PLASTIC SCREW COVERS TO CONCEAL SCREW HEADS AT ALL SEMI-EXPOSED CABINET SURFACES. ALL EXPOSED SCREWS SHALL BE COUNTERSUNK.
9. CORE MATERIAL FOR SHELVING GREATER THAN 30" WIDE SHALL BE 1" THICK.
10. REFERENCE TOILET ACCESSORY LEGEND AND MOUNTING HEIGHTS IN A.500 SERIES.
11. PROVIDE KEYBOARD TRAYS & CPU HOLDERS AT ALL COMPUTER WORK STATION LOCATIONS UNLESS NOTED OTHERWISE.
12. PROVIDE FILLER PANELS AS NEEDED BETWEEN BUILT-IN APPLIANCES AND ADJACENT CABINETS OR WALLS.
13. ALL VERTICAL JOINTS BETWEEN CABINETS SHALL BE BUTT JOINTS. THEY SHALL LOOK "SEAMLESS" AND BE COVERED IN PLASTIC LAMINATE.
14. ALL EXPOSED SURFACES ON CABINETS WITHOUT DOORS SHALL BE CLAD IN PLASTIC LAMINATE UNO. NO EXPOSED MELAMINE UNO ON INTERIOR ELEVATIONS.

BASE CABINETS:

1. PROVIDE PLASTIC LAMINATE CLADDING ON ALL SURFACES OF BUILT IN DESKS AT KNEE SPACES AND EXPOSED ENDS OF DESK UNLESS NOTED OTHERWISE ON INTERIOR ELEVATIONS.
2. PROVIDE SCHEDULED BASE ALONG BOTTOM OF EXPOSED FRONTS, BACKS, SIDES, AND ENDS OF ALL FIXED CABINETS, PEDESTALS, VERTICAL SUPPORT PANELS, AND KNEE SPACES, ETC UNLESS NOTED OTHERWISE ON THE INTERIOR ELEVATIONS.
3. ALL DRAWER LENGTHS SHALL BE 20" UNLESS NOTED OTHERWISE. ALL DRAWERS GREATER THAN 30" WIDE SHALL HAVE TWO PULLS.
4. ALL HORIZONTAL AND VERTICAL REVEALS SHALL BE 1/8".
5. ALL TOEKICK SPACES SHALL BE 4 1/8" TALL X 3 1/4" DEEP UNLESS NOTED OTHERWISE. REF TO TYP CASEWORK DETAILS ON SHEET A.571.

COUNTERTOPS:

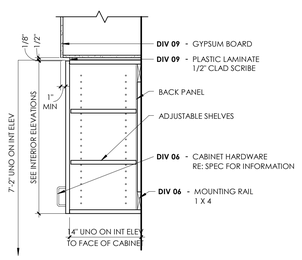
1. ALL COUNTERTOPS ARE TO BE 24" DEEP UNO ON INTERIOR ELEVATIONS.
2. ALL OUTSIDE COUNTERTOP CORNERS TO BE 1 1/2" RADIUS (IN PLAN) UNLESS NOTED OTHERWISE REF TO TYP. CASEWORK DETAILS ON SHEET A.571, COUNTERTOP CORNER DETAIL.
3. PROVIDE WALL MOUNTED BRACKETS (FIELD PAINTED) FOR SUPPORT OF COUNTERTOPS AT KNEE SPACES. COUNTERTOPS SHALL BE SUPPORTED 30" MINIMUM - 36" MAXIMUM OC COORDINATE LOCATION WITH KEYBOARD TRAYS AND CPU HOLDERS. REF. INTERIOR ELEVATIONS FOR LOCATIONS OF COUNTERTOP BRACKETS.
4. LOCATE GROMMETS AT BACK OF COUNTERTOPS EVERY 36" OC WITH A MINIMUM OF 1 PER KNEE SPACE UNLESS NOTED OTHERWISE ON THE EQUIPMENT PLAN. COORDINATE FINAL GROMMET LOCATIONS WITH OWNER. EXCEPTION: DO NOT PROVIDE GROMMETS AT ACCESSIBLE PORTION OF COUNTER, AS INDICATED ON THE EQUIPMENT PLANS.
5. REFER TO INTERIOR ELEVATIONS AND FINISH LEGEND FOR COUNTERTOP MATERIAL. ALL COUNTERTOPS AT SINKS TO BE SOLID SURFACE MATERIAL UNLESS NOTED OTHERWISE ON INTERIOR ELEVATIONS. REF TO TYP. CASEWORK DETAILS ON SHEET A.571 FOR SOLID SURFACE MATERIAL COUNTERTOP EDGE DETAIL AND FOR PLASTIC LAMINATE COUNTEROP EDGE DETAIL.
6. ALL BACK AND SIDE SPLASHES SHALL BE 4" TALL X 3/4" THICK IF PLASTIC LAMINATE. 1/2" THICK IF SOLID SURFACE MATERIAL UNO ON THE INTERIOR ELEVATIONS. ALL SPLASHES SHALL BE SCRIBED TO CONFORM TO THE SURFACE OF ABUTTING WALLS. ALL SPLASHES SHALL BE SEALED TO THE WALL WITH CLEAR SILICONE SEALANT. IF SOLID SURFACE, PROVIDE SPLASHES ON ALL REAR AND SIDE WALLS AT BASE CABINETS.

UPPER CABINETS:

1. TOP OF UPPER AND FULL HEIGHT CABINETS SHALL BE 7'-2" AFF UNLESS NOTED OTHERWISE ON INTERIOR ELEVATIONS. REF A.560 SERIES SHEETS.
2. REFERENCE SERIES A.220 AND A.560 FOR FURDOWN LOCATIONS. WALL CABINETS WITHOUT A FURR DOWN ABOVE SHALL RECEIVE A CONTINUOUS 6" HIGH SLOPED PANEL, FINISHED TO MATCH CABINETS UNLESS NOTED OTHERWISE.
3. WALL MOUNTED UPPER CABINETS SHALL INCLUDE ADJUSTABLE SHELVES UNLESS NOTED OTHERWISE.

CABINET HEIGHT	NUMBER OF SHELVES
UP TO 24"	1
25" THROUGH 42"	2
43" THROUGH 48"	3

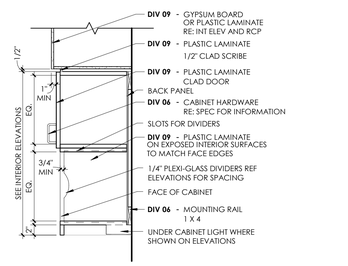
4. TOPS AND BOTTOMS OF WALL HUNG CABINETS SHALL BE 3/4" THICK WITH PLASTIC LAMINATE ON ALL EXPOSED SURFACES.
5. BACKS OF WALL HUNG CABINETS SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE. BACKS OF BASE CABINETS SHALL BE 1/4" THICK UNLESS NOTED OTHERWISE.



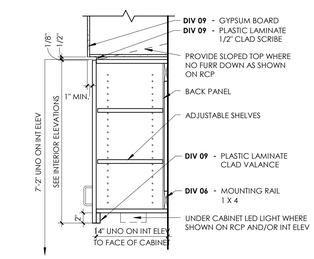
IF CABINET HAS GLASS DOORS REFER TO DETAIL 07/A.572

9 - E7 - UPPER CABINET
1" = 1'-0"

WITH DOORS AND NO UNDER CABINET TASK LIGHT RECESS



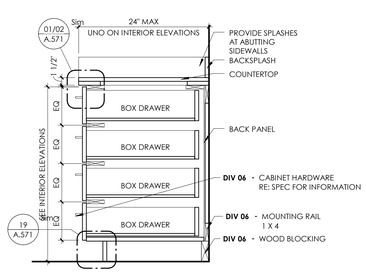
8 - E4 - UPPER CABINET
1" = 1'-0"



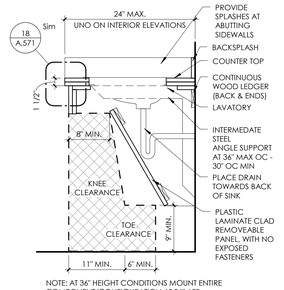
NOTE: REFER TO THIS TYPICAL DETAIL E1 FOR MATERIALS AND DIMENSIONS OF TYPE "E" UPPER CABINETS.

IF CABINET HAS GLASS DOORS REFER TO DETAIL 07/A.572

6 - E1 - UPPER CABINET
1" = 1'-0"

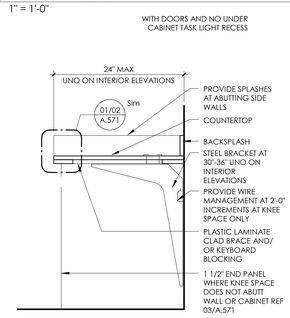


13 - D4 - BASE CABINET
1" = 1'-0"



NOTE: AT 36" HEIGHT CONDITIONS MOUNT ENTIRE COMPONENT/CONFIGURATION AT 36" AFF

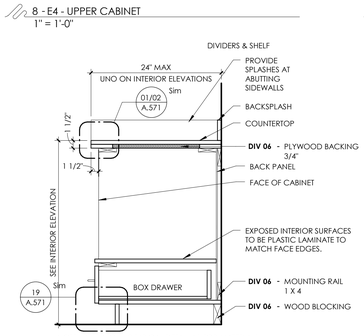
07 - C1 - ACCESSIBLE LAVATORY
1" = 1'-0"



NOTE: PROVIDE APRON AND FILLER PANELS, AT UNDER COUNTER EQUIPMENT LOCATIONS. REF INTERIOR ELEVATIONS FOR LOCATIONS. REF TO INTERIOR FINISH PLAN FOR COUNTERTOP MATERIAL. IF PLASTIC LAMINATE COUNTERTOP REF 01/A.572, IF SSM REF 02/ A.572.

05 - B1 - KNEE SPACE W/O DRAWER
1" = 1'-0"

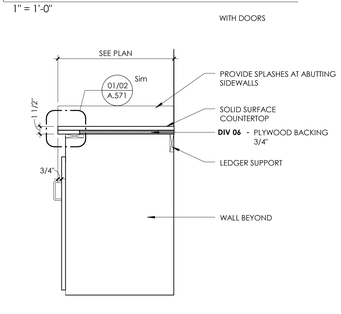
KNEE SPACE OR U/C EQUIPMENT CONDITION



NOTE: REFER TO THIS TYPICAL DETAIL A1 FOR MATERIALS, DIMENSIONS, ANDDETAIL ENLARGEMENTS OF TYPE "A" BASE CABINETS. REFER TO INTERIOR FINISH PLAN FOR COUNTERTOP MATERIAL. IF PLASTIC LAMINATE RE: 01/A.572, IF SSM RE: 02/A.572

03 - A6 - BASE CABINET
1" = 1'-0"

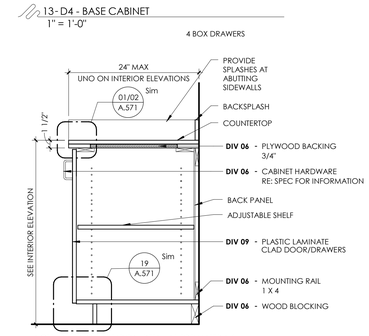
WITHOUT DOOR



NOTE: REFER TO THIS TYPICAL DETAIL A1 FOR MATERIALS, DIMENSIONS, ANDDETAIL ENLARGEMENTS OF TYPE "A" BASE CABINETS. REFER TO INTERIOR FINISH PLAN FOR COUNTERTOP MATERIAL. IF PLASTIC LAMINATE RE: 01/A.572, IF SSM RE: 02/A.572

4 - A5 - BASE CABINET
1" = 1'-0"

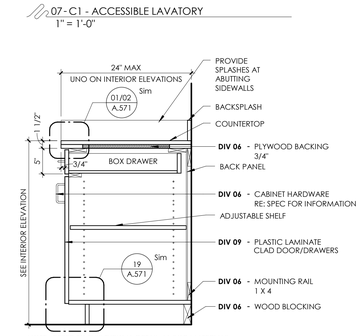
AT LAUNDRY BIN



NOTE: REFER TO THIS TYPICAL DETAIL A1 FOR MATERIALS, DIMENSIONS, ANDDETAIL ENLARGEMENTS OF TYPE "A" BASE CABINETS. REFER TO INTERIOR FINISH PLAN FOR COUNTERTOP MATERIAL. IF PLASTIC LAMINATE RE: 01/A.572, IF SSM RE: 02/A.572

02 - A2 - BASE CABINET
1" = 1'-0"

WITH DOOR



NOTE: REFER TO THIS TYPICAL DETAIL A1 FOR MATERIALS, DIMENSIONS, ANDDETAIL ENLARGEMENTS OF TYPE "A" BASE CABINETS. REFER TO INTERIOR FINISH PLAN FOR COUNTERTOP MATERIAL. IF PLASTIC LAMINATE RE: 01/A.572, IF SSM RE: 02/A.572

01 - A1 - KNEE SPACE W/ DRAWER
1" = 1'-0"

WITH DOOR & 1 DRAWER

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

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WSP + CCRD
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Greenwood Village, CO 80111
ph: 303.694.4755

No.	Description	Date

STATE OF COLORADO
JOHN MENNO HNEDAK
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

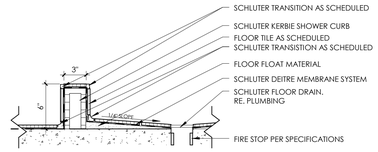
Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	Author
Checked by	Checker

Sheet Title:
TYPICAL CASEWORK SECTIONS & DETAILS

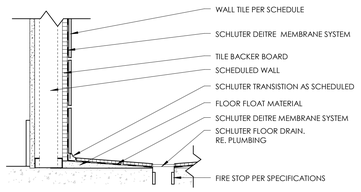
Sheet Number
A.571

CONTRACT & SPECIFICATIONS PROVISIONS

8/8/16 12:56:50 PM



10- DETAIL @ SHOWER CURB
1 1/2" = 1'-0"

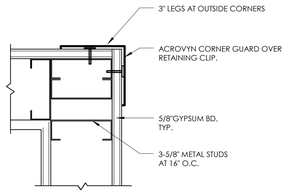


09- DETAIL @ SHOWER TILE
1 1/2" = 1'-0"



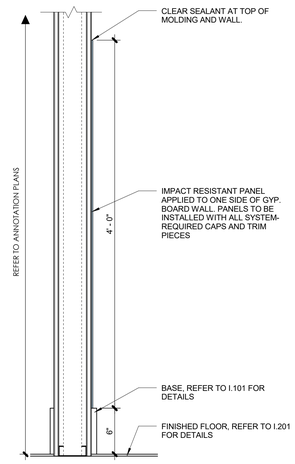
*NOTE: CORNER GUARD TO BE MOUNTED ABOVE
SCHEDULED BASE TO 4'-6" A.F.F.

08- TYP DOULBE CORNER GUARD
1 1/2" = 1'-0"

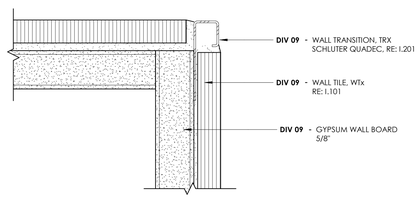


*NOTE: CORNER GUARD TO BE MOUNTED ABOVE
SCHEDULE BASE

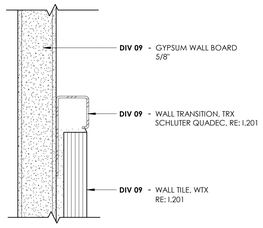
07- TYP SINGLE CORNER GUARD
1 1/2" = 1'-0"



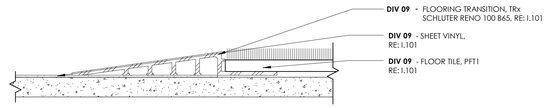
06- TYP WALL PROTECTION SECTION
1 1/2" = 1'-0"



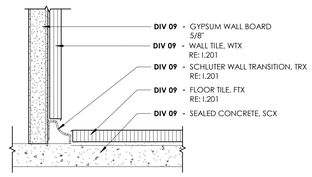
05- WTR2 - OUTSIDE CORNER- TILE TO TILE
12" = 1'-0"



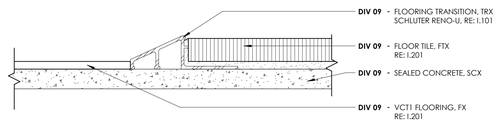
04- WTR1 - WALL TILE TO GYP
12" = 1'-0"



03- FTR1 - FLOOR TILE TO SHEET VINYL
12" = 1'-0"



02- FTR2 - FLOOR TILE TO WALL TILE
6" = 1'-0"



01- FTR1 - VCT TO TILE
12" = 1'-0"

FINISH LEGEND

FLOORING

VCT1 - Field
Manuf: Mannington
Style: Touchstone
Color: Almond Buff 55507
Size: 12" x 12" x 1/8"
Contact: Gail Montressor @ 303-945-1843

VCT2
Manuf: Mannington
Style: Touchstone
Color: Horizon
Size: 12" x 12" x 1/8"
Contact: Gail Montressor @ 303-945-1843

VCT3
Manuf: Mannington
Style: Touchstone
Color: Macaw
Size: 12" x 12" x 1/8"
Contact: Gail Montressor @ 303-945-1843

VCT4
Manuf: Mannington
Style: Touchstone
Color: Banana Cream
Size: 12" x 12" x 1/8"
Contact: Gail Montressor @ 303-945-1843

VCT5
Manuf: Mannington
Style: Touchstone
Color: New Eggplant
Size: 12" x 12" x 1/8"
Contact: Gail Montressor @ 303-945-1843

SV1 - Field
Manuf: Mannington
Style: Biospec
Color: Cool Beige
Size: 6'-6" X 30-68 sq. yards x 0.08" thick
Contact: Gail Montressor @ 303-945-1843

SV2
Manuf: Mannington
Style: Biospec
Color: Lapis
Size: 6'-6" X 30-68 sq. yards x 0.08" thick
Contact: Gail Montressor @ 303-945-1843

SV3
Manuf: Mannington
Style: Biospec
Color: Banana Cream
Size: 6'-6" X 30-68 sq. yards x 0.08" thick
Contact: Gail Montressor @ 303-945-1843

SV4
Manuf: Mannington
Style: Biospec
Color: Lime
Size: 6'-6" X 30-68 sq. yards x 0.08" thick
Contact: Gail Montressor @ 303-945-1843

SV5
Manuf: Mannington
Style: Biospec
Color: Blueberry
Size: 6'-6" X 30-68 sq. yards x 0.08" thick
Contact: Gail Montressor @ 303-945-1843

FT1
Manuf: Daltile
Style: Parkway
Color: Beige PK96
Size: 12" x 12" x 3/8" Thick
Contact: Sara Harper @ 303.885.8975
Grout: Epoxy
Grout Color: TBD

FLOORING TRANSITIONS

FTR1- VCT to Tile
Manuf: Schluter Systems
Style: Reno-U
Color: Satin Anodized Aluminum
Size: 5/32" to 3/8" H

FTR2- Floor Tile to Wall Tile
Manuf: Schluter Systems
Style: Dilex- HKU
Size: 3/8" radius
Color: Brushed Stainless Steel 304

FTR3- Sheet Vinyl to Tile
Manuf: Schluter Systems
Style: Reno Ramp-K
Size: 3/8" H x 2-1/2" L
Color: Satin anodized aluminum (AE)

BASE

INT
6" H Integral Base

RB1
Manuf: Johnsonite
Style: 4" h Traditional Cove Base x 120' roll
Color: 49 Beige
NOTE: Miter inside corners. Do not use premolded outside corners

RB2 Profile Base
Manuf: Johnsonite
Style: Millwork Wall Finishing System
Color: 49 Beige
NOTE: Miter inside corners. Do not use premolded outside corners

WALLS

P1 - Field
Manuf: Sherwin Williams
Color: Divine White SW6105
Finish: Semigloss

P2
Manuf: Sherwin Williams
Color: Sunny Veranda SW9017
Finish: Semigloss

P3
Manuf: Sherwin Williams
Color: Great Green SW6430
Finish: Semigloss

P4
Manuf: Sherwin Williams
Color: Porch Ceiling SW 9063
Finish: Semigloss

P5
Manuf: Sherwin Williams
Color: Berry Cream SW9075
Finish: Semigloss

P6
Manuf: Sherwin Williams
Color: Nomadic Desert SW6107
Finish: Semigloss

P7 Chalkboard Paint
Manuf: Benjamin Moore
Color: City Shadow CSP-60 (308)
Finish: Eggshell

CEILING

ACT1
Manuf: Armstrong
Tile Style: Dune Tegular
Tile Model: #1772
Tile Size: 24" x 24" x 5/8"
Tile Color: White
Grid Style: 15/16" Prelude
Grid Color: White
*NOTE: Refer to A.220 series for size location
*NOTE: At all areas where ACT1 is used, provide additional 2' T's at existing Grid.

ACT2 (See Alternates)
Manuf: Armstrong
Tile Style: Dune Second Look
Tile Model: #2712
Tile Size: 24" x 48" x 5/8"
Tile Color: White
Grid Style: 15/16" Prelude
Grid Color: White
*NOTE: Refer to A.220 series for size location

ACT3
Manuf: Armstrong
Tile Style: Dune Tegular
Tile Model: #1773
Tile Size: 24" x 48" x 5/8"
Tile Color: White
Grid Style: 15/16" Prelude
Grid Color: White
*NOTE: Refer to A.220 series for size location

GYP
Gypsum Board ceiling, painted as noted on finish plan

MILLWORK

PL1
Manuf: Wilsonart
Color: Shaker Cherry #7935K-07
Finish: Textured Gloss

SS1
Manuf: Avonite
Color: Jicama K1-6625
Size: 1/2" Thick
Contact: Mary Farace @ 720.544.1805

SS2
Manuf: Avonite
Color: Cat Eye K3-8330
Size: 1/2" Thick
Contact: Mary Farace @ 720.544.1805

SS3
Manuf: Corian
Color: Cameo White
Size: 1/2" Thick
Contact: Emily Harding @ 800.642.2246

WALL TILE
*All grout to be Epoxy

WT1 Mosaic Tile
Manuf: Daltile
Style: Color Wave
Color: Winter Blues
Size: 12" x 12"
Grout Color: TBD

WT2 Field Tile
Manuf: Daltile
Style: Parkway
Color: Beige PK96
Size: 9" x 12" x 3/8" Thick
Grout Color: TBD

ST1 Stacked Stone
Manuf: Stile Squared
Style: Ledge Stone
Color: Carbondale Cliffs
Size: 6" x 24" Panel

WTR1 Wall tile to gyp
Manuf: Schluter Systems
Style: Quadec
Color: Satin anodized aluminum (AE)
Size: 3/8" H

WTR2 Outside corner - tile to tile
Manuf: Schluter Systems
Style: Quadec
Color: Satin anodized aluminum (AE)
Size: 3/8" H

WALL PROTECTION

WP1 Sheet - Field
Manuf: Inpro Corporation
Style: Rigid Sheet
Size: 4' x 10' x 0.06" Thick
Color: Chamois 0234
*include manuf trim pieces as required.

WP2 Sheet
Manuf: Inpro Corporation
Style: Rigid Sheet
Size: 4' x 10' x 0.06" Thick
Color: Buttercup 0376
*include manuf trim pieces as required.

WP3 Sheet
Manuf: Inpro Corporation
Style: Rigid Sheet
Size: 4' x 10' x 0.06" Thick
Color: Cactus 0242
*include manuf trim pieces as required.

WP4 Sheet
Manuf: Inpro Corporation
Style: Rigid Sheet
Size: 4' x 10' x 0.06" Thick
Color: Buoyant Blue 0132
*include manuf trim pieces as required.

WP6 Single Corner Guard
Manuf: Inpro Corporation
Style: 150 Surface Mount. 130 at angled corners
Size: (1) 3" x 3" x refer to detail height
Color: Chamois 0234

WP7 Double Corner Guard
Manuf: Inpro Corporation
Style: 160D Surface Mount
Size: (2) 2" x 2" x refer to detail height
Color: Chamois 0234

WP8 Handrails
Manuf: Acrovyn
Style: HRB-4C
Color: Desert Sand 102

WP9 Child Handrails
Manuf: Acrovyn
Style: P-OAH pipe rail
Color: Imperial Purple 520

MISC.

RP1 Resin Panel
Manuf: 3-Form
Style: Clear + Fizz + Clear
Thickness: 5/8"
Finish: Front & Back- Markerboard Plus

FV1 Frosted Vinyl
Manuf: 3M
Style: Fasara Glass Finish
Color: Opaque White

TWS1 Tackable Fabric
Class A Homosote Panels wrapped in:
Manuf: National Office Furniture
Style: Repetition
Color: Almond

SR1 Shower Curtain Rod L-shape
Manuf: Barclay
Style: 4121-60
Color: Polished Chrome CP

SR2 Shower Curtain Rod Straight
Manuf: Barclay
Style: 4100-48
Color: Polished Chrome CP

(ME) Match Existing

(E) Existing to Remain

GENERAL NOTES

FLOOR FINISH:
A. ALL FLOOR TRANSITIONS ARE TO OCCUR AT THE CENTERLINE OF DOOR WHEN DOOR IS IN CLOSED POSITION.

B. REFER TO I.101 SERIES FOR TRANSITION AND THRESHOLD DETAILS.

C. REFER TO INTERIOR FLOOR FINISH PLANS FOR ALL FLOOR PATTERNS.

WALL BASE:
A. ALL RUBBER BASE SHALL BE SEALED TIGHT TO FINISHED FLOOR.

WALL FINISH:
A. WALL TEXTURE SHALL MATCH FACILITY STANDARD, UNLESS NOTED OTHERWISE.

B. PAINT ALL WALLS SEMIGLOSS, UNLESS NOTED OTHERWISE. SEE FINISH LEGEND FOR DEFINITION.

C. PAINT ALL ELECTRICAL AND ACCESS WALL PANELS TO MATCH ADJACENT WALL FINISH.

CEILING FINISH:
A. FURR-DOWN FINISH: VERTICAL AND HORIZONTAL SURFACES OF FURR-DOWN TO MATCH ADJACENT WALLS, UNLESS NOTED OTHERWISE.

B. REFER TO REFLECTED CEILING PLAN FOR ALL CEILING HEIGHTS.

C. PAINT ALL GYP. BD. CEILINGS SEMIGLOSS, UNLESS NOTED OTHERWISE. SEE FINISH LEGEND FOR DEFINITION.

D. PAINT ALL ACCESS PANELS IN CEILING TO MATCH ADJACENT CEILING FINISH.

E. PAINT ALL SIDES OF SOFFIT FOR GYP. CEILING ABOVE COLOR LISTED ON REFLECTED CEILING PLAN.

F. ALL CEILING GRID WALL ANGLES TO BE SEALED AT WALL WHERE PAINT OCCURS.

DOORS/WINDOWS:
A. INTERIOR HOLLOW METAL DOOR & FRAME, AND INTERIOR SURFACE OF EXTERIOR HOLLOW METAL DOOR & FRAME TO BE PAINTED WITH P6, UNLESS NOTED OTHERWISE.

ACCESSORIES:
A. REFER TO EQUIPMENT PLAN AND DETAILS FOR WALL PROTECTION (WP) LOCATIONS. REFER TO INTERIOR FINISH LEGEND FOR SPECIFIC PROFILES AND COLORS.

B. PROVIDE AND INSTALL ADA COMPLAINT SIGNAGE, AS REQUIRED BY CODE FOR ALL ADA TOILET ROOMS, STAIR LEVELS AND SERVICE ROOMS.

C. PROVIDE PAPER TOWEL DISPENSER AT ALL SINK LOCATIONS.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: ***Aug 31, 2016***
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

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Email: info@path21arch.com
www.path21arch.com

Consultant Team

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WSP + CCRD
5613 DTC Parkway, Suite 500
Greenwood Village, CO 80111
ph: 303.694.4755

No.	Description	Date

STATE OF COLORADO
JOHN MENNO HAP
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	Author
Checked by	Checker

Sheet Title:
FINISH LEGEND

Sheet Number
I.101

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8/8/16 12:28:01 PM



01 - FINISH PLAN - LEVEL 03
3/16" = 1'-0"

FINISH PLAN GENERAL NOTES

1. REFER TO INTERIOR FINISH LEGEND I.101 FOR FINISH MANUFACTURER AND COLOR INFORMATION.
2. REFER TO A.531 SERIES FOR FLOOR TRANSITION DETAILS.
3. REFER TO A.220 SERIES REFLECTED CEILING PLANS FOR LOCATION OF CEILING FINISHES AND CEILING HEIGHTS.

FINISH PLAN LEGEND

ROOM FINISH TAG (REFERENCE I.101 SHEET)

ACT	CEILING FINISH
P	WALL FINISH
RB	WALL BASE FINISH
SV	FLOOR FINISH

* DENOTES MULTIPLE FINISHES, PLEASE REFER TO ENLARGED PLANS, DETAILS AND/OR ELEVATIONS FOR MORE INFORMATION.

- (1) KEYNOTE
- NOT IN SCOPE OF WORK
- (P4) PAINT ACCENT
- (CPT) FINISH TAG
- REPLACE ALL CEILING TILE WITH NEW CEILING TILE PER FINISH PAGES. GRID TO REMAIN.

FINISH PATTERN LEGEND

(1) SCHLUTER RENO-RAMP-K TRANSTION AT SHEET VINYL TO TILE TRANSITION. RE: I.101 FOR DETAILS.

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No.	Description	Date

STATE OF COLORADO
JOHN MENNO MEIJ
401729
LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	Author
Checked by	Checker

Sheet Title:
FINISH PLANS

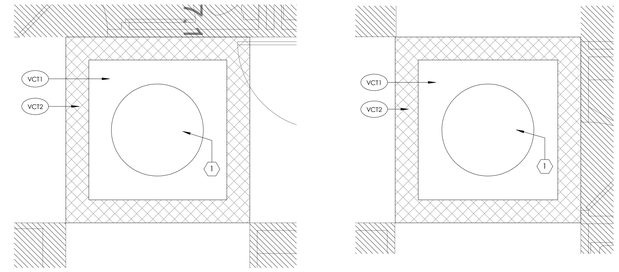
Sheet Number
I.201

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

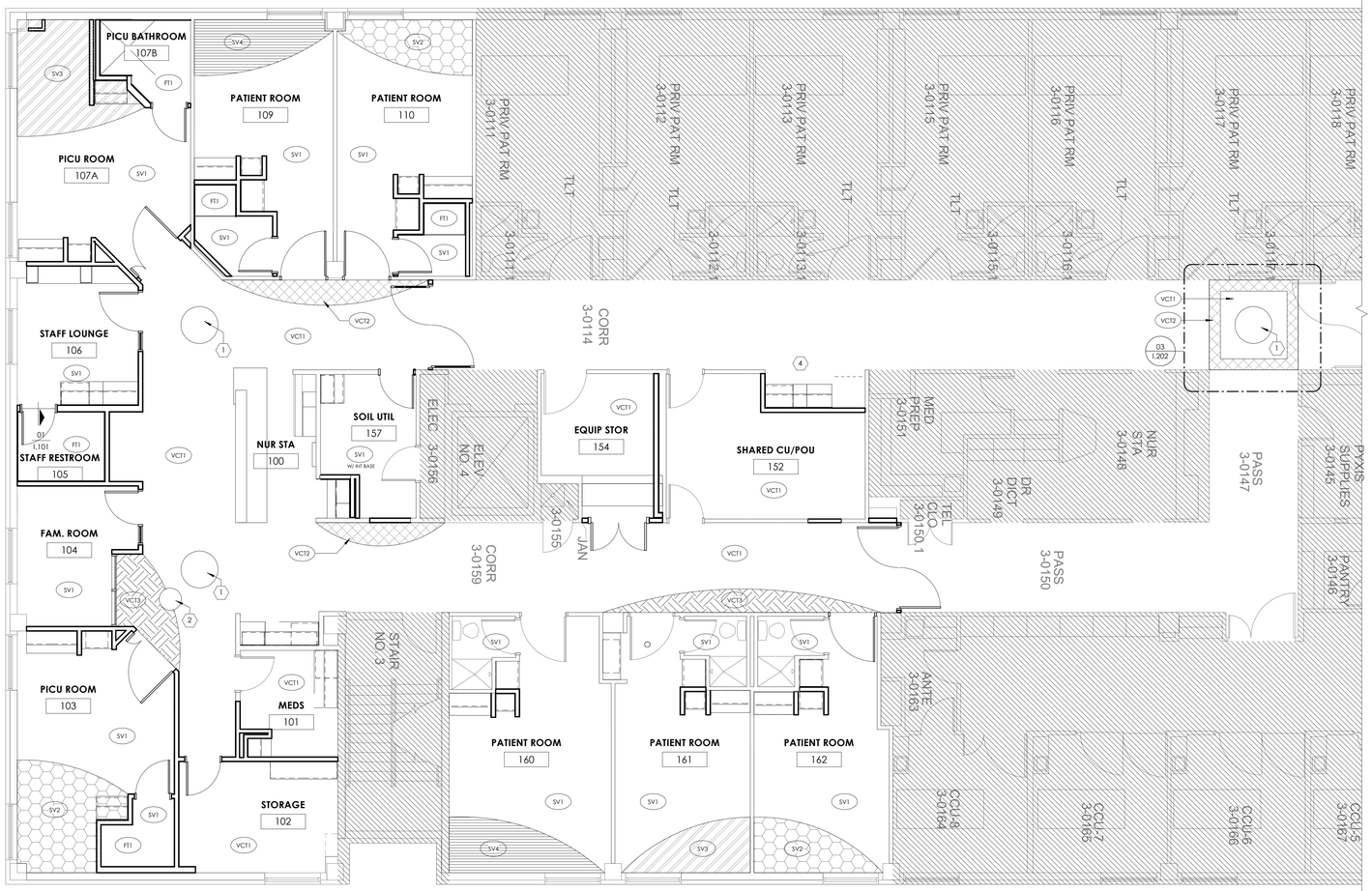
CONTRACT & SPECIFICATIONS INSTITUTE

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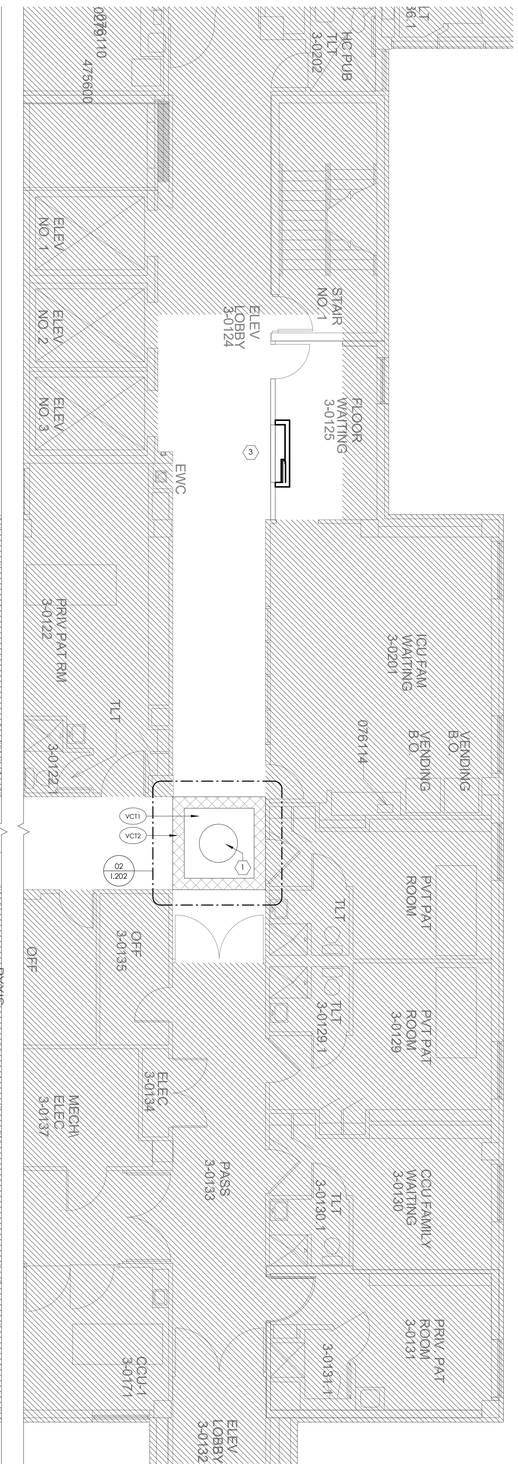


03- FLOOR PATTERN - 02
3/8" = 1'-0"

02- FLOOR PATTERN - 01
3/8" = 1'-0"



01 - FLOOR PATTERN - LEVEL 03
3/16" = 1'-0"



FLOOR PATTERN GENERAL NOTES

1. REFER TO INTERIOR FINISH LEGEND I.101 FOR FINISH MANUFACTURER AND COLOR INFORMATION.
2. REFER TO A.531 SERIES FOR FLOOR TRANSITION DETAILS.
3. REFER TO A.220 SERIES REFLECTED CEILING PLANS FOR LOCATION OF CEILING FINISHES AND CEILING HEIGHTS.

FLOOR PATTERN LEGEND

FLOOR FINISH

- SV1 — FIELD - PATIENT ROOMS
- SV2
- SV3
- SV4
- VCT1 — FIELD - CORRIDORS
- VCT2
- VCT3

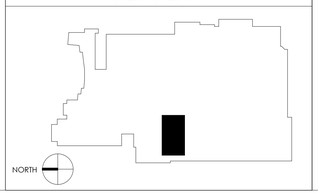
FLOOR PATTERN LEGEND

1. JOCKIMO LIQUID LAVA TILE- 40" DIA. BLUE
2. JOCKIMO LIQUID LAVA TILE- 24" DIA. BLUE
3. PROVIDE INFILL OF FLOOR TILE UNDER STAINLESS STEEL CABINET FROM FACILITY ATTIC STOCK.
4. PROVIDE INFILL OF FLOOR TILE UNDER CABINET FROM FACILITY ATTIC STOCK.

This sheet of drawings has not been reviewed for code compliance.

RSN: *1142126*
Permit #: *16-1162585*

KEY PLAN



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No.	Description	Date

STATE OF COLORADO
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LICENSED ARCHITECT
08/05/16

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

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Date	AUGUST 05, 2016
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FLOOR PATTERNS

Sheet Number
I.202

CONTRACT & SPECIFICATIONS DOCUMENTS

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01 - FURNITURE PLAN - LEVEL 03
3/16" = 1'-0"

This sheet of drawings has not been reviewed for code compliance.

RSN: *1142126*
Permit #: *16-1162585*

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Sheet Title:

FURNITURE PLAN

Sheet Number

I.221

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8/8/16 12:26:08 PM

GENERAL NOTES - ALL HVAC SHEETS:

A. ANY DISCREPANCY THAT PREVENTS THE CONTRACTOR FROM MEETING THE DESIGN INTENT OF THE DRAWINGS SHALL BE DOCUMENTED ON THE PROJECT RECORD DOCUMENTS AND BE REPORTED TO THE ARCHITECT/ENGINEER IMMEDIATELY.

B. ALL DEVIATIONS FROM SCHEDULED EQUIPMENT THAT RESULTS IN ADDITIONAL COST DUE TO LACK OF COORDINATION WITH DIMENSIONS, WEIGHTS, AND CONNECTION POINTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

C. CONTRACTOR SHALL VISIT JOBSITE AND VERIFY SIZE AND LOCATION OF ALL EXISTING ITEMS AND CONDITIONS. CONTRACTOR SHALL COORDINATE ALL WORK CLOSELY WITH EXISTING CONDITIONS AND WITH ALL OTHER TRADES.

D. ALL MECHANICAL, ELECTRICAL, AND PLUMBING WORK SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL BUILDING CODES. REFER TO SPECIFICATIONS FOR MATERIALS AND METHODS FOR MECHANICAL AND PLUMBING CONSTRUCTION.

E. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, PAY ALL FEES, AND COMPLY WITH ALL NATIONAL, STATE, AND MUNICIPAL LAWS, CODES, AND ORDINANCES RELATING TO BUILDING AND PUBLIC SAFETY.

F. THE CONTRACTOR SHALL PREPARE A FULL SET OF COORDINATION DRAWINGS, SHOWING THE RELATIONSHIP OF ALL SYSTEMS TO BE INSTALLED. THESE DRAWINGS SHALL INDICATE SIZES, ELEVATIONS, AND EXACT LOCATIONS OF ALL STRUCTURAL, ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS. THESE DRAWINGS SHALL BE COMPLETED PRIOR TO BEGINNING ANY WORK AND SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW. CONTRACTOR SHALL NOTE ANY ITEMS THAT PREVENT HIM FROM MEETING THE DESIGN INTENT OF THE CONSTRUCTION DOCUMENTS ON THESE DRAWINGS.

G. CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR A COMPLETE WORKING AND COORDINATED SYSTEM.

H. COORDINATE THE EXACT LOCATION OF MECHANICAL AND PLUMBING EQUIPMENT AND DEVICES WITH THE LOCATIONS OF LIGHT FIXTURES, PIPING, CONDUIT, AND OTHER CONSTRUCTION, TO ALLOW FOR PROPER ACCESS TO SERVICE EQUIPMENT.

I. COORDINATE THE LOCATION OF DUCTWORK AND PIPING WITH ALL OTHER TRADES AND PROVIDE OFFSETS IN DUCTWORK AND PIPING AS REQUIRED.

J. IT IS THE INTENT OF THESE DOCUMENTS TO ALLOW ALL CEILING CONSTRUCTION AND HEIGHTS TO BE AS SHOWN ON THE ARCHITECTURAL DRAWINGS. COORDINATE THE LOCATION OF DUCTWORK AND PIPING AND PROVIDE OFFSETS IN DUCTWORK AND PIPING AS REQUIRED TO MEET THIS INTENT.

K. CONDUIT, PIPING, AND DUCTWORK SHALL BE INDEPENDENTLY SUPPORTED, AND EACH SUPPORT SHALL BE INDEPENDENT OF PARTITION AND CEILING SYSTEM SUPPORTS. WHERE INDEPENDENT SUPPORT IS NOT POSSIBLE AN ENGINEERED SUPPORT SYSTEM SHALL BE UTILIZED.

L. INSTALL ALL FLOOR MOUNTED EQUIPMENT ON PADS AS SPECIFIED. PAD BY GENERAL CONTRACTOR. COORDINATE REQUIREMENTS WITH GENERAL CONTRACTOR.

M. ALL WORK SHALL BE SCHEDULED AND PERFORMED IN STRICT COORDINATION WITH ARCHITECTURAL PHASING PLANS AND WITH BUILDING SCHEDULES, OCCUPANCIES, AND WORK.

N. PROTECT EQUIPMENT AND WORK FROM DAMAGE DURING HANDLING AND INSTALLATION UNTIL COMPLETION OF CONSTRUCTION.

O. REMOVE ALL EXCESS MATERIAL AND DEBRIS AND CLEAN ALL EQUIPMENT UPON COMPLETION OF WORK. TOUCH UP WITH PAINT WHERE REQUIRED.

P. CONTRACTOR SHALL COORDINATE ALL WORK CLOSELY WITH ALL OTHER TRADES.

Q. CLIENT/ARCHITECT SHALL HAVE FINAL APPROVAL OF ALL GRILLE, DIFFUSER, AND THERMOSTAT LOCATIONS.

R. COORDINATE ALL AIR DEVICE LOCATIONS AND MOUNTING FRAME STYLES WITH LIGHTING PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS.

S. COORDINATE ALL WALL MOUNTED DEVICE LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS.

T. PROVIDE ADDITIONAL VALVES, TAPS, TEMPORARY DUCTWORK, ETC. AS NECESSARY TO PROVIDE UNINTERRUPTED SERVICE TO AREAS OUTSIDE OF THE PHASE IN WHICH WORK IS BEING PERFORMED.

U. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF WALLS THAT EXTEND TO STRUCTURE. EACH HVAC DUCT OR PIPE PENETRATION THROUGH THESE WALLS SHALL BE INSTALLED AS SPECIFIED OR DETAILED. WHERE FLEXIBLE DUCT WOULD PENETRATE A WALL WHICH EXTENDS TO STRUCTURE, PROVIDE INSULATED RIGID DUCT EXTENDING 12" ON EITHER SIDE OF THE PARTITION.

V. ALL DEVIATIONS FROM SCHEDULED EQUIPMENT THAT RESULTS IN ADDITIONAL COST DUE TO LACK OF COORDINATION WITH DIMENSIONS, WEIGHTS, AND CONNECTION POINTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

W. DUCT SIZES ARE NET FREE AREA.

X. PROVIDE ROUND DUCTS TO ALL AIR DEVICES UNLESS NOTED OTHERWISE. DUCT SIZE SHALL MATCH AIR DEVICE NECK SIZE OR THE TABLE IN AIR DEVICE SCHEDULE, WHICHEVER IS LARGER. FLEXIBLE DUCTS SHALL BE SIZED SIMILARLY. DO NOT USE FLEXIBLE DUCTS ABOVE NON-LAYIN CEILINGS.

Y. PROVIDE FRAMED 0.5" BY 0.5" BIRD SCREEN (GALVANIZED STEEL ASSEMBLY) AT ALL DUCTS TERMINATING WITHOUT AN AIR DEVICE, AT INDOOR FACE OF LOUVERS, AND AT UNDUCTED AIR FLOW OPENINGS AT EQUIPMENT.

Z. PROVIDE MANUAL VOLUME DAMPER IN EACH AIR DEVICE RUNOUT DUCT AS FAR FROM AIR DEVICE AS POSSIBLE.

AA. INSTALL TURNING VANES IN ALL 90 DEGREE SQUARE ELLS IN SUPPLY, RETURN, AND EXHAUST DUCTS. (NONE ALLOWED IN COMBUSTION AIR DUCTS).

AB. MULTI-BLADE DAMPERS OF ANY TYPE INSTALLED WITHIN 36" OF AN ELL OR OTHER FITTING SHALL BE INSTALLED WITH THE DAMPER BLADE SHAFTS PARALLEL TO THE AIRSTREAM FLOW DIRECTION UPSTREAM OF THE FITTING.

AC. ALL FIRE AND COMBINATION FIRE/SMOKE DAMPERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION DETAILS AND BE U.L. TESTED AND LISTED.

AD. SLOPE & ARRANGE CONDENSATE PIPING TO ESTABLISH HIGH POINTS FOR AIR ELIMINATION AND LOW POINTS TO PERMIT PROPER DRAINING OF EACH LINE. PROVIDE MANUAL AIR VENTS AT HIGH POINTS AND DRAIN VALVES AT LOW POINTS.

AE. COORDINATE LOCATION OF ALL DUCT AND PIPING FLOOR SLEVE/CORE PENETRATIONS WITH STRUCTURAL DRAWINGS.

AB. INSTALL SPACE THERMOSTAT ADJACENT TO LATCH SIDE OF DOOR IN SPACE INDICATED. INDICATED LOCATIONS ARE APPROXIMATE. AVOID HEAT PRODUCING EQUIPMENT. FINAL SPACE THERMOSTAT/SENSOR LOCATIONS SHALL BE AS DIRECTED BY THE ARCHITECT.

AE. COORDINATE LOCATION OF ALL DISCONNECTS, CONTROL PANELS AND ELECTRICAL CONNECTIONS FOR MECHANICAL AND PLUMBING EQUIPMENT TO MAINTAIN NEC REQUIRED CLEARANCES OF 42" DEEP AND 30" WIDE IN FRONT OF EQUIPMENT.

GENERAL PIPING NOTES:

A. REFER TO THE ARCHITECTURAL PHASING PLAN FOR THE AREAS SHOWN ON THIS SET OF PLANS. WORK SHALL BE SCHEDULED AND PERFORMED IN SEQUENCE WITH THE PHASING PLAN.

B. ARCHITECT SHALL HAVE FINAL APPROVAL OF ALL THERMOSTAT LOCATIONS. COORDINATE ALL WALL MOUNTED DEVICE LOCATIONS WITH ARCHITECTURAL INTERIOR ELEVATIONS.

N. ALL CONNECTION BETWEEN PIPES OF DISSIMILAR MATERIALS SHALL BE MADE WITH DIELECTRIC UNIONS.

O. G.C. TO PROVIDE ACCESS DOORS IF REQUIRED FOR ACCESS TO VAV'S AND ANY VALVES THAT ARE NOT ACCESSIBLE. VERIFY SIZE AND LOCATIONS WITH MECHANICAL CONTRACTOR.

P. PROVIDE DRAIN PAN UNDER PIPES INSIDE ELECTRICAL AND COMMUNICATION ROOMS.

Q. PROVIDE CONDENSATE DRAIN PIPING FROM ALL COOLING COILS TO DRAIN.

R. LOCATE ISOLATION VALVES FOR EQUIPMENT AS CLOSE TO THE MAIN AS POSSIBLE.

GENERAL DEMOLITION NOTES:

A. ALL CAPPED DUCT TAPS AND CONNECTING DUCTS THAT ARE NOT BEING USED ARE TO BE REMOVED BACK TO THE MAIN DUCT AND PATCHED AS PER ITEM B BELOW.

B. PATCH OPENINGS IN EXISTING DUCTWORK THAT IS TO REMAIN INCLUDING OPENINGS. WHERE TAPS OR DUCTWORK ARE TO BE REMOVED, THE FOLLOWING SHALL OCCUR:

- OPENINGS IN THE MAIN DUCTS ARE TO BE COVERED WITH A SHEET METAL PATCH. THE PATCH IS TO BE LARGER THAN THE EXISTING OPENING AND IS TO BE SECURED WITH SHEET METAL SCREWS FOUR INCHES ON CENTERS.
- A LIBERAL QUANTITY OF FIRE RESISTANT ADHESIVE IS TO BE APPLIED TO THE EDGES OF THE METAL PATCH AND THE ASSEMBLY SCREWED IN PLACE.

C. REFER TO THE ARCHITECTURAL PHASING PLAN FOR THE AREAS SHOWN ON THIS PLAN. WORK SHALL BE SCHEDULED AND PERFORMED IN SEQUENCE WITH THE PHASING PLAN.

D. DEMOLITION OF EACH PHASE SHALL OCCUR AS PART OF THE WORK FOR THAT PHASE. REMOVE ONLY THE WORK THAT SERVES THE AREA OF DEMOLITION.

E. PROVISIONS SHALL BE MADE BY THE CONTRACTOR TO PREVENT DISRUPTING ADJACENT AREAS OF THE PHASE IN WHICH WORK IS BEING PERFORMED.

F. PROVIDE ADDITIONAL VALVES, TAPS, TEMPORARY DUCTWORK AND/OR PIPING AS NECESSARY TO PROVIDE UNINTERRUPTED SERVICE TO AREAS OUTSIDE OF THE PHASE IN WHICH WORK IS BEING PERFORMED.

G. ALL WORK SHALL BE PERFORMED IN STRICT COORDINATION WITH HOSPITAL SCHEDULES, OCCUPANCIES AND WORK. CONTRACTOR SHALL COORDINATE WITH HOSPITAL REPRESENTATIVE.

H. ALL NECESSARY SHUTDOWNS OR OUT OF PHASE WORK SHALL BE SCHEDULED WITH THE HOSPITAL REPRESENTATIVE.

MECHANICAL SYMBOLS

ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS.
SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION
A/B	NEW EQUIPMENT DESIGNATION (TOP - EQUIP. ABBREV., BOTTOM - MARK)
A/B	NEW DIFFUSER DESIGNATION (TOP - SCHEDULE DESIG., BOTTOM - CFM)
	NEW EQUIPMENT
	EXISTING EQUIPMENT
	NEW DUCT
	EXISTING DUCT
	EXISTING DUCT TO BE REMOVED OR RELOCATED
	NEW SUPPLY DIFFUSER
	EXISTING SUPPLY DIFFUSER
	EXISTING SUPPLY DIFFUSER TO BE REMOVED OR RELOCATED
	NEW R/A OR EXHAUST GRILLE
	EXISTING R/A OR EXHAUST GRILLE
	EXISTING R/A OR EXHAUST GRILLE TO BE REMOVED OR RELOCATED
	NEW SLOT DIFFUSER
	FLEXIBLE DUCT
	EXISTING SLOT DIFFUSER
	EXISTING SLOT DIFFUSER TO BE REMOVED OR RELOCATED
T	THERMOSTAT
T	EXISTING THERMOSTAT TO BE REMOVED OR RELOCATED
	45° PRESSURE TAP W/ VOLUME DAMPER
	CONICAL TAP WITH VOLUME DAMPER
	CONICAL TAP W/O VOLUME DAMPER
	MANUAL VOLUME DAMPER
	FIRE DAMPER
	SMOKE DAMPER
	FIRE/SMOKE DAMPER
M	MOTORIZED DAMPER
B	BAROMETRIC DAMPER
CHS	CHILLED WATER SUPPLY PIPE
CHR	CHILLED WATER RETURN PIPE
CS	CONDENSER WATER SUPPLY PIPE
CR	CONDENSER WATER RETURN PIPE
RL	REFRIGERANT LIQUID PIPE
RG	REFRIGERANT GAS PIPE
HS	HEATING WATER SUPPLY
HR	HEATING WATER RETURN
HPS	HIGH PRESSURE STEAM
HPR	HIGH PRESSURE CONDENSATE RETURN
LPS	LOW PRESSURE STEAM
LPR	LOW PRESSURE CONDENSATE RETURN
PCR	PUMPED CONDENSATE RETURN
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RETURN
	SANITARY WASTE LINE
CD	CONDENSATE DRAIN
P	PUMPED SANITARY LINE
	VENT LINE
	DIRECTION OF SLOPE
	DIRECTION OF FLOW
	EXPANSION LOOP
	GATE VALVE
	BUTTERFLY VALVE
	BALL VALVE
	GLOBE VALVE
	TEMPERATURE AND PRESSURE RELIEF VALVE
	AUTOMATIC 2-WAY CONTROL VALVE
	AUTOMATIC 3-WAY CONTROL VALVE
	PLUG VALVE/BALANCING COCK
	SOLENOID VALVE
	CHECK VALVE
	HYDRAULIC SHOCK ARRESTOR
	VALVE IN VERTICAL
	UNION
V	VACCUUM BREAKER
	P-TRAP
	FLOOR DRAIN W/ P-TRAP
	HUB DRAIN
	FLOOR CLEANOUT OR GRADE CLEANOUT
	CLEANOUT OR WALL CLEANOUT
	PETE'S PLUG
	GAUGE COCK
	THERMOMETER
	THERMOMETER WELL
	STRAINER WITH BLOW-OFF VALVE
	F & T STEAM TRAP
	STEAM BUCKET TRAP
	CONNECT TO EXISTING
EP	ELECTRIC PNEUMATIC SWITCH

CONTROL DIAGRAM SYMBOLS

SYMBOL	DESCRIPTION
AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
TT-X	TEMPERATURE TRANSMITTER #X
HT-X	RELATIVE HUMIDITY TRANSMITTER #X
V-X	CONTROL VALVE #X
SPT-X	STATIC PRESSURE TRANSMITTER #X
ESC-X	END SWITCH, NORMALLY CLOSED #X
ESO-X	END SWITCH, NORMALLY OPEN #X
TS-X	TEMPERATURE SENSOR #X
SD-X	SMOKE DETECTOR #X
OL	OVERLOAD RELAY #X
DPS-X	DIFFERENTIAL PRESSURE SENSOR #X
CSR-X	CURRENT SENSING RELAY #X
FM-X	FLOW METER #X
FS-X	FLOW SWITCH #X
EAS-X	EMERGENCY AIR HANDLER SHUTDOWN BUTTON - AHU-#X

PROJECT DESIGN CRITERIA

LOCATION:	
CITY/STATE	AURORA, COLORADO
APPLICABLE CODES:	
BUILDING	2015 IBC
MECHANICAL	2015 IMC
PLUMBING	2015 IPC
ENERGY	2015 IECC
ELECTRICAL	2014 NEC
LATITUDE:	
DEG. N. LAT.	39.61
ELEVATION:	
FT. ABOVE SEA LEVEL	5470

Heating system shall be capable of maintaining 68 degrees F a 3'0" above the floor.
2015 IMC 309, IRC 303.9 and IBC 1204.1

MECHANICAL ABBREVIATIONS

AC	ABOVE CEILING	RLA	RELIEF AIR
AFF	ABOVE FINISHED FLOOR	SLA	SUPPLY LOW PRESSURE AIR
AI	ANALOG INPUT	SMA	SUPPLY MEDIUM PRESSURE AIR
AO	ANALOG OUTPUT	UH	UNIT HEATER
BFC	BELOW FINISHED CEILING	VAV	VARIABLE AIR VOLUME
BF	BELOW FLOOR, BLIND FLANGE	WH	WATER HEATER
BG	BELOW GRADE	WHP	WATER-SOURCE HEAT PUMP
BV	BUTTERFLY VALVE	FMB	FILTER MIXING BOX
CA	COMBISTION AIR	IN HG	INCHES MERCURY (PRESSURE)
CRU	COMPUTER ROOM UNIT	IN WC	INCHES WATER COLUMN (PRESSURE)
CRU	CONDENSATE RETURN UNIT	IBT	INVERTED BUCKET TRAP
CU	CONDENSING UNIT	TAV	THERMOSTATIC AIR VENT (STEAM SYSTEM)
DI	DIGITAL INPUT	MA	MIXED AIR
DO	DIGITAL OUTPUT	LE	LAUNDRY EQUIPMENT
DS	DISCONNECT SWITCH	CLPR	C LOW PRESSURE RETURN (CONDENSATE)
E	EXISTING	CLPS	C LOW PRESSURE STEAM
EDH	ELECTRIC DUCT HEATER	CHWR	CHILLED WATER RETURN
EUH	ELECTRIC UNIT HEATER	CHWS	CHILLED WATER SUPPLY
EF	EXHAUST FAN	CR	CONDENSER RETURN
EOMD	END OF MAIN DRIP (STEAM)	CS	CONDENSER SUPPLY
SF	SUPPLY FAN	GWR	GLYCOL WATER RETURN
EX	EXHAUST AIR	GWS	GLYCOL WATER SUPPLY
OSA	OUTSIDE AIR	HWR	HEATING WATER RETURN
TA	TRNASFER AIR	HWS	HEATING WATER SUPPLY
UNO	UNLESS NOTED OTHERWISE	HPR	HIGH PRESSURE RETURN (CONDENSATE)
PRV	PRESSURE RELIEF VALVE	HPS	HIGH PRESSURE STEAM
SV	SAFETY VALVE	LCA	LAB COMP. AIR
GD	GREASE DUCT	LHWC	LAB HEATING WATER
SS	STAINLESS STEEL	LPR	LOWER PRESSURE RETURN (CONDENSATE)
FCU	FAN COIL UNIT	LPS	LOW PRESSURE STEAM
FPB	FAN POWERED BOX	LTCWR	LOW TEMP. CHILLED WATER RETURN
FPI	FINS PER INCH	LTCWS	LOW TEMP. CHILLED WATER SUPPLY
GC	GENERAL CONTRACTOR	LTHWS	LOW TEMP. HEATING WATER SUPPLY
GEF	GENERAL EXHAUST FAN	PCWWR	PROCESS CHILLED WATER RETURN
GSF	GENERAL SUPPLY FAN	PCWS	PROCESS CHILLED WATER SUPPLY
MVD	MANUAL VOLUME DAMPER	SCWR	SECONDARY CHILLED WATER RETURN
N	NEW	SCWS	SECONDARY CHILLED WATER SUPPLY
OBD	OPPOSED BLADE DAMPER		
R	RELOCATED		
RA	RETURN AIR		
RCA	RECIRCULATED (RETURN) AIR		

MECHANICAL VENTILATION SCHEDULE

SPACE NAME	ROOM INFORMATION AREA (SQFT)	CEILING (FT)	OCCUPANCY CATEGORY	FGI 2010 REQ. OA MIN (ACH)	SA MIN (ACH)	FULL EXHAUST	SA MIN (CFM)	OA MIN (CFM)	PRESS +/-1 Neg +1 Pos	IMC 2015 REQ. OCC DENSITY	PEOPLE OA RATE	AREA OA RATE	OA MIN (CFM)	PLAN REQUIREMENTS SA (CFM)	OA (CFM)	RA (CFM)	EA (CFM)
	4,085						2,575	539									
101-Corr	400	8.0	Patient Corridor	NR	2	NR	107	0	NR	-	-	-	-	150	0	150	0
100-Nurse Station	675	8.0	Patient Corridor	NR	2	NR	180	0	NR	-	-	-	-	450	0	450	0
157-Soil Util	100	8.0	Soiled workroom or soiled holding	2	10	Yes	134	27	N	-	-	-	-	275	27	0	375
102-Storage	145	8.0	Storage	-	-	-	-	-	-	0	0	0.12	23	250	23	250	0
103-PICU Rm	260	8.0	Critical and intensive care	2	6	NR	208	70	P	-	-	-	-	550	70	400	0
103-Toilet	35	8.0	Toilet room	NR	10	Yes	47	0	N	-	-	-	-	0	0	0	50
104-Fam Rm	115	8.0	Reception areas	-	-	-	-	-	-	30	5	0.06	34	300	34	300	0
106-Staff Lounge	150	8.0	Break Rooms	-	-	-	-	-	-	25	5	0.06	36	425	36	350	0
105-Staff Toilet	45	8.0	Toilet room	NR	10	Yes	60	0	N	-	-	-	-	0	0	0	75
107-PICU ISOL	275	8.0	All room (a), (e), (e)	2	12	Yes	440	74	N	-	-	-	-	550	74	0	625
108-PICU Toilet	55	8.0	Toilet room	NR	10	Yes	74	0	N	-	-	-	-	0	0	0	75
109-Patient Rm	240	8.0	Patient room (s)	2	6	NR	192	64	NR	-	-	-	-	200	64	200	0
109-Toilet	45	8.0	Toilet room	NR	10	Yes	60	0	N	-	-	-	-	0	0	0	75
110-Patient Rm	240	8.0	Patient room (s)	2	6	NR	192	64	NR	-	-	-	-	200	64	200	0
110-Toilet	35	8.0	Toilet room	NR	10	Yes	47	0	N	-	-	-	-	0	0	0	50
152-Shared CU/POU	205	8.0	Storage	-	-	-	-	-	-	0	0	0.12	31	100	31	0	0
154-Equip Stor	100	8.0	Storage	-	-	-	-	-	-	0	0	0.12	15	50	15	0	0
101-Meds	85	8.0	Medication room	2	4	NR	46	23	P	-	-	-	-	250	23	150	0
160-Patient Rm	285	8.3	Patient room (s)	2	6	NR	238	80	NR	-	-	-	-	340	80	340	0
160-Toilet	35	8.0	Toilet room	NR	10	Yes	47	0	N	-	-	-	-	0	0	0	50
161-Patient Rm	255	8.3	Patient room (s)	2	6	NR	213	71	NR	-	-	-	-	320	71	320	0
161-Toilet	35	8.0	Toilet room	NR	10	Yes	47	0	N	-	-	-	-	0	0	0	50
162-Patient Rm	235	8.3	Patient room (s)	2	6	NR	196	66	NR	-	-	-	-	310	66	310	0
162-Toilet	35	8.0	Toilet room	NR	10	Yes	47	0	N	-	-	-	-	0	0	0	50

NOTES:
1. CALCULATIONS BASED ON 30%OSA BUILDING SUPPLY AIR.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: ***Aug 31, 2016***
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

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No.	Description	Date

COLORADO LICENSED JAMES HOLLAND 45834 REGISTERED PROFESSIONAL ENGINEER

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	HF
Checked by	RH

Sheet Title:
MECHANICAL LEGENDS AND NOTES

Sheet Number
M.001

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MECHANICAL AND PLUMBING SPECIFICATIONS:

MASTER MECHANICAL DRAWING TYPE SPECIFICATIONS

I GENERAL CONDITIONS:

A. THE SCOPE OF THE WORK SHALL INCLUDE THE FURNISHING AND INSTALLATION OF THE NECESSARY MATERIAL AND LABOR TO ACCOMPLISH THE WORK INDICATED BY THE DRAWINGS AND HEREIN SPECIFIED. ALL WORK BY THIS CONTRACTOR SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL BUILDING CODES.

B. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE EXISTING CONDITIONS AT THE JOB SITE BEFORE SUBMITTING PROPOSALS. SUBMISSION OF PROPOSALS SHALL BE TAKEN AS EVIDENCE THAT SUCH INSPECTION HAS TAKEN PLACE. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE COMPLETE SET OF CONSTRUCTION DOCUMENTS, AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.

C. MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE NEW AND SHALL BEAR THE UL. LABEL WHERE APPLICABLE, UNLESS NOTED OTHERWISE. ALL WORK SHALL BE GUARANTEED AGAINST DEFECTIVE MATERIALS AND WORKMANSHIP FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR AFTER COMPLETION AND ACCEPTANCE BY THE OWNER.

D. CONTRACTOR SHALL INSTALL MECHANICAL SYSTEMS WITHOUT INTERFERENCE AND IN STRICT COORDINATION WITH OTHER TRADES.

E. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE CONTRACT DOCUMENTS AND APPLICABLE CODES AND STANDARDS. IN CASE OF DIFFERENCE BETWEEN APPLICABLE CODES AND STANDARDS AND THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ARCHITECT/ENGINEER AND THE OWNER IN WRITING OF SUCH DIFFERENCE. SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF APPLICABLE CODES AND STANDARDS, HE SHALL BEAR ALL COSTS ARISING IN CORRECTING SUCH DEFECTS. APPLICABLE CODES AND STANDARDS SHALL INCLUDE ALL ORDINANCES, UTILITY COMPANY REGULATIONS, AND APPLICABLE REQUIREMENTS OF NATIONALLY ACCEPTED CODES AND STANDARDS. SHOULD THE CONTRACTOR SUPPLY EQUIPMENT DIFFERING FROM THE SPECIFIED ITEMS IN THE CONTRACT DOCUMENTS WITHOUT NOTIFICATION TO THE ENGINEER, HE SHALL BEAR ALL COSTS TO UPGRADE DEFICIENCIES ARISING FROM SUCH.

F. WHERE ONLY ONE MANUFACTURER'S NAME IS LISTED IN THE EQUIPMENT SPECIFICATION, OTHER MANUFACTURERS OF SIMILAR CHARACTERISTICS AND OF EQUAL OR BETTER PERFORMANCE CAPACITIES MAY BE CONSIDERED FOR "OR EQUAL" APPROVAL BY THE ENGINEER. WHERE MORE THAN ONE MANUFACTURER IS LISTED IN THE NOTES AND EQUIPMENT SPECIFICATIONS, ONLY THOSE NAMED MANUFACTURERS WILL BE CONSIDERED FOR APPROVAL.

G. SHOULD A SUBSTITUTION BE ACCEPTED, AND SHOULD THE SUBSTITUTE MATERIAL PROVE DEFECTIVE, OR OTHERWISE UNSATISFACTORY FOR THE SERVICE INTENDED WITHIN THE GUARANTEE PERIOD, THIS MATERIAL OR EQUIPMENT SHALL BE REPLACED WITH THE MATERIAL OR EQUIPMENT SPECIFIED AT NO COST TO THE OWNER.

H. PROVIDE ACCESS, INCLUDING NECESSARY ACCESS DOORS, FOR NEW AND EXISTING EQUIPMENT REQUIRING OPERATION AND/OR MAINTENANCE. RELOCATE EXISTING AND LOCATE ALL NEW EQUIPMENT SUCH THAT OPERATION OR MAINTENANCE IS NOT RESTRICTED.

I. DO NOT RUN PIPING OR DUCTWORK, OR LOCATE EQUIPMENT, WITH RESPECT TO SWITCHBOARDS, PANELBOARDS, POWER PANELS, MOTOR CONTROL CENTERS OR DRY TYPE TRANSFORMERS, WITHIN 42 INCHES IN FRONT OF EQUIPMENT, OVER EQUIPMENT, OR WITHIN 36 INCHES HORIZONTALLY OF SAME SPACE.

J. PROVIDE SNAP-ON OR ADHESIVES LABELS INDICATING CHILLED OR HOT WATER SUPPLY AND RETURN, CONDENSATE DRAINAGE, DOMESTIC HOT AND COLD WATER, MEDICAL GASES, ETC.

II MECHANICAL DEMOLITION

A. UNLESS NOTED OTHERWISE, THE MECHANICAL DEMOLITION SHALL BE CARRIED OUT TO THE EXTENT THAT THE FLOORS ARE RETURNED TO THE ORIGINAL BASE BUILDING CONDITIONS. CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS IN ORDER TO ACCURATELY DETERMINE THE EXTENT OF THE WORK UNDER THIS SECTION.

B. UNLESS NOTED OTHERWISE, REMOVE EXISTING INTERIOR DIFFUSERS, GRILLES, AND DUCTWORK AS INDICATED PLANS. EXISTING DIFFUSERS AND GRILLES MAY BE REUSED IF THEY MEET THE SCHEDULED SPECIFICATIONS. EXISTING BASE BUILDING SLOT DIFFUSERS ARE TO REMAIN EXCEPT WHERE INDICATED ON PLANS.

C. EXISTING THERMOSTATS AND/OR TEMPERATURE SENSORS ARE TO BE RELOCATED AND REUSED IF IN GOOD WORKING CONDITION.

D. WASTE, DOMESTIC WATER, AND VENT PIPING SHALL BE REMOVED BACK TO RISER STACK CONNECTIONS AND CAPPED, UNLESS NOTED OTHERWISE.

E. EXISTING DUCTWORK SHOWN ON PLANS MAY NOT EXACTLY MATCH THE ACTUAL FIELD CONDITIONS. IT IS NOT NECESSARY TO REWORK THE DUCTWORK IN ORDER TO MATCH WHAT IS DEPICTED ON THE PLANS. CONTRACTOR SHALL VERIFY EXISTING DUCTWORK ROUTING AND LOCATIONS AND MAKE ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS WITH NEW DUCTWORK, EQUIPMENT, LIGHT FIXTURES, ETC.

III PRODUCTS, EQUIPMENT AND EXECUTION:

A. PROVIDE ALTERNATIVE PRICING FOR NON HCA STANDARD PIPING.

B. SANITARY DRAIN LINES (SOIL, WASTE AND VENT) SHALL BE AMERICAN MANUFACTURED SERVICE WEIGHT CAST IRON OR DWV COPPER PIPE. JOINTS SHALL BE FABRICATED BY THE USE OF COMPRESSION JOINTS SIMILAR TO TYLER PIPE AND FOUNDRY'S "TY-SEAL" FOR CAST IRON PIPE OR 95/5 SOLDER FOR DWV COPPER PIPE. NO-HUB CAST IRON PIPE ASSEMBLED WITH STAINLESS STEEL/NEOPRENE HUBLESS COUPLINGS SHALL BE LIMITED TO ABOVE GROUND INSTALLATIONS.

C. DOMESTIC WATER PIPING INSTALLED ABOVE GROUND SHALL BE AMERICAN MANUFACTURED TYPE "L" HARD DRAWN COPPER ASSEMBLED WITH 95/5 SOLDER AND WROUGHT COPPER JOINT FITTINGS.

D. RELIEF AND DRAIN PIPING SHALL BE AMERICAN MANUFACTURED TYPE "M" COPPER WITH 95/5 SOLDER JOINT FITTINGS OR SCHEDULE 40 BLACK STEEL PIPES WITH SCREWED FITTINGS.

E. MEDICAL GAS PIPING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH CURRENT NFPA-99 AND HOSPITAL LICENSING CODE REQUIREMENTS, GCA P-2.1 RECOMMENDATIONS FOR MEDICAL-SURGICAL VACUUM SYSTEMS IN HEALTH CARE FACILITIES.

1. PIPING SHALL BE AMERICAN MANUFACTURED SEAMLESS TYPE 'K' HARD-DRAWN COPPER TUBING CLEANED AND SEALED FOR MEDICAL GAS USE. FITTINGS SHALL BE WROUGHT, BRASS OR BRONZE, MADE ONLY FOR BRAZED CONNECTIONS. ALL JOINTS IN THE PIPING, EXCEPT AT VALVES AND EQUIPMENT REQUIRING SCREW CONNECTIONS, SHALL BE ASSEMBLED WITH A SILVER BRAZING ALLOY. SCREWED JOINTS SHALL BE MADE-UP WITH GLYCERIN.

2. MEDICAL GAS WALL OUTLETS SHALL MATCH EXISTING MANUFACTURER, MODEL NUMBER AND FINISH OR MAY BE BEACON MEDICAL PRODUCTS TO MATCH EXISTING.

3. PROVIDE NECESSARY PIPING, FITTINGS, VALVES, ALARMS, SENSORS, WIRING, OUTLETS, ETC. AND LABOR FOR COMPLETE OPERATING SYSTEMS.

4. COLOR-CODED ADHESIVE PIPE MARKERS SHALL BE INSTALLED AT NO MORE THAN 20 FEET APART, OR ONE IN EACH ROOM, OR EACH FLOOR OF THE BUILDING. LABELS SHALL INCLUDE GAS CONTENTS, OPERATING PRESSURE AND THE DIRECTION OF FLOW ON ALL MEDICAL GASES, COMPRESSED AIR AND VACUUM PIPING.

5. THE MEDICAL AIR VACUUM PIPING SHALL ORIGINATE FROM THE EXISTING AIR AND VACUUM PIPING SYSTEMS LOCATED ABOVE THE CORRIDOR CEILING.

6. THE OXYGEN PIPING SHALL ORIGINATE FROM THE EXISTING OXYGEN DISTRIBUTION LINE ABOVE THE CORRIDOR CEILING.

7. THE MANUFACTURER OF MEDICAL GAS EQUIPMENT SHALL TEST ALL MEDICAL GAS PIPING SYSTEMS AFTER INSTALLATION TO INSURE THAT NO CROSSED LINES EXIST AND THAT THE PROPER SERVICE IS BROUGHT TO EACH OUTLET. THE TEST SHALL BE PERFORMED IN ACCORDANCE WITH NFPA 99 4-5 GAS SYSTEM PERFORMANCE CRITERIA AND TESTING. FURNISH THE OWNER, THROUGH THE ARCHITECT, A WRITTEN CERTIFICATION, SIGNED BY AN OFFICER OF THE COMPANY, THAT THE SYSTEM HAS BEEN CHECKED AND IS CONSTRUCTED AND TESTED IN ACCORDANCE WITH NFPA 99 AND IS SAFE FOR PATIENT USE. MANUFACTURER MUST SUBMIT A LETTER SIGNED BY AN OFFICER OF THE COMPANY TO THE ARCHITECT 10 DAYS PRIOR TO BID OPENING THAT THIS SERVICE WILL BE PERFORMED.

8. VALVES NOT IN BOXES SHALL BE BEACON BRONZE-BODY, DOUBLE-SEAL, FULL-FLOW UNION BALL TYPE, WITH TEFLON SEATS AND SEALS, DESIGNED FOR A WORKING PRESSURE OF 27" Hg VACUUM TO 400 PSI WITH CHROME-PLATED BRASS BALLS WHICH SEAL IN BOTH DIRECTIONS. EACH VALVE SHALL BE SO DESIGNED THAT ONLY A QUARTER TURN OF THE LEVER TYPE HANDLE IS NECESSARY BETWEEN THE OPEN AND CLOSED POSITIONS. VALVE DESIGN SHALL ELIMINATE THE NEED FOR UNIONS BY PERMITTING REMOVAL OR SWING-AWAY OF THE CENTER VALVE SECTION OUT-OF-LINE. VALVES SHALL CONFORM TO NFPA STANDARDS. VALVES SHALL BE SUPPLIED PROPERLY WASHED FOR OXYGEN SERVICE. GAS SERVICE LABELS SHALL BE PROVIDED FOR EACH SERVICE AS REQUIRED.

9. PROVIDE GAUGES ON SYSTEMS AS REQUIRED BY NFPA 99, CURRENT EDITION, AND WHERE INDICATED ON THE DRAWINGS.

10. GAUGES FOR PIPELINE INSTALLATION SHALL BE EQUAL TO OHMEDA MAIN LINE GAUGES AS FOLLOWS:

	SERVICE	CALIBRATION	STOCK NO.
a.	OXYGEN, N20, AIR	0-100 PSI	841-0014-300
b.	VACUUM	0-30" Hg.	395-7558-300
c.	NITROGEN	0-400 PSI	841-0007-300

11. WALL SERVICE OUTLETS SHALL BE INSTALLED WHERE INDICATED ON THE DRAWINGS AND SHOWN ON ARCHITECTURAL ELEVATIONS.

12. OUTLETS TO MATCH EXISTING OR SHALL BE BEACON RECESSED WALL OUTLET ASSEMBLY OF THE TYPE LISTED BELOW.

a.	OXYGEN	0221-7804-810	DIAMOND III
b.	VACUUM	0221-7804-812	DIAMOND III
c.	AIR	0221-7804-813	DIAMOND III
d.	NITROUS OXIDE	0221-7804-811	DIAMOND III
e.	NITROGEN	0221-7806-815	DIAMOND III

13. BEFORE ERECTION, ALL PIPE, TUBING, VALVES AND FITTINGS (EXCEPT THOSE SUPPLIED EXPRESSLY CLEANED FOR OXYGEN SERVICES BY MANUFACTURER) SHALL BE THOROUGHLY CLEANSED OF ALL GREASE, OIL OR OTHER READILY OXIDIZABLE MATERIALS BY WASHING IN A HOT SOLUTION OF SODIUM CARBONATE OR TRISODIUM PHOSPHATE MIXED IN EQUAL PROPORTIONS OF ONE POUND TO THREE GALLONS OF WATER. SCRUBBING AND CONTINUOUS AGITATION OF THE PARTS SHALL BE EMPLOYED WHERE NECESSARY TO REMOVE ALL DEPOSITS AND INSURE COMPLETE CLEANSING. AFTER WASHING, ALL MATERIALS SHALL BE RINSED THOROUGHLY IN CLEAN, HOT WATER. AFTER CLEANSING, GREAT CARE MUST BE EXERCISED IN THE STORAGE AND HANDLING OF ALL MATERIALS AND IN THE CONDITION OF TOOLS USED IN CUTTING AND REAMING TO PREVENT OIL OR GREASE BEING INTRODUCED INTO THE TUBING. WHERE SUCH CONTAMINATION IS KNOWN TO HAVE OCCURRED, THE MATERIALS AFFECTED MUST BE REWASHED AND THEN RINSED.

14. AFTER INSTALLATION OF THE PIPING, BUT BEFORE INSTALLATION OF THE STATION OUTLETS AND OTHER MEDICAL GAS SYSTEM COMPONENTS (e.g., PRESSURE-ACTUATING SWITCHES FOR ALARMS, MANIFOLDS, PRESSURE GAUGES OR PRESSURE RELIEF VALVES), THE LINE SHALL BE BLOWN CLEAR BY MEANS OF OIL-FREE, DRY AIR OR NITROGEN. THE SYSTEM SHALL BE TESTED IN ACCORDANCE WITH NFPA 99 4-5.1.3 "MEDICAL GAS SYSTEM TEST".

15. ALL PIPING SHALL BE SUPPORTED WITH COPPER-CLAD HANGERS WITH POLYSTYRENE OR NEOPRENE INSERTS OR PADS AT APPROPRIATE INTERVALS AND NOT SUPPORTED BY OTHER PIPING.

E. FITTINGS AND PIPING CONNECTED WITH PLUMBING FIXTURES SHALL BE BRASS AND, WHEREVER EXPOSED, SHALL BE POLISHED CHROME-PLATED.

F. FURNISH AND INSTALL ALL REQUIRED WATER, WASTE, SOIL, AND VENT CONNECTIONS TO ALL PLUMBING FIXTURES AND EQUIPMENT, TOGETHER WITH ALL FITTINGS, SUPPORTS, FASTENING DEVICES, COCKS, VALVES, TRAPS, ETC., LEAVING ALL IN COMPLETE WORKING ORDER.

G. PLUMBING FIXTURES SHALL BE PROVIDED AS SCHEDULED ON THE DRAWINGS. PLUMBING FIXTURES SHALL BE NEW, EXCEPT WHERE NOTED, AND SHALL BE APPROVED BY THE APPLICABLE WATER CONSERVATION AUTHORITY. THE PLUMBING CONTRACTOR SHALL PROVIDE NECESSARY CHROME PLATED P-TRAPS, SUPPLIES WITH STOPS, RISERS, INLET DRAINS, ETC.

H. SHOCK ARRESTORS SHALL BE SIMILAR TO JOSAM 75000 OR AS MANUFACTURED BY PPP AND SIOUX CHIEF SIZED AS PER THE PDI.

I. FIXTURE CARRIERS SHALL BE PROVIDED FOR WATER CLOSETS, URINALS AND LAVATORIES AS REQUIRED AND SHALL BE FLOOR SUPPORTED AS MANUFACTURED BY JOSAM.

J. TRAP PRIMERS SHALL BE AS REQUIRED BY LOCAL CODES AND SIMILAR TO J.R. SMITH FIR 2698 WATER SAVER TRAP PRIMER.

K. FLOOR DRAINS SHALL BE SIMILAR TO JOSAM SERIES 30000 CAST IRON FLOOR DRAIN WITH NICKALOY STRAINER.

L. CLEANOUTS SHALL BE PROVIDED IN SANITARY WASTE LINES AS SHOWN AND AT EACH CHANGE OF DIRECTION GREATER THAN 45 DEGREES. WALL CLEANOUTS SHALL BE SIMILAR TO JOSAM 5879 WITH BRONZE PLUG AND STAINLESS STEEL COVER. FLOOR CLEANOUTS SHALL BE SIMILAR TO JOSAM 56020 WITH CARPET MARKER FOR CARPETED FLOORS.

M. PIPE, EQUIPMENT, ETC., SHALL BE PROPERLY SUPPORTED FROM STRUCTURE WITH THE USE OF APPROVED TYPE CLEVIS, TRAPEZE HANGERS OR FLOOR STANDS WITH SPACING AS FOLLOWS:

1. STEEL PIPE OR COPPER TUBING - 1-1/2" OR LESS, 6 FOOT INTERVALS.

2. CAST IRON - ONE (1) HANGER PER LENGTH OF PIPE AND NOT EXCEEDING 10'-0" O.C.

3. FITTINGS - WITHIN 2'-0" OF EACH CHANGE OF DIRECTION.

N. INSULATION SHALL BE PROTECTED AT HANGERS BY A SECTION OF CALCIUM SILICATE PIPE INSULATION AND A 12" LONG HALF-ROUND SHEET METAL SHIELD ON THE OUTSIDE OF THE INSULATION. EXTEND PIPING INSULATION FULL THICKNESS WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PENETRATIONS.

O. PROVIDE AND INSTALL UNIONS AT PROPER POINTS TO PERMIT REMOVAL OF A PIPE, EQUIPMENT, ETC., WITHOUT INJURY TO OTHER PARTS OF THE SYSTEM AND TO PREVENT CORROSION DUE TO ELECTROLYSIS. ALL EQUIPMENT SHALL BE INSTALLED IN A MANNER TO PERMIT ACCESS FOR SERVICE WITHOUT DISASSEMBLY. UNIONS SHALL BE DIELECTRIC WHERE DISSIMILAR MATERIALS OCCUR. PRESSURE RATINGS SAME AS FITTINGS.

P. ALL DOMESTIC COLD WATER AND HOT WATER PIPE AND FITTINGS SHALL BE INSULATED WITH ½" THICK OWENS-CORNING FIBERGLASS 25 ASJ/SSL OR APPROVED EQUAL.

Q. ROOF DRAIN BODIES AND HORIZONTAL STORM DRAIN PIPING OR DOWNSPOUTS, AND ANY DRAINS RECEIVING CONDENSATE SHALL BE INSULATED WITH 1 ½ " THICK OWENS-CORNING FIBERGLASS FOIL-BACKED ALL SERVICE BLANKET WRAP INSULATION.

R. HOT WATER HEATING PIPES SHALL BE INSULATED WITH OWENS-CORNING ASJ-SSL-II OR APPROVED EQUAL 1" THICK FOR HOT WATER PIPE INSULATION. FITTINGS AND VALVES SHALL BE FINISHED WITH WHITE 25/50 PVC COVERS OVER MOLDED INSULATION FITTINGS. ALL JOINTS AND LAPS SHALL BE VAPOR SEALED.

S. PROVIDE INSULATION PRODUCTS MANUFACTURED BY JOHNS-MANVILLE, OWENS-CORNING, ARMSTRONG AND CERTAINTEED. FIBERGLASS PIPE INSULATION SHALL BE ASTM C547-77, CLASS 1. PROVIDE BANDS, WIRES, AND CEMENT AS RECOMMENDED BY INSULATION MANUFACTURER FOR THE APPLICATIONS INDICATED. FLEXIBLE FIBERGLASS DUCTWORK INSULATION SHALL BE ASTM C553-70, TYPE I, CLASS B3.

1. PROVIDE COMPOSITE INSULATION (INSULATION JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVE) WITH FLAME-SPREAD RATINGS OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM K04 (HFFA 255) METHOD.

2. MAINTAIN INTEGRITY OF VAPOR BARRIER JACKETS ON PIPE AND DUCTWORK INSULATION, AND PROTECT TO PREVENT PUNCTURE OR OTHER DAMAGE. SEAL OPEN ENDS OF INSULATION WITH MASTIC. SECTIONALLY SEAL ALL BUTT ENDS OF CHILLED WATER INSULATION OF FITTINGS WITH WHITE VAPOR BARRIER COATING. EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED. INSTALL PROTECTIVE METAL SHIELDS AND FOAM GLASS INSERTS WHERE PIPE HANGERS BEAR ON OUTSIDE OF INSULATION.

T. ISOLATION VALVES FOR HOT WATER SYSTEM SHALL BE EQUAL TO MILWAUKEE "BUTTERBALL" OR NIBCO BALL VALVES AND PROVIDED AT EACH PIECE OF EQUIPMENT. PROVIDE AUTO AIR VENTS IN HEATING WATER PIPING WHERE HIGH POINTS OCCUR.

U. RECTANGULAR "LOW PRESSURE" SHEET METAL DUCT SHALL BE FABRICATED OF CONTINUOUS HOT DIP MILL GALVANIZED MINIMUM 26 GAUGE STEEL SHEETS AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS FOR 1.0" W.C. AND FOR THE FIRST 10 TO 15 FEET DOWNSTREAM OF A TERMINAL UNIT (FP/VAV OR VAV) SHALL HAVE AN INTERNAL DUCT LINING EQUAL TO JOHNS-MANVILLE PERMACOTE LINACOUSTIC, 1" THICK, 1.5 LB. DENSITY DUCT LINER. (DUCTS FOR MEDICAL WORK SHALL NOT BE LINED, BUT WILL BE WRAPPED.)

V. ROUND "LOW PRESSURE" DUCT FITTINGS SHALL BE FABRICATED OF CONTINUOUS HOT DIP MILL GALVANIZED MINIMUM 26 GAUGE STEEL SHEETS AND INSTALLED IN ACCORDANCE WITH SMACNA RECOMMENDATIONS FOR 0.5" W.C.

W. RECTANGULAR AND ROUND "PRIMARY AIR" SHEET METAL DUCT AND FITTINGS SHALL BE FABRICATED OF CONTINUOUS HOT DIP MILL GALVANIZED MINIMUM 26 GAUGE STEEL SHEETS AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS FOR 3.0" W.C., AND RECTANGULAR DUCT SHALL HAVE AN INTERNAL DUCT LINING EQUAL TO JOHNS-MANVILLE PERMACOTE LINACOUSTIC, 1" THICK, 1.5 LB. DENSITY DUCT LINER (DUCTS FOR MEDICAL WORK SHALL NOT BE LINED, BUT WILL BE WRAPPED). CONSTRUCTION METHODS:

1. RECTANGULAR - DUCTMATE SYSTEM

2. ROUND - SPIRAL DUCT SYSTEM

X. ROUND DUCTS AND UNLINED RECTANGULAR DUCTS SHALL BE INSULATED WITH 3/4 POUND PER CUBIC FOOT MINIMUM DENSITY, 2" THICK, COMMERCIAL GRADE, OWENS-CORNING FIBERGLASS FOIL BACKED ALL SERVICE DUCT WRAP, OR EQUAL.

Y. FLEXIBLE DUCTS SHALL BE FLEXMASTER TYPE 8M, THERMAFLEX MKE OR WIREMOLD WK. FLEXIBLE DUCTS SHALL BE LISTED AS U.L. 181 CLASS (1) AIR DUCT AND SHALL COMPLY WITH NFPA STANDARDS 90A AND 90B.

Z. CONTRACTOR SHALL BALANCE THE HVAC SYSTEMS FOR DESIGNATED AIR AND WATER QUANTITIES AND SHALL BE N.E.B.B. OR A.A.B.C. APPROVED. SUBMIT REPORT ON NEBB, AABC, OR SMACNA FORMS FOR APPROVAL BY THE ENGINEER. EXTENT OF BALANCING WORK TO INCLUDE REBALANCING OF EXISTING SUPPLY AND EXHAUST SYSTEMS AS REQUIRED TO ACHIEVE DESIGN CFM ON SUBJECT PROJECT.

AA. DUCT ACCESS DOORS: PROVIDE RIGID AND CLOSE FITTING DOORS OF GALVANIZED STEEL WITH SEALING GASKETS AND QUICK FASTENING LOCKING DEVICES. FOR INTERNALLY LINED OR INSTALLED DUCTWORK, INSTALL MINIMUM ONE INCH THICK INSULATION WITH SHEET METAL COVER. INSTALL AT EACH FIRE DAMPER. DOORS TO BE EQUAL TO FLEXMASTER "THE INSPECTOR SERIES."

BB. FURNISH AND INSTALL SMOKE, FIRE AND/OR FIRE/SMOKE DAMPERS WHERE SHOWN ON THE DRAWINGS, AND REQUIRED BY THE GOVERNING AUTHORITY. DAMPERS SHALL BE INSTALLED AS RECOMMENDED BY SMACNA AND COMPLY WITH U.L. AND LOCAL ORDINANCES AS REQUIRED BY THE GOVERNING AUTHORITY.

CC. TEMPERATURE CONTROLS:

1. ALL TEMPERATURE CONTROLS NECESSARY FOR THE RENOVATION AND FINISH-OUT OF THE SPACE SHALL COMPLY TO THE BASE BUILDING SYSTEM AND CONTROL SPECIFICATIONS. BUILDING STANDARD CONTROL SYSTEM COMPONENTS SHALL BE UTILIZED.

2. NEW THERMOSTATS OR SENSORS SHALL MATCH THE EXISTING THERMOSTATS OR SENSORS.

3. ALL CONTROL WIRING AND POWER WIRING FOR CONTROLS SHALL BE BY THE CONTROLS SUB-CONTRACTOR.

4. TERMINAL UNITS, FAN-COIL UNITS AND MOTORIZED SUPPLY AIR DAMPERS SHALL BE CONTROLLED BY ROOM THERMOSTATS PIPED WITH MAIN CONTROL PRESSURE AND BRANCH PRESSURE FROM THERMOSTAT TO OPERATORS, CONTROL VALVES, ETC.

5. AT THE COMPLETION OF CONSTRUCTION, ALL NEW AND EXISTING THERMOSTATS AND SENSORS SHALL BE CALIBRATED.

DD. TEST AND BALANCE:

1. THE GENERAL CONTRACTOR SHALL RETAIN THE SERVICES OF AN INDEPENDENT CERTIFIED AIR BALANCE FIRM TO PERFORM THE TESTING AND BALANCING AND PREPARE REPORTS TO THE GENERAL CONTRACTOR. IF THE MECHANICAL CONTRACTOR IS NEBB CERTIFIED, THEY CAN BALANCE THE SYSTEM.

2. TESTING AND BALANCING SHALL BE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN ACCORDANCE WITH THE ASSOCIATED AIR BALANCE COUNCIL NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION, SECOND EDITION, 1974, OR NATIONAL ENVIRONMENTAL BALANCING BUREAU STANDARDS.

3. THE CONTRACTOR SHALL CORRECT ALL DEFICIENCIES IN THE OPERATION OF FACTORY SET VAV UNITS.

4. READINGS AND TEST OF DIFFUSERS, GRILLES AND REGISTERS SHALL INCLUDE DESIGN, INITIAL TEST, AND FINAL ADJUSTED FPM VELOCITY AND CFM. ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE BALANCED BY A HOOD THAT HAS BEEN CALIBRATED, INCLUDING A MANOMETER, AND PILOT TUBE READINGS SHALL BE TAKEN TO ESTABLISH TOTAL CFM FLOW IN ALL MAIN DUCTS. DIRECT READING INSTRUMENTS SUCH AS VELOMETERS AND ANEMOMETERS MAY BE USED AT TERMINAL UNITS.

IV RECORDS FOR OWNER:

A. CONTRACTOR SHALL KEEP A CLEAN SET OF DRAWINGS ON THE JOB, NOTING DAILY ALL CHANGES MADE IN THESE DRAWINGS IN CONNECTION WITH THE FINAL INSTALLATION INCLUDING EXACT DIMENSIONED LOCATIONS OF ALL NEW AND UNCOVERED EXISTING UTILITIES AND SHALL, WITH HIS REQUEST FOR FINAL PAYMENT, TURN OVER A CLEAN, NEATLY MARKED SET OF 2 MIL REPRODUCIBLE MYLARS SHOWING "AS INSTALLED" WORK TO THE ARCHITECT FOR SUBSEQUENT REVIEW AND TRANSMITTAL TO THE OWNER. CONTRACTOR SHALL NOTE ALL CONSTRUCTION CHANGES, DATE EACH SHEET AND LABEL "AS-BUILTS" IN THE REVISION BLOCK ON THE DRAWINGS. CONTRACTOR SHALL ALSO FURNISH ONE (1) SET OF BLUELINE PRINTS FROM THE "AS-BUILTS" MYLARS.

B. IN ADDITION TO THE ABOVE, CONTRACTOR SHALL ACCUMULATE DURING THE JOB'S PROGRESS, THE FOLLOWING DATA, IN TRIPLICATE, PREPARED IN A NEAT BROCHURE OR PACKET FOLDER AND TURNED OVER TO THE ARCHITECT FOR REVIEW AND SUBSEQUENT DELIVERY TO THE OWNER.

1. ALL WARRANTIES AND GUARANTEES AND MANUFACTURER'S DIRECTIONS ON EQUIPMENT AND MATERIAL COVERED BY THE CONTRACT INCLUDING THE NAMES, ADDRESSES AND TELEPHONE NUMBERS OF THE MANUFACTURER'S REPRESENTATIVE.

2. APPROVED FIXTURE BROCHURES, WIRING DIAGRAMS AND CONTROL DIAGRAMS (ORIGINAL DATA, NO COPIES).

3. COPIES OF APPROVED SHOP DRAWINGS.

4. OPERATING INSTRUCTIONS FOR HEATING AND COOLING AND OTHER MECHANICAL SYSTEM. OPERATING INSTRUCTIONS SHALL ALSO INCLUDE RECOMMENDED MAINTENANCE AND SEASONAL CHANGEOVER PROCEDURES.

5. TEST AND BALANCE REPORTS REQUIRED BY THESE SPECIFICATIONS.

6. ANY AND ALL OTHER DATA AND/OR DRAWINGS REQUIRED DURING CONSTRUCTION.

7. REPAIR PARTS LISTS OF ALL MAJOR ITEMS AND EQUIPMENT INCLUDING NAME, ADDRESS AND TELEPHONE NUMBERS OF LOCAL SUPPLIER OR AGENT.

8. VALVE TAG CHARTS AND DIAGRAMS.

C. ALL OF THE ABOVE DATA SHALL BE SUBMITTED TO THE ENGINEER FOR HIS REVIEW AT SUCH TIME AS THE CONTRACTOR SUBMITS HIS LAST ESTIMATE PRIOR TO HIS FINAL PAYMENT, BUT IN NO CASE, LESS THAN TWO WEEKS BEFORE FINAL INSPECTION.

GENERAL MECHANICAL NOTES

V RETURN AIR WILL BE TAKEN THROUGH LIGHT FIXTURES, PORTIONS OF PERIMETER SLOTS, AND RETURN AIR GRILLES.

VI CONTRACTOR TO VERIFY THAT ALL LIGHT FIXTURES HAVE SLOTS OPEN FOR AIR HANDLING CAPABILITIES. (BEND TABS IF REQUIRED.)

VII LOCATIONS AND SIZES OF EXISTING SYSTEMS ARE APPROXIMATE. EXACT SIZES AND LOCATIONS OF ALL EXISTING PIPING, DUCTS, ETC. SHALL BE VERIFIED ON THE JOB BY THE CONTRACTOR.

VIII CONTRACTOR SHALL INSTALL MECHANICAL SYSTEMS WITHOUT INTERFERENCE AND IN STRICT COORDINATION WITH ALL OTHER TRADES. HOLD DUCTWORK TIGHT AGAINST UNDERSIDE OF STRUCTURE ABOVE.

IX CFM DESIGNATION AT TERMINALS INICATE PRIMARY AIR ON TOP AND FAN AIR ON BOTTOM.

X ALL DUCT SIZES ARE "AIR SIZE". SHEET METAL TO BE INCREASED TO ACCOMMODATE DUCT LINER, IF APPLICABLE.

XI TAPE AND SEAL ALL ROUND DUCT CONNECTIONS TO BE PERMANENTLY AIR TIGHT.

XII SPIN-IN COLLARS "ONLY" SHALL BE SUITABLE FOR CONNECTION TO RECTANGULAR DUCTWORK AND SHALL HAVE VOLUME DAMPERS. "DOVE-TAIL" TAPS WILL NOT BE ALLOWED.

XIII RIGID SHEET METAL DUCT SHALL BE RUN WITHIN SIX FEET OF DIFFUSERS. FLEX DUCT SHALL BE SUPPORTED AS OFTEN AS NECESSARY TO PREVENT KINKS, FOLDS OR OTHER OBSTRUCTIONS TO AIR FLOW. CEILING GRID AND ASSOCIATED SUPPORTS MAY NOT BE USED TO SUPPORT DUCTWORK. PROVIDE RIGID 90 DEGREE ELBOWS ON DIFFUSER NECKS.

XIV EQUIPMENT CAPACITIES AND CHARACTERISTICS SHALL BE AS SCHEDULED ON THE DRAWINGS.

XV EXISTING CEILING DIFFUSERS MAY BE REUSED AND RELOCATED AS NECESSARY UNLESS NOTED OTHERWISE OR SIZE PROHIBITS USE.

XVI NEW CEILING DIFFUSERS TO BE TITUS, METALAIRE OR KRUEGER AND EQUAL TO TITUS MODEL PCS AND SUIT THE SPECIFIED SERVICE AND CEILING TYPE UNLESS NOTED OTHERWISE ON PLANS. COORDINATE WITH ARCHITECTURAL PLANS.

XVII CEILING RETURN AIR GRILLES SHALL BE TITUS, NAILOR, METALAIRE OR KRUEGER AND EQUAL TO TITUS MODEL PXP.

XVIII EXHAUST REGISTERS SHALL BE TITUS, NAILOR, METALAIRE OR KRUEGER AND EQUAL TO TITUS MODEL 3FL.

XIX THERMOSTATS FOR EXISTING TERMINAL BOXES ARE EXISTING AND SHALL BE INSTALLED WHERE SHOWN ON PLANS. (44" A.F.F. UNLESS NOTED OTHERWISE.) NEW THERMOSTATS SHALL BE EQUAL TO AND MATCH EXISTING THERMOSTATS. CALIBRATE ALL NEW AND EXISTING THERMOSTATS AT THE JOB COMPLETION.

XX ALL NEW FLOOR PENETRATIONS AND PENETRATIONS THROUGH RATED WALLS SHALL BE FIRE SAFED.

XXI RE-POUR ALL ABANDONED FLOOR PENETRATIONS.

XXII ALL DIFFUSERS AND SLOT SUPPLIES SHALL BE FURNISHED WITH SPIN-IN COLLAR. VOLUME DAMPER AND 6' OF FLEXIBLE DUCT.

XXIII CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL BY THE ENGINEER ALL MAJOR ITEMS OF MATERIALS AND EQUIPMENT.

GENERAL FIRE PROTECTION NOTES

XXIV IT IS THE INTENT THAT THE FIRE PROTECTION SUB-CONTRACTOR BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE FIRE SUPPRESSION SYSTEMS IN ACCORDANCE WITH APPLICABLE CODES.

XXV FIRE PROTECTION SUB-CONTRACTOR SHALL UTILIZE EXISTING PIPING SYSTEM AND SPRINKLER HEADS WHERE POSSIBLE, AND ADD PIPING AND HEADS AS REQUIRED TO PROVIDE CODE APPROVED COVERAGE OR MATCH EXISTING BUILDING SPRINKLER GRID COVERAGE.

XXVI SPRINKLER HEADS TO MATCH EXISTING HEADS WITHIN THE BUILDING.

XXVIICOORDINATE HEAD LOCATIONS WITH LIGHT FIXTURES, DIFFUSERS, GRILLES, ETC.

GENERAL PLUMBING NOTES

XXVIII LOCATIONS AND SIZES OF EXISTING SYSTEMS ARE APPROXIMATE. EXACT SIZES AND LOCATIONS OF EXISTING SYSTEMS TO BE UTILIZED SHALL BE VERIFIED AT JOB SITE.

XXIX SEAL AROUND ALL PIPE PENETRATIONS THROUGH FLOORS WITH WATER PROOFING AND FIRE-SAFE MATERIALS.

XXX REMOVE ALL EXISTING ABANDONED PLUMBING PIPING, FITTINGS AND CAP AT STACKS.

XXXI RE-POUR ALL ABANDONED FLOOR PENETRATIONS.

XXXIICONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL BY THE ENGINEER ALL MAJOR ITEMS OF MATERIALS AND EQUIPMENT.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Erick B.
Date: Aug 31, 2016
2015 INTERNATIONAL CODES & 2014 NEC

RSN: 1142126
Permit #: 16-1162585

COLORADO LICENSED RICHARD JAMES HOPKINS 45834 PROFESSIONAL ENGINEER 8/5/16

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No.	Description	Date

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	HF
Checked by	RH

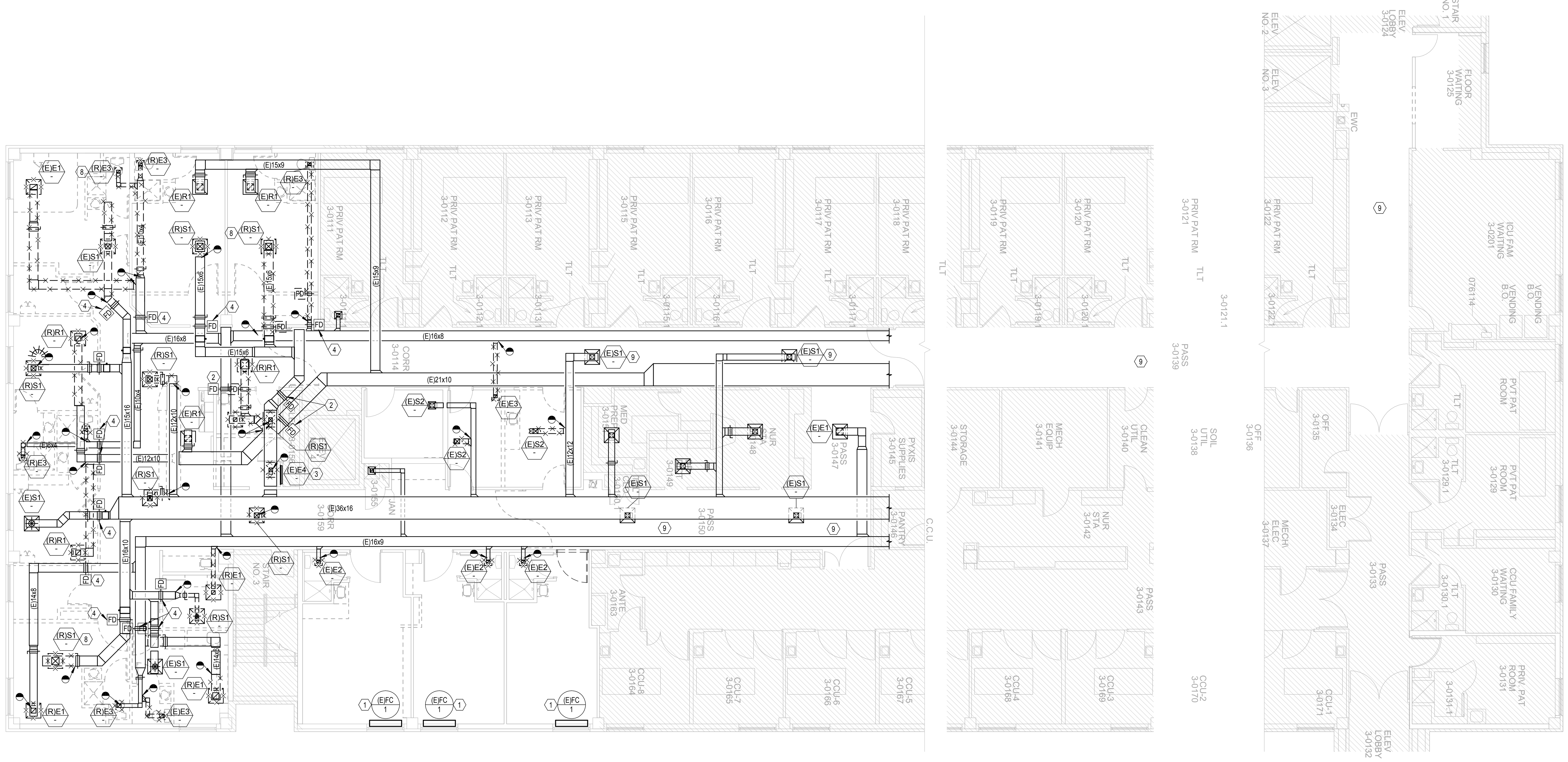
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MECHANICAL SPECIFICATIONS

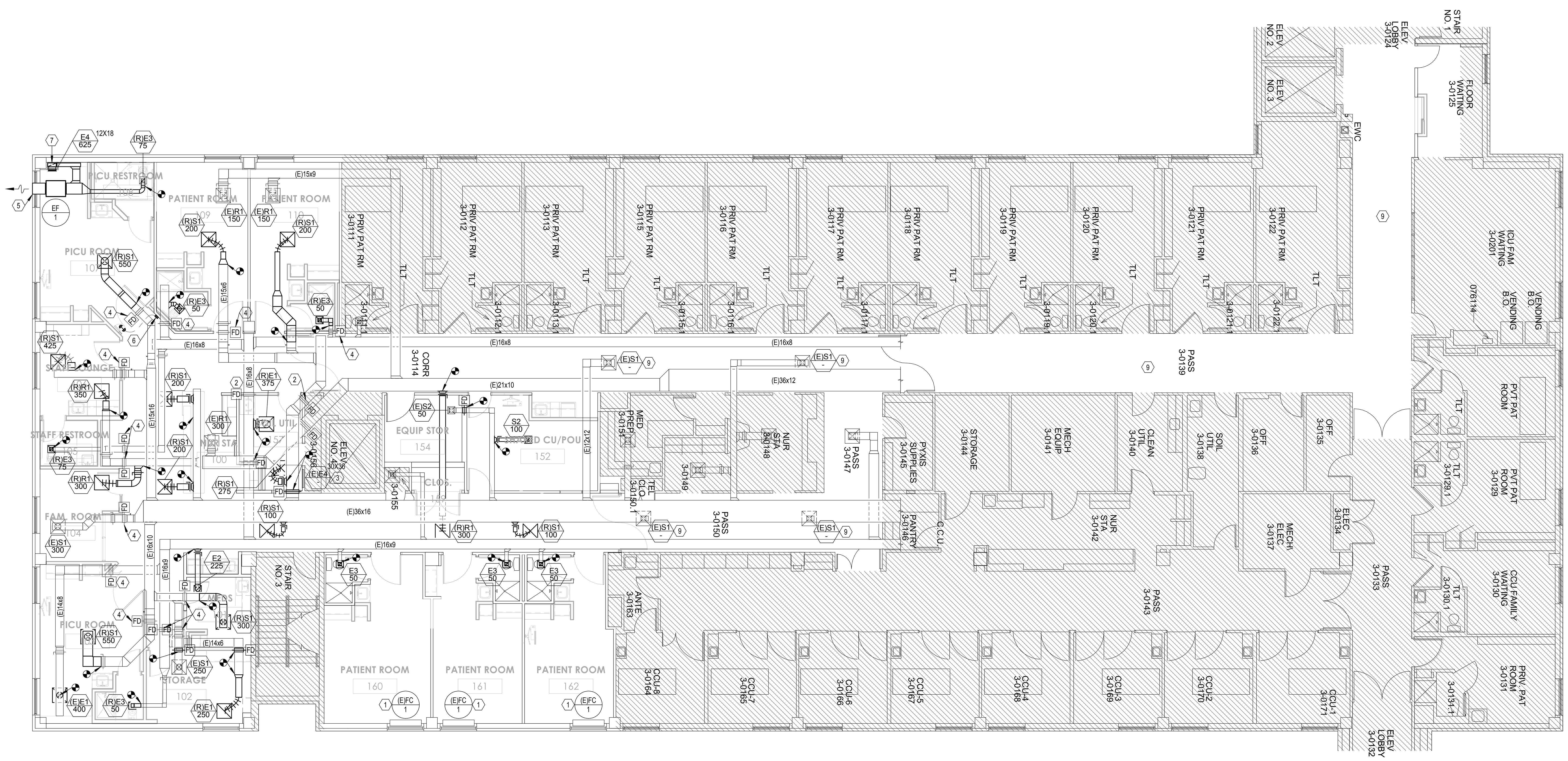
Sheet Number

M.002

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(2) LEVEL 03 PLAN - HVAC DEMOLITION
1/8" = 1'-0"



(1) LEVEL 03 PLAN - HVAC
1/8" = 1'-0"

GENERAL NOTES:

A. REFER TO SHEET M.001 FOR LEGENDS, GENERAL NOTES, AND ABBREVIATIONS.
B. EXISTING DUCTWORK SHOWN ON PLANS MAY NOT EXACTLY MATCH THE ACTUAL FIELD CONDITIONS. IT IS NOT NECESSARY TO REWORK DUCTWORK TO MATCH WHAT IS DEPICTED ON PLAN. CONTRACTOR SHALL VERIFY EXISTING DUCTWORK ROUTING AND LOCATIONS AND MAKE ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS WITH NEW DUCTWORK, EQUIPMENT, LIGHT FIXTURES, ETC.
C. PROVIDE FIRE DAMPERS AS NECESSARY WHERE DUCTS PENETRATE RATED WALLS.
D. EXISTING TO REMAIN AND RELOCATED SUPPLY AND RETURN GRILLES ARE TO BE CAREFULLY REMOVED, CLEANED OF ANY DEBRIS OR DUST, AND INSPECTED TO ENSURE UNITS ARE IN PROPER OPERATING CONDITION. CONTRACTOR TO REPLACE UNITS AS NEEDED.
E. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING CEILING TILE AND GRID AS REQUIRED TO ACCOMODATE THEIR WORK.
F. CAP AND SEAL ALL UNUSED DUCT TAPS AIR TIGHT.
G. FLEXBILE DUCTWORK SHALL NOT EXCEED 6 FEET IN LENGTH.
H. REBALANCE ALL EXISTING AND RELOCATED DIFFUSERS TO NOTED CFMs.

(#) LEGEND NOTES:

1. EXISTING MAGIC AIRE FFC-04 VERTICAL FAN COIL UNITS AND ALL ASSOCIATED PIPING TO REMAIN. CONTRACTOR TO CLEAN, TEST, AND REPLACE ANY PARTS TO ENSURE FAN COILS ARE IN FULL WORKING ORDER. BALANCE OUTSIDE AIR DAMPER AT FACADE TO 100CFM. REPLACE ANY FILTERS PRIOR TO CONSTRUCTION COMPLETION AND TURN OVER. UNITS TO BE PAINTED PER ARCHITECTURAL DIRECTION.
2. ENSURE ALL EXISTING FIRE DAMPERS AT SOILED UTILITY ROOM ARE IN PROPER OPERATING CONDITION. ADD OR RELOCATE DAMPERS AS REQUIRED TO MAINTAIN NEW 1-HR FIRE BARRIER RATING.
3. EXISTING TRANSFORMER TRANSFER GRILLE TO REMAIN. CONTRACTOR TO ENSURE GRILLE IS ADEQUATELY SECURED TO ELECTRICAL CLOSET WALL. REPAIR AS NEEDED.
4. ALL FIRE DAMPERS IN NON RATED WALLS ARE TO BE GUTTED AND LABELED AS DECOMMISSIONED. DAMPERS ARE NOT REQUIRED IN A SMOKE RESISTANT CORRIDOR.
5. PROVIDE 18X8 HOODED WALL CAP, GREENHECK MODEL WC-18X8 OR SIMILAR. WALL CAP FINSIH AND COLOR TO MATCH METAL SPANDREL PANEL
6. PROVIDE ROOM PRESSURE MONITOR MATCHING FACILITY STANDARDS AND CONNECT TO BAS.
7. 14X12 DUCT DOWN TO LOWER EXHAUST GRILLE LOCATE 12"AFF.
8. EXISTING GRILLE/DIFFUSER TO BE RELOCATED. TYPICAL.
9. ALTERNATE #2: REPLACE ALL LIGHTING, ACT, AND GRILLES, REGISTERS, AND DIFFUSERS IN CORRIDORS LEADING TO PEDIATRIC UNIT. SEE ARCHITECTURAL DRAWINGS D.223 AND A.223. MECHANICAL CONTRACTOR TO VERIFY CFM AT CORRIDOR DIFFUSERS, REMOVE AND CLEAN ALL DIFFUSERS OF ANY DEBRIS AND CONFIRM UNITS ARE IN PROPER OPERATING CONDITION, REPLACE AS NEEDED. COORDINATE DIFFUSER LOCATION WITH LIGHT FIXTURES AND NEW 2X2 CEILING GRID, RELOCATE DIFFUSERS AND REBALANCE TO VERIFIED CFM.

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No.	Description	Date

COLORADO LICENSED
RICHARD JAMES HOPKINS
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PROFESSIONAL ENGINEER

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Erick B.
Date: Aug 31, 2016
2015 INTERNATIONAL CODES & 2014 NEC

RSN: 1142126
Permit #: 16-1162585

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	HF
Checked by	RH

Sheet Title:

LEVEL 03 PLAN - HVAC

Sheet Number

M.203

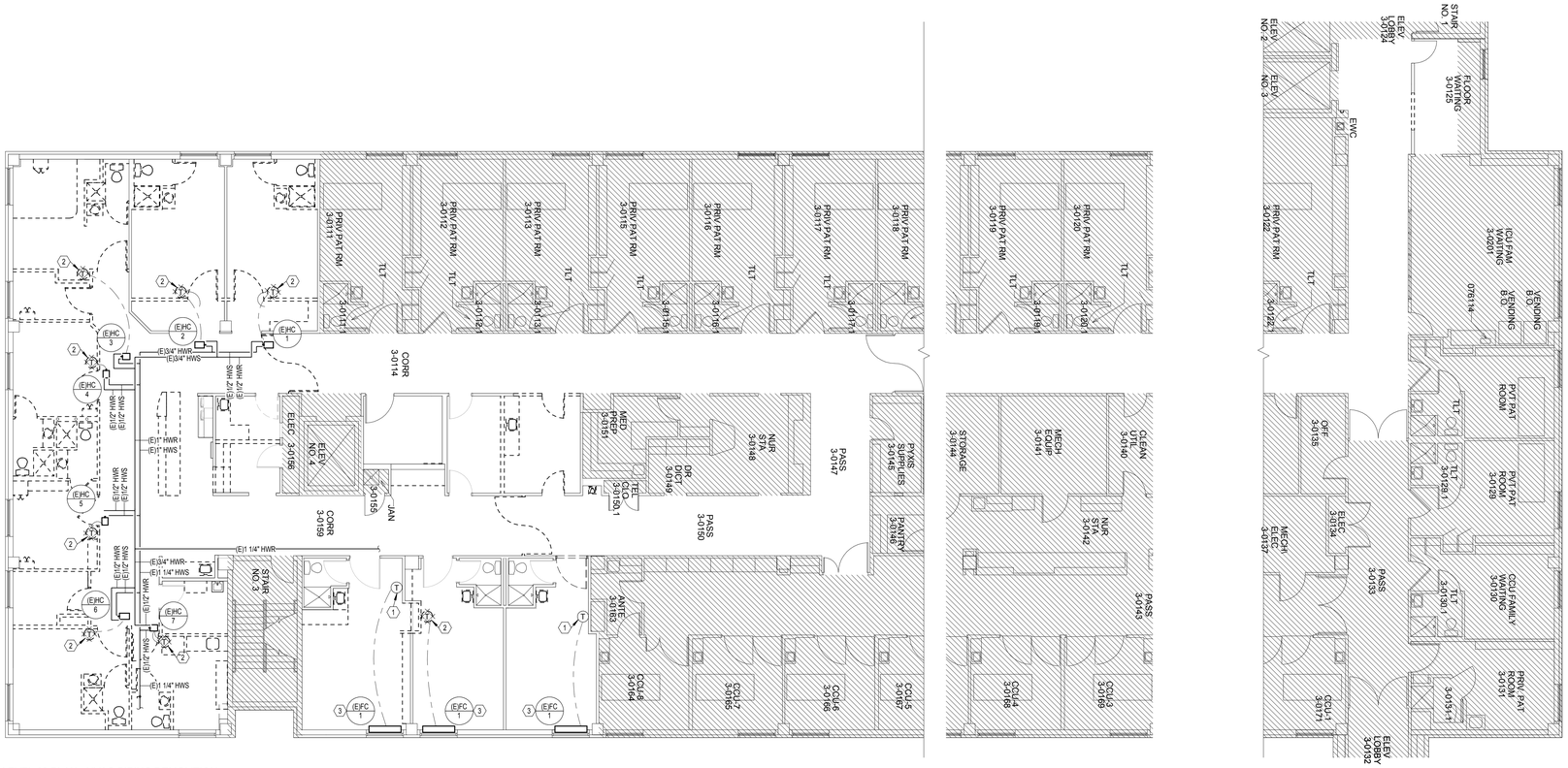
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GENERAL NOTES:

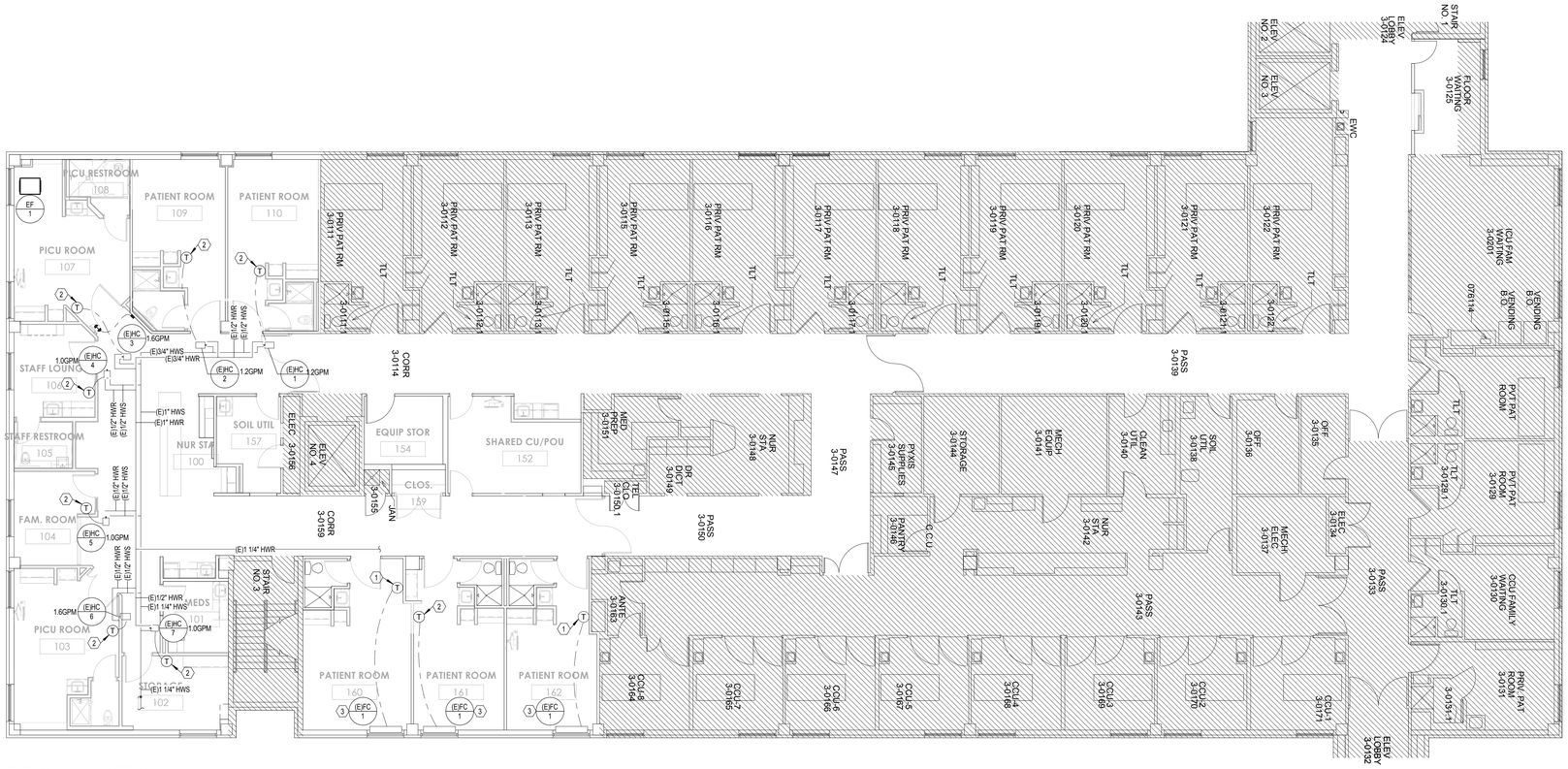
A. REFER TO SHEET M.001 FOR LEGENDS, GENERAL NOTES, AND ABBREVIATIONS.
B. EXISTING HOT WATER REHEAT COILS TO REMAIN. CONTRACTOR TO SERVICE AND CLEAN ALL COILS. ENSURE UNITS ARE IN PROPER OPERATING CONDITION, AND REPLACE ANY COMPONENETS AS NECESSARY. REBALANCE CONTROL VALVE TO NOTED GPM.

(#) LEGEND NOTES:

1 EXISTING PNEUMATIC THERMOSTAT TO REMAIN. REPAIR OR REPLACE ANY DAMAGED OR NON-FUNCTIONAL SENSORS AND TUBING.
2 EXISTING PNEUMATIC THERMOSTAT AND PNEUMATIC TUBING TO BE RELOCATED TO NEW LOCATION AS SHOWN ON NEW CONSTRUCTION PLAN ON THIS SHEET. REPAIR OR REPLACE ANY DAMAGED OR NON-FUNCTIONAL SENSORS AND TUBING. PROVIDE ALTERNATE PRICING TO REPLACE CONTROL VALVES WITH DDC VALVES/THERMOSTATS AND CONNECT TO BAS.
3 EXISTING MAGIC AIRE FFC-04 VERTICAL FAN COIL UNITS AND ALL ASSOCIATED PIPING TO REMAIN. BALANCE OUTSIDE AIR DAMPER AT FACADE TO 100CFM. UNITS TO BE PAINTED PER ARCHITECTURAL DIRECTION.



2 LEVEL 03 PLAN - HVAC PIPING DEMOLITION
1/8" = 1'-0"



1 LEVEL 03 PLAN - HVAC PIPING
1/8" = 1'-0"

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
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No.	Description	Date

COLORADO LICENSED JAMES HOLLOWAY 45834 PROFESSIONAL ENGINEER

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	HF
Checked by	RH

Sheet Title:
LEVEL 03 PLAN - HVAC PIPING

Sheet Number
M.303

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FAN SCHEDULE

DESIG.	CFM	INLET SONES	EXT. S.P.	FAN DATA TYPE	FAN DATA RPM	FAN DATA DRIVE	ELECTRICAL MOTOR DATA WATTS	ELECTRICAL MOTOR DATA RPM	ELECTRICAL MOTOR DATA VOLT / PH	ELECTRICAL MOTOR DATA MOTOR	MANUFACTURER / MODEL NO.	APPROX. LOUVER OPENING (IN)	REMARKS / NOTES
EF-1	700	-	0.25	CENTRIFUGAL CABINET	646	BELT	348	1100	115/1	-	GREENHECK / MODEL CSP-A700	-	1,2,3,4,5,8

NOTES:
1. FANS SELECTED FOR AN ELEVATION OF 5350 FT ABOVE SEA LEVEL.
2. THE FAN MOTOR SHALL BE HIGH EFFICIENCY DESIGN (AS SPECIFIED) AND FURNISHED AS PART OF THE FAN. DIVISION 26 CONTRACTOR SHALL PROVIDE THE NECESSARY WIRING (AND CONDUIT) TO MOTOR.
3. THE LISTED STATIC PRESSURE FOR THESE FANS DOES NOT INCLUDE VELOCITY PRESSURE LOSSES OR GAINS. THE MANUFACTURER WILL DETERMINE VELOCITY PRESSURE LOSSES OR GAINS TO OBTAIN TOTAL STATIC PRESSURE FOR THE FAN SELECTION.
4. REFER TO MECHANICAL DETAILS AND SPECIFICATIONS FOR ACCESSORIES.
5. PROVIDE STARTER AND DISCONNECT
6. FAN ON EMERGENCY POWER.
7. PROVIDE VFD & INVERTER DUTY MOTOR.
8. PROVIDE FAN SPEED CONTROLLER

AIR DEVICE SCHEDULE

DESIG.	FRAME SIZE	OBD	FINISH	THROW	NECK SIZE	MANUFACTURER/MODEL NO.	REMARKS/NOTES
S1	24x24	NO	WHITE	4-WAY	NOTE 1	PRICE SCD	SQUARE CONE SUPPLY DIFFUSER
S2	12x12	YES	WHITE	N/A	NOTE 1	PRICE 500	LOUVERED SUPPLY GRILLE
R1	24x24	NO	WHITE	N/A	NOTE 1	PRICE PDR	PERFORATED RETURN GRILLE
E1	24x24	NO	WHITE	N/A	NOTE 1	PRICE PDR	PERFORATED EXHAUST GRILLE
E2	12X12	NO	WHITE	N/A	NOTE 1	PRICE PDR	PERFORATED EXHAUST GRILLE
E3	6x6	YES	WHITE	N/A	NOTE 1	PRICE 500	LOUVERED EXHAUST GRILLE
E4	SEE PLANS	NO	WHITE	N/A	SEE PLANS	PRICE 500	LOUVERED SIDE WALL EXHAUST GRILLE

NOTES:

1.

NECK*	AIRFLOW
6"	0-100 CFM
8"	101-200 CFM
10"	201-350 CFM
12"	351-560 CFM
14"	561-850 CFM

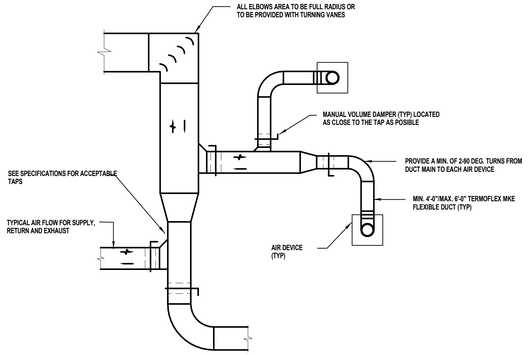
* AND/OR DUCT RUNOUT

2.

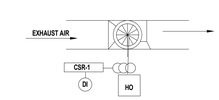
NECK*	AIRFLOW
6x6	0-100 CFM
8x8	101-230 CFM
10x10	231-360 CFM
12x12	361-450 CFM
16x16	451-800 CFM
22x22	801-1200 CFM

* AND/OR DUCT RUNOUT

GENERAL NOTES:
1. COORDINATE DIFFUSER LOCATION AND BORDER TYPE WITH ARCHITECTURAL REFLECTED CEILING PLAN.
2. COORDINATE COLOR AND FINISH WITH ARCHITECT.
3. ALL EXISTING/RELOCATED DIFFUSERS AND GRILLES ARE TO BE CAREFULLY REMOVED, CLEANED OF ANY DEBRIS OR DUSCT, AND INSPECTED TO ENSURE UNITS ARE IN PROPER OPERATING CONDITION. CONTRACTOR TO REPLACE UNITS AS NEEDED. ANY UNITS REPLACED SHALL MATCH EXISTING.
4. REBALANCE ALL DIFFUSERS TO NOTED CFMS.
5. FLEXIBLE DUCTWORK TO DIFFUSERS SHALL NOT EXCEED 6 FEET IN LENGTH.
6. SEE NOTE 1 FOR RUNOUT SIZE IF NOT INDICATED ON PLANS (NOTE 2 MAY BE USED AS AN ALTERNATE). PROVIDE SQUARE TO ROUND ADAPTER AS REQUIRED.



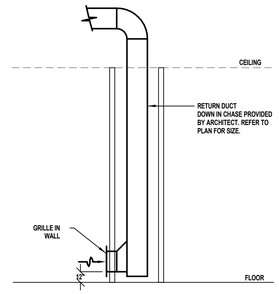
03 TYPICAL LOW PRESSURE SUPPLY RETURN AND EXHAUST DUCT DETAIL
NO SCALE



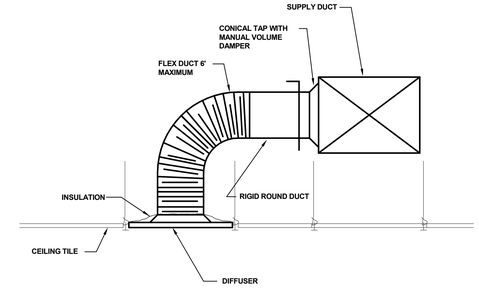
CONTROL SEQUENCE FOR A TYPICAL ISOLATION EXHAUST FAN

THE FAN SHALL NOT BE CONTROLLED BY THE DDC CONTROL SYSTEM. THE DDC SYSTEM SHALL MONITOR THE FANS OPERATION AND ALARM IF THE FAN FAILS WHEN SENSED BY CSR-1.

07 TYPICAL ISOLATION EXHAUST FAN
SCALE: NTS

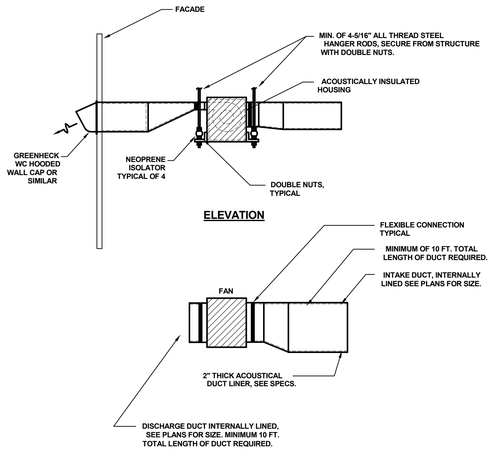


05 LOW RETURN AIR GRILLE IN WALL DETAIL
NO SCALE

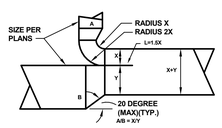


DUCTED RETURN GRILLE SIMILAR

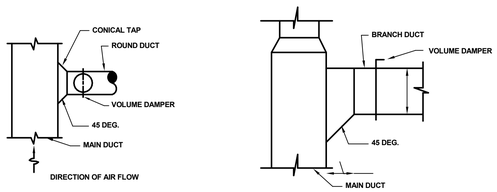
02 DIFFUSER CONNECTION DETAIL
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06 IN-LINE CEILING EXHAUST FAN
NO SCALE



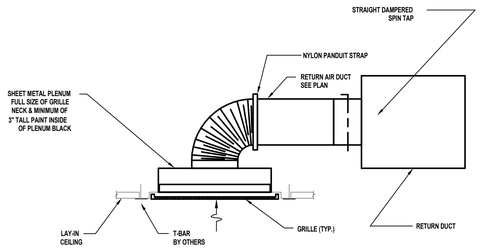
SPLITTER - SUPPLY DUCTS



TYPICAL CONICAL TAP

TYPICAL TAP

04 LOW PRESSURE DUCT DETAILS
NO SCALE



01 RETURN AIR GRILLE DUCT CONNECTION
NO SCALE

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
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COLORADO LICENSED PROFESSIONAL ENGINEER 45834 JAMES R. HOLT

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1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	HF
Checked by	RH

Sheet Title:
MECHANICAL DETAILS

Sheet Number
M.701

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AUG/2016 11:45:09 AM

GENERAL NOTES - PLUMBING

A. ALL MECHANICAL, ELECTRICAL, AND PLUMBING WORK SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL BUILDING CODES. REFER TO SPECIFICATIONS FOR MATERIALS AND METHODS FOR MECHANICAL AND PLUMBING CONSTRUCTION.

B. INDICATED LOCATIONS ARE APPROXIMATE.

C. COORDINATE WITH OWNER AND PERSONNEL THE SHUT-DOWN OF THE EXISTING SITE UTILITIES.

D. ROUTE ALL PLUMBING PIPING AS TIGHT AS POSSIBLE TO STRUCTURE. PIPING SHALL BE INSTALLED PARALLEL/PERPENDICULAR TO WALLS AND COLUMN LINES.

E. CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR A COMPLETE WORKING AND COORDINATED SYSTEM.

F. COORDINATE THE EXACT LOCATION OF MECHANICAL, PLUMBING, AND FIRE PROTECTION EQUIPMENT WITH THE LOCATIONS OF LIGHT FIXTURES, PIPING, CONDUIT, AND OTHER CONSTRUCTION, TO ALLOW FOR PROPER ACCESS TO SERVICE EQUIPMENT.

G. COORDINATE ALL NEW WORK WITH ALL TRADES. WORK SHOWN ON THESE DRAWINGS ARE INTENDED TO PROVIDE THE OVERALL ENGINEERING DESIGN CONCEPT AND DOES NOT PROVIDE FOR RELOCATIONS, OFFSETS, ETC., THAT ARE REQUIRED BY THE COORDINATION OF TRADES. THIS ADDITIONAL WORK SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT.

H. IT IS THE REQUIREMENT OF THESE DOCUMENTS TO ALLOW ALL CEILING CONSTRUCTION AND HEIGHTS TO BE AS SHOWN ON THE ARCHITECTURAL DRAWINGS. COORDINATE THE LOCATION OF PIPING AND PROVIDE OFFSETS IN PIPING AS REQUIRED TO MEET THIS REQUIREMENT.

I. CONDUIT, PIPING, AND DUCTWORK SHALL BE INDEPENDENTLY SUPPORTED, AND EACH SUPPORT SHALL BE INDEPENDENT OF PARTITION AND CEILING SYSTEM SUPPORTS. WHERE INDEPENDENT SUPPORT IS NOT POSSIBLE AN ENGINEERED SUPPORT SYSTEM SHALL BE UTILIZED.

J. ALL WORK SHALL BE SCHEDULED AND PERFORMED IN STRICT COORDINATION WITH ARCHITECTURAL PHASING PLANS. CONTRACTOR SHALL SCHEDULE AND PERFORM WORK IN SEQUENCE WITH THE PHASING PLAN.

K. PROTECT EQUIPMENT AND WORK FROM DAMAGE DURING HANDLING AND INSTALLATION UNTIL COMPLETION OF CONSTRUCTION.

L. REMOVE ALL EXCESS MATERIAL AND DEBRIS AND CLEAN ALL EQUIPMENT UPON COMPLETION OF WORK. TOUCH UP WITH PAINT WHERE REQUIRED.

M. ALL CONNECTIONS BETWEEN PIPES OF DISSIMILAR MATERIALS SHALL BE MADE WITH DIELECTRIC UNIONS.

N. LOCATE ISOLATION VALVES FOR EQUIPMENT AS CLOSE TO THE MAIN AS POSSIBLE.

O. ALL SANITARY SEWER AND STORM DRAIN SYSTEM WALL CLEANOUTS SHALL BE PLACED AT 18" AFF UNLESS OTHERWISE NOTED.

P. DO NOT ROUTE PIPING INSIDE ELECTRICAL AND COMMUNICATION ROOMS, IN UNAVOIDABLE INSTANCES, ALL EQUIPMENT SHALL BE PROTECTED FROM OVERHEAD PIPING WITH DRAIN PANS. ROUTE DRAIN FROM DRAIN PANS TO NEAREST FLOOR DRAIN IN MECHANICAL AREAS. WHERE NO FLOOR DRAIN IS ACCESSIBLE ROUTE AS INDIRECT WASTE TO PLUMBING FIXTURE AS INDICATED ON CONTRACT DRAWINGS, OR NEAREST LAVATORY TAILPIECE. PROVIDE SENSOR IN DRAIN PAN TO SEND ALARM TO BAS IN CASE OF LEAKAGE INTO PAN.

Q. EACH SUBCONTRACTOR SHALL PROVIDE ADEQUATELY SIZED ACCESS DOORS TO PROVIDE REQUIRED ACCESS THROUGH HARD SURFACES TO THEIR WORK REQUIRING ACCESS (ANY FLOW DEVICES, VALVES, ETC.). SUBCONTRACTOR IS ALSO REQUIRED TO PROVIDE ADEQUATE LOCATION INFORMATION SO ACCESS CAN BE INSTALLED BY INTERIORS SUBCONTRACTOR.

R. REFER TO ARCHITECTURAL DRAWINGS FOR RATED WALL TYPES.

S. ALL PLUMBING PIPING SHALL BE IDENTIFIED IN ACCORDANCE WITH THE SPECIFICATIONS.

T. SLOPE AND ARRANGE WATER PIPING SYSTEMS TO ESTABLISH HIGH POINTS FOR AIR ELIMINATION AND LOW POINTS TO PERMIT PROPER DRAINING OF EACH LINE.

U. COORDINATE ALL PIPING FLOOR PENETRATIONS WITH STRUCTURAL.

V. SPACE LOCATIONS FOR MATERIALS, EQUIPMENT AND FIXTURES HAVE BEEN MADE ON THE BASIS OF PRESENT AND KNOWN FUTURE REQUIREMENTS AND THE DIMENSIONS OF ITEMS OF EQUIPMENT OR FIXTURES OF A PARTICULAR MANUFACTURER WHETHER INDICATED OR NOT. THE CONTRACTOR SHALL VERIFY THAT ALL MATERIALS, EQUIPMENT AND FIXTURES PROPOSED FOR USE ON THIS PROJECT ARE WITHIN THE CONSTRAINTS OF THE ALLOCATED SPACE.

W. PIPE PENETRATIONS THROUGH WALLS SHALL MAINTAIN THE CONSTRUCTION/FIRE RATING OF THE WALL.

DEMOLITION

A. ALL CAPPED SANITARY WASTE, VENTS AND DOMESTIC WATER PIPING THAT ARE NOT BEING USED, NEED TO BE REMOVED BACK TO THE MAINS AND CAPPED.

B. PROVIDE ADDITIONAL VALVES, FITTINGS AND/OR PIPING AS NECESSARY TO PROVIDE UNINTERRUPTED SERVICE TO AREAS OUTSIDE AND INSIDE OF THE AREA WORK.

C. ALL WORK SHALL BE PERFORMED IN STRICT COORDINATION WITH HOSPITAL SCHEDULES, OCCUPANCIES AND WORK. CONTRACTOR SHALL COORDINATE WITH HOSPITAL REPRESENTATIVE.

D. ALL NECESSARY SHUTDOWNS OR OUT OF PHASE WORK SHALL BE SCHEDULED WITH THE HOSPITAL REPRESENTATIVE.

E. INFORMATION PROVIDED ON THESE DRAWINGS HAVE BEEN TAKEN FROM DESIGN DRAWING AND FIELD OBSERVATIONS. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO PRICING AND COMMENCEMENT OF WORK.

F. WHERE EXISTING WALLS ARE DEMOLISHED, REMOVE ALL EXISTING PLUMBING FIXTURES AND THEIR ASSOCIATED PIPING BACK TO THE POINT OF ORIGINATION. ALL EXISTING PIPING THAT WAS SHUT DOWN DURING DEMOLITION SHALL BE TURNED ON AND CHECKED FOR LEAKS.

G. PROVIDE FOR ANY AND ALL DEMOLITION WORK NECESSARY TO ACCOMMODATE ALL NEW CONSTRUCTION, INCLUDING ARCHITECTURAL, MECHANICAL, PLUMBING OR ELECTRICAL WORK.

H. IF DEMOLITION IS REQUIRED TO INSTALL AN ITEM, THE CONTRACTOR SHALL RESTORE THE AREA TO PREVIOUS CONDITION, OR REPLACE DAMAGED ITEMS WITH NEW ITEMS TO MATCH EXISTING.

I. A DEVICE OR PIPING WITH AN 'X' INDICATES EXISTING TO BE REMOVED INCLUDING ALL ASSOCIATED VALVES AND FIXTURES. PIPING TO BE VALVED AND CAPPED AT POINT OF ORIGIN.

J. CONTRACTOR SHALL REMOVE ALL FIXTURES, ASSOCIATED PIPING AND EQUIPMENT INDICATED TO BE REMOVED AND/OR RELOCATED UNLESS NOTED OTHERWISE. PROVIDE AND INSTALL ALL NECESSARY FIXTURES, EQUIPMENT AND ACCESSORIES REQUIRED TO MAINTAIN SERVICE TO ALL "EXISTING TO REMAIN" FIXTURES AND EQUIPMENT THAT MAY BE INTERRUPTED DURING DEMOLITION.

K. WHERE EXISTING MECHANICAL EQUIPMENT IS DEMOLISHED, REMOVE ALL RELATED PLUMBING TO THE EQUIPMENT AND THEIR ASSOCIATED PIPING BACK TO THE POINT OF ORIGINATION AND VALVE & CAP.

L. ITEMS REMOVED AND NOT REINSTALLED OR RETURNED TO OWNER SHALL BE DISPOSED OF LEGALLY (COORDINATE WITH OWNER FOR THE DISPOSAL).

M. ALL EXISTING PLUMBING RISER(S) LOCATED IN THE DEMOLISHED WALLS/CHASES MUST BE RELOCATED TO AN APPROVED LOCATION BY THE ARCHITECT THEN RECONNECTED ON ADJACENT FLOORS.

N. ANY FLOOR DRAINS OR FLOOR SINKS NOT REQUIRED SHALL BE REMOVED COMPLETELY. DRAINS ON THE GROUND FLOOR SHALL BE PERMANENTLY PLUGGED WITH GROUT AND CUT BACK TO ACCEPT NEW FLOORING MATERIAL.

RENOVATION

A. COORDINATE ALL PIPING ROUTING WITH OTHER TRADES BEFORE INSTALLING PIPING. OFFSET PIPING WHERE POSSIBLE, TO COORDINATE WITH OTHER TRADES.

B. CONNECT VENT AND WATER FOR NEW FIXTURES TO NEAREST PIPING IN CEILING SPACE ON THIS FLOOR. CONNECT WASTE FOR NEW FIXTURES TO NEAREST PIPING IN CEILING SPACE OF FLOOR BELOW.

C. WHERE POSSIBLE, REUSE EXISTING FLOOR PENETRATIONS AFTER REVIEW AND APPROVAL BY ARCHITECT. LOCATIONS SHOWN ON THESE DRAWINGS REFLECT DESIGN INTENT AND ARE BASED ON AS-BUILT DRAWINGS MADE AVAILABLE TO THE ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL LOCATIONS OF NEW FLOOR PENETRATIONS BASED ON FIELD INVESTIGATION AND VERIFICATION, PRIOR TO STARTING NEW WORK.

D. WHERE UNAVOIDABLE, PIPE ROUTING MAY REQUIRE BORING THROUGH STRUCTURAL GIRDERS. CONTRACTOR SHALL X-RAY GIRDER AND PREPARE A DRAWING AND SUPPORTING DOCUMENTS SHOWING THE PROPOSED BORE LOCATIONS FOR PIPING. SUBMIT THIS PROPOSED PIPING LAYOUT FOR ENGINEER/ARCHITECT/OWNER REVIEW AND APPROVAL PRIOR TO COMMENCING WORK. PROCEED WITH NEW WORK ONLY WITH WRITTEN STATEMENT TO PROCEED FROM ARCHITECT OR STRUCTURAL ENGINEER.

E. FOR ALL EXISTING FLOOR PENETRATIONS NOT USED, CUT PIPING JUST BELOW FLOOR LEVEL, PLUG PIPING WATER-TIGHT AND FILL WITH GROUT. REPAIR AND PATCH FLOOR TO MATCH EXISTING.

F. CONFIRM WITH ARCHITECTURAL DRAWINGS THE REQUIRED MOUNTING HEIGHTS PRIOR TO INSTALLATION/RE-INSTALLATION OF FIXTURES.

G. ALL CONNECTIONS TO EXISTING PIPING SHALL BE MADE TO SAME SIZE OR LARGER EXISTING PIPING. IF IT IS DETERMINED BY FIELD INVESTIGATION THAT THE EXISTING PIPE SIZE TO BE CONNECTED TO IS SMALLER THAN THE NEW PIPE SIZE, NOTIFY ARCH/ENGR BEFORE PROCEEDING WITH WORK.

H. CONNECTIONS TO EXISTING SANITARY PIPING IS BASED ON EXISTING DRAWINGS AND LIMITED FIELD INVESTIGATION DUE TO INACCESSIBLE AREAS. PIPING LESS THAN 4" SHALL HAVE A 1/4" SLOPE PER FOOT, PIPING 4" AND LARGER A 1/8" SLOPE PER FOOT. IF IT IS DETERMINED DURING CONSTRUCTION/FIELD SURVEY THAT THE PIPE ROUTING CAN NOT TIE-IN TO EXISTING SANITARY PIPING AS SHOWN ON THESE DRAWINGS BECAUSE OF ELEVATION DIFFERENCES, CONTRACTOR SHALL PREPARE AN ADJUSTED PIPING ROUTING AND CONNECTION TO EXISTING PIPING BASED ON ACTUAL FIELD CONDITIONS. SUBMIT THIS PROPOSED PIPING LAYOUT FOR ENGINEER/ARCHITECT/OWNER REVIEW PRIOR TO CONTINUING WITH CONSTRUCTION.

FIRE PROTECTION NOTES

A. FIRE PROTECTION CONTRACTOR SHALL REFER TO THE PLUMBING DRAWINGS FOR SCOPE OF WORK, INCLUDING THE GENERAL NOTES ON THIS SHEET.

B. THE BUILDING'S FIRE PROTECTION SYSTEM MUST REMAIN IN SERVICE DURING CONSTRUCTION. FIRE PROTECTION ENGINEER IS RESPONSIBLE FOR EXTENT OF DEMOLITION, RELOCATION, AND RENOVATION OF THE FIRE PROTECTION SYSTEM.

C. RENOVATION AND DEMOLITION SCOPE OF WORK FOR FIRE PROTECTION SYSTEM IS THE RESPONSIBILITY OF THE FIRE PROTECTION ENGINEER.

D. DESIGN OF THE SPRINKLER SYSTEM SHALL BE UNDER DIRECT SUPERVISION OF AN RME (RESPONSIBLE MANAGING EMPLOYEE) EXPERIENCED IN DESIGN OF THIS WORK AND LICENSED IN THE STATE OF COLORADO. ALL DESIGN SUBMITTAL DOCUMENTS SHALL BEAR THE RME's SIGNED AND DATED REGISTRATION NUMBER. THE SYSTEM SHALL BE INSTALLED BY A FIRM HAVING MINIMUM THREE YEARS EXPERIENCE REGULARLY ENGAGED IN THE DESIGN AND INSTALLATION OF AUTOMATIC FIRE PROTECTION SYSTEMS IN ACCORDANCE WITH REQUIREMENTS OF THE NATIONAL FIRE PROTECTION ASSOCIATION AND THE STATE OF COLORADO FIRE MARSHALL'S OFFICE. EVIDENCE TO SUPPORT THE ABOVE REQUIREMENTS SHALL BE SUBMITTED WITH SHOP DRAWINGS. WORKING PLANS SHALL BE SEALED BY AN ENGINEER REGISTERED BY THE COLORADO STATE BOARD FOR PROFESSIONAL ENGINEERS IN THE FIRE PROTECTION SPECIALTY.

E. DEMOLISH/RELOCATE/PROVIDE NEW SPRINKLER HEADS AS REQUIRED BY THE RENOVATION/EXPANSION SPACE FLOOR PLANS. FIRE PROTECTION SYSTEM FOR THE BUILDING MUST REMAIN IN SERVICE DURING CONSTRUCTION.

F. PROVIDE STANDARD QUICK RESPONSE SPRINKLER HEADS FOR ALL AREAS, UNLESS OTHERWISE NOTED.

G. COORDINATE SPRINKLER AND FIRE MAIN LOCATIONS WITH ALL TRADES.

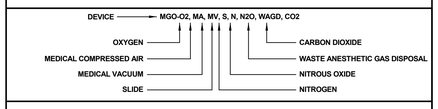
H. COORDINATE ALL FIRE PROTECTION SPRINKLER LOCATIONS AND MOUNTING STYLES WITH LIGHTING PLANS AND ARCHITECTURAL REFLECTED CEILING PLANS.

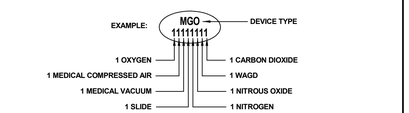
MEDICAL GAS SYMBOLS

SYMBOL	DESCRIPTION
O2	MEDICAL OXYGEN PIPING
MA	MEDICAL AIR PIPING
MV	MEDICAL VACUUM PIPING
WAGD	WASTE ANESTHETIC GAS DISPOSAL PIPING
N	MEDICAL NITROGEN PIPING
N2O	MEDICAL NITROUS OXIDE PIPING
CO2	CARBON DIOXIDE PIPING
GGG	MEDICAL GAS PIPING DROPS IN WALL FULL SIZE
MGO	MEDICAL GAS OUTLETS
AA	AREA ALARM
MA	MASTER ALARM
ZVB	ZONE VALVE BOX
	MASTER ALARM SENSOR
	AREA ALARM SENSOR
	LOCKABLE TYPE BALL VALVE

MEDICAL GAS LEGEND

MAP	= MASTER ALARM PANEL	MED AIR	= MEDICAL COMPRESSED AIR
MGB	= MEDICAL GAS CEILING BOOM	MV	= MEDICAL VACUUM
MGC	= MEDICAL GAS CEILING COLUMN	02	= OXYGEN
MGD	= MEDICAL GAS DROP	S	= SLIDE
MGH	= MEDICAL GAS HEADWALL	AAP	= AREA ALARM PANEL
MGO	= MEDICAL GAS WALL OUTLET	ZVB	= ZONE VALVE BOX
MGP	= MEDICAL GAS PEDESTAL	NCP	= NITROGEN CONTROL PANEL
MVE	= MEDICAL GAS VACUUM EXHAUST	N	= NITROGEN
ME	= MEDICAL EQUIPMENT COMPRESSED AIR (FOR BRAKES ON MEDICAL BOOMS)	N20	= NITROUS DIOXIDE GAS
		CO2	= CARBON DIOXIDE GAS
		WAGD	= WASTE ANESTHETIC GAS DISPOSAL





MEDICAL GAS NOTES:

A. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF MEDICAL GAS OUTLETS, ZONE VALVE BOXES AND ALARM PANELS.

B. NOT ALL GASES ARE TO BE USED AT EACH LOCATION. THE GAS ORDER SHOWN IN THE EXAMPLE IS TYPICAL FOR ALL OUTLETS.

C. COORDINATE MEDICAL GAS PIPE ROUTINGS WITH ALL OTHER TRADES BEFORE INSTALLATION.

TYPICAL MOUNTING HEIGHTS FOR MEDICAL GAS DEVICES*:

WALL OUTLETS:	5' (60 INCHES) TO THE CENTER OF THE OUTLET
ZONE VALVE BOX:	5'-6" (66 INCHES) TO THE TOP OF THE ZONE VALVE BOX
AREA ALARM:	5'-6" (66 INCHES) TO THE TOP OF THE ALARM
MASTER ALARM:	5'-6" (66 INCHES) TO THE TOP OF THE ALARM
NITROGEN CONTROL CABINET:	5'-2" (62 INCHES) TO THE BOTTOM OF THE PANEL
FIXED CEILING COLUMN:	5'-3" (63 INCHES) TO THE BOTTOM OF THE COLUMN
RETRACTABLE CEILING COLUMN:	5'-10" (70 INCHES) TO THE BOTTOM OF THE COLUMN
CEILING HOSE DROP:	6'-4" (76 INCHES) TO THE BOTTOM OF THE HOSE
ASSEMBLY CEILING ARMS/BOOMS:	CONSULT MANUFACTURERS RECOMMENDATIONS

* ALL DIMENSION HEIGHTS SHALL BE COORDINATED WITH ARCHITECTURAL ELEVATION.

PLUMBING SYMBOLS

ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATICALLY AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER (TEMP. AS NOTED)
	DOMESTIC HOT WATER RETURN (TEMP. AS NOTED)
	EXISTING PIPING TO BE REMOVED
SS	SANITARY SEWER PIPING (SOIL OR WASTE)
	SANITARY VENT PIPING
IW	INDIRECT WASTE
CD	CONDENSATE DRAIN PIPING
D	DRAIN PIPING
	CONNECT NEW TO EXISTING
F	FIRE PROTECTION (STANDPIPE, SPRINKLER, SERVICE)
	GATE VALVE
	BUTTERFLY VALVE
	BALL VALVE
FD	FLOOR DRAIN
WCO	WALL CLEANOUT
CO	CLEANOUT PLUG
	DIRECTION OF SLOPE
	DIRECTION OF FLOW
	CAP OUTLET OR PLUGGED OUTLET
	CAP SANITARY SEWER OR STORM PIPING

PLUMBING ABBREVIATIONS

ABV	ABOVE	FLR	FLOOR
AFF	ABOVE FINISH FLOOR	FS	FIRE SPRINKLER
AFG	ABOVE FINISH GRADE	GC	GENERAL CONTRACTOR
A/C	ABOVE CEILING	GCO	GRADE CLEANOUT
AP	ACCESS PANEL OR DOOR	IE	INVERT ELEVATION
BFF	BELOW FINISH FLOOR	INV	INVERT
BF	BELOW FLOOR	LV	LAVATORY
BG	BELOW GRADE	MS	MOPSINK
BV	AUTOMATIC BALANCING VALVE	NC	NORMALLY CLOSED
CW	DOMESTIC COLD WATER	RPPBP	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER.
HW	DOMESTIC HOT WATER		
HWRC	DOMESTIC HOT WATER RETURN	SK	SINK
DF	DRINKING FOUNTAIN	SS	SANITARY SEWER
E	EXISTING	SS	SANITARY WASTE
FCO	FLOOR CLEANOUT	TP	TRAP PRIMER
FD	FLOOR DRAIN	V	VENT
FF	FINISH FLOOR	VTR	VENT THROUGH ROOF
FFD	FUNNEL FLOOR DRAIN	WCO	WALL CLEANOUT
FFE	FINISH FLOOR ELEVATION		

PROJECT DESIGN CRITERIA

LOCATION:	
CITY/STATE	AURORA, CO
APPLICABLE CODES:	
BUILDING	2015 IBC
MECHANICAL	2015 IMC
PLUMBING	2015 IPC
ENERGY	2015 IECC
ELECTRICAL	2014 NEC
LATITUDE:	
DEG. N. LAT.	39°41 N
ELEVATION:	
FT. ABOVE SEA LEVEL	5470

COLORADO STATE LICENSED MASTER PLUMBER SHALL PROVIDE MEDICAL GAS CERTIFIED THIRD PARTY INSPECTION AND APPROVAL FOR RELATED PIPING.

PLUMBING FIXTURE SCHEDULE

DESIG.	FIXTURE TYPE	San. Sewer	Vent	Cold Water	Hot Water	DESCRIPTION
LV-1	WALL MOUNTED LAVATORY	2"	1 1/2"	1/2"	1/2"	ZURN MODEL NO. Z5344 WALL MOUNT SINK, 20"x15" VITREOUS CHINA, FRONT OVERFLOW WITH 4" CENTER FAUCET HOLES. PROVIDE SINK WITH ZURN Z6915-XL-MV AQUA SENSE BATTERY POWERED FAUCET, WITH MIXING VALVE, ADA COMPLIANT, LEAD FREE, LAMINAR OUTLET. PROVIDE ZURN MODEL NO. Z8746-PC OFFSET LAVATORY STRAINER AND TAILPIECE, Z8946-3-NT ADA TRAP, STOP AND SUPPLY PROTECTORS FOR OFFSET GRID STRAINER.
SK-1	STAINLESS STEEL COUNTER MOUNTED SINK	2"	1 1/2"	1/2"	1/2"	ELKAY LRAD2219 #18 GA. TYPE 304 STAINLESS STEEL DROP-IN SINK, 6.5" DEPTH, OFF-CENTERED REAR, 2 FAUCET HOLES. PROVIDE Z6834-XL-PC STOPS, Z6700-PC P-TRAP AND Z8946-1-NT ADA TRAP, STOP AND SUPPLY PROTECTORS (WHERE APPLICABLE). PROVIDE SINK WITH CHICAGO FAUCETS MODEL NO. 389-317GNDFCCP, DECK MOUNTED 4" CENTERS FAUCET, 5-1/4" GOOSENECK FAUCET, 1.6 GPM NON-AERATING LAMINAR OUTLET AND 4" WRISTBLADES.
WB-1	WALL BOX ICE MAKER	-	-	1/2"	-	COLD WATER CONNECTION BOX: GUY GRAY MODEL MWB-9 WITH QUARTER TURN VALVES INSTALLED - 1/2" SWEAT CONNECTION AND DRAIN CONNECTION. BOX SHALL BE RECESSED METAL POWDER COATED IN WHITE. MOUNT AT 12" A.F.F. OR LOCATION AS INDICATED ON ARCHITECTURAL PLANS.
WB-2	WALL BOX COFFEE MAKER	-	-	1/2"	-	COLD WATER AND DRAIN CONNECTION BOX: GUY GRAY MODEL MB1AB WITH QUARTER TURN VALVES INSTALLED - 1/2" SWEAT CONNECTION. BOX SHALL BE RECESSED METAL POWDER COATED IN WHITE. MOUNT AT 12" A.F.F. OR LOCATION AS INDICATED ON ARCHITECTURAL PLANS.
WC-1	WATER CLOSET FLOOR MOUNTED	4"	2"	1"	-	ZURN Z5665 HET SERIES WATER CLOSET, FLOOR MOUNTED, VITREOUS CHINA, ADA HEIGHT, ELONGATED FRONT RIM, 2 1/8" FULLY GLAZED TRAPWAY. PROVIDE WITH ZURN EXPOSED Z6000AV=BWN AQUAVANTAGE FLUSH VALVE WITH INTEGRAL BEDPAN WASHER ASSEMBLY, CHROME PLATED WITH POLISHED EXTERIOR, HIGH BACK PRESSURE VACUUM BREAKER, VANDAL RESISTANT STOP CAP, 1.6 GAL. LOW CONSUMPTION FLUSH, ADA COMPLIANT.
SH-1	SHOWER	-	-	1/2"	1/2"	TILED SHOWER BY ARCHITECT. SYMMONS S-96-300-B30-X-L-V PRESSURE BALANCING SHOWER VALVE, LEVERTROL VOLUME CONTROL, INLINE VACUUM BREAKER, STOPS AND LEVER HANDLE. PROVIDE SHOWER HEAD ASSEMBLY SYMMONS HAND HELD SHOWER, 60" HOSE, 30" SLIDE BAR. PROVIDE WITH HORIZONTAL AND VERTICAL GRAB BARS.
TD-1	TRENCH DRAIN	2"	1 1/2"	-	-	SCHLUTER - KERDI - LINE MODEL NO. KLV 60 E 150, 60" LENGTH, STAINLESS STEEL CONSTRUCTION, STAINLESS STEEL BONDING FLANGE, CENTER OUTLET.
FD-1	FLOOR DRAIN	2"	1 1/2"	-	-	SCHLUTER - KERDI - DRAIN KIT MODEL NO. KD2/E/GR. 4" SQUARE GRATE, STAINLESS STEEL CONSTRUCTION, STAINLESS STEEL FLANGE AND GRATE ASSEMBLY, DEEP SEAL TRAP, VANDAL RESISTANT.
WCO	WCO CLEANOUT	AS NOTED ON PLANS				JR SMITH 4725 CHROME PLATED ROUND FRAME ACCESS COVER WITH SECURED COVER.

GENERAL NOTES:

1. VERIFY ALL MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS.
2. ALL P-TRAPS SHALL HAVE INTEGRAL CLEANOUT PLUGS.
3. ALL PLUMBING FIXTURES MUST CONFORM TO CURRENT "ADA" REQUIREMENTS FOR PERFORMANCE AND ACCESSIBILITY AS REQUIRED.
4. ALL VITREOUS CHINA FIXTURES TO BE WHITE ENAMELED.
5. ALL EXPOSED PIPING TO BE CHROME PLATED.

RSN: *1142126*
Permit #: *2016-1162585 LT*

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Craig Macy*
Date: *Aug 21, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

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No.	Description	Date

COLORADO LICENSED PROFESSIONAL ENGINEER
JAMES R. HOLT
45834
PROFESSIONAL ENGINEER

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	HF
Checked by	RH

Sheet Title:
PLUMBING LEGENDS, NOTES, AND SCHEDULE

Sheet Number
P.001

8/3/2016 11:49:12 AM



1 UNDERFLOOR PLAN - PLUMBING
1/8" = 1'-0"



2 UNDERFLOOR PLAN - PLUMBING DEMOLITION
1/8" = 1'-0"

GENERAL NOTES:

A. REFER TO SHEET P.001 FOR LEGENDS, GENERAL NOTES, AND ABBREVIATIONS.
B. PROVIDE ALTERNATIVE PRICING FOR NON HCA STANDARD PIPING AND FIXTURES.

⟨#⟩ LEGEND NOTES:

1 CONNECT THE NEW SS TO THE EXISTING SS OF EQUAL OR GREATER SIZE. ADJUST THE EXISTING SS SYSTEM AS NECESSARY TO MAKE CONNECTION.
2 RELOCATE EXISTING PLUMBING RISERS INTO NEW PICU RESTROOM WALL. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE RISERS PRIOR TO CONSTRUCTION. ADJUST THE EXISTING RISERS AS NECESSARY TO MAKE CONNECTION.
3 4" SS UP.
4 2" SS UP.
5 EXISTING 4"SS DN.
6 EXISTING 4"SD UP/DN.
7 EXISTING 2"V UP/DN.
8 EXISTING 4"SS UP.
9 EXISTNG 4"SS UP/DN.
10 RELOCATE EXISTING VENT RISER TO NEW FAMILY ROOM WALL. CONTRACTOR SHALL FIELD VERIFY LOCATION OF RISER PRIOR TO CONSTRUCTION. ADJSUT THE EXISTING RISER AS NECESSARY TO MAKE CONNECTION.

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No.	Description	Date

RSN: 1142126
Permit #: 2016-1162585 LT

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Craig Macy
Date: Aug 31, 2016
2015 INTERNATIONAL CODES & 2014 NEC

COLORADO LICENSED PROFESSIONAL ENGINEER 45834

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	HF
Checked by	RH

Sheet Title:
UNDERFLOOR PLAN - PLUMBING

Sheet Number
P.103

GENERAL NOTES:

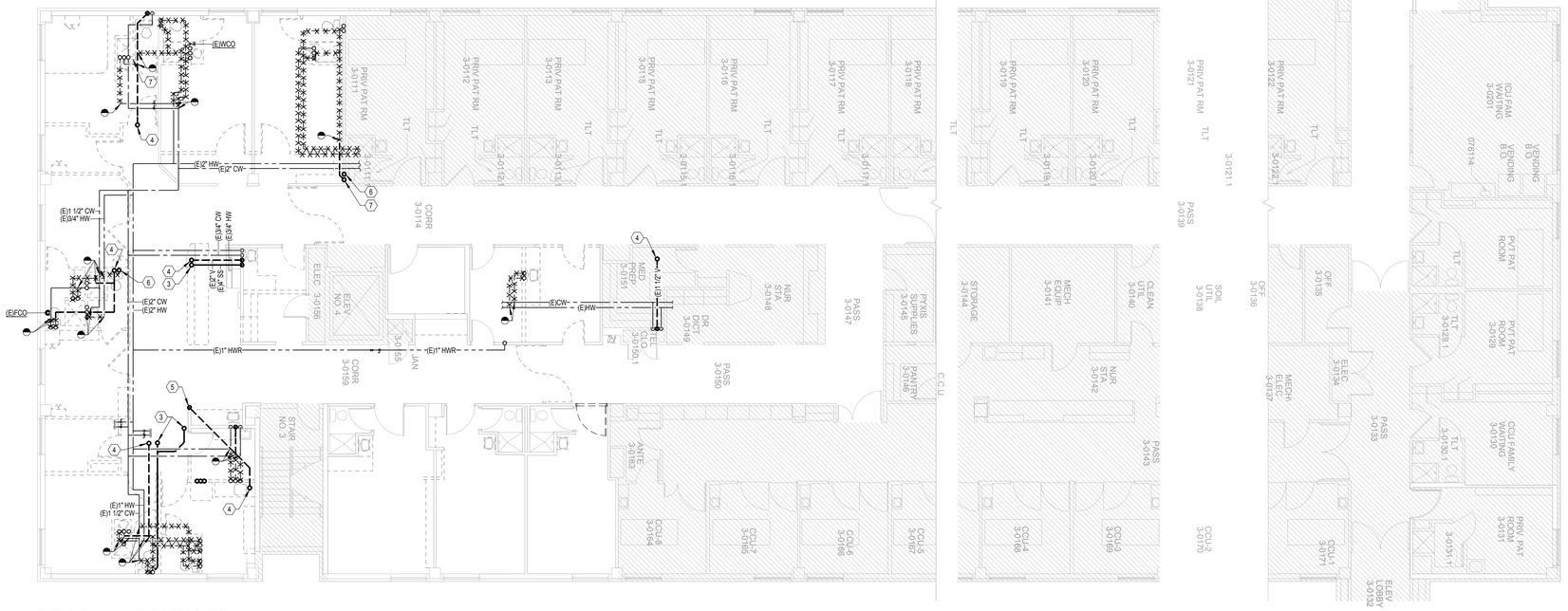
A. REFER TO SHEET P.001 FOR LEGENDS, GENERAL NOTES, AND ABBREVIATIONS.
B. PROVIDE ALTERNATIVE PRICING FOR NON HCA STANDARD PIPING AND FIXTURES.

(#) LEGEND NOTES:

1 CONNECT THE NEW CW, HW, OR SV TO EXISTING OF EQUAL OR GREATER SIZE. ADJUST EXISTING PIPING AS NECESSARY TO MAKE CONNECTION.
2 PROVIDE NEW P-LUMBING FIXTURE AS SCHEDULED AND RE-CONNECT TO EXISTING UTILITY ROUGH-INS. ADJUST ROUGH-INS AS NECESSARY TO MAKE A FULLY FUNCTIONING FIXTURE.
3 EXISTING 4"SS UP.
4 EXISTING 2"V UP.
5 EXISTING 2"V DN.
6 EXISTING 4"SS UP/DN.
7 EXISTING 2"V UP/DN.
8 1/2" CW DN TO ICE MAKER. PROVIDE WALL BOX AS SCHEDULED. REDUCE TO 3/8" AT EQUIPMENT AND PROVIDE WATTS SD-2 BACKFLOW PREVENTER.
9 PROVIDE NEW COFFEE MAKER AND ICE MAKER AND CONNECT TO EXISTING UTILITY ROUGH-INS. ADJUST ROUGH-INS AS NECESSARY TO MAKE CONNECTION. REDUCE TO 3/8" AT EQUIPMENT AND PROVIDE WATTS SD-2 BACKFLOW PREVENTER.
10 1/2" CW DN TO COFFEE MAKER. PROVIDE WALL BOX AS SCHEDULED. REDUCE TO 3/8" AT EQUIPMENT AND PROVIDE WATTS SD-2 BACKFLOW PREVENTER.
11 ROUTE 1 1/2" SS, 1/2" HW, AND 1/2" CW FROM EXISTING SINK IN WALL OVER TO NEW SK-1. AVOID ANY PENETRATIONS TO STAIRWAY RATED WALL.
12 INSTALL ADA SHOWER CONTROLS ON SHOWER ENCLOSURE SIDE WALL AND INSTALL SHOWER HEAD ON SHARED HANDSINK WET WALL.



1 LEVEL 03 PLAN - PLUMBING
1/8" = 1'-0"



3 LEVEL 03 PLAN - PLUMBING DEMOLITION
1/8" = 1'-0"

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No.	Description	Date

COLORADO LICENSED JAMES T. HOLLIS 45834 PROFESSIONAL ENGINEER

RSN: *1142126*
Permit #: *2016-1162585 LT*

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Craig Macy*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	HF
Checked by	RH

Sheet Title:
LEVEL 03 PLAN - PLUMBING

Sheet Number
P.203

CONTRACT & SPECIFICATIONS ARCHITECTURE

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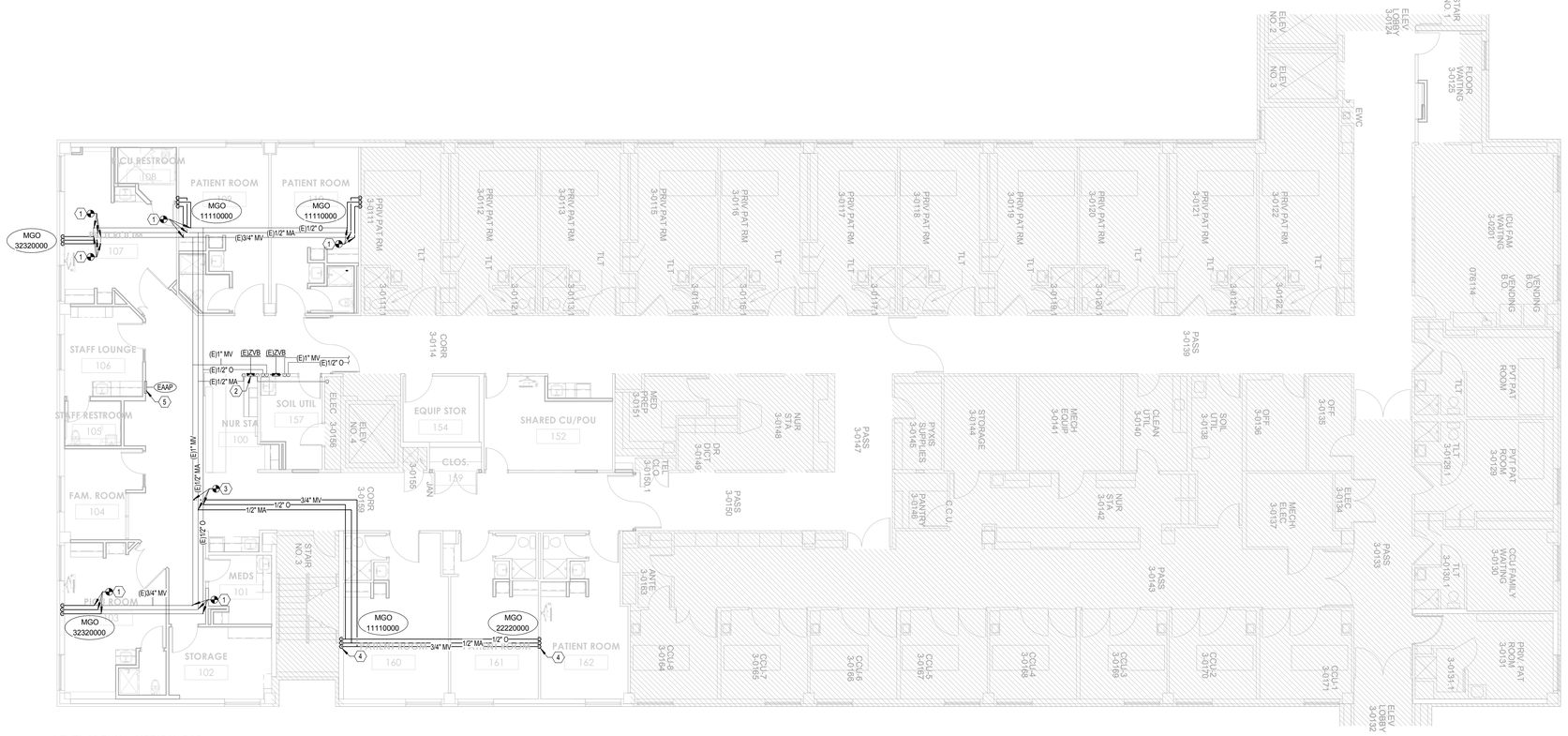
GENERAL NOTES:

A. REFER TO SHEET P.001 FOR LEGENDS, GENERAL NOTES, AND ABBREVIATIONS.

(#) LEGEND NOTES:

1. CONNECT THE NEW OXYGEN, MEDICAL AIR, AND VACCUM PIPING TO EXISTING OF EQUAL OR GREATER SIZE. ADJUST THE EXISTING PIPING AS NECESSARY TO MAKE CONNECTION.
2. RELOCATE EXISTING MEDICAL AIR ZONE VALVE BOX TO OPPOSITE SIDE OF WALL. ADJUST EXISTING MEDICAL AIR PIPING AS NECESSARY TO MAKE CONNECTION.
3. CONNECT THE NEW MEDICAL AIR, OXYGEN, AND MEDICAL VACUUM PIPING TO EXISTING OF EQUAL OR GREATER SIZE. ADJUST THE EXISTING PIPING AS NECESSARY TO MAKE CONNECTION.
4. PROVIDE NEW MEDICAL AIR, OXYGEN, AND MEDICAL VACUUM PIPING TO EXISTING PATIENT ROOMS. DEMOLISH EXISTING MEDICAL GAS OUTLETS AND PIPING BACK TO THE MAIN. MOUNT NEW MEDICAL GAS OUTLETS IN ACCORDANCE WITH MANUFACTURER'S RECCOMENDATIONS AND THE LOCAL AUTHORITY HAVING JURISDICTION.
5. RELOCATE EXISTING AREA ALARM PANEL FROM NURSE STATION TO LOCATION SHOWN. RECONNECT THE ALARM PANEL WIRING TO EXISTING ALARM SENSORS. MOUNT THE AREA ALARM PANEL IN ACCORDANCE WITH THE LOCAL AUTHORITY HAVING JURISDICTION.

COLORADO STATE LICENSED MASTER PLUMBER SHALL PROVIDE MEDICAL GAS CERTIFIED THIRD PARTY INSPECTION AND APPROVAL FOR RELATED PIPING.



1 LEVEL 03 PLAN - MEDICAL GAS
1/8" = 1'-0"



2 LEVEL 03 PLAN - MEDICAL GAS DEMOLITION
1/8" = 1'-0"

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No.	Description	Date

COLORADO LICENSED
RICHARD JAMES HOLLOWAY
45834
PROFESSIONAL ENGINEER

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
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Checked by	RH

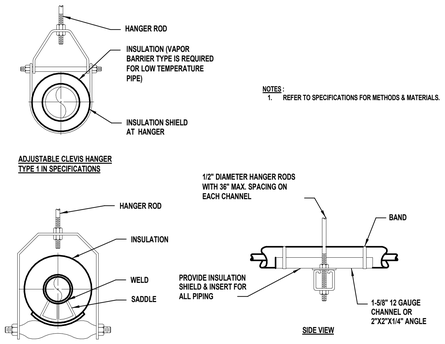
Sheet Title:
LEVEL 03 PLAN - MEDICAL GAS

Sheet Number
P.303

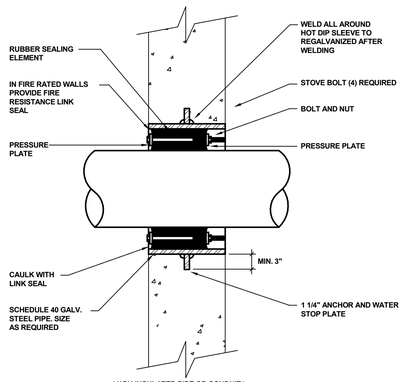
RSN: *1142126*
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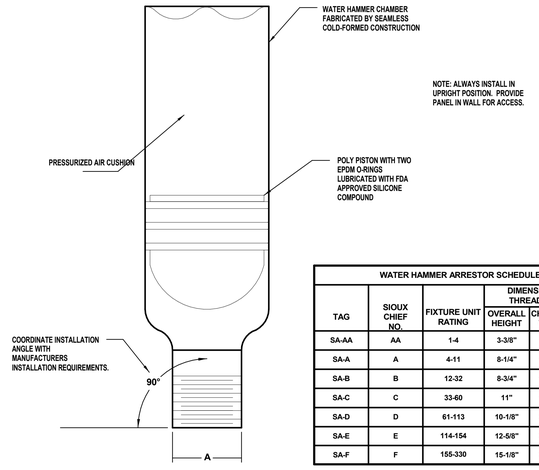
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01 PIPE HANGER DETAIL
NO SCALE



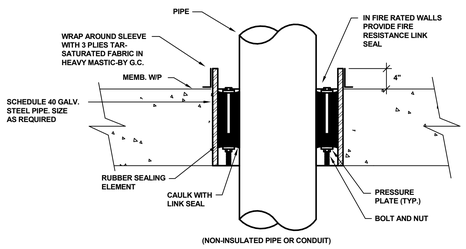
02 PIPE SLEEVE THRU NEW WALL
NO SCALE



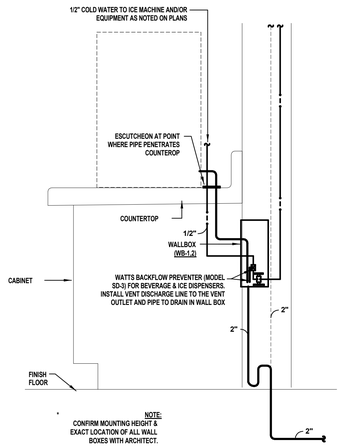
WATER HAMMER ARRESTOR SCHEDULE					
TAG	SIOUX CHIEF NO.	FIXTURE UNIT RATING	DIMENSIONS - FOR THREADED CONN.		
			OVERALL HEIGHT	CHAMBER WIDTH	CONN. SIZE
SA-AA	AA	1-4	3-3/8"	7/8"	1/2"
SA-A	A	4-11	8-1/4"	1-3/8"	1/2"
SA-B	B	12-32	8-3/4"	1-3/8"	3/4"
SA-C	C	33-60	11"	1-3/8"	1"
SA-D	D	61-113	10-1/8"	2-1/8"	1"
SA-E	E	114-154	12-5/8"	2-1/8"	1"
SA-F	F	155-330	15-1/8"	2-1/8"	1"

NOTE:
1. ALWAYS INSTALL IN UPRIGHT POSITION. PROVIDE PANEL IN WALL FOR ACCESS.
2. SHOCK ARRESTORS SHALL BE PROVIDED AT ALL FIXTURES AND BATTERIES OF FIXTURES WHETHER OR NOT SHOWN ON DRAWINGS.

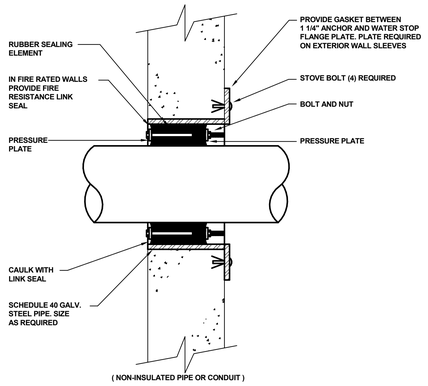
03 WATER HAMMER ARRESTOR
NO SCALE



04 PIPE SLEEVE THRU EXISTING FLOOR
NO SCALE



05 WALL BOX DETAIL
NO SCALE



06 PIPE SLEEVE THRU EXISTING WALL
NO SCALE

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No.	Description	Date

COLORADO LICENSED PROFESSIONAL ENGINEER RICHARD JAMES HOLLENBECK 45834

RSN: *1142126*
Permit #: *2016-1162585 LT*

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Craig Macy*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
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Sheet Title:

PLUMBING DETAILS

Sheet Number

P.701

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ELECTRICAL DEMOLITION NOTES

A. PROVIDE UPDATED, TYPE WRITTEN DIRECTORY OF ALL CORRECT CIRCUITS WITH LOAD DEFINITIONS FOR EACH PANEL BOARD. DIRECTORY SHALL BE LOCATED INSIDE PANEL DOOR.
B. INFORMATION PROVIDED ON THESE DRAWINGS HAVE BEEN TAKEN FROM DESIGN DRAWING AND FIELD OBSERVATIONS. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO PRICING AND COMMENCEMENT OF WORK.
C. WHERE EXISTING WALLS ARE DEMOLISHED, REMOVE ALL EXISTING ELECTRICAL DEVICES AND THEIR ASSOCIATED CONDUITS AND WIRING BACK TO THE POINT OF ORIGINATION. ENERGIZE ALL EXISTING DEVICES THAT WERE INTERRUPTED DURING DEMOLITION. WHERE ENTIRE CIRCUITS ARE REMOVED, TURN THE CIRCUIT BREAKER OFF AND LABEL AS "SPARE".
D. PROVIDE FOR ANY AND ALL DEMOLITION WORK NECESSARY TO ACCOMMODATE ALL NEW CONSTRUCTION, INCLUDING ARCHITECTURAL, MECHANICAL, PLUMBING OR ELECTRICAL WORK.
E. IF DEMOLITION IS REQUIRED TO INSTALL AN ITEM, THE CONTRACTOR SHALL RESTORE THE AREA TO PREVIOUS CONDITION, OR REPLACE DAMAGED ITEMS WITH NEW ITEMS TO MATCH EXISTING.
F. DESIGNATION 'EX' REPRESENTS EXISTING DEVICE OR LIGHT FIXTURE TO REMAIN AS CIRCUITED AND SWITCHED UNLESS NOTED OTHERWISE. EXISTING LIGHT FIXTURES SHALL BE CLEANED AND REPAIRED AS REQUIRED.
G. CONTRACTOR SHALL REMOVE ALL CONDUIT AND WIRING ASSOCIATED WITH DEVICES AND EQUIPMENT TO BE REMOVED AND/OR RELOCATED UNLESS NOTED OTHERWISE. PROVIDE AND INSTALL ALL NECESSARY DEVICES, EQUIPMENT AND ACCESSORIES REQUIRED TO MAINTAIN SERVICE TO ALL "EXISTING TO REMAIN" DEVICES AND EQUIPMENT THAT MAY BE INTERRUPTED DURING DEMOLITION.
H. WHERE EXISTING MECHANICAL/PLUMBING EQUIPMENT IS DEMOLISHED, REMOVE ALL RELATED ELECTRICAL FEEDS TO THE EQUIPMENT AND THEIR ASSOCIATED CONDUITS BACK TO THE POINT OF ORIGINATION.
I. SPACE ALLOCATIONS FOR MATERIALS, EQUIPMENT AND DEVICES HAVE BEEN MADE ON THE BASIS OF PRESENT AND KNOWN FUTURE REQUIREMENTS AND THE DIMENSIONS OF ITEMS OF EQUIPMENT OR DEVICES OF A PARTICULAR MANUFACTURER WHETHER INDICATED OR NOT. THE CONTRACTOR SHALL VERIFY THAT ALL MATERIALS, EQUIPMENT AND DEVICES PROPOSED FOR USE ON THIS PROJECT ARE WITHIN THE CONSTRAINTS OF THE ALLOCATED SPACE.
J. REFER TO ARCHITECTURAL PLANS FOR AREAS WHERE CEILING IS DEMOLISHED. REMOVE ALL LIGHTING FIXTURES AND ASSOCIATED CONDUIT AND WIRING FROM THESE LOCATIONS.
K. ALL RECEPTACLES WITHIN THE PROJECT SCOPE SHALL BE HOSPITAL GRADE TYPE. IF A DEVICE IS INDICATED AS EXISTING TO REMAIN AND IS NOT A HOSPITAL GRADE RECEPTACLE, REPLACE THE EXISTING DEVICE WITH A HOSPITAL GRADE RECEPTACLE AND RECONNECT TO EXISTING CIRCUIT. CONTRACTOR SHALL FIELD SURVEY SPACE PRIOR TO CONSTRUCTION AND DETERMINE AN EXACT QUANTITY OF DEVICES TO BE REPLACED.
L. ALL LIGHTING FIXTURES DEMOLISHED UNDER THESE DRAWINGS SHALL BE RETURNED TO THE OWNER.

ELECTRICAL GENERAL NOTES

A. CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING HIS PROPOSAL AND BECOME FAMILIAR WITH THE CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED, AND CORRELATE HIS SITE OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. INCONSISTENCIES DISCOVERED SHALL BE REPORTED TO THE ARCHITECT AND ENGINEER AT ONCE, BEFORE SUBMITTAL OF BID PROPOSAL.
B. ALL ELECTRICAL PRODUCTS AND INSTALLATIONS SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL CODES. REFER TO SPECIFICATIONS FOR MATERIALS AND METHODS FOR ELECTRICAL CONSTRUCTION.
C. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, PAY ALL FEES, AND COMPLY WITH ALL NATIONAL, STATE, AND MUNICIPAL LAWS, CODES, AND ORDINANCES RELATING TO BUILDING AND PUBLIC SAFETY.
D. CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR A COMPLETE WORKING AND COORDINATED SYSTEM.
E. UNLESS OTHERWISE NOTED, ALL EQUIPMENT AND MATERIALS SHALL BE NEW AND U.L. LISTED OR LABELED. EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, AND LISTING OR LABELING REQUIREMENTS AND RESTRICTIONS. PROVIDE SUBMITTAL DATA AS DEPICTED IN THE ELECTRICAL SPECIFICATIONS.
F. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR APPROVAL FOR ALL ELECTRICAL MATERIALS PROPOSED TO BE PROVIDED UNDER THIS CONTRACT. ANY DEVIATIONS FROM ITEMS SPECIFIED SHALL BE CLEARLY IDENTIFIED. NO WORK IS AUTHORIZED WITHOUT SHOP DRAWINGS REVIEWED BY ENGINEER.
G. ALL POWER WIRING SHALL BE INSTALLED IN CONDUIT. POWER CONDUCTORS SHALL BE STRANDED COPPER THHN/THWN #10 AWG MINIMUM. ONLY SOLID #12 COPPER CONDUCTORS SHALL BE ACCEPTABLE.
H. ALL EMPTY CONDUIT SYSTEMS SHALL CONTAIN A PULL WIRE FOR FUTURE PULLING OF CONDUCTORS.
I. REFER TO AND COORDINATE WITH ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL WIRING DEVICES, LIGHT FIXTURES, AND EQUIPMENT.
J. REFER TO AND COORDINATE WITH ALL DIVISIONS OF WORK FOR THE LOCATION OF ALL ITEMS LOCATED IN THE CEILING INCLUDING, BUT NOT LIMITED TO SUPPLY-AIR DIFFUSERS, RETURN-AIR DIFFUSERS AND FIRE SPRINKLER HEADS.
K. COORDINATE WITH OTHER TRADES ALL NECESSARY WIRING AND CONNECTIONS REQUIRED FOR EACH PIECE OF EQUIPMENT PRIOR TO PULLING CONDUCTORS INTO NEW CONDUITS.
L. VERIFY EXACT LOCATION OF ALL POWER CONNECTIONS AND CONTROL DEVICES WITH OTHER TRADES AND MANUFACTURERS SHOP DRAWINGS BEFORE CONSTRUCTION. CONTRACTOR SHALL COORDINATE ALL REQUIRED ENERGY MANAGEMENT SYSTEM POINTS AND CONTACT CONNECTIONS TO ENSURE THE COMPLETE AND PROPER OPERATION OF ALL SYSTEMS.
M. ALL PENETRATIONS THROUGH FIRE RATED WALLS OR PARTITIONS SHALL BE MADE IN ACCORDANCE WITH U.L. 483 "FIRE RESISTANCE DIRECTORY". PENETRATIONS SHALL BE SLEEVED AND SEALED WITH A UL APPROVED FIRE RATED SEALANT. REFER TO ARCHITECTURAL PLANS FOR FIRE RATED WALLS.
N. CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL POWER OUTAGES WITH OWNER'S REPRESENTATIVE.
O. CIRCUITING FOR LIGHTING AND POWER IS SHOWN DIAGRAMMATICALLY. HOMERUNS SHALL BE COMBINED WHERE POSSIBLE, ACCORDING TO NEC.
P. CONTRACTOR SHALL WARRANTY WORK FOR ONE (1) YEAR FROM THE COMPLETION OF THE PROJECT AND PROVIDE OWNER WITH AS BUILT DRAWINGS.
Q. CROSS-HATCHING REPRESENTS FIXTURE ON LIFE SAFETY OR CRITICAL CIRCUIT.
R. ALL GFI RECEPTACLES SHALL BE WIRED TO SELF-PROTECT ONLY AND SHALL NOT AFFECT POWER TO ANY DOWNSTREAM DEVICES.
S. MOUNT ALL RECEPTACLES THROUGHOUT THE PROJECT WITH THE GROUND POLE AT THE TOP OF THE CONFIGURATION WHEN MOUNTED VERTICALLY, AND ON THE LEFT WHEN MOUNTED HORIZONTALLY.
T. DISCONNECTING MEANS FOR ALL MECHANICAL AND PLUMBING EQUIPMENT SHALL BE MOUNTED INDEPENDENTLY OF THE PIECE OF EQUIPMENT.
U. SPACE ALLOCATIONS FOR MATERIALS, EQUIPMENT AND DEVICES HAVE BEEN MADE ON THE BASIS OF PRESENT AND KNOWN FUTURE REQUIREMENTS AND THE DIMENSIONS OF ITEMS OF EQUIPMENT OR DEVICES OF A PARTICULAR MANUFACTURER WHETHER INDICATED OR NOT. THE CONTRACTOR SHALL VERIFY THAT ALL MATERIALS, EQUIPMENT AND DEVICES PROPOSED FOR USE ON THIS PROJECT ARE WITHIN THE CONSTRAINTS OF THE ALLOCATED SPACE AND CODE COMPLIANT.
V. NOTE: ANY DEVIATIONS FROM SCHEDULED EQUIPMENT RESULTING IN ADDITIONAL COSTS DUE TO LACK OF COORDINATION WITH DIMENSIONS AND WEIGHTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SUB-CONTRACTOR.
W. THE ENGINEERED SYSTEMS, INCLUDING: NURSE CALL, DICTATION, INTERCOM, CODE BLUE, SOUND SYSTEMS, TELEVISION, RADIO, ETC. SHALL BE PROVIDED WITH STANDARD BACK BOXES AND CONDUITS STUBBED ABOVE THE CEILING, FURNISHED AND INSTALLED BY THE CONTRACTOR. SPECIAL BOXES WILL BE PROVIDED BY THE VENDOR AND INSTALLED BY THE CONTRACTOR.

HCA INNOVATION MEMORANDUMS

A) CONTRACTOR SHALL PURCHASE ALL WIRING DEVICES, SAFETY SWITCHES, CONDUCTORS, RACEWAY, GROUNDING SYSTEMS, HANGERS, JUNCTION BOXES, PANELS, AND CABINETS, PER INNOVATION MEMO #16.

1) LANCE SMITH - CED NASHVILLE
HCA@CED-NASHVILLE.COM
(615) 329-2601
(615) 207-7223

2) JESS HOOVER
HCA@GRAYBAR.COM
(615) 743-3232
(239) 494-2088

B) CONTRACTOR SHALL PURCHASE ALL LIGHTING FIXTURES PER INNOVATION MEMO #5.

1) JESS HOOVER
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(615) 743-3232
(239) 494-2088

FIRE ALARM SYMBOLS LEGEND

ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION	MNTG. HT. UNO
F	FIRE ALARM PULL STATION WALL MOUNTED	48" AFF
X	FIRE ALARM AUDIBLE VISUAL SIGNAL WALL MOUNTED (X: H=HORN, S=SPEAKER)	48" AFF
X	FIRE ALARM AUDIBLE SIGNAL WALL MOUNTED (X: H=HORN, S=SPEAKER)	48" AFF
	FIRE ALARM VISUAL SIGNAL WALL MOUNTED	48" AFF
CLG X	FIRE ALARM AUDIBLE VISUAL SIGNAL CEILING MOUNTED (X: H=HORN, S=SPEAKER)	--
CLG X	FIRE ALARM AUDIBLE SIGNAL CEILING MOUNTED (X: H=HORN, S=SPEAKER)	--
CLG	FIRE ALARM VISUAL SIGNAL CEILING MOUNTED	--
FS	FIRE ALARM SPRINKLER FLOW SWITCH	--
TS	FIRE ALARM SPRINKLER TAMPER SWITCH	--
PS	FIRE ALARM SPRINKLER PRESSURE SWITCH	--
	SMOKE DETECTOR WALL MOUNTED	9" BFC
	SMOKE DETECTOR CEILING MOUNTED	--
P	PATIENT ROOM SMOKE DETECTOR	--
	DUCT SMOKE DETECTOR	--
	HEAT DETECTOR WALL MOUNTED	9" BFC
	HEAT DETECTOR CEILING MOUNTED	--
DH	ELECTRO-MAGNETIC DOOR HOLDER	AS REQUIRED
M	ELECTRO-MAGNETIC SMOKE DOOR HOLDER (INTERFACED WITH FIRE ALARM SYSTEM. DC POWER PROVIDED BY FIRE ALARM WIRING	AS REQUIRED
	FIRE ALARM BELL	108" AFF
FACP	FIRE ALARM CONTROL PANEL	__" AFF
FAAP	FIRE ALARM ANNUNCIATOR PANEL	__" AFF
FPAP	FIRE PUMP ANNUNCIATOR PANEL	__" AFF
FCP	FIREFIGHTER'S CONTROL PANEL	__" AFF
NAC	NOTIFICATION APPLIANCE CIRCUIT FOUR CIRCUIT FIRE ALARM INDICATING CIRCUIT POWER EXTENDER	__" AFF
FP	TELEPHONE JACK FOR FIREMAN'S PHONE (BY FIRE ALARM CONTRACTOR)	48" AFF
FPH	WARDEN STATION TELEPHONE FOR FIREMAN'S PERMANENT HANDSET (BY FIRE ALARM CONTRACTOR)	48" AFF

LIGHTING SYMBOLS LEGEND

ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION	MNTG. HT. UNO (SEE NOTE 1)
	2'x4' LIGHT FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	2'x4' LIGHT FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	2'x4' LIGHT FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	2'x4' LIGHT FIXTURE WITH INBOARD LAMPS ON NORMAL CIRCUIT AND OUTBOARD LAMPS ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	2'x4' LIGHT FIXTURE WITH INBOARD LAMPS ON LIFE SAFETY CIRCUIT AND OUTBOARD LAMPS ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	2'x4' LIGHT FIXTURE WITH INBOARD LAMPS ON CRITICAL CIRCUIT AND OUTBOARD LAMPS ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	2'x2' LIGHT FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	2'x2' LIGHT FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	2'x2' LIGHT FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	2'x2' LIGHT FIXTURE WITH INBOARD LAMPS ON NORMAL CIRCUIT AND OUTBOARD LAMPS ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	2'x2' LIGHT FIXTURE WITH INBOARD LAMPS ON LIFE SAFETY CIRCUIT AND OUTBOARD LAMPS ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	2'x2' LIGHT FIXTURE WITH INBOARD LAMPS ON CRITICAL CIRCUIT AND OUTBOARD LAMPS ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	WALL MOUNTED LINEAR FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	WALL MOUNTED LINEAR FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	WALL MOUNTED LINEAR FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	RECESSED/SURFACE MOUNTED LINEAR FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	RECESSED/SURFACE MOUNTED LINEAR FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	RECESSED/SURFACE MOUNTED LINEAR FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	RECESSED/SURFACE DOWNLIGHT FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	RECESSED/SURFACE DOWNLIGHT FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	RECESSED/SURFACE DOWNLIGHT FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	WALL MOUNTED FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	WALL MOUNTED FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	WALL MOUNTED FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	RECESSED DOWNLIGHT FIXTURE WITH WALL WASH ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	RECESSED DOWNLIGHT FIXTURE WITH WALL WASH ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	RECESSED DOWNLIGHT FIXTURE WITH WALL WASH ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	HANGING RECTANGULAR PENDANT FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	HANGING RECTANGULAR PENDANT FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	HANGING RECTANGULAR PENDANT FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	HANGING CIRCULAR PENDANT FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	HANGING CIRCULAR PENDANT FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	HANGING CIRCULAR PENDANT FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	WALL MOUNTED 90-MINUTE BATTERY-POWERED EGRESS LIGHTING ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	CEILING MOUNTED EXIT SIGN. SHADING INDICATES DOUBLE OR SINGLE FACE. ARROW INDICATES CHEVRON DIRECTIONS.	SEE FIXTURE SCHEDULE
	END MOUNTED EXIT SIGN. SHADING INDICATES DOUBLE OR SINGLE FACE. ARROW INDICATES CHEVRON DIRECTIONS.	SEE FIXTURE SCHEDULE
	WALL MOUNTED EXIT SIGN. SHADING INDICATES DOUBLE OR SINGLE FACE. ARROW INDICATES CHEVRON DIRECTIONS.	SEE FIXTURE SCHEDULE
	WALL PACK LIGHT FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	WALL PACK LIGHT FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	WALL PACK LIGHT FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	BOLLARD LIGHT FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	BOLLARD LIGHT FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	BOLLARD LIGHT FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	EXTERIOR LIGHT POLE FIXTURE ON NORMAL CIRCUIT.	SEE FIXTURE SCHEDULE
	EXTERIOR LIGHT POLE FIXTURE ON LIFE SAFETY CIRCUIT OR LEGALLY REQUIRED STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	EXTERIOR LIGHT POLE FIXTURE ON CRITICAL CIRCUIT OR NON-ESSENTIAL STANDBY SYSTEM.	SEE FIXTURE SCHEDULE
	SPOT/FLOOD LIGHT FIXTURE.	SEE FIXTURE SCHEDULE
$\$_X$	WALL SWITCH SPST, 20A, 120/277V	48" AFF
$\$_2$	DOUBLE POLE TOGGLE SWITCH, 20A, 208/480V	48" AFF
$\$_3$	3-WAY WALL SWITCH, 20A, 120/277V	48" AFF
$\$_4$	4-WAY WALL SWITCH, 20A, 120/277V	48" AFF
$\$_D$	WALL DIMMER SWITCH	48" AFF
$\$_K$	KEY OPERATED WALL SWITCH	48" AFF
$\$_{3D}$	3-WAY DIMMER WALL SWITCH, 20A, 120/277V	48" AFF
$\$_{3K}$	3-WAY KEY OPERATED WALL SWITCH, 20A, 120/277V	48" AFF
$\$_{MC}$	MOMENTARY WALL SWITCH, 20A, 120/277V	48" AFF
$\$_B$	LIGHTING CONTROL SWITCH BANK FOR MULTIPLE SWITCHES, REFER TO DETAIL FOR QUANTITY OF SWITCHES IN BANK.	48" AFF
$\$_{LV}$	LOW VOLTAGE WALL SWITCH	48" AFF
$\$_P$	WALL SWITCH WITH PILOT LIGHT	48" AFF
$\$_T$	WALL SWITCH WITH ADJUSTABLE COUNTDOWN TIMER	48" AFF

LIGHTING NOTES:
1. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHTS OF ALL DEVICES.

POWER SYMBOLS LEGEND

ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION	MNTG. HT. UNO
	SINGLE RECEPTACLE - 20A/125V/2P/3W/G NEMA 5-20R	18" AFF
	DUPLEX RECEPTACLE - 20A/125V/2P/3W/G NEMA 5-20R	18" AFF
E	DUPLEX RECEPTACLE ON EMERGENCY CIRCUIT	18" AFF
GFI	DUPLEX RECEPTACLE GFCI - 20A/125V/2P/3W/G NEMA 5-20R	18" AFF
H	DUPLEX RECEPTACLE MOUNTED HORIZONTALLY	18" AFF
TP	DUPLEX RECEPTACLE, TAMPER PROOF - 20A/125V/2P/3W/G NEMA 5-20R	18" AFF
WP	DUPLEX RECEPTACLE, GFCI, TAMPER RESISTANT, WEATHER RESISTANT, HOUSED IN A "WEATHERPROOF-WHILE-IN-USE" ENCLOSURE - 20A/125V/2P/3W/G NEMA 5-20R	18" AFF
RF	DUPLEX RECEPTACLE ROUTED THROUGH RF FILTER	18" AFF
PM	DUPLEX RECEPTACLE FOR PATIENT MONITORING - PROVIDE AT SAME HEIGHT AS DATA OUTLET	--
FM	DUPLEX RECEPTACLE FOR FETAL MONITORING - PROVIDE AT SAME HEIGHT AS DATA OUTLET	--
C	20A "CLOCK" TYPE RECEPTACLE (FOR U.C. REFS AND MICROWAVES)	AS REQUIRED
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTERTOP	8" AFC OR 42" AFF
E	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTERTOP ON EMERGENCY CIRCUIT	8" AFC OR 42" AFF
	QUADRAPLEX RECEPTACLE (TWO DUPLEX RECEPTACLES UNDER ONE COVERPLATE)	18" AFF
E	QUADRAPLEX RECEPTACLE ON EMERGENCY CIRCUIT (TWO DUPLEX RECEPTACLES UNDER ONE COVERPLATE)	18" AFF
	QUADRAPLEX RECEPTACLE MOUNTED ABOVE COUNTERTOP (TWO DUPLEX RECEPTACLES UNDER ONE COVERPLATE)	8" AFC OR 42" AFF
E	QUADRAPLEX RECEPTACLE MOUNTED ABOVE COUNTERTOP ON EMERGENCY CIRCUIT (TWO DUPLEX RECEPTACLES UNDER ONE COVERPLATE)	8" AFC OR 42" AFF
	SPECIAL PURPOSE RECEPTACLE (NEMA NO. AS INDICATED)	18" AFF
	FLOOR MOUNTED RECEPTACLE IN FLOOR BOX OR POKE-THRU DEVICE - FLUSH MOUNTED, UNO	18" AFF
	CEILING MOUNTED RECEPTACLE - CONFIGURATION UNO	FLUSH W/ CLG SURFACE
J	JUNCTION BOX - SIZE & MOUNTING AS REQUIRED	AS REQUIRED
J D/T	WALL MOUNTED JUNCTION BOX FOR DATA/TELEPHONE - SIZE & MOUNTING AS REQUIRED	AS REQUIRED
	POWER POLE	--
X/Y/Z	DISCONNECT SWITCH (X=FRAME SIZE, Y=FUSE SIZE, Z=NUMBER OF POLES)	AS REQUIRED
X/-/Z	DISCONNECT SWITCH NON-FUSED (X=FRAME SIZE, Z=NUMBER OF POLES)	AS REQUIRED
CB X/Z	ENCLOSED CIRCUIT BREAKER (X=TRIP RATING, Z=NUMBER OF POLES)	AS REQUIRED
#	MOTOR STARTER FVNR UNO (#=NEMA SIZE)	AS REQUIRED
CB	COMBINATION MOTOR CONTROLLER / DISCONNECT SWITCH	AS REQUIRED
$\$_M$	MANUAL MOTOR STARTER SWITCH WITH THERMAL OVERLOAD AND PILOT LIGHT	AS REQUIRED
	EMERGENCY POWER OFF BUTTON - WALL MOUNTED	AS REQUIRED
	CIRCUIT CONDUCTOR INDICATION (EQUIPMENT GROUND, NEUTRAL, PHASE)	--
	CIRCUIT HOMERUN TO PANELBOARD (2#12, 1#12G, 3/4"C. 20A/1P CB UNO)	--
	CONDUIT INSTALLED IN CEILING SPACE OF FLOOR BELOW.	--
X,X,X	THREE SINGLE POLE DEVICE CIRCUIT NUMBERS	--
X/X/X	MULTI-POLE DEVICE CIRCUIT NUMBERS	--
	208Y/120V PANELBOARD	--
	480Y/277V PANELBOARD	--
	208Y/120V DISTRIBUTION PANELBOARD	--
	480Y/277V DISTRIBUTION PANELBOARD	--
	ISOLATION PANEL	--
	SWITCHBOARD	--
T	STEP-DOWN TRANSFORMER	--
	AUTOMATIC TRANSFER SWITCH	--
	BY-PASS / ISOLATION AUTOMATIC TRANSFER SWITCH	--
	GROUND BAR	--
RG	ROOM GROUND BAR	--
PG	PATIENT GROUND BAR	--
GAP	GENERATOR ANNUNCIATOR PANEL	AS REQUIRED
ATSA	AUTOMATIC TRANSFER SWITCH ANNUNCIATOR PANEL	AS REQUIRED
TVSS	TRANSIENT VOLTAGE AND SURGE SUPPRESSOR DEVICE	AS REQUIRED
AAP	AREA ALARM PANEL	AS REQUIRED
FOAP	FUEL OIL ALARM PANEL	AS REQUIRED
MGAP	MEDICAL GAS ALARM PANEL - PANEL PROVIDED UNDER DIV 15	AS REQUIRED
DHTA	DECONTAMINATION HOLDING TANK ALARM - PANEL PROVIDED UNDER OTHER DIVISION	AS REQUIRED

OCCUPANCY SENSOR/CONTROLS SYMBOLS LEGEND

ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS. SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION	MNTG. HT. UNO (SEE NOTE 1)
OS DT #	OCCUPANCY SENSOR, DUAL TECHNOLOGY (# = AREA COVERAGE)	CEILING MOUNTED
OS US #	OCCUPANCY SENSOR, ULTRASONIC (# = AREA COVERAGE)	CEILING MOUNTED
OS IR #	OCCUPANCY SENSOR, INFRARED (# = AREA COVERAGE)	CEILING MOUNTED
VS DT #	VACANCY SENSOR, DUAL TECHNOLOGY (# = AREA COVERAGE)	CEILING MOUNTED
VS US #	VACANCY SENSOR, ULTRASONIC (# = AREA COVERAGE)	CEILING MOUNTED
VS IR #	VACANCY SENSOR, INFRARED (# = AREA COVERAGE)	CEILING MOUNTED
$\$_O$	WALL SWITCH OCCUPANCY SENSOR CONTROL	48" AFF
$\$_{OT}$	WALL TIMER SWITCH OCCUPANCY SENSOR CONTROL	48" AFF
$\$_V$	WALL SWITCH VACANCY SENSOR CONTROL	48" AFF

OCCUPANCY SENSOR/CONTROLS NOTES:
1. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHTS OF ALL DEVICES.

PROJECT DESIGN CRITERIA

LOCATION:	
CITY/STATE	AURORA, COLORADO
APPLICABLE CODES:	
BUILDING	2009 IBC
MECHANICAL	2009 IMC
PLUMBING	2009 IPC
ENERGY	2009 IECC
ELECTRICAL	2014 NEC
LATITUDE:	
DEG. N. LAT.	39.41.45N 104.48.29W
ELEVATION:	
FT. ABOVE SEA LEVEL	5471

ELECTRICAL ABBREVIATIONS

AAP	AREA ALARM PANEL	MH	MANHOLE
AFC	ABOVE FINISHED COUNTER	MLO	MAIN LUGS ONLY
AFF	ABOVE FINISHED FLOOR	MTD	MOUNT OR MOUNTED
ATS	AUTOMATIC TRANSFER SWITCH	N	NEW DEVICE
BFC	BELOW FINISHED CEILING	NC (N.C.)	NORMALLY CLOSED
BOF	BOTTOM OF FIXTURE	NEC	NATIONAL ELECTRIC CODE
C	CONDUIT	NF	NONFUSED
CB,C/B OR CKT BKR	CIRCUIT BREAKER	NIC	NOT IN CONTRACT
CKT	CIRCUIT	NL	NIGHT LIGHT
CCTV	CLOSED CIRCUIT T.V.	NO (N.O.)	NORMALLY OPEN
CLG	CEILING	PART (PART)	PARTIAL OR SHARED CIRCUIT INDICATED
CUH	CABINET HEATER	PB	PULL BOX
DN	DOWN (I.E. DOWN TO....)	PNL	PANEL
EC	EMPTY CONDUIT	PWR	POWER
ELEC	ELECTRIC	R	REMOVE DEVICES
E	EMERGENCY	RL	RELOCATED DEVICE
EMS	ENERGY MANAGEMENT SYSTEM	RCPT(S) OR RECEPT	RECEPTACLE(S)
EGC	EQUIPMENT GROUNDING CONDUCTOR	RF	RETURN AIR FAN
EWC	ELECTRIC WATER COOLER	SEF	SMOKE EXHAUST FAN
EX	EXISTING	SF	SUPPLY AIR FAN
F	FUSE	SO (S.O.)	SPACE ONLY
FA	FIRE ALARM	SP	SPARE
FACP, FAP	FIRE ALARM CONTROL PANEL	ST (S.T.)	SHUNT TRIP
FCU	FAN COIL UNIT	SW	SWITCH
FIXT	FIXTURE	TEL	TELEPHONE
FLR	FLOOR	TF	TRANSFER FAN
FLUOR	FLUORESCENT	TP	TAMPER PROOF
FTB, FTS	FAN TERMINAL UNIT	TV	TELEVISION
FUT	FUTURE	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
G, GND	GROUND (EQUIPMENT)	UF	UNDERFLOOR
GEF	GENERAL EXHAUST FAN	UG	UNDERGROUND
GEN	GENERATOR	UH	UNIT HEATER
GFCI, GFI	GROUND FAULT CIRCUIT INTERRUPTER	UNO (U.N.O.)	UNLESS NOTED OR INDICATED OTHERWISE
HP	HORSE POWER	V	VOLTAGE
HPF	HIGH POWER FACTOR	VFD	VARIABLE FREQUENCY DRIVE
HWAT	HEAT TRACE	VP	VAPOR PROOF
IC	INTERRUPTING CAPACITY	VV	VARIABLE VOLUME UNIT
ICAND	INCANDESCENT	W	WIRE
IG	ISOLATED GROUND	W/	WITH
JB	JUNCTION BOX	WG	WIRE GUARD
KEF	KITCHEN EXHAUST FAN	WP	WEATHER PROOF
LTG	LIGHTING	WT	WATER TIGHT
LTS	LIGHTS	XFMR	TRANSFORMER
LV	LOW VOLTAGE	+xx	MOUNTING HEIGHT IN INCHES. AFF UNO.
MATV	MASTER ANTENNA		
MCB	MAIN CIRCUIT BREAKER		
MFR	MANUFACTURER		
MDP	MAIN DISTRIBUTION PANEL		

ONE-LINE DIAGRAM & RISER SYMBOLS LEGEND

	DESCRIPTION	SYMBOL	DESCRIPTION
	BATTERY	M	UTILITY METER
	TRANSFORMER		GROUNDING ELECTRODE
X	CIRCUIT BREAKER AT = TRIP RATING		FUSE
X / X, X	CIRCUIT BREAKER SPACE ONLY AF FRAME RATING --	X	SWITCH - NON FUSED X = SWITCH RATING
XXX.X	FEEDER TAG.	X, X	FUSED SWITCH X SWITCH RATING AT FUSE RATING
X / X, X X, X	CIRCUIT BREAKER AF FRAME RATING AT TRIP RATING LSIG ELECTRONIC TRIP FUNCTIONS		

GENERAL NOTATIONS AND MOUNTING HEIGHTS

NOTE 1: ALL MOUNTING HEIGHTS REFER TO CENTERLINE OF DEVICE, UNLESS OTHERWISE INDICATED.
A) 48" AFF INDICATES TO TOP OF DEVICE;
B) 18" AFF INDICATES TO TOP OF DEVICE;
C) 60" AFF INDICATES TO BOTTOM OF DEVICE;
D) 80" AFF INDICATES TO BOTTOM OF DEVICE;

NOTE 2: CONFIRM ALL BACKBOX SIZES WITH VENDOR SHOP DRAWINGS PRIOR TO ELECTRICAL ROUGH-IN.

NOTE 3: NOT ALL SHOWN ON THIS SHEET ARE USED IN THIS PROJECT SCOPE.

2 - LEGEND NOTES: DENOTES "SEE LEGEND NOTE NO. 2"

02/E7.01 - DENOTES: REFERENCE DETAIL 02 ON DRAWING (SHEET) E7.01

E5.01 02 - DENOTES: REFERENCE ENLARGED DETAIL PLAN 02 ON DRAWING (SHEET) E5.01

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Erick B.
Date: Aug 31, 2016
2015 INTERNATIONAL CODES & 2014 NEC
AURORA

RSN: 1142126
Permit #: 16-1162585

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No.	Description	Date

COLORADO LICENSED PROFESSIONAL ENGINEER TYLER LEE FRITZ 43240 8/5/2016

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	JD
Checked by	TF

Sheet Title:
ELECTRICAL LEGENDS AND NOTES

Sheet Number
E.001

8/5/2016 4:39:22 PM

I GENERAL CONDITIONS

A. THE SCOPE OF THE WORK SHALL INCLUDE THE FURNISHING AND INSTALLATION OF THE NECESSARY MATERIAL AND LABOR TO ACCOMPLISH THE WORK INDICATED BY THE DRAWINGS AND HEREIN SPECIFIED. ALL WORK BY THIS CONTRACTOR SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL BUILDING CODES.

B. THE CONTRACT DOCUMENTS DO NOT PROPOSE TO SHOW ALL EXISTING SYSTEMS, EQUIPMENT OR MATERIAL. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE EXISTING CONDITIONS AT THE JOB SITE BEFORE SUBMITTING PROPOSALS. SUBMISSION OF PROPOSALS SHALL BE TAKEN AS EVIDENCE THAT SUCH INSPECTION HAS TAKEN PLACE. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE COMPLETE SET OF CONSTRUCTION DOCUMENTS, AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY.

C. MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE NEW AND SHALL BEAR THE U.L. LABEL WHERE APPLICABLE, UNLESS NOTED OTHERWISE. ALL WORK SHALL BE GUARANTEED AGAINST DEFECTIVE MATERIALS AND WORKMANSHIP FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR AFTER COMPLETION AND ACCEPTANCE BY THE OWNER.

D. CONTRACTOR SHALL INSTALL ELECTRICAL SYSTEMS WITHOUT INTERFERENCE AND IN STRICT COORDINATION WITH OTHER TRADES.

E. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE CONTRACT DOCUMENTS AND APPLICABLE CODES AND STANDARDS. IN CASE OF DIFFERENCE BETWEEN APPLICABLE CODES AND STANDARDS AND THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF SUCH DIFFERENCE. SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF APPLICABLE CODES AND STANDARDS, HE SHALL BEAR ALL COSTS ARISING IN CORRECTING SUCH DEFECTS. APPLICABLE CODES AND STANDARDS SHALL INCLUDE ALL ORDINANCES, UTILITY COMPANY REGULATIONS, AND APPLICABLE REQUIREMENTS OF NATIONALLY ACCEPTED CODES AND STANDARDS. SHOULD THE CONTRACTOR SUPPLY EQUIPMENT DIFFERING FROM THE SPECIFIED ITEMS IN THE CONTRACT DOCUMENTS WITHOUT NOTIFICATION TO THE ENGINEER, HE SHALL BEAR ALL COSTS TO UPGRADE DEFICIENCIES ARISING FROM SUCH.

F. WHERE ONLY ONE MANUFACTURER'S NAME IS LISTED IN THE EQUIPMENT SPECIFICATION, OTHER MANUFACTURERS OF SIMILAR CHARACTERISTICS AND OF EQUAL OR BETTER PERFORMANCE CAPACITIES MAY BE CONSIDERED FOR "OR EQUAL" ACCEPTANCE BY THE ENGINEER. SUBSTITUTION REQUESTS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL. WHERE MORE THAN ONE MANUFACTURER IS LISTED IN THE NOTES AND EQUIPMENT SPECIFICATIONS, ONLY THOSE NAMED MANUFACTURERS WILL BE CONSIDERED FOR ACCEPTANCE. SHOULD A SUBSTITUTION BE ACCEPTED, AND SHOULD THE SUBSTITUTE MATERIAL PROVE DEFECTIVE, OR OTHERWISE UNSATISFACTORY FOR THE SERVICE INTENDED WITHIN THE GUARANTEE PERIOD, THIS MATERIAL OR EQUIPMENT SHALL BE REPLACED WITH THE MATERIAL OR EQUIPMENT SPECIFIED AT NO COST TO THE OWNER.

G. PROVIDE ACCESS, INCLUDING NECESSARY ACCESS DOORS, FOR NEW AND EXISTING EQUIPMENT REQUIRING OPERATION AND/OR MAINTENANCE. RELOCATE EXISTING AND LOCATE ALL NEW EQUIPMENT SUCH THAT OPERATION OR MAINTENANCE IS NOT RESTRICTED.

H. INSTALL EQUIPMENT WITH WORKING CLEARANCES COMPLYING WITH NEC 110-16 AND 110-34.

II PRODUCTS

A. CONDUIT

1. RIGID STEEL CONDUIT (GRC - GALVANIZED RIGID CONDUIT): CONSTRUCTED OF MILD STEEL PIPING, GALVANIZED INSIDE AND OUTSIDE, CONFORMING WITH FED. SPEC. WW-C-581C, ANSI C80.1 AND APPLICABLE UL STANDARDS.

2. INTERMEDIATE METAL CONDUIT (IMC): CONSTRUCTED OF ZINC COATED STEEL TUBING MANUFACTURED IN ACCORDANCE WITH UL-1242 AND MEETING THE REQUIREMENTS OF THE NEC.

3. ELECTRIC METALLIC TUBING (EMT): OF HIGH GRADE STEEL MANUFACTURED SPECIFICALLY TO STANDARDS ASSURING MAXIMUM WELDING CHARACTERISTICS AND DUCTILITY, AND SHALL CONFORM TO FED. SPEC. WW-T-806b.

4. FLEXIBLE METAL CONDUIT: MANUFACTURED OF MILD STEEL STRIP MATERIAL HAVING A HOT-DIP GALVANIZED COATING AND MEETING REQUIREMENTS OF FED. SPEC. WW-C-566b.

5. LIQUIDTIGHT FLEXIBLE CONDUIT: FLEXIBLE METAL CONDUIT AS SPECIFIED HEREIN WITH A COPPER GROUNDING STRAND AND FACTORY-APPLIED NEOPRENE JACKET. LIQUID TIGHT FLEXIBLE CONDUIT SHALL BE UL LISTED, EQUIVALENT TO ANACONDA "SEALTITE", TYPE UA.

6. HOSPITAL GRADE METAL-CLAD CABLE MAY BE USED. TYPE HCF-MC METAL CLAD CABLE SHALL CONSIST OF FACTORY ASSEMBLED INSULATED CONDUCTORS ENCLOSED IN A METALLIC SHEATH OF INTERLOCKED GALVANIZED STEEL STRIP MANUFACTURED IN ACCORDANCE WITH UL 1569. THE CONDUCTORS SHALL HAVE AN OPERATING TEMPERATURE OF 90 DEGREE C AND SHALL BE COVERED BY A HIGH DIELECTRIC STRENGTH ASSEMBLY TAPE. TYPE MC CABLE SHALL BE AS MANUFACTURED BY AFC OR EQUAL.

B. COUPLINGS AND TERMINATORS

1. FOR RIGID STEEL OR INTERMEDIATE METAL CONDUIT: FACTORY-MADE THREADED COUPLINGS OF SAME MATERIAL AS THE CONDUIT.

2. FOR ELECTRICAL METALLIC TUBING: STEEL SET SCREW COUPLINGS; STEEL SET SCREW BOX CONNECTORS WITH NYLON INSULATED THROAT AND LOCKNUTS AT ALL BOXES AND CABINET TERMINATIONS OR NON-INSULATED BOX CONNECTOR, LOCKNUT AND NYLON-INSULATED GROUNDING BUSHING ON ALL TUBING WHERE GROUNDING BUSHINGS ARE REQUIRED.

3. FOR FLEXIBLE METAL CONDUIT: COUPLINGS AT CONNECTIONS BETWEEN FLEXIBLE CONDUIT AND EMT, AND NYLON INSULATED THROAT STEEL CONNECTORS AT BOX OR CABINET TERMINATIONS.

C. JUNCTION AND PULL BOXES

1. SIZE BOXES IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEC. BOXES SHALL BE NO SMALLER THAN 4 INCHES SQUARE BY 1-1/2 INCHES DEEP WITH COVERS ACCESSIBLE AT ALL TIMES. SET BOXES ON CONCEALED CONDUITS WITH COVERS FLUSH WITH THE FINISHED WALL OR CEILING LINE. PROVIDE JUNCTION AND PULL BOXES OF APPROPRIATE DIMENSIONS FOR CONDUITS AND CONDUCTORS NOTED, WHERE SHOWN AND WHERE NECESSARY FOR THE INSTALLATION AND PULLING OF CABLES AND WIRES. INSTALL COVERS ON JUNCTION BOXES AND CONDULETS AFTER WIRING AND CONNECTIONS ARE COMPLETED.

D. OUTLET BOXES

1. OUTLET BOXES SHALL BE UL LISTED, AND OF SIZES AND TYPES REQUIRED FOR THE APPLICATION. OUTLET BOXES SHALL BE SHEET STEEL, NO LIGHTER THAN 14 GAUGE, GALVANIZED AFTER FABRICATION. SET BOX SO FACE OF BOX WILL FINISH FLUSH WITH BUILDING SURFACE.

a. FOR LIGHTING FIXTURE OUTLETS: 4 INCH SQUARE BY 1-1/2 INCHES DEEP WITH RAISED FIXTURE RING.

b. FOR WALL SWITCHES, RECEPTACLES, AND COMMUNICATION USE: 4 INCH SQUARE, BY 1-1/2 INCHES DEEP. USE BOXES WITH PLASTER RINGS IN ALL PLASTERED WALLS WHERE WALL THICKNESS PERMITS. USE BOXES LESS THAN 1-1/2 INCH DEEP ONLY IN LOCATIONS WHERE DEEP BOXES CANNOT BE ACCOMMODATED BY CONSTRUCTION.

E. PULL CORDS

1. PROVIDE A NYLON POLYETHYLENE CORD, WITH A TENSILE STRENGTH OF NOT LESS THAN 200 POUNDS, IN EACH EMPTY CONDUIT TO FACILITATE THE FUTURE INSTALLATION OF CONDUCTORS. INCORPORATE PLASTIC TAGS FOR IDENTIFICATION.

F. CONDUCTORS

1. CONDUCTORS SHALL BE 98% CONDUCTIVITY SOFT DRAWN ANNEALED COPPER, 600 VOLT, THHN/THWN INSULATION, #10 AND SMALLER - SOLID, #8 AND LARGER - STRANDED.

2. NO CONDUCTORS SHALL BE SMALLER THAN NO. 12, EXCEPT FOR SIGNAL OR CONTROL CIRCUITS AND FOR INDIVIDUAL LIGHTING FIXTURE TAPS AS PERMITTED BY NEC.

3. FOR HOME RUNS ON 120-VOLT, 20-AMPERE BRANCH CIRCUITS, WHERE LENGTH OF RUN FROM PANELBOARD TO FIRST OUTLET EXCEEDS 100 LINEAR FEET, USE NO. 10 CONDUCTORS. WHERE LENGTH OF RUN IS 100 LINEAR FEET OR LESS, USE NO. 12 CONDUCTORS.

4. FOR HOME RUNS ON 277-VOLT, 20-AMPERE BRANCH CIRCUITS, WHERE LENGTH OF RUN FROM PANELBOARD TO FIRST OUTLET EXCEEDS 200 LINEAR FEET, USE NO. 10 CONDUCTORS. WHERE LENGTH OF RUN IS 100 LINEAR FEET OR LESS, USE NO. 12 CONDUCTORS.

G. WIRING DEVICES, COVER PLATES AND ACCESSORIES

1. PROVIDE WIRING DEVICES AND ASSOCIATED ACCESSORIES OF HOSPITAL GRADE. DEVICES OF LEVITON, HUBBELL OR PASS & SEYMORE ARE ACCEPTABLE. SUBMIT FOR REVIEW A COMPLETE LIST OF ANY SUBSTITUTES OFFERED FROM THOSE SPECIFIED.

2. COLOR OF WALL SWITCHES, RECEPTACLES AND FACEPLATES: AS SPECIFIED OR SELECTED BY ARCHITECT.

3. WHERE LIGHTING CIRCUITS ARE SHOWN TO BE LINE VOLTAGE SWITCHED, PROVIDE WITH SPECIFICATION GRADE, HORSEPOWER RATED, UL LISTED, BACK- AND SIDE-WIRED, TOGGLE SWITCHES RATED 20-AMP, 120 VOLTS OR 277 VOLTS. SWITCHES SHALL BE SPST, DPST, 3-WAY OR 4-WAY, WITH OR WITHOUT PILOT LIGHT, AS INDICATED ON THE DRAWINGS.

4. RECEPTACLES

a. STANDARD WALL RECEPTACLES SHALL BE HOSPITAL GRADE, RATED 20-AMP, 120-VOLT, 2 POLE, 3-WIRE, GROUNDING TYPE, SIDE-WIRED, NEMA 5-20R.

b. SPECIAL PURPOSE RECEPTACLES SHALL BE HOSPITAL GRADE DEVICES FOR THE NEMA CONFIGURATIONS SCHEDULED OR INDICATED ON THE DRAWINGS.

c. GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES SHALL BE HOSPITAL GRADE 20 AMP, 120 VOLT, 2 POLE, 3-WIRE, NEMA 5-20R.

5. MAINTAIN GROUNDING CONTINUITY BETWEEN DEVICES AND METALLIC RACEWAY SYSTEM IN ADDITION TO PROVIDING A GREEN EQUIPMENT GROUNDING CONDUCTOR RUN WITH ALL CIRCUIT CONDUCTORS AS INDICATED ON THE DRAWINGS. EXCEPT CARE SHALL BE TAKEN WHEN INSTALLING RECEPTACLES HAVING ISOLATED GROUND POLE SO AS TO NOT BOND THE EQUIPMENT GROUND CONDUCTOR TO THE CONDUIT SYSTEM.

H. OVERCURRENT PROTECTIVE DEVICES

1. MOLDED CASE CIRCUIT BREAKERS

a. AS MANUFACTURED BY THE MANUFACTURER OF THE PANELBOARD IN WHICH INSTALLED.

b. ONE, TWO OR THREE POLE WITH RATINGS INDICATED ON THE DRAWINGS; (STANDARD) OR (HIGH INTERRUPTING) CONSTRUCTION AS REQUIRED BY THE SHORT CIRCUIT RATINGS INDICATED ON THE DRAWINGS.

c. QUICK-MAKE, QUICK-BREAK, CALIBRATED FOR OPERATION IN AN AMBIENT TEMPERATURE OF 40 -C. TRIP INDICATION BY HANDLE POSITION, TRIP-FREE. TWO AND THREE POLE BREAKERS: COMMON TRIP WITH SINGLE OPERATING HANDLE WITHOUT HANDLE TIES, PERMANENT TRIP UNIT CONTAINING INDIVIDUAL THERMAL AND MAGNETIC TRIP ELEMENTS IN EACH POLE. FRAME SIZES GREATER THAN 100 AMPERES: VARIABLE MAGNETIC TRIP ELEMENTS WHICH ARE SET BY A SINGLE ADJUSTMENT.

d. REMOVABLE LUGS, UL LISTED FOR COPPER AND ALUMINUM CONDUCTORS. LISTED FOR INSTALLATION OF MECHANICAL OR COMPRESSION TYPE LUGS.

I. PANELBOARDS

1. AS MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, CUTLER-HAMMER OR SIEMENS.

2. LIGHTING AND APPLIANCE PANELBOARDS

a. PANELBOARD BUS STRUCTURE AND MAIN LUGS OR MAIN CIRCUIT BREAKER SHALL HAVE CURRENT RATINGS AS INDICATED ON THE DRAWINGS. BUS BARS SHALL ACCEPT BOLT-ON CIRCUIT BREAKERS. ALL CURRENT CARRYING PARTS OF THE BUS STRUCTURE SHALL BE PLATED. UL LABELED.

b. THE PANELBOARD BUS ASSEMBLY SHALL BE ENCLOSED IN A SURFACE OR FLUSH MOUNTED STEEL CABINET AS INDICATED ON THE DRAWINGS.

c. EACH PANELBOARD SHALL HAVE A SHORT CIRCUIT CURRENT RATING EQUAL TO OR GREATER THAN THE FAULT CURRENT INDICATED ON THE DRAWINGS. PANELBOARDS SHALL BE MARKED WITH THEIR MAXIMUM SHORT CIRCUIT RATING AT THE SUPPLY VOLTAGE.

J. GROUNDING

1. GROUNDING SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.

2. GROUNDING CONDUCTORS SHALL BE ANNEALED COPPER CABLES OF THE SIZES INDICATED OR REQUIRED.

3. A "GREEN WIRE" EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED WITHIN EACH FEEDER AND BRANCH CIRCUIT RACEWAY, WHETHER METALLIC OR NON-METALLIC, TO FORM A COMPLETE AND CONTINUOUS GROUNDING PATH. CONNECT GROUNDING CONDUCTORS TO GROUND TERMINALS AT EACH END OF THE RUN.

K. LIGHTING FIXTURES

1. INSURE EACH LIGHTING FIXTURE HAS AN OPERATING SET OF LAMPS EQUAL TO EXISTING OR OF THE TYPES SHOWN ON THE DRAWINGS AND/OR SPECIFIED HEREIN. LAMPS SHALL BE MANUFACTURED BY GENERAL ELECTRIC, PHILIPS, OR OSRAM/SYLVANIA, EXCEPT WHERE SCHEDULED OTHERWISE.

2. FLUORESCENT LAMPS: IN GENERAL, 48-INCH LENGTH, T-8, RAPID START, ENERGY-SAVING LAMPS; LAMP COLOR AS INDICATED.

3. FLUORESCENT BALLASTS: IN GENERAL, ELECTRONIC TYPE FOR BOTH STANDARD FLUORESCENT AND COMPACT FLUORESCENT; INPUT POWER FACTOR ABOVE 95%, THD LESS THAN 20%; AS MANUFACTURED BY MOTOROLA, ADVANCE OR MAGNETEK.

4. PROVIDE A LIGHTING FIXTURE COMPLETE WITH LAMPS, BALLASTS, AND OTHER REQUIRED APPURTENANCES FOR EACH LIGHTING OUTLET SHOWN ON THE DRAWINGS. LIGHT FIXTURES SHALL BE AS DESCRIBED IN THE "LIGHTING FIXTURE SCHEDULE". EACH UNIT SHALL BE FURNISHED WITH ALL MOUNTING AND TRIM ACCESSORIES TO SUIT THE SPECIFIC SERVICES APPLIED. FINISHES SHALL BE FACTORY-STANDARD, EXCEPT WHERE SCHEDULED OTHERWISE.

5. PROVIDE LIGHTING FIXTURES IN ACCORDANCE WITH THE DESIGNATIONS AND DESCRIPTIONS ON THE DRAWINGS. WHERE A SINGLE MANUFACTURER AND ASSOCIATED CATALOG NUMBER IS SCHEDULED, IT IS TO ESTABLISH A DESIRED TYPE AND STANDARD OF QUALITY.

6. LIGHTING FIXTURES SHALL BE UL LABELED.

L. FIRE ALARM SYSTEM

1. FURNISH AND INSTALL FIRE ALARM AND DETECTION SYSTEM ADDITIONS AND RELOCATIONS AS INDICATED ON THE DRAWINGS, COMPATIBLE AND CONSISTENT WITH THE EXISTING SYSTEM.

2. THE EXISTING SYSTEM OPERATION SHALL REMAIN UNCHANGED PROVIDING CONTINUAL SERVICE DURING ALL PHASES OF THE RENOVATION AND EXPANSION.

M. TELEPHONE/DATA SYSTEM

1. AT ALL WALL DATA/VOICE OUTLET LOCATIONS, PROVIDE BACK BOXES AND 3/4" EMPTY CONDUIT WITH PULL CORD TO ABOVE CEILING.

III EXECUTION

A. INSTALLATION OF BUILDING CONDUIT

1. ALL INTERIOR RACEWAYS SHALL BE EMT. RACEWAYS IN DAMP OR WET LOCATIONS, OR IN HAZARDOUS LOCATIONS, SHALL BE GRC OR IMC.

2. CONDUITS SHALL BE OF SUCH SIZE AND SO INSTALLED THAT THE CONDUCTORS MAY BE DRAWN THROUGH WITHOUT INJURY OR EXCESSIVE STRAIN, SHALL BE SECURED AT CABINETS AND BOXES WITH GALVANIZED LOCKNUTS, BOTH INSIDE AND OUTSIDE, AND SHALL HAVE APPROPRIATE BUSHINGS INSIDE. BUSHINGS SHALL BE INSULATING TYPE WITH BOND GROUND CLAMPS.

3. USE LENGTHS OF FLEXIBLE METAL CONDUIT NOT LESS THAN 12 INCHES LONG AT FINAL CONNECTIONS TO ALL MOTORS, TRANSFORMERS AND SIMILAR DEVICES SUBJECT TO MOVEMENT BECAUSE OF VIBRATION OR MECHANICAL ADJUSTMENT. USE FLEXIBLE METAL CONDUITS TO EFFECT FINAL CONNECTIONS TO RECESSED LIGHTING FIXTURES. USE LIQUID TIGHT FLEXIBLE METAL CONDUIT, WITH APPROPRIATE CONNECTIONS, IN DAMP OR WET LOCATIONS, AT MOTOR OR EQUIPMENT LOCATIONS IN MECHANICAL EQUIPMENT ROOMS, AT OR NEAR PUMPS, AND WHEN INSTALLED OUTDOORS.

4. GROUND METALLIC CONDUITS AS REQUIRED BY NEC.

5. INSTALL RACEWAYS CONTINUOUS FROM OUTLET TO OUTLET BOX, OR CABINET, WITH A MAXIMUM OF 150 FEET BETWEEN PULLS. IN AREAS WHERE THERE ARE NO SUSPENDED CEILINGS, RUN ALL CONDUITS PARALLEL/PERPENDICULAR TO BUILDING SURFACE PLANES.

6. IN SYSTEMS OPERATING AT MORE THAN 300 VOLTS BETWEEN PHASE CONDUCTORS, AND WHERE DIFFERENT PHASE CONDUCTORS ARE TO BE RUN TO A COMMON GANG WALL SWITCH BOX, PROVIDE SUBSTANTIAL BARRIERS BETWEEN ADJACENT SWITCHES IN THE BOX SO THAT TWO DIFFERENT PHASE WIRES WILL NOT BE IN THE SAME COMPARTMENT.

7. WHEREVER RACEWAYS PASS THROUGH FLOORS, WALLS, PENETRATIONS, OR OTHER PARTITIONS, CAREFULLY FILL ANY SPACE BETWEEN THE OUTSIDE OF THE RACEWAY AND THE BUILDING MATERIAL TO PREVENT PASSAGE OF AIR, WATER, SMOKE, AND FUMES. FILLING MATERIAL SHALL BE A UL LISTED, INTUMESCENT SEALING HAVING FIRE/SMOKE RESISTIVE RATING EQUAL TO THE BUILDING MATERIAL PENETRATED.

8. TYPE HCF-MC METAL CLAD CABLES SHALL BE ACCEPTABLE TO BE INSTALLED IN WALLS AND CEILINGS IN CONFORMANCE WITH THE REQUIREMENTS OF NEC 334. TYPE HCF-MC CABLE SHALL BE USED ONLY FOR BRANCH CIRCUITS FOR LIGHTING AND SPECIFIC AND GENERAL PURPOSE RECEPTACLES. TYPE HCF-MC CABLE SHALL NOT BE USED FOR FEEDERS OR MULTIPLE BRANCH CIRCUIT HOMERUNS, AND MORE SPECIFICALLY, SHALL NOT BE USED FOR HVAC, AND KITCHEN EQUIPMENT BRANCH CIRCUITS. TYPE MC CABLE SHALL NOT BE UTILIZED WITHIN ELECTRICAL EQUIPMENT ROOMS. CABLE SHALL TRANSITION TO A RIGID TYPE CONDUIT PRIOR TO ENTERING ELECTRICAL EQUIPMENT ROOMS.

9. CONDUITS UTILIZED THROUGHOUT THE PROJECT SHALL NOT BE SMALLER THAN 3/4 INCH FOR FEEDERS, MULTIPLE BRANCH CIRCUIT HOMERUNS AND HOMERUNS OF CONDUCTORS LARGER THAN NO. 12. INDIVIDUAL BRANCH CIRCUIT WIRING FOR NO. 12 CONDUCTORS SHALL BE ACCEPTABLE IN 1/2" CONDUIT, I.E. 2#12, 1#12G, 1/2"C.

B. INSTALLATION OF PULL AND JUNCTION BOXES

1. FASTEN ALL BOXES SECURELY TO THE BUILDING CONSTRUCTION, INDEPENDENT OF CONDUIT SYSTEMS.

2. ON CONCEALED CONDUIT SYSTEMS WHERE BOXES ARE NOT OTHERWISE ACCESSIBLE, SET BOXES FLUSH WITH FINISHED SURFACES FOR ACCESS, AND PROVIDE OVERLAPPING COVERS.

C. INSTALLATION OF OUTLET BOXES

1. TERMINATE CONDUITS AT A METAL OUTLET BOX AT EACH OUTLET OR DEVICE. ALL BOXES SHALL CONFORM TO THE NEC.

2. OUTLET BOXES SHALL BE SUPPORTED INDEPENDENT OF THE CONDUIT SYSTEM.

D. INSTALLATION OF CONDUIT HANGERS AND SUPPORTS

1. FURNISH AND INSTALL ALL HANGERS AND SUPPORTS REQUIRED BY RACEWAY SYSTEMS.

2. SUPPORT ALL ABOVE-GROUND ELECTRICAL CONDUITS FROM THE BUILDING STRUCTURE/CONSTRUCTION. SUPPORT CONDUITS RUNNING VERTICALLY OR HORIZONTALLY ALONG WALLS WITH GALVANIZED MALLEABLE IRON ONE-HOLE CLAMPS. CARRY INDIVIDUALLY SUPPORTED HORIZONTAL CONDUITS 1-1/4 INCH AND LARGER ON SUITABLE HANGERS.

3. LOCATE HANGERS AND TRAPEZES TO SUPPORT HORIZONTAL RACEWAYS WITHOUT APPRECIABLE SAGGING. HANGER SPACING SHALL NOT EXCEED NEC REQUIREMENTS, OR RECOMMENDATIONS OF THE NECA "STANDARD OF INSTALLATION".

4. WHERE CONDUITS SMALLER THAN 1-1/4 INCH ARE INSTALLED ABOVE REMOVABLE TYPE DRY CEILINGS, SUPPORT THEM ON SUITABLE HANGER RODS WITH METAL CLIPS AT A DISTANCE ABOVE THE CEILING SUFFICIENT TO PERMIT REMOVAL OF CEILING PANELS AND LAY-IN LIGHT FIXTURES. LOCATE SUCH CONDUITS SO AS NOT TO HINDER ACCESS TO MECHANICAL EQUIPMENT THROUGH CEILING PANELS.

E. INSTALLATION OF CONDUCTORS

1. PULL NO CONDUCTORS INTO CONDUITS UNTIL ALL WORK OF A NATURE WHICH MAY CAUSE INJURY TO CONDUCTORS IS COMPLETED.

2. RUN FEEDERS IN CONTINUOUS PIECES, WITHOUT JOINTS OR SPLICES, INSOFAR AS PRACTICABLE.

3. RUN CONDUITS FOR EMERGENCY POWER CONDUCTORS SEPARATE FROM ALL OTHER WIRING.

F. SEGREGATION OF WIRING SYSTEMS

1. SEGREGATION OF WIRING SYSTEMS SHALL NOT BE COMPROMISED BY THE USE OF COMMON PULLBOXES, WIREWAYS, CABINETS OR ANY OTHER TYPE OF ENCLOSURE.

2. THE RACEWAY SYSTEM FOR EACH FEEDER SHALL BE A SEPARATE SYSTEM COMPLETELY FAULT ISOLATED FROM ALL OTHER RACEWAY SYSTEMS.

3. THE RACEWAY SYSTEM FOR THE BRANCH CIRCUITS OF EACH PANELBOARD SHALL BE A SEPARATE SYSTEM COMPLETELY FAULT ISOLATED FROM ALL OTHER RACEWAY SYSTEMS.

G. EQUIPMENT CONNECTIONS AND CONTROL WIRING

1. THE FURNISHING AND INSTALLATION OF CONTROL POWER WIRING REQUIRED FOR EQUIPMENT FURNISHED UNDER DIVISION 15 AND NOT SHOWN ON THE ELECTRICAL DRAWINGS SHALL BE FURNISHED UNDER DIVISION 15. CONTROL POWER WIRING IS DEFINED AS THE LINE VOLTAGE (120V) POWER WIRING FOR EQUIPMENT CONTROL CABINETS, TEMPERATURE CONTROL, ENERGY MANAGEMENT, OR BUILDING AUTOMATION SYSTEM PANELS AND LINE VOLTAGE SMOKE/FIRE DAMPERS.

2. THE FURNISHING AND INSTALLATION OF THE TEMPERATURE CONTROL WIRING, ENERGY MANAGEMENT SYSTEM OR BUILDING AUTOMATION WIRING NOT SHOWN ON THE ELECTRICAL DRAWINGS SHALL BE FURNISHED UNDER DIVISION 15. TEMPERATURE CONTROL, ENERGY MANAGEMENT SYSTEM AND BUILDING AUTOMATION SYSTEM WIRING IS DEFINED AS THE INTERLOCK OR INTERCONNECTING WIRING REQUIRED BETWEEN SYSTEM CONTROL DEVICES, APPURTENANCES AND CONTROL PANELS TO ALLOW THE SYSTEM TO FUNCTION AUTOMATICALLY. THIS INCLUDES WIRING BETWEEN THE FIRE ALARM SYSTEM, SMOKE EXHAUST SYSTEMS, DOOR ENTRY SYSTEMS AND ANY OTHER SYSTEM REQUIRING INTERFACE WITH THE TEMPERATURE CONTROL, ENERGY MANAGEMENT AND BUILDING AUTOMATION SYSTEM.

3. PROVIDE POWER WIRING TO EACH MOTOR-DRIVEN AND/OR ELECTRICALLY-OPERATED SYSTEM OR UNIT OF EQUIPMENT. THE WIRING SHALL ALLOW THE MOTOR(S) OR EQUIPMENT TO OPERATE IN A MANUAL MODE.

4. CONTROL WIRING WILL, UNLESS SPECIFICALLY NOTED OTHERWISE, WILL BE FURNISHED AND INSTALLED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS.

5. EXCEPT FOR ITEMS THAT ARE FURNISHED WITH FACTORY-INSTALLED, INTEGRAL MOTORS, AN ELECTRIC MOTOR OF REQUIRED SIZE AND ELECTRICAL CHARACTERISTICS WILL BE PROVIDED AND INSTALLED UNDER OTHER DIVISIONS FOR EACH ITEM OF MOTOR-DRIVEN EQUIPMENT. COMPLETE THE ELECTRICAL INSTALLATION OF THESE MOTORS IN ACCORDANCE WITH APPROVED WIRING DIAGRAMS AND INSTRUCTIONS.

6. WHERE DISCONNECT SWITCHES OR CIRCUIT BREAKERS ARE NOT PROVIDED INTEGRAL WITH CONTROL EQUIPMENT FOR MOTORS AND OTHER ELECTRICAL APPURTENANCES, PROVIDE AND INSTALL ALL DISCONNECT SWITCHES REQUIRED BY THE NATIONAL ELECTRICAL CODE AND/OR INDICATED.

7. WHERE POSSIBLE, TERMINATE CONDUITS IN CONDUIT BOXES ON MOTORS. WHERE MOTORS ARE NOT PROVIDED WITH CONDUIT BOXES, TERMINATE THE CONDUITS IN CONDUIT FITTINGS AT THE MOTORS.

H. EXISTING SYSTEMS TO REMAIN

1. THE CONTRACT DOCUMENTS DO NOT PROPOSE TO SHOW ALL EXISTING SYSTEMS, MATERIAL OR EQUIPMENT. OBTAIN DATA RELATED TO EXISTING CONDITIONS FROM EXISTING DOCUMENTS, MEASUREMENTS, NOTATIONS, PHOTOGRAPHS, SURVEYS AND OTHER OBSERVATIONS AT THE SITE.

2. REMOVE EXISTING WIRE, CONDUIT, EQUIPMENT, FIXTURES AND OTHER ITEMS TO PROVIDE ACCESS FOR WORK IN EXISTING FACILITIES. REINSTALL AND REFINISH ITEMS REMOVED, OR OTHERWISE DAMAGED, TO MATCH EXISTING ADJACENT SURFACED UPON COMPLETION OF THE WORK.

3. WHERE EXISTING FUNCTIONS TO REMAIN IN USE ARE DISRUPTED, THEY SHALL BE FULLY RESTORED AFTER DISRUPTION, IN FULL COMPLIANCE WITH THIS DIVISION OF THE SPECIFICATIONS FOR NEW WORK.

4. MODIFY, REMOVE OR RELOCATE MATERIALS AND ITEMS INDICATED ON THE DRAWINGS OR REQUIRED BY THE INSTALLATION OF NEW WORK.

5. WORKING JOINTLY WITH THE ARCHITECT, ESTABLISH AND MARK SALVAGE AND DEMOLITION ITEMS BEFORE COMMENCING WORK; REPORT ITEMS SCHEDULE FOR RELOCATION, REINSTALLATION OR REUSE, WHICH ARE FOUND TO BE IN DAMAGED CONDITION; AWAIT FURTHER INSTRUCTIONS FROM THE ARCHITECT BEFORE COMMENCING WITH WORK.

6. DEMOLITION EQUIPMENT, DEVICES AND MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR. SALVAGED EQUIPMENT AND DEVICES SHALL BE THE PROPERTY OF THE CONTRACTOR UNLESS NOTED OTHERWISE.

7. MAKE MINOR RELOCATIONS NECESSITATED BY THE CONDITIONS AT THE SITE OR AS DIRECTED BY THE ARCHITECT, WITHOUT ADDITIONAL COST TO THE OWNER. REPAIR AND RESTORE TO GOOD FUNCTIONAL CONDITION, EQUIPMENT, MATERIALS AND ITEMS SCHEDULED FOR RELOCATION, WHICH ARE DAMAGED DURING DISMANTLING OR REASSEMBLY OPERATIONS. NEW MATERIALS AND ITEMS OF SIMILAR DESIGN AND QUALITY MAY BE SUBSTITUTED FOR MATERIALS AND ITEMS INDICATED TO BE RELOCATED UPON APPROVAL OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. REMOVE CAREFULLY, IN REVERSE ORDER TO ORIGINAL ASSEMBLY OR PLACEMENT, ITEMS WHICH ARE TO BE RELOCATED. PROTECT ITEMS UNTIL RELOCATION IS COMPLETE. CLEAN AND REPAIR ITEMS TO BE RELOCATED, AND PROVIDE NEW MATERIALS, FITTINGS AND APPURTENANCES REQUIRED TO COMPLETE THE RELOCATIONS AND TO RESTORE TO GOOD OPERATING ORDER. PERFORM THE RELOCATION WORK IN ACCORDANCE WITH APPLICABLE PORTIONS OF THESE SPECIFICATIONS, UTILIZING SKILLED WORKERS.

8. RELOCATING DEVICES: REMOVE AND REINSTALL IN LOCATIONS DESIGNATED BY THE ARCHITECT TEMPERATURE CONTROL SYSTEM DEVICES, RELAYS, WIRE, CONDUIT, FIXTURES, EQUIPMENT AND OTHER DEVICES REQUIRED FOR THE OPERATION OF THE VARIOUS SYSTEMS THAT ARE INSTALLED IN EXISTING-TO-BE-REMOVED CONSTRUCTION.

I. CONTRACTOR SHALL KEEP A CLEAN SET OF DRAWINGS ON THE JOB, NOTING DAILY ALL CHANGES MADE IN THESE DRAWINGS IN CONNECTION WITH THE FINAL INSTALLATION INCLUDING EXACT DIMENSIONED LOCATIONS OF ALL NEW AND UNCOVERED EXISTING UTILITIES AND SHALL, WITH HIS REQUEST FOR FINAL PAYMENT, TURN OVER A CLEAN, NEATLY MARKED SET OF REPRODUCIBLE MYLARS SHOWING "AS INSTALLED" WORK TO THE ARCHITECT FOR SUBSEQUENT REVIEW AND TRANSMITTAL TO THE OWNER. CONTRACTOR SHALL NOTE ALL CONSTRUCTION CHANGES, DATE EACH SHEET AND LABEL "AS-BUILTS" IN THE REVISION BLOCK ON THE DRAWINGS. CONTRACTOR SHALL ALSO FURNISH ONE (1) SET OF AS-BUILT BLUELINE PRINTS.

J. IN ADDITION TO THE ABOVE, CONTRACTOR SHALL ACCUMULATE DURING THE JOB'S PROGRESS, THE FOLLOWING DATA, IN TRIPLICATE, PREPARED IN A NEAT BROCHURE OR PACKET FOLDER AND TURNED OVER TO THE ARCHITECT FOR REVIEW AND SUBSEQUENT DELIVERY TO THE OWNER.

1. ALL WARRANTIES AND GUARANTEES AND MANUFACTURER'S DIRECTIONS ON EQUIPMENT AND MATERIAL COVERED BY THE CONTRACT INCLUDING THE NAMES, ADDRESSES AND TELEPHONE NUMBERS OF THE MANUFACTURER'S REPRESENTATIVE.

2. APPROVED FIXTURE BROCHURES, WIRING DIAGRAMS AND CONTROL DIAGRAMS (ORIGINAL DATA, NO COPIES).

3. COPIES OF APPROVED SHOP DRAWINGS.

4. OPERATING INSTRUCTIONS FOR ALL ELECTRICAL SYSTEM EQUIPMENT. OPERATING INSTRUCTIONS SHALL ALSO INCLUDE RECOMMENDED MAINTENANCE PROCEDURES.

5. TEST REPORTS REQUIRED BY THESE SPECIFICATIONS.

6. ANY AND ALL OTHER DATA AND/OR DRAWINGS REQUIRED DURING CONSTRUCTION.

7. REPAIR PARTS LISTS OF ALL MAJOR ITEMS OF EQUIPMENT INCLUDING NAME, ADDRESS AND TELEPHONE NUMBERS OF LOCAL SUPPLIER OR AGENT.

K. ALL OF THE ABOVE DATA SHALL BE SUBMITTED TO THE ENGINEER FOR HIS REVIEW AT SUCH TIME AS THE CONTRACTOR SUBMITS HIS LAST ESTIMATE PRIOR TO HIS FINAL PAYMENT, BUT IN NO CASE, LESS THAN TWO WEEKS BEFORE FINAL INSPECTION.

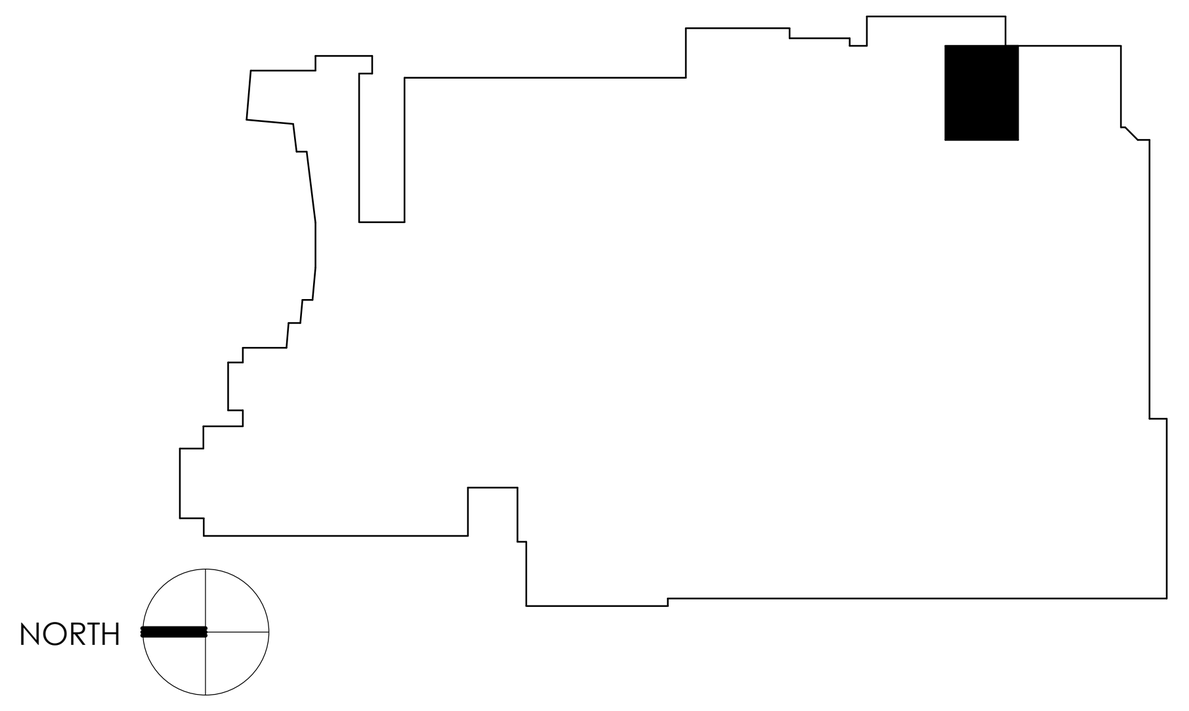
END OF SECTION

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: Erick B.
Date: Aug 31, 2016
2015 INTERNATIONAL CODES & 2014 NEC

RSN: 1142126
Permit #: 16-1162585

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PROFESSIONAL ENGINEER

KEY PLAN



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No.	Description	Date

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	JD
Checked by	TF

Sheet Title:

ELECTRICAL SPECIFICATIONS

Sheet Number

E.002

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SECTION 260573
OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements for computer-based, fault-current and overcurrent protective device coordination studies and arc flash protection study. Protective devices shall be set based on Engineer's review of submitted results of the protective device coordination study.
   1. Coordination of series-rated devices is not permitted.
   2. Delegated Design Requirements for Arc Flash Hazard Analysis.

1.2 PERFORMANCE REQUIREMENTS

A. Overcurrent Protective Device Coordination: All overcurrent protective devices proposed for inclusion in the Work shall be selected to be selectively coordinated with the overcurrent protective devices installed on their supply side such that an overcurrent event (overload, short-circuit, or ground-fault) occurring at the lowest level in the system (branch circuit) cannot cause the feeder protective device supplying the branch circuit panelboard to open. This coordination shall be carried through each level of distribution for all branches of emergency power to 0.10 seconds.

B. Delegated Design for Arc Flash Hazard Analysis: Prepare computer-based, arc-flash study to determine the arc-flash hazard distance and the incident energy to which personnel could be exposed during work on or near electrical equipment.

1.3 DEFINITIONS

A. One-Line Diagram: A diagram which shows, by means of single lines and graphic symbols, the course of an electric circuit or system of circuits and the component devices or parts used therein.

B. Protective Device: A device that senses when an abnormal current flow exists and then removes the affected portion from the system.

C. SCCR: Short-circuit current rating.

D. Service: The conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premises served.

1.4 ACTION SUBMITTALS

A. Simultaneous Action Submittals: The following action submittals shall be made in conjunction with the approval process for system protective devices specified in other Sections. The release of electrical equipment submittals (circuit breakers, disconnects, etc.) is dependent on the receipt of a complete and accurate overcurrent protective device coordination study. The Architect and Engineer require a full submittal review period as delineated in Division 01 Section "Submittal Procedures" to adequately review the OCPD study against the submitted electrical components prior to release of submittals for equipment procurement. The submittal schedule required by Division 01 requirements shall provide for this review time in the action submittal process. Delay claims arising due to Contractor's failure to coordinate simultaneous action submittals will not be considered by the Owner. The following submittals shall be in digital form:
   1. Coordination-study input data, including completed computer program input data sheets. Provide editable electronic media including all SKM files and breaker TCC's.
   2. Study and Equipment Evaluation Reports.
   3. Coordination-Study Report; signed, dated, and sealed by a qualified professional engineer.
   4. Arc-flash study input data, including completed computer program input data sheets.
   5. Arc Flash Hazard Analysis Report; signed, dated, and sealed by a qualified professional engineer.

B. Product Data: For computer software program to be used for studies.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Coordination Study Specialist and Arc-Flash Hazard Analysis Specialist.

B. Product Certificates: For coordination-study and fault-current-study computer software programs, certifying compliance with IEEE 399. For arc-flash hazard analysis software, certifying compliance with IEEE 1584 and NFPA 70E.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For the overcurrent protective devices to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation And Maintenance Data," include the following:
   a. The following parts from the Protective Device Coordination Study Report:
      1) One-line diagram.
      2) Protective device coordination study,
      3) Time-current coordination curves.
      4) Coordination setting schedules.
   b. Power system data.

1.7 QUALITY ASSURANCE

A. Studies shall use computer programs that are distributed nationally and are in wide use. Software algorithms shall comply with requirements of standards and guides specified in this Section. Manual calculations are not acceptable.

B. Coordination Study Software Developer Qualifications: Firm shall have been in both sales and markets computer software used for studies, having performed successful studies of similar magnitude on electrical distribution systems using similar devices.
   1. The computer program shall be developed under the charge of a licensed professional engineer who holds IEEE Computer Society's Certified Software Development Professional certification.

C. Delegated Design System Study Specialist Qualifications: Comprehensive engineering analysis by a qualified Professional Engineer or personnel trained and employed by the equipment manufacturer in required calculation methodology.
   1. Analysis to be performed by a Professional Engineer or personnel trained, employed, and supervised by a registered Professional Engineer.
   2. Registered professional engineer shall be a full-time employee of the electrical equipment manufacturer or a professional engineering firm.
   3. Registered Professional Engineer shall have a minimum of ten (10) years of experience in performing power system studies.
   4. Report shall be signed and sealed by a Professional Engineer with current registration in the state of Colorado.

D. Comply with IEEE 242 for short-circuit currents and coordination time intervals.

E. Comply with IEEE 399 for general study procedures.

F. Comply with IEEE 1584 for performing Arc Flash Hazard Calculations.

PART 2 - PRODUCTS

2.1 COMPUTER SOFTWARE DEVELOPERS

A. Computer Software Developers: Subject to compliance with requirements, provide products by the following:
   1. SKM Systems Analysis, Inc.

2.2 COMPUTER SOFTWARE PROGRAM REQUIREMENTS

A. Comply with IEEE 242 and IEEE 399 for fault-current and overcurrent protective device coordination studies.

B. Comply with IEEE 1584 and NFPA 70E for arc-flash hazard analysis.

C. Analytical features of fault-current-study computer software program shall include "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

D. Computer software program shall be capable of plotting and diagramming time-current-characteristic curves as part of its output. Computer software program shall report device settings and ratings of all overcurrent protective devices and shall demonstrate coordination by computer-generated, time-current coordination plots.

2.3 SHORT-CIRCUIT STUDY REPORT CONTENTS

A. Executive Summary

B. Study descriptions, purpose, basis, and scope. Include case descriptions, definition of terms, and guide for interpretation of the computer printout.

C. One-line diagram, showing the following:
   1. Protective device designations and ampere ratings.
   2. Cable size and lengths.
   3. Transformer kilovolt ampere (kVA) and voltage ratings.
   4. Motor and generator designations and kVA ratings.
   5. Switchgear, switchboard, motor-control center and panelboard designations.

D. Short-Circuit Study Input Data: As described in "Power System Data" Article in the Evaluations.

E. Short-Circuit Study Output:
   1. Interrupting Duty Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:
      a. Voltage.
      b. Calculated symmetrical fault-current magnitude and angle.
      c. Fault-point X/R ratio.
      d. No AC Decrement (NACD) ratio.
      e. Equivalent impedance.
      f. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on a symmetrical basis.
      g. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on a total basis.

2.4 PROTECTIVE DEVICE COORDINATION STUDY REPORT CONTENTS

A. Executive summary.

B. Study descriptions, purpose, basis and scope. Include case descriptions, definition of terms and guide for interpretation of the computer printout.

C. One-line diagram, showing the following:
   1. Protective device designations and ampere ratings.
   2. Cable size and lengths.
   3. Transformer kilovolt ampere (kVA) and voltage ratings.
   4. Motor and generator designations and kVA ratings.
   5. Switchgear, switchboard, motor-control center, and panelboard designations.

D. Study Input Data: As described in "Power System Data" Article.

E. Short-Circuit Study Output: As specified in "Short-Circuit Study Output" Paragraph in "Short-Circuit Study Report Contents" Article above.

F. Protective Device Coordination Study:
   1. Report recommended settings of protective devices, ready to be applied in the field. Use manufacturer's data sheets for recording the recommended setting of overcurrent protective devices when available.
      a. Phase and Ground Relays:
         1) Device tag.
         2) Relay current transformer ratio and tap, time dial, and instantaneous pickup value.
         3) Recommendations on improved relaying systems, if applicable.
      b. Circuit Breakers:
         1) Adjustable pickups and time delays (long time, short time, ground).
         2) Adjustable time-current characteristic.
         3) Adjustable instantaneous pickup.
         4) Recommendations on improved trip systems, if applicable.

Low-voltage fuse classes are defined in UL 248-1 through UL 248-18. Medium-voltage fuses are defined in IEEE C37.40.

      c. Fuses: Show current rating, voltage, and class.

   G. Time-Current Coordination Curves: Determine settings of overcurrent protective devices to achieve selective coordination. Graphically illustrate that adequate time separation exists between devices installed in series, including power utility company's upstream devices. Prepare separate sets of curves for the switching schemes and for emergency periods where the power source is local generation. Show the following information:
      1. Device tag and title, one-line diagram with legend identifying the portion of the system covered.
      2. Terminate device characteristic curves at a point reflecting maximum symmetrical or asymmetrical fault current to which the device is exposed.
      3. Identify the device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.
      4. Plot the following listed characteristic curves, as applicable:
         a. Power utility's overcurrent protective device.
         b. Medium-voltage equipment overcurrent relays.
         c. Medium- and low-voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands.
         d. Low-voltage equipment circuit-breaker trip devices, including manufacturer's tolerance bands.
         e. Transformer full-load current, magnetizing inrush current, and ANSI through-fault protection curves.
         f. Cables and conductors damage curves.
         g. Ground-fault protective devices.
         h. Motor-starting characteristics and motor damage points.
         i. Generator short-circuit decrement curve and generator damage point.
         j. The largest feeder circuit breaker in each motor-control center and panelboard.
      5. Provide adequate time margins between device characteristics such that selective operation is achieved.
      6. Comments and recommendations for system improvements.

2.5 ARC-FLASH STUDY REPORT CONTENT

A. Executive summary.

B. Study descriptions, purpose, basis and scope.

C. One-line diagram, showing the following:
   1. Protective device designations and ampere ratings.
   2. Cable size and lengths.
   3. Transformer kilovolt ampere (kVA) and voltage ratings.
   4. Motor and generator designations and kVA ratings.
   5. Switchgear, switchboard, motor-control center and panelboard designations.

D. Study Input Data: As described in "Power System Data" Article.

E. Protective Device Coordination Study Report Contents: As specified in "Protective Device Coordination Study Report Contents" Article above.

F. Arc-Flash Study Output:
   1. Interrupting Duty Report: Three-phase and unbalanced fault calculations, showing the following for each overcurrent device location:
      a. Voltage.
      b. Calculated symmetrical fault-current magnitude and angle.
      c. Fault-point X/R ratio.
      d. No AC Decrement (NACD) ratio.
      e. Equivalent impedance.
      f. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on a symmetrical basis.
      g. Multiplying factors for 2-, 3-, 5-, and 8-cycle circuit breakers rated on a total basis.

G. Incident Energy and Flash Protection Boundary Calculations:
   1. Arcing fault magnitude.
   2. Protective device clearing time.
   3. Duration of arc.
   4. Arc-flash boundary.
   5. Working distance.
   6. Incident energy.
   7. Hazard risk category.
   8. Recommendations for arc-flash energy reduction.

H. Fault study input data, case descriptions, and fault-current calculations including a definition of terms and guide for interpretation of the computer printout.

I. Equipment specific Arc Flash Warning Labels.

2.6 ARC-FLASH WARNING LABELS

A. Produce a 3.5-by-5-inch (76-by-127-mm) thermal transfer label of high-adhesion polyester for each work location included in the analysis.

B. The label shall have an orange header with the wording, "WARNING, ARC-FLASH HAZARD," and shall include the following information taken directly from the arc-flash hazard analysis:
   1. Flash Hazard Boundary
   2. Short Circuit Current Available
   3. Shock Hazard when Cover is Removed
   4. Limited Approach Boundary
   5. Restricted Approach Boundary
   6. Prohibited Approach Boundary
   7. PPE Requirements, including the following:
      a. Hazard Risk Category
      b. Required Minimum Arc Rating of PPE in cal/cm^2
      c. Clothing Description
   8. Engineering report number, revision number, and issue date.

C. Labels shall be machine printed, with no field-applied markings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine Project overcurrent protective device submittals for compliance with electrical distribution system coordination requirements and other conditions affecting performance.
   1. Proceed with coordination study [and arc-flash study]only after relevant equipment submittals have been assembled, but prior to their submission to the Architect.
      a. Coordination study shall accompany submission of relevant equipment submittals.
      b. [Overcurrent protective devices that have not been submitted and approved prior to arc-flash study may not be used in study.]

3.2 POWER SYSTEM DATA

A. Delegated Design System Analyst performing the short-circuit, protective device coordination study, and arc flash hazard analysis shall furnish the Contractor with a list of required data immediately after award of the contract. Contractor shall expedite collection of the data to ensure completion of the study and analysis as required.

B. For new equipment, use characteristics submitted under the provisions of action submittals and information submittals for this Project.

C. For existing equipment, whether or not relocated, obtain required electrical distribution system data by field investigation and surveys, conducted by qualified technicians and engineers.
   1. Comply with recommendations in IEEE 1584 and NFPA 70E as to the amount of detail that is required to be acquired in the field.
   2. Field data gathering shall be under the direct supervision and control of the engineer in charge of performing the study, and shall be by the engineer or its representative who holds NETA ETT Level III certification or NICET Electrical Power Testing Level III certification.

D. Source combination shall include present and future motors and generators indicated in the documents.

E. If applicable, include fault contribution of existing motors in the study and analysis.

F. Gather and tabulate the following input data to support coordination study:
   1. Product Data for overcurrent protective devices specified in other Sections and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
   2. [Impedance of utility service entrance.]
   3. Electrical Distribution System Diagram: In hard-copy and electronic-copy formats, showing the following:
      a. Circuit breakers and fuses ratings and types.
      b. Relays and associated power and current transformer ratings and ratios.
      c. Transformer kilovolt amperes, primary and secondary voltages, connection type, impedance, X/R ratios, taps measured in per cent, and phase shift.
      d. Generator short-circuit current contribution data, including short-circuit reactance, rated kilovolt amperes, size, rated voltage, and X/R ratio.
      e. Cables: Indicate conduit material, sizes of conductors, conductor material, insulation, and length.
      f. Busway ampacity, impedance, lengths, and conductor material.
      g. Motor horsepower and code letter designation according to NEMA MG 1.
      h. Low-voltage cable sizes, lengths, number, conductor material and conduit material (magnetic or nonmagnetic).
      i. Medium-voltage cable sizes, lengths, conductor material, and cable construction and metallic shield performance parameters.
   4. Data sheets to supplement electrical distribution system diagram, cross-referenced with tag numbers on diagram, showing the following:
      a. Special load considerations, including starting inrush currents and frequent starting and stopping.
      b. Transformer characteristics, including primary protective device, magnetic inrush current, and overload capability.
      c. Motor full-load current, locked rotor current, service factor, starting time, type of start, and thermal-damage curve.
      d. Generator thermal-damage curve.
      e. Ratings, types, and settings of utility company's overcurrent protective devices.
      f. Time-current-characteristic curves of devices.
      g. Manufacturer, frame size, interrupting rating in amperes rms symmetrical, ampere or current sensor rating, long-time adjustment range, short-time adjustment range, and instantaneous adjustment range for circuit breakers.
      h. Manufacturer and type, ampere-tap adjustment range, time-delay adjustment range, instantaneous attachment adjustment range, and current transformer ratio for overcurrent relays.
      i. Panelboards, switchboards, motor-control center ampacity, and interrupting rating in amperes rms symmetrical.

3.3 FAULT-CURRENT STUDY

A. A short-circuit current ratings indicated in the Contract Documents are based on Fault-Current study prepared by the Engineer during design and are based on available information and anticipated feeder lengths. Calculate the maximum available short-circuit current in amperes rms symmetrical at circuit-breaker positions of the electrical power distribution system based on proposed feeder routing. The calculation shall be for a current immediately after initiation and for a three-phase bolted short circuit at each of the following:
   1. Electric Utility's supply termination point.

Retain one or both of the selections in the subparagraph below. Short-circuit study is required back to Service equipment for any system modifications as of 2011 NFPA 70. Provide service entrance equipment names and provide one-line back to Service Entrance Equipment indicated.

   1. Service Entrance Equipment: Existing.
   2. Switchgear and switchboard bus.
   3. Motor-control center.
   4. Distribution panelboard.
   5. Branch circuit panelboard.
   6. Standby Generators and Transfer Switches.
   7. Enclosed Fused Switch.
   8. Enclosed Circuit Breaker.

B. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project. Include studies of system-switching configurations and alternate operations that could result in maximum fault conditions.

C. Calculate momentary and interrupting duties on the basis of maximum available fault current.

D. Calculate short-circuit currents according to IEEE 551.

E. In addition to IEEE 551 short-circuit current calculations, calculate the short-circuit currents at the following:
   1. Motor Controllers: Rated greater than or equal to 2hp at 300V or more.
   2. Air-Conditioning and Refrigerating Equipment Controllers: Including, but not limited to, equipment supplied from a branch circuit protected at greater than 60A.

F. Calculations to verify interrupting ratings of overcurrent protective devices shall comply with IEEE 241 and IEEE 242.
   1. Transformers, as appropriate for transformers included in the Work:
      a. ANSI C57.12.10.
      b. ANSI C57.12.22.
      c. ANSI C57.12.40.
      d. IEEE C57.12.00.
      e. IEEE C57.96.
   2. Medium-Voltage Circuit Breakers: IEEE C37.010.
   3. Low-Voltage Circuit Breakers: IEEE 1015 and IEEE C37.20.1.
   4. Low-Voltage Fuses: IEEE C37.46.

G. Study Report:
   5. Show calculated X/R ratios and equipment interrupting rating (1/2-cycle) fault currents on electrical distribution system diagram, including existing Service Entrance equipment.

H. Equipment Evaluation Report:
   1. For 600-V overcurrent protective devices, ensure that interrupting ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.
   2. For devices and equipment rated for asymmetrical fault current, apply multiplication factors listed in the standards to 1/2-cycle symmetrical fault current.
   3. Ensure that short-circuit withstand ratings are equal to or higher than the calculated ½-cycle symmetrical fault current for the following:
      a. Electrical Distribution Equipment: Including, but not limited to, switchgear, switchboards, and panel boards.
      b. Motor Controllers.
      c. Air-Conditioning and Refrigerating Equipment Controllers.
   4. Verify adequacy of phase conductors at maximum three-phase bolted fault currents; verify adequacy of equipment grounding conductors and grounding electrode conductors at maximum ground-fault currents. Ensure that short-circuit withstand ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.
   5. Notify Engineer, in writing, of any existing circuit protective devices improperly rated for the calculated available fault current.

3.4 COORDINATION STUDY

A. Perform coordination study using approved computer software program. Prepare a written report using results of fault-current study. Comply with IEEE 399.
   1. Calculate the maximum and minimum 1/2-cycle short-circuit currents.
   2. Calculate the maximum and minimum ground-fault currents.

B. Comply with IEEE 241 and IEEE 242 recommendations for fault currents and time intervals.

C. Transformer Primary Overcurrent Protective Devices:
   1. Device shall not operate in response to the following:
      a. Inrush current when first energized.
      b. Self-cooled, full-load current or forced-air-cooled, full-load current, whichever is specified for that transformer.
      c. Permissible transformer overloads according to IEEE C57.96 if required by unusual loading or emergency conditions.
   2. Device settings shall protect transformers according to IEEE C57.12.00, for fault currents.

D. Conductor Protection: Protect feeders against damage from fault currents according to ICEA P-32-382, ICEA P-45-482, and conductor melting curves in IEEE 242. Demonstrate that equipment withstands the maximum short-circuit current for a time equivalent to the tripping time of the primary relay protection or total clearing time of the fuse. To determine temperatures that damage insulation, use curves from cable manufacturers or from listed standards indicating conductor size and short-circuit current.

E. Coordination-Study Report: Prepare a written report indicating the following results of coordination study:
   1. Tabular Format of Settings Selected for Overcurrent Protective Devices:
      a. Device tag.
      b. Relay-current transformer ratios; and tap, time-dial, and instantaneous-pickup values.
      c. Circuit-breaker sensor rating; and long-time, short-time, and instantaneous settings.
      d. Fuse-current rating and type.
      e. Ground-fault relay-pickup and time-delay settings.
   2. Coordination Curves: Prepared to determine settings of overcurrent protective devices to achieve selective coordination. Graphically illustrate on log-log scale graphs, with no more than five devices indicated on any plot that adequate time separation exists between devices installed in series, including power utility company's upstream devices. Prepare separate sets of curves for the switching schemes and for emergency periods where the power source is local generation. Show the following information:
      a. Device tag.
      b. Voltage and current ratio for curves.
      c. Three-phase and single-phase damage points for each transformer.
      d. No damage, melting, and clearing curves for fuses.
      e. Transformer inrush points.
      f. Maximum fault-current cutoff point.
      g. Motor starting characteristics, damage points and overload relay.
      h. Thermal damage curve for motors larger than 100 HP.
      i. Generator short-circuit decrement curve and damage point, and thermal damage curve.

F. Completed data sheets for setting of overcurrent protective devices.

G. Complete Schedule of breaker settings to summarize information contained on data sheets. Sample schedule has been included at the end of this section for preferred format.

3.5 ARC FLASH HAZARD ANALYSIS

A. Comply with NFPA 70E and its Annex D for hazard analysis study.

B. The flash protection boundary and the incident energy shall be calculated at all significant locations in the electrical distribution system where work could be performed on energized parts including, but not limited to, the following:
   1. Disconnect switches.
   2. Electrical substations.
   3. Electrical switchgear and switchboards.
   4. Emergency system boxes and enclosures.
   5. Enclosed circuit breakers.
   6. Motor-control centers.
   7. Panelboards.

C. When appropriate, the short circuit calculations and the clearing times of the phase overcurrent devices will be retrieved from the short-circuit and coordination study model. Ground overcurrent protection relays should not be taken into consideration when determining the clearing time when performing incident energy calculations.

D. Calculate the arc-flash protection boundary and the corresponding incident energy calculations for multiple system scenarios to be compared and the greatest incident energy to be uniquely reported for each equipment location. Calculations to be performed to represent the maximum and minimum contributions of fault current magnitude for all normal and emergency operating conditions.
   1. The minimum calculation will assume that the utility contribution is at a minimum and will assume a minimum motor contribution (all motors off).
   2. The maximum calculation will assume a maximum contribution from the utility and will assume the maximum amount of motors to be operating. Calculations shall take into consideration the parallel operation of synchronous generators with the electric utility, where applicable.

E. Incident energy calculations shall consider the accumulation of energy over time when performing arc flash calculations on buses with multiple sources. Iterative calculations must take into account the changing current contributions, as the sources are interrupted or decremented with time. Fault contribution from motors and generators to be decremented as follows:
   1. Fault contribution from induction motors should not be considered beyond 3-5 cycles.
   2. Fault contribution from synchronous motors and generators should be decayed to match the actual decrement of each as closely as possible.

F. For each equipment location with a separately enclosed main device, calculations for incident energy and flash protection boundary shall include both the line and load side of the main breaker.
   1. When performing incident energy calculations on the line side of a main breaker, the line side and load side contributions must be included in the fault calculation.

G. Mis-coordination should be checked amongst all devices within the branch containing the immediate protective device to compute the incident energy for the corresponding location.

H. Arc Flash calculations shall be based on actual overcurrent protective device clearing time. Maximum clearing time will be capped at 2 seconds based on IEEE 1584 section B.1.2. Where it is not physically possible to move outside of the flash protection boundary in less than 2 seconds during an arc flash even, a maximum clearing time based on the specific location shall be utilized.

I. Complete Arc Flash report to be used for the preparation of Arc Flash Warning labels for electrical equipment.

3.6 Correct Deficiencies, Re-calculate and Report:

A. After Engineer's initial review, correct unsatisfactory conditions and recalculate to demonstrate compliance; resubmit overcurrent protective devices as required to bring system into compliance.

B. Revise and Resubmit report multiple times as necessary to demonstrate compliance with requirements.

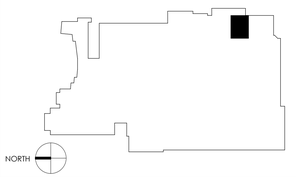
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City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: ***Aug 31, 2016***
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

KEY PLAN



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No.	Description	Date

COLORADO REGISTERED PROFESSIONAL ENGINEER 43940 8/8/2016 PROFESSIONAL ENGINEER

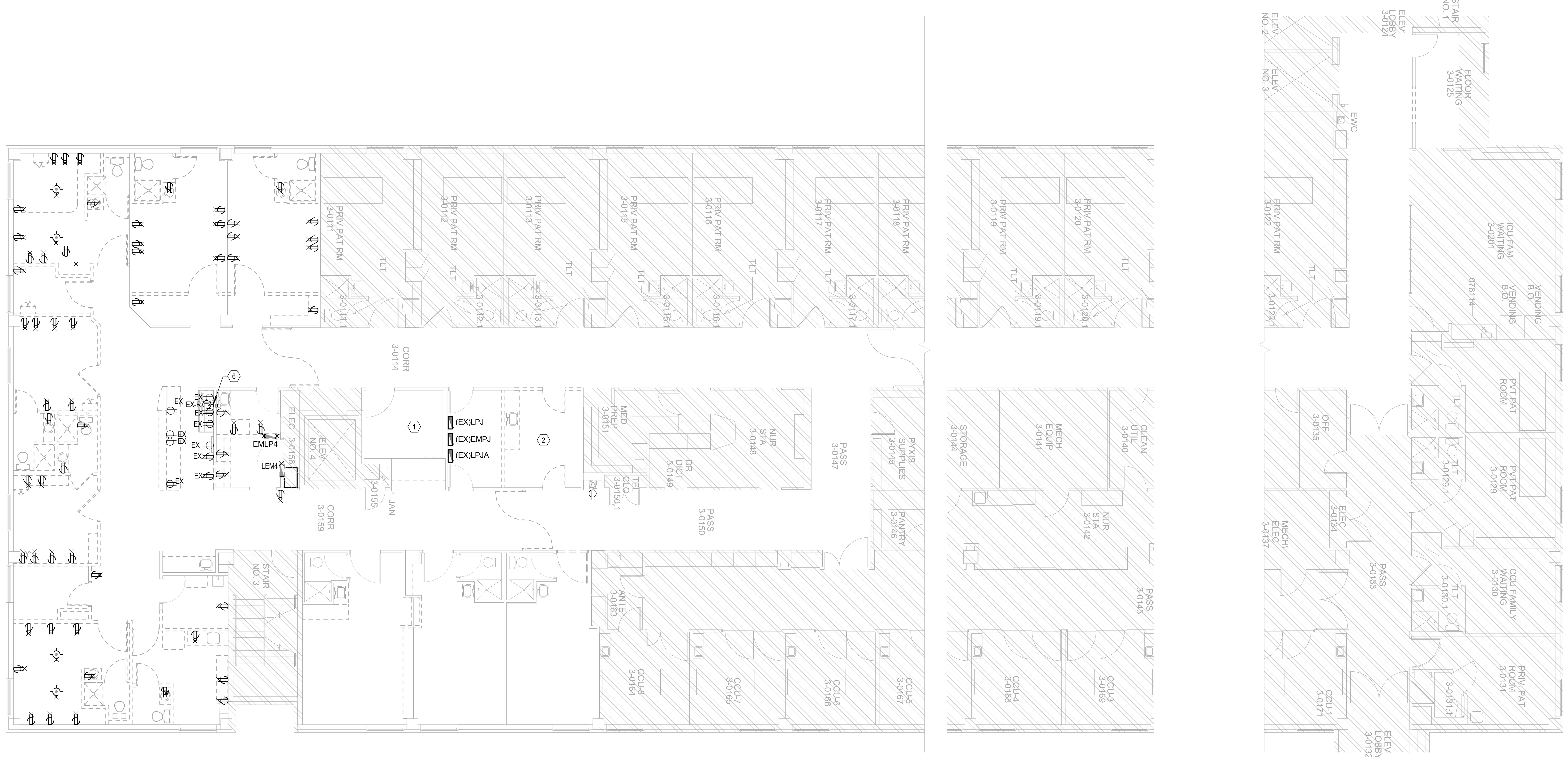
TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	JD
Checked by	TF

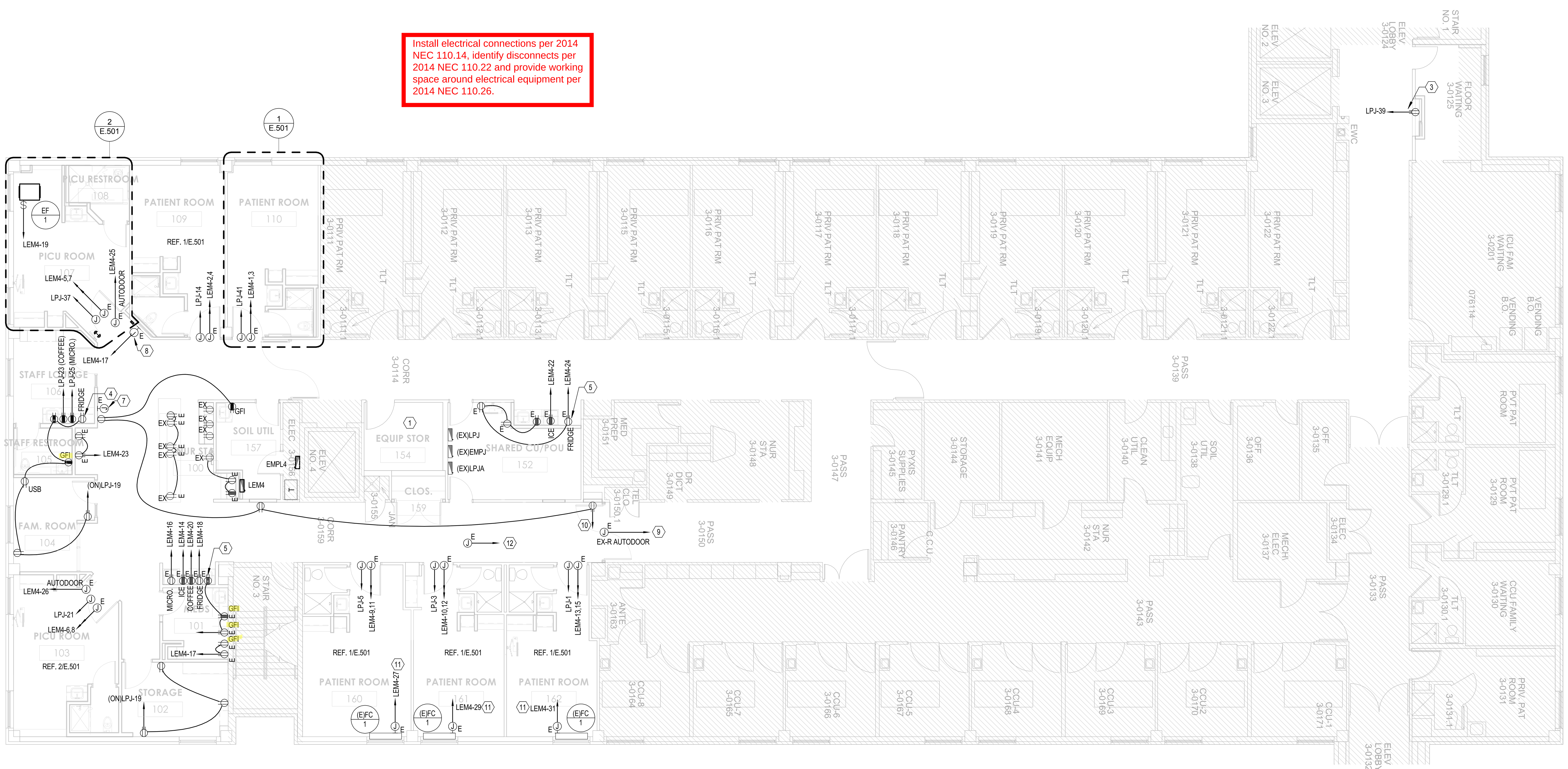
Sheet Title:
ELECTRICAL OCPD SPECIFICATIONS

Sheet Number
E.003



2 LEVEL 03 PLAN - POWER DEMOLITION
1/8" = 1'-0"

Install electrical connections per 2014 NEC 110.14, identify disconnects per 2014 NEC 110.22 and provide working space around electrical equipment per 2014 NEC 110.26.



1 LEVEL 03 PLAN - POWER
1/8" = 1'-0"

Field Inspection consultation is available upon request. Call 303-739-7420 to request a consultation

Failure to follow approved plans may result in an hourly fee to review the field changes for code compliance.

GENERAL NOTES:

A. REFER TO SHEET E.001 FOR LEGENDS, GENERAL NOTES, AND ABBREVIATIONS.

LEGEND NOTES:

1. THIS SPACE AND ALL DEVICES LOCATED WITHIN ARE EXISTING TO REMAIN.
2. ALL DEVICES WITHIN THIS SPACE ARE TO BE DEMOLISHED.
3. CONTRACTOR SHALL LOCATE RECEPTACLE SERVING BUBBLEWALL FEATURE WITHIN CONTRACTOR BUILT ENCLOSURE. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT MOUNTING HEIGHT AND LOCATION OF DEVICE.
4. ALL DEVICES AT STAFF LOUNGE SHALL BE PROVIDED AS GFI DEVICES. DEVICES SHALL BE LOCATED IN ACCESSIBLE LOCATION OR PROVIDED WITH A REMOTE DEADFRONT DEVICE, REFER TO DETAIL 03/E.701 FOR ADDITIONAL INFORMATION.
5. ALL DEVICES AT NOURISHMENT ALCOVE SHALL BE PROVIDED AS GFI DEVICES. DEVICES SHALL BE LOCATED IN ACCESSIBLE LOCATION OR PROVIDED WITH A REMOTE DEADFRONT DEVICE, REFER TO DETAIL 03/E.701 FOR ADDITIONAL INFORMATION.
6. EXISTING MEDICAL GAS AREA ALARM PANEL TO BE RELOCATED WITHIN THIS PROJECT SCOPE. REFER TO VIEW 1 ON THIS SHEET FOR ADDITIONAL INFORMATION.
7. RELOCATED LOCATION OF EXISTING MEDICAL GAS AREA ALARM PANEL. CONTRACTOR SHALL INTERCEPT EXISTING 120V, LIFE SAFETY CIRCUIT PREVIOUSLY FEEDING MEDICAL GAS AREA ALARM PANEL AND EXTEND ALL FEEDERS, CONDUIT, AND ASSOCIATED DIV. 26 DEVICES AS REQUIRED TO NEW LOCATION.
8. ROOM PRESSURE MONITOR FOR ISOLATION SPACE. COORDINATE EXACT CONNECTION LOCATION AND REQUIREMENTS WITH DIVISION 23.
9. RELOCATED LOCATION OF EXISTING AUTODOOR. CONTRACTOR SHALL INTERCEPT EXISTING 120V, LIFE SAFETY CIRCUIT PREVIOUSLY FEEDING AUTODOORS AND EXTEND ALL FEEDERS, CONDUIT, AND ASSOCIATED DIV. 26 DEVICES AS REQUIRED TO NEW LOCATION.
10. CONNECT RECEPTACLES TO NEARBY 120V CORRIDOR CIRCUIT. CONTRACTOR SHALL CIRCUIT NO MORE THAN (8) RECEPTACLES TO A SINGLE CIRCUIT.
11. CONTRACTOR SHALL INTERCEPT AND EXTEND FEEDERS CURRENTLY SERVING DEVICE TO NEW CIRCUITING LOCATIONS AS SHOWN ON PLANS.
12. CONTRACTOR SHALL INTERCEPT 120V EQUIPMENT BRANCH CONTROLS CIRCUIT CURRENTLY SERVING THE SPACE AND CONNECT NEW OR EXISTING RE-USED MECHANICAL EQUIPMENT TO THIS CIRCUIT.

Locate receptacles a minimum of 15" AFF and locate light switches, pull boxes, thermostats, etc. a maximum of 44" AFF.
2009 ICC/ANSI 117.1 308

This plan was reviewed for adopted codes and **NOT** for compliance with **ADA** or **FHA** accessibility requirements. Contact 800-949-4232 (**ADA**) and 303-894-7822 x 325 (**FHA**) for federal accessibility requirements that apply to your project.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Aug 31, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

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No.	Description	Date

COLORADO LICENSED TYLER LEE FRITZ 43240 PROFESSIONAL ENGINEER 8/5/2016

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
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Sheet Title:

LEVEL 03 PLAN - POWER

Sheet Number

E.203

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GENERAL NOTES:

A. REFER TO SHEET E.001 FOR LEGENDS, GENERAL NOTES, AND ABBREVIATIONS.

(#) LEGEND NOTES:

1 ALL LIGHTING FIXTURES AND DEVICES WITHIN THIS SPACE ARE EXISTING TO REMAIN.

2 CONNECT FIXTURES TO 120V NORMAL CIRCUIT CURRENTLY SERVING THIS CORRIDOR. FIXTURES SERVED VIA A 60W POWER SUPPLY. CONTRACTOR SHALL NOTIFY ENGINEER IF ADDITIONAL 60W TO EXISTING CIRCUIT LOADS CIRCUIT PAST 1920VA OR 80% RATED CAPACITY OF BREAKER SERVING CIRCUIT.

3 ALL LIGHTING WITHIN THIS CORRIDOR IS EXISTING TO REMAIN AND NOT IN PROJECT SCOPE.

4 CONNECT FIXTURES TO EXISTING LIFE SAFETY CIRCUIT SERVING CORRIDOR. CIRCUIT WILL SEE NO NET LOAD AS FIXTURES ARE JUST BEING ADJUSTED.

5 LIGHTING CONTROLLER FOR TYPE 'B' FIXTURES. COORDINATE WITH MANUFACTURER FOR DEVICE REQUIREMENTS.

6 LUMINAIRES AND LIGHTING DEVICES WITHIN THIS SPACE SHALL BE DEMO'D. CONTRACTOR SHALL REFER TO UPDATED RCP ON ARCHITECTURAL DRAWINGS AND NEW LIGHTING LAYOUT ON VIEW 1 ON THIS SHEET FOR REVISED LIGHTING LAYOUT IN THIS SPACE.

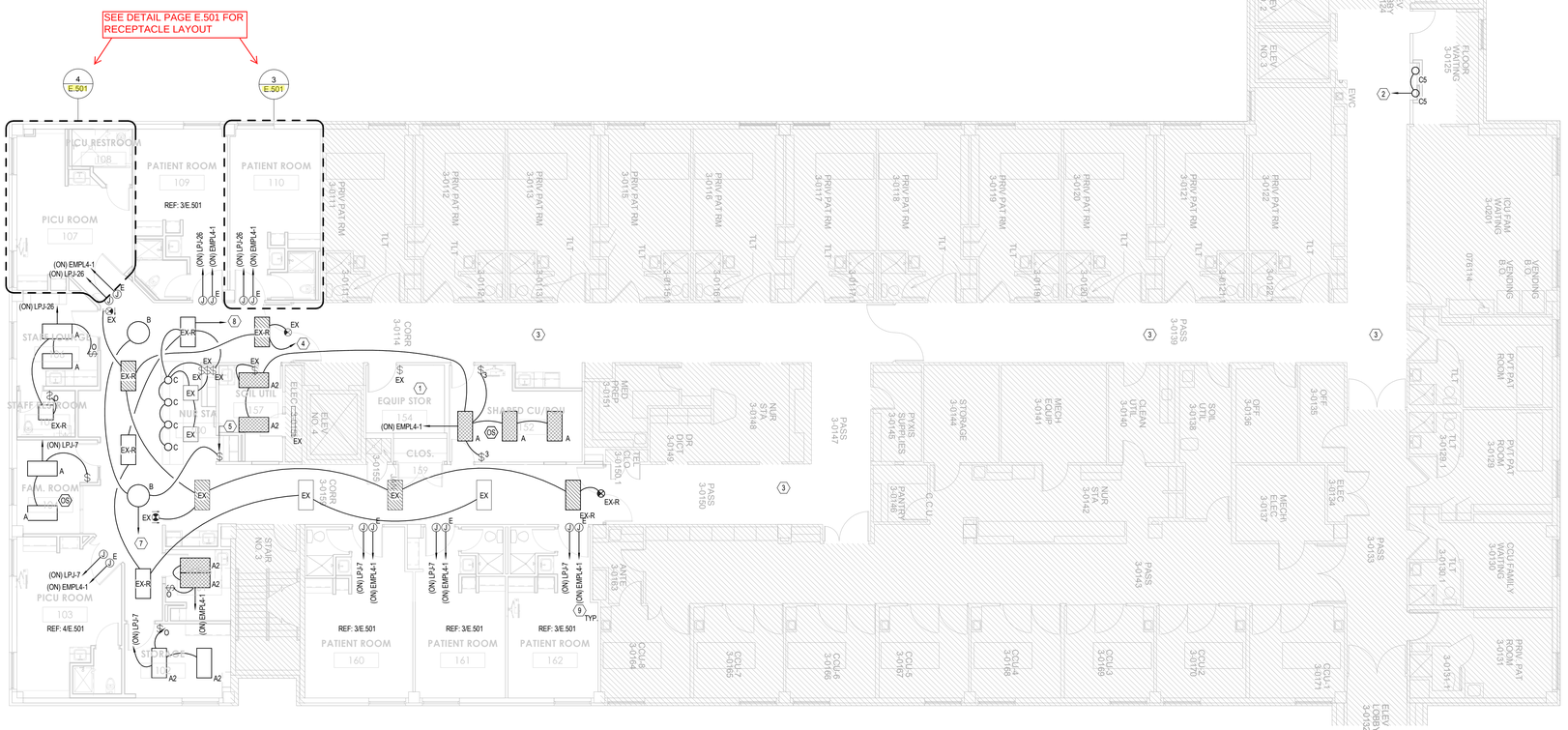
7 CONNECT FIXTURES TO 120V NORMAL CIRCUIT CURRENTLY SERVING THIS CORRIDOR. FIXTURES WILL ADD A COMBINED 128W OF LOAD TO THE CIRCUIT. CONTRACTOR SHALL NOTIFY ENGINEER IF ADDITIONAL 128W TO EXISTING CIRCUIT LOADS CIRCUIT PAST 1920VA OR 80% RATED CAPACITY OF BREAKER SERVING CIRCUIT.

8 CONNECT FIXTURES TO 120V NORMAL CIRCUIT PREVIOUSLY SERVING THESE FIXTURES.

9 CONNECT FIXTURES SHOWN AS CIRCUITED TO EMPL4-1 TO AVAILABLE CIRCUIT IN PANEL EMPL4. DURING LIMITED SITE SURVEY THIS PANEL WAS UNABLE TO BE SURVEYED. IT IS BELIEVED THERE IS AVAILABLE LOADING AND POLE SPACE WITHIN THIS PANEL.



2 LEVEL 03 PLAN - LIGHTING DEMOLITION
1/8" = 1'-0"



1 LEVEL 03 PLAN - LIGHTING
1/8" = 1'-0"

Framing Members of suspended ceiling systems used to support luminaires shall be securely fastened to each other and shall be securely attached to the building structure at appropriate intervals. Luminaires shall be securely fastened to the ceiling framing member by mechanical means such as bolts, screws, or rivets. Listed clips identified for use with the type of ceiling framing member(s) and luminaire(s) shall also be permitted. 410.36 (B) 2014 NEC

In indoor locations in other than dwellings and associated accessory structures, fluorescent luminaires that utilize double ended lamps and contain ballast(s) that can be serviced in place shall have a disconnecting means either internal or external to each luminaire. 410.130 (G)(1) 2014 NEC

Provide emergency illumination equipment that complies with 2014 NEC 700.12 (F) or 2014 NEC 700.

Locate receptacles a minimum of 15" AFF and locate light switches, pull boxes, thermostats, etc. a maximum of 44" AFF.
2009 ICC/ANSI 117.1 308

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: ***Sep 01, 2016***
2015 INTERNATIONAL CODES & 2014 NEC

RSN: ***1142126***
Permit #: ***16-1162585***

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No.	Description	Date

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43240
8/5/2016
PROFESSIONAL ENGINEER

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
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LEVEL 03 PLAN - LIGHTING

Sheet Number
E.303

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8/5/2016 4:45:13 PM

GENERAL NOTES:

A. REFER TO SHEET E.001 FOR LEGENDS, GENERAL NOTES, AND ABBREVIATIONS.

(#) LEGEND NOTES:

1 FOR CONNECTION TO HOSPITAL INFANT PROTECTION SYSTEM. COORDINATE EXACT CONNECTION REQUIREMENTS AND LOCATION WITH VENDOR. PROVIDE ALL REQUIRED BACKBOX AND CONDUIT ABOVE CEILING FOR PROPER INSTALL.

2 PROVIDE ALL REQUIRED BACKBOX AND PATHWAYS FOR SECURITY DEVICES AT THIS DOOR. COORDINATE EXACT CONNECTION LOCATIONS AND REQUIREMENTS WITH FACILITY AND SECURITY CONTROLS VENDOR.

3 CONTRACTOR SHALL RE-USE BACK BOXES FOR NEW NURSE CALL DEVICES IN THESE LOCATIONS. IF DEVICES ARE NOT EXISTING AS SHOWN CONTRACTOR SHALL PROVIDE NEW DEVICE. COORDINATE ALL REQUIREMENTS WITH NURSE CALL VENDOR.

4 CONTRACTOR SHALL PROVIDE BACKBOXES AND RACEWAY FOR PATIENT MONITORING AT THESE APPROXIMATE LOCATIONS. REFER TO ARCHITECTURAL AND VENDOR DRAWINGS FOR ADDITIONAL INFORMATION REGARDING CONNECTION REQUIREMENTS AND LOCATIONS.



2 LEVEL 03 PLAN - SPECIAL SYSTEMS DEMOLITION
1/8" = 1'-0"



1 LEVEL 03 PLAN - SPECIAL SYSTEMS
1/8" = 1'-0"

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
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1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
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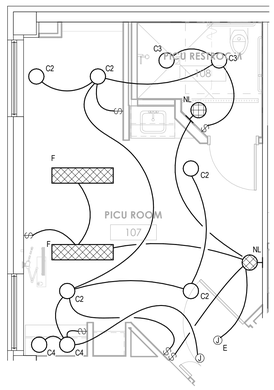
Sheet Title:

LEVEL 03 PLAN - SPECIAL SYSTEMS

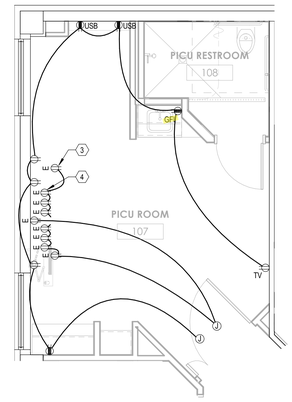
Sheet Number

E.403

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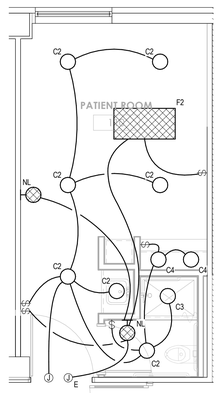


4 ENLARGED PICU ROOM 107 - LIGHTING
1/4" = 1'-0"

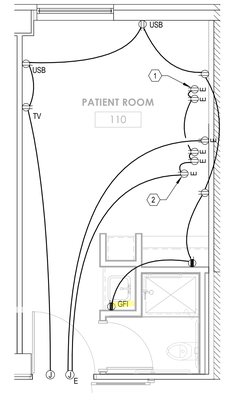


2 ENLARGED PICU ROOM 107 - POWER
1/4" = 1'-0"

Provide emergency illumination equipment that complies with 2014 NEC 700.12 (F) or 2014 NEC 700.



3 ENLARGED PATIENT ROOM 110 - LIGHTING
1/4" = 1'-0"



1 ENLARGED PATIENT ROOM 110 - POWER
1/4" = 1'-0"

517.18 2014 NEC General Care Areas.
(A) Patient Bed Location. Each Patient Bed Location shall be supplied by at least two branch circuits, one from the critical branch and one from the normal system. All branch circuits from the normal system shall originate in the same panelboard. The electrical receptacles or the cover plate for the electrical receptacles supplied from the critical branch circuit shall have a distinctive color or marking so as to be readily identifiable and shall also indicate the panelboard and branch circuit number supplying them.
Branch circuits serving patient bed locations shall not be part of a multiwire branch circuit.
(B) Patient Bed Location Receptacles. Each Patient bed Location shall be provided with a minimum of eight receptacles. They shall be permitted to be of the single, duplex, or quadruplex type or ant combination of the three. All receptacles shall be listed "Hospital Grade" and shall be so identified. The grounding terminal of each receptacle shall be connected to an insulated copper equipment grounding conductor sized in accordance with Table 250.122

517.19 2014 NEC Critical Care Areas.
(A) Patient Bed Location Branch Circuits. Each patient bed location shall be supplied by at least two branch circuits, one or more from the critical branch and one or more circuits from the normal system. At least one branch circuit from the critical branch shall supply an outlet(s) only at that bed location. All branch circuits from the normal system shall be from a single panelboard. Critical Branch receptacles shall be identified and shall also indicate the panelboard and circuit number supplying them.
The branch circuit serving patient bed locations shall not be part of a multiwire branch circuit.
(B) Patient Bed Location Receptacles.
(1) Minimum Number And Supply. Each patient bed location shall be provided with a minimum of 14 receptacles, at least one of which shall be connected to either of the following:
(1) The normal system branch circuit required in 517.19(A).
(2) A critical branch circuit supplied by a different transfer switch than the other receptacles at the same patient bed location.
(2) Receptacle Requirements. The receptacles required in 517.19(B)(1) shall be permitted to be single, duplex, or quadruplex type or any combination thereof. All recpetacles shall be listed "Hospital Grade" and shall be so identified. The grounding terminal of each receptacle shall be connected to the reference grounding point by means of an insulated copper equipment grounding conductor.

Locate receptacles a minimum of 15" AFF and locate light switches, pull boxes, thermostats, etc. a maximum of 44" AFF.
2009 ICC/ANSI 117.1 308

GENERAL NOTES:

A. REFER TO SHEET E.001 FOR LEGENDS, GENERAL NOTES, AND ABBREVIATIONS.

LEGEND NOTES:

1 DEVICES SHOWN IN THIS STACK LEVEL ARE TO BE MOUNTED AT 50" A.F.F.
2 DEVICES SHOWN IN THIS STACK LEVEL ARE TO BE MOUNTED AT 66" A.F.F.
3 DEVICES SHOWN IN THIS STACK LEVEL ARE TO BE MOUNTED AT 65" A.F.F.
4 DEVICES SHOWN IN THIS STACK LEVEL ARE TO BE MOUNTED AT 38" A.F.F.

This plan was reviewed for adopted codes and **NOT** for compliance with **ADA** or **FHA** accessibility requirements. Contact 800-949-4232 (**ADA**) and 303-894-7822 x 325 (**FHA**) for federal accessibility requirements that apply to your project.

Field Inspection consultation is available upon request. Call 303-739-7420 to request a consultation

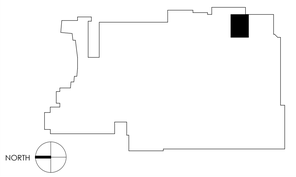
Failure to follow approved plans may result in an hourly fee to review the field changes for code compliance.

Code violations that are found during inspection are required to be corrected. Permit issuance does not grant approval of a code violation.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Sep 01, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

KEY PLAN



path 21 architecture
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Tel: 303.534.5221
Fax: 303.534.5215
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Consultant Team
MEP
WSP + CCRD
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Greenwood Village, CO 80111
ph: 303.694.4755

No.	Description	Date

COLORADO LICENSED
JEFFREY L. FRITZ
43940
PROFESSIONAL ENGINEER
8/5/2016

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	JD
Checked by	TF

Sheet Title:
ELECTRICAL ENLARGED PLANS

Sheet Number
E.501

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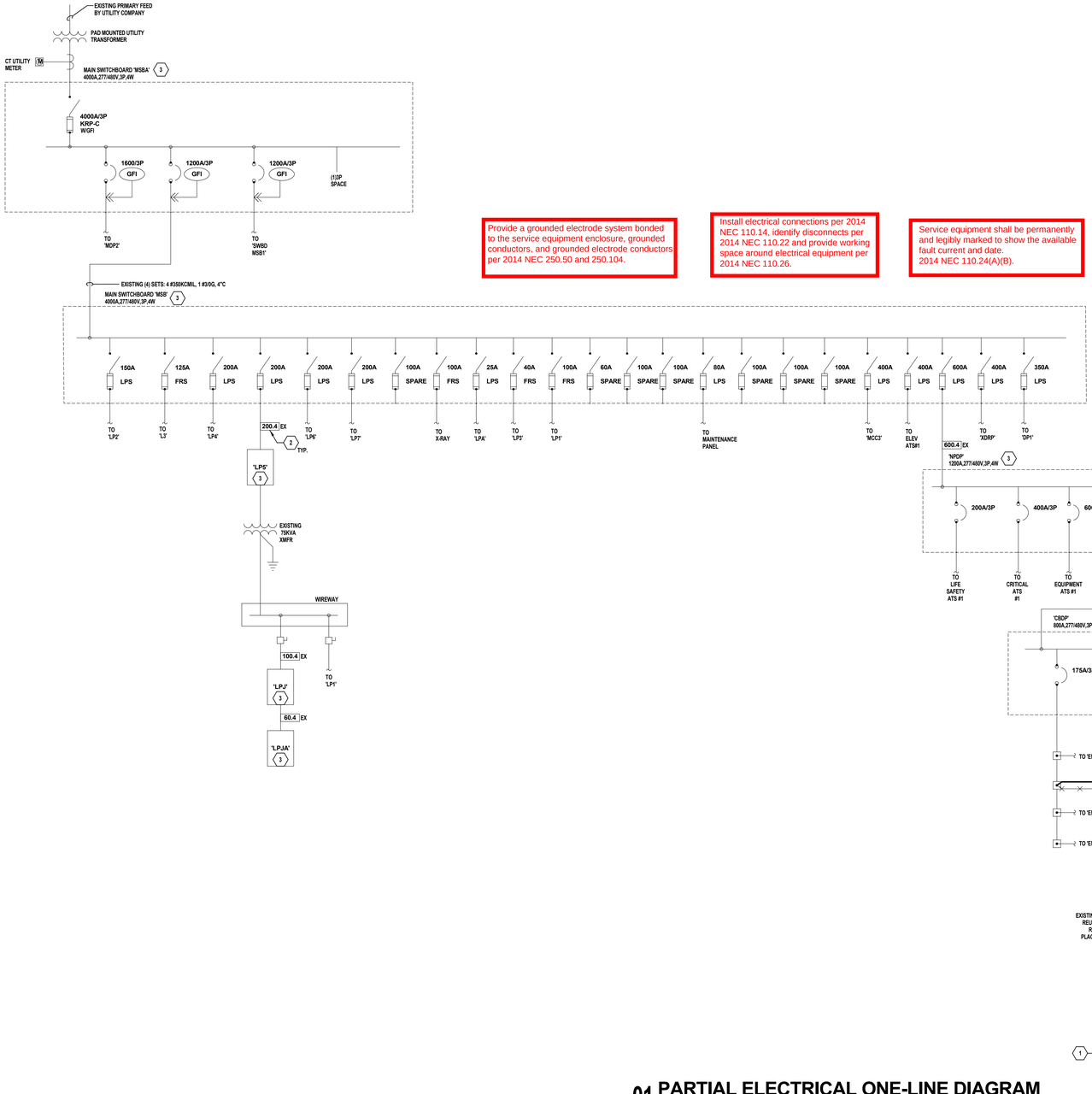
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GENERAL NOTES

A. REFER TO SHEET E.001 FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS, SYMBOLS AND ADDITIONAL INFORMATION.

LEGEND NOTES

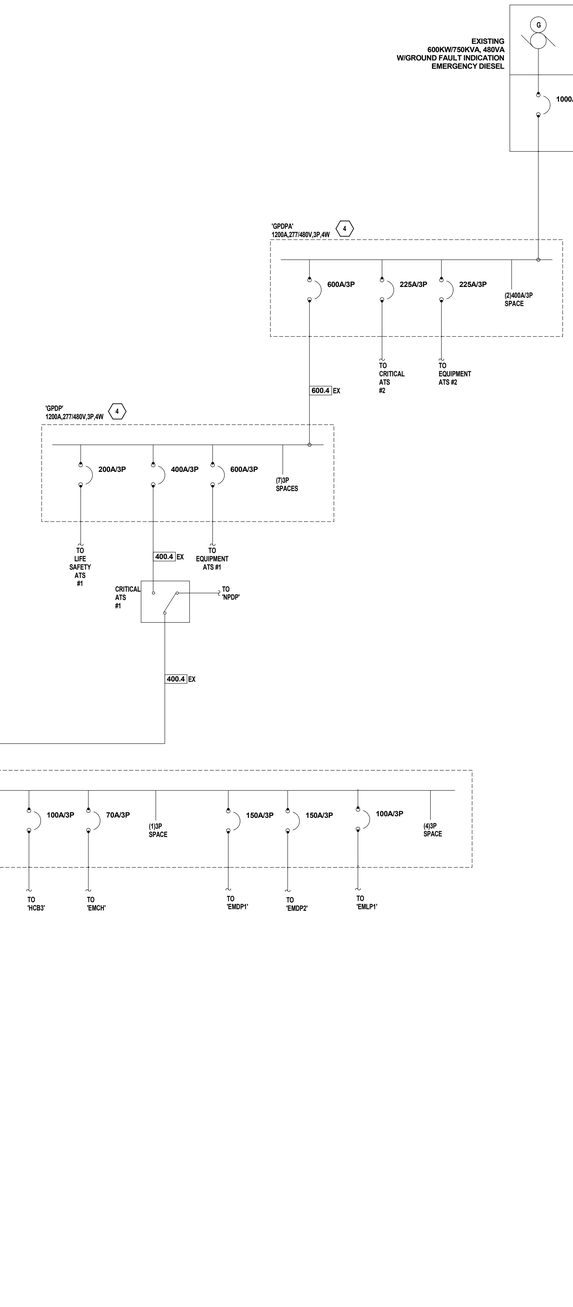
1. INTERCEPT AND EXTEND ALL FEEDERS CURRENTLY SERVING PANEL AND CONNECT TO NEW UPSTREAM PANEL OF THE SAME NAME. CONTRACTOR SHALL TRACE ALL LOADS ON EXISTING PANEL AND VERIFY IF ANY CIRCUITS ARE CONNECTED TO DEVICES LOCATED OUTSIDE OF SCOPE. THESE DEVICES SHALL BE RE-FED FROM NEW PANEL LOCATION. UPDATE PANEL SCHEDULE AND FACEPLATES OF ALL DEVICES WITH NEW CIRCUIT DESIGNATION.
2. EXISTING FEEDER SIZING SHOWN TAKEN FROM EXISTING DRAWINGS AND LIMITED SITE SURVEY. CONTRACTOR SHALL VERIFY FEEDER SIZING FOR ALL MODIFICATIONS REQUIRED WITHIN PROJECT SCOPE.
3. CONTRACTOR SHALL METER PANEL FOR 30 DAYS WITH A MINIMUM OF 1 DATA POINT PER 15 MINUTES. PROVIDE ENGINEER WITH 7-DAYS DATA AND 30-DAYS DATA FOR VERIFICATION OF PANEL LOADING.
4. CONTRACTOR SHALL METER LOAD SIDE OF ALL AUTOMATIC TRANSFER SWITCHES CONNECTED TO THIS DISTRIBUTION PANEL TO PROVIDE COMPLETE LOADING OF PANEL. EACH METER SHALL BE CONTINUOUSLY METERING FOR 30 DAYS WITH A MINIMUM OF 1 DATA POINT PER 15 MINUTES. PROVIDE ENGINEER WITH 7-DAYS DATA AND 30-DAYS DATA FOR VERIFICATION OF PANEL LOADING.



Provide a grounded electrode system bonded to the service equipment enclosure, grounded conductors, and grounded electrode conductors per 2014 NEC 250.50 and 250.104.

Install electrical connections per 2014 NEC 110.14, identify disconnects per 2014 NEC 110.22 and provide working space around electrical equipment per 2014 NEC 110.26.

Service equipment shall be permanently and legibly marked to show the available fault current and date.
2014 NEC 110.24(A)(B).



01 PARTIAL ELECTRICAL ONE-LINE DIAGRAM
NO SCALE

Code violations that are found during inspection are required to be corrected. Permit issuance does not grant approval of a code violation.

Field Inspection consultation is available upon request. Call 303-739-7420 to request a consultation

Failure to follow approved plans may result in an hourly fee to review the field changes for code compliance.

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: ***Sep 01, 2016***
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

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Greenwood Village, CO 80111
ph: 303.694.4755

No.	Description	Date

COLORADO LICENSED ELECTRICAL ENGINEER 43240 8/2/2016 PROFESSIONAL ENGINEER

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	JD
Checked by	TF

Sheet Title:
ELECTRICAL ONE-LINE DIAGRAM

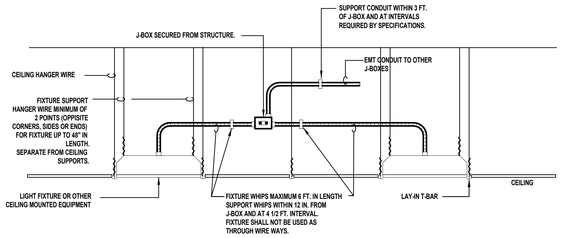
Sheet Number
E.601

CONTRACT & drawings property of path21 architecture

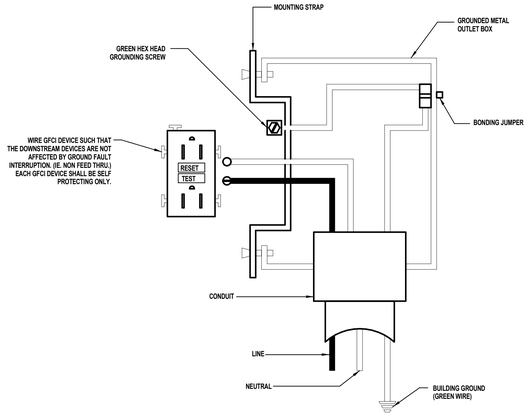
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Framing Members of suspended ceiling systems used to support luminaires shall be securely fastened to each other and shall be securely attached to the building structure at appropriate intervals. Luminaires shall be securely fastened to the ceiling framing member by mechanical means such as bolts, screws, or rivets. Listed clips identified for use with the type of ceiling framing member(s) and luminaire(s) shall also be permitted. 410.36 (B) 2014 NEC

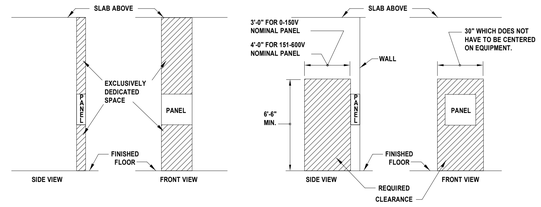
In indoor locations in other than dwellings and associated accessory structures, fluorescent luminaires that utilize double ended lamps and contain ballast(s) that can be serviced in place shall have a disconnecting means either internal or external to each luminaire. 410.130 (G)(1) 2014 NEC



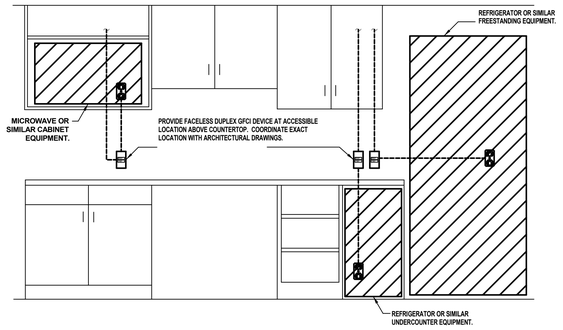
10 LAY-IN FIXTURE MOUNTING DETAIL
NO SCALE



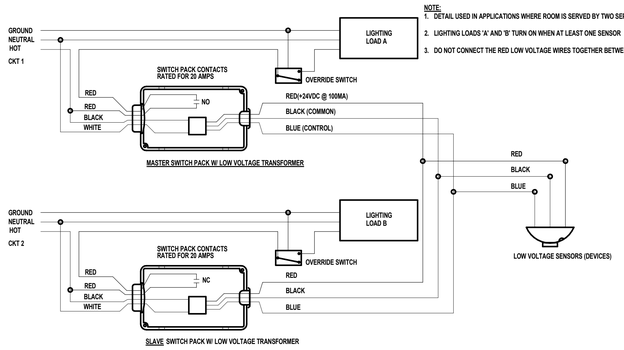
07 GFCI RECEPTACLE - WIRING DIAGRAM
NO SCALE



04 TYPICAL PANELBOARD REQUIRED CLEARANCE DETAIL
NO SCALE



03 ACCESSIBLE GFCI DETAIL
NO SCALE



09 LOW VOLTAGE OCCUPANCY SENSORS W/ 2-CIRCUITS & LINE-VOLTAGE OVERRIDE SWITCH
NO SCALE

OCCUPANCY SENSOR GENERAL NOTES

A. IT IS THE INTENT OF THESE DOCUMENTS THAT THE OCCUPANCY SENSOR SYSTEM SHALL COVER THE ENTIRE ROOM. THE CONTRACTOR SHALL HAVE THE SELECTED DEVICE MANUFACTURER LAYOUT AND ADJUST SENSOR TYPES OR QUANTITIES AS NEEDED TO PROVIDE COMPLETE COVERAGE. SHOP DRAWINGS SHALL BE SUBMITTED AS DESCRIBED IN THE SPECIFICATIONS ON THIS PAGE FOR ENGINEERS REVIEW PRIOR TO PROCUREMENT. COST FOR ANY ADJUSTMENTS OR ADDITIONS TO THE SENSOR LAYOUT SHALL BE INCLUDED IN THE CONTRACTOR BID PRICE. NO ADDITIONAL COSTS WILL BE CONSIDERED FOR THESE PRODUCT SPECIFIC ADJUSTMENTS.

B. THESE WIRING DETAILS ARE A GENERAL REPRESENTATION OF TYPICAL INSTALLATION PRACTICES. THE CONTRACTOR SHALL COORDINATE ALL DEVICE PLACEMENT, COVERAGE PATTERNS, WIRING DETAILS, SWITCH PACK QUANTITIES AND CONDUIT REQUIREMENTS DURING THE SHOP DRAWING PROCESS WITH THE SELECTED LIGHTING CONTROLS VENDOR.

C. NOT MORE THAN (3) LOW VOLTAGE DEVICES SHALL BE POWERED FROM A SINGLE SWITCH PACK. VERIFY REQUIREMENTS WITH SYSTEM MANUFACTURER DURING SHOP DRAWING PHASE.

D. SWITCH PACK CONTACTS SHALL FAIL TO THE CLOSED("ON") POSITION TO ALLOW LIGHTING OPERATION IN THE EVENT OF A RELAY OR SENSOR FAILURE.

SUBMITTALS

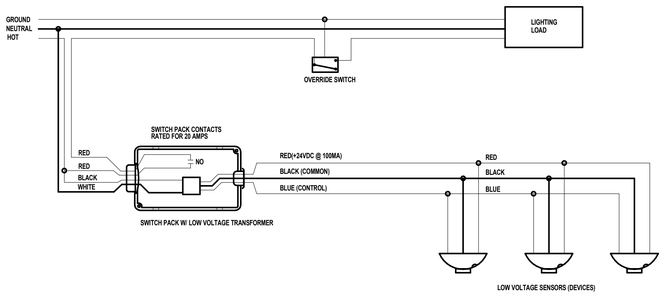
A. SUBMIT THE FOLLOWING IN ACCORDANCE WITH DIVISION 1 SUBMITTAL PROCEDURES.

B. COMPLETE BILL OF MATERIALS LISTING ALL PARTS NEEDED TO FULLY INSTALL SELECTED SENSOR SYSTEM.

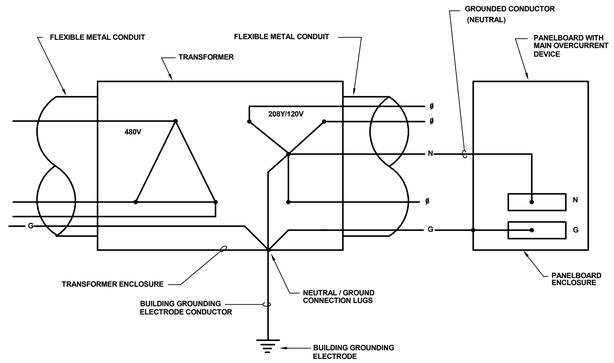
C. PRODUCT DATA SHEETS FOR EACH PRODUCT SPECIFIED. DATA SHEETS SHOULD INCLUDE CATALOG CUT SHEETS WITH TECHNICAL SPECIFICATIONS AND INSTALLATION INSTRUCTIONS..

D. SHOP DRAWINGS DETAILING ALL MECHANICAL AND ELECTRICAL EQUIPMENT REQUIRED TO INSTALL COMPETE SENSOR SYSTEM. SHOP DRAWINGS SHOULD BE 1/8"=1'-0" SCALE OR LARGER. DRAWINGS SHOULD INCLUDE ONE-LINE DIAGRAMS, WIRE COUNTS, COVERAGE PATTERNS, AND PHYSICAL DIMENSIONS OF EACH ITEM.

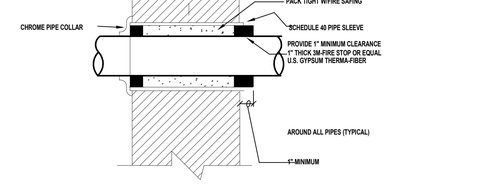
E. SUBMIT SAMPLES FOR FINISH, COLOR, AND TEXTURE TO ARCHITECT FOR APPROVAL.



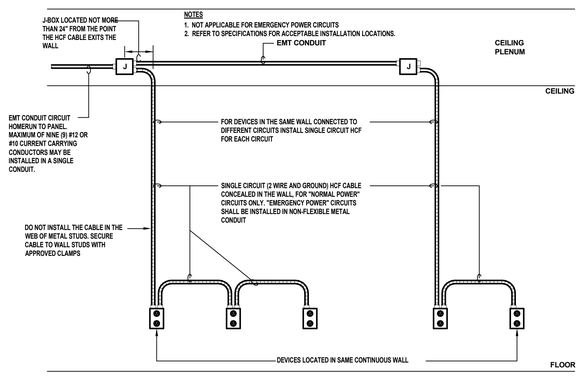
08 LOW VOLTAGE OCCUPANCY SENSORS W/ LINE-VOLTAGE OVERRIDE SWITCH
NO SCALE



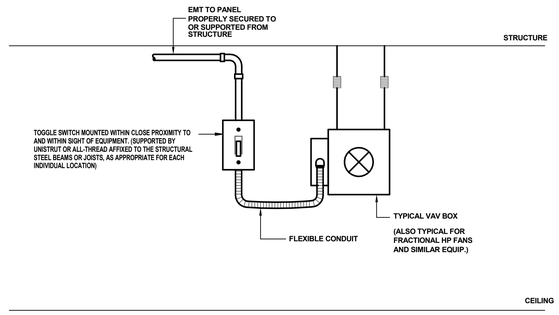
06 480 VOLT TO 208Y/120 VOLT LIGHTING & DISTRIBUTION TRANSFORMER GROUNDING DETAIL
NO SCALE



02 FIRE PENETRATION DETAIL
NO SCALE



05 HEALTHCARE FACILITIES CABLE (HFC) INSTALLATION DETAIL
NO SCALE



01 TYPICAL VAV BOX DISCONNECT
NO SCALE

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Sep 01, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
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Consultant Team

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3613 DTC Parkway, Suite 500
Greenwood Village, CO 80111
ph: 303.694.4755

No.	Description	Date

COLORADO LICENSED 43240 REGISTERED PROFESSIONAL ENGINEER 8/5/2016

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	JD
Checked by	TF

Sheet Title:
ELECTRICAL DETAILS

Sheet Number
E.701

8/5/2016 4:39:46 PM

PANEL: LEM4 — CRITICAL

LOCATION: SOIL UTIL 157 | FED FROM: EMPL4
MAIN BUS: 125A | WIRES: 4W + G | NEUTRAL BUS: Yes
MCB: 100A | ENCLOSURE: NEMA 1 | GROUND BUS: Yes
VOLTAGE: 208/120 | BUS TYPE: Copper | ISOLATED GROUND BUS: No
AIC: 10,000A | MOUNTING: Recessed | 200% NEUTRAL: No
PANEL LUGS: Main Circuit Breaker | FEED THROUGH LUGS: Yes

CKT NO.	DESCRIPTION	TOTAL LOAD (VA)	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	PHASE	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	TOTAL LOAD (VA)	DESCRIPTION	CKT NO
1	R-PAT. ROOM 110	900	20	1	A	20	1	900	R-PAT. ROOM 109	2
3	R-PAT. ROOM 110	180	20	1	B	20	1	180	R-PAT. ROOM 109	4
5	R-PICU ROOM 107	1440	20	1	C	20	1	1440	R-PICU ROOM 103	6
7	R-PICU ROOM 107	180	20	1	A	20	1	180	R-PICU ROOM 103	8
9	R-PAT. ROOM 160	900	20	1	B	20	1	900	R-PAT. ROOM 161	10
11	R-PAT. ROOM 160	180	20	1	C	20	1	180	R-PAT. ROOM 161	12
13	R-PAT. ROOM 162	900	20	1	A	20	1	1000	ICE - N. STAT 102	14
15	R-PAT. ROOM 162	180	20	1	B	20	1	1100	MICRO. - N. STAT 102	16
17	PYXIS 101	500	20	1	C	20	1	800	REF. - N. STAT 102	18
19	DIFF. PRESS. MON. 107	500	20	1	A	20	1	1200	COFFEE - N. STAT 102	20
21	EF-1 107	384	20	1	B	20	1	1000	ICE - CORR. 3-0114	22
23	CRASH CARTS 100	500	20	1	C	20	1	800	FRIDGE - CORR. 3-0114	24
25	PICU 107 AUTODOOR	500	20	1	A	20	1	500	PICU 103 AUTODOOR	26
27	FCU-1 160	696	20	1	B	20	1	-	SPARE	28
29	FCU-1 161	696	20	1	C	20	1	-	SPARE	30
31	FCU-1 162	696	20	1	A	20	1	-	SPARE	32
33	SPARE	-	20	1	B	20	1	-	SPARE	34
35	SPARE	-	20	1	C	20	1	-	SPARE	36
37	PANEL 'EMPJ'	-	30	3	A	40	3	-	PANEL 'EMPI'	38
39		-			B			-		40
41		-			C			-		42

NOTES:

'LEM4' LOAD SUMMARY

	LTS	RCPTS	MTRS	HSPTL	MISC	TOTAL (KVA)	TOTAL (AMPS)
TOTAL CONNECTED LOAD	0.0	0.0	2.1	8.6	8.8	19.5	54.2
DEMAND FACTOR	SEE DEMAND FACTOR TABLE						
TOTAL DEMAND LOAD	0.0	0.0	2.3	3.5	8.8	14.5	40.3
CONTINUOUS (DESIGN) FACTOR	1.25	1.00	1.00	1.00	1.00		
TOTAL DESIGN LOAD	0.0	0.0	2.3	3.5	8.8	14.5	40.3

PANEL: EMPL4 — CRITICAL

LOCATION: ELEC. 3-0156 | FED FROM: CBDP
MAIN BUS: 225A | WIRES: 4W + G | NEUTRAL BUS: Yes
MCB: N/A | ENCLOSURE: NEMA 1 | GROUND BUS: Yes
VOLTAGE: 480/277 | BUS TYPE: Copper | ISOLATED GROUND BUS: No
AIC: 22,000A | MOUNTING: Surface | 200% NEUTRAL: No
PANEL LUGS: Main Lugs Only | FEED THROUGH LUGS: Yes

CKT NO.	DESCRIPTION	TOTAL LOAD (VA)	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	PHASE	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	TOTAL LOAD (VA)	DESCRIPTION	CKT NO
1	PEDS SUITE LIGHTING	1712	20	1	A	20	1	-	SPARE	2
3	SPARE	-	20	1	B	20	1	-	SPARE	4
5	SPARE	-	20	1	C	20	1	-	SPARE	6
7	SPARE	-	20	1	A	20	1	-	SPARE	8
9	SPARE	-	20	1	B	20	1	-	SPARE	10
11	SPARE	-	20	1	C	20	1	-	SPARE	12
13	SPARE	-	20	1	A	20	1	-	SPARE	14
15	SPARE	-	20	1	B	20	1	-	SPARE	16
17	SPARE	-	20	1	C	20	1	-	SPARE	18
19	SPARE	-	20	1	A	20	1	-	SPARE	20
21	SPARE	-	20	1	B	20	1	-	SPARE	22
23	SPARE	-	20	1	C	20	1	-	SPARE	24
25	SPARE	-	20	1	A	20	1	-	SPARE	26
27	SPARE	-	20	1	B	20	1	-	SPARE	28
29	SPARE	-	20	1	C	20	1	-	SPARE	30
31	SPARE	-	20	1	A	20	1	-	SPARE	32
33	SPARE	-	20	1	B	20	1	-	SPARE	34
35	SPARE	-	20	1	C	20	1	-	SPARE	36
37	SPARE	-	20	1	A		3	7456	PANEL 'LEM4'	38
39	SPARE	-	20	1	B			5520	VIA XFMR	40
41	SPARE	-	20	1	C			6536	"	42

NOTES:
* THIS PANEL WAS NOT SURVEYED DURING LIMITED SITE SURVEY.
IT IS EXPECTED TO HAVE EXISTING CIRCUITS THAT SHALL REMAIN. THOSE CIRCUITS SHALL BE INTERCEPTED AND EXTENDED TO NEW PANEL LOCATION.
CONTRACTOR SHALL TRACE ALL EXISTING CIRCUITS TO VERIFY THE DO NOT SERVE OUTSIDE THE SCOPE OF WORK PRIOR TO DEMOLITION.

'EMPL4' LOAD SUMMARY

	LTS	RCPTS	MTRS	HSPTL	MISC	TOTAL (KVA)	TOTAL (AMPS)
TOTAL CONNECTED LOAD	1.7	0.0	2.1	8.6	8.8	21.2	35.5
DEMAND FACTOR	SEE DEMAND FACTOR TABLE						
TOTAL DEMAND LOAD	1.7	0.0	2.3	3.5	8.8	16.2	19.5
CONTINUOUS (DESIGN) FACTOR	1.25	1.00	1.00	1.00	1.00		
TOTAL DESIGN LOAD	2.1	0.0	2.3	3.5	8.8	16.6	20.0

EXISTING PANEL: LPJ — NORMAL

LOCATION: SHARED CU/POU 152 | FED FROM: LP5
MAIN BUS: 125A | WIRES: 4W + G | NEUTRAL BUS: Yes
MCB: N/A | ENCLOSURE: NEMA 1 | GROUND BUS: Yes
VOLTAGE: 208/120 | BUS TYPE: Copper | ISOLATED GROUND BUS: No
AIC: 10,000A | MOUNTING: Recessed | 200% NEUTRAL: No
PANEL LUGS: Main Lugs Only | FEED THROUGH LUGS: Yes

CKT NO.	DESCRIPTION	TOTAL LOAD (VA)	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	PHASE	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	TOTAL LOAD (VA)	DESCRIPTION	CKT NO
1	R-PAT. ROOM 162	1440	*20	1	A	20	1	-	SPARE	2
3	R-PAT. ROOM 161	1440	*20	1	B	20	1	-	SPARE	4
5	R-PAT. ROOM 160	1440	*20	1	C	20	1	-	SPARE	6
7	L-SOUTH 3RD FLR PEDS	1368	*20	1	A	20	1	-	SPARE	8
9	SPARE	-	20	1	B	20	1	-	SPARE	10
11	SPARE	-	20	1	C	20	1	-	SPARE	12
13	SPARE	-	20	1	A	*20	1	1440	R-PAT. ROOM 109	14
15	SPARE	-	20	1	B	20	1	-	SPARE	16
17	SPARE	-	20	1	C	20	1	-	SPARE	18
19	R-STOR/FAM./STAFF LNGE	1740	*20	1	A	20	1	-	SPARE	20
21	R-PICU ROOM 103	1440	*20	1	B	20	1	-	SPARE	22
23	COFFEE 106	1200	*20	1	C	20	1	-	SPARE	24
25	MICRO. 106	1100	*20	1	A	*20	1	1114	L-NORTH 3RD FLR PEDS	26
27	SPARE	-	20	1	B	20	1	-	SPARE	28
29	SPARE	-	20	1	C	20	1	-	SPARE	30
31	SPARE	-	20	1	A	20	1	-	SPARE	32
33	SPARE	-	20	1	B	20	1	-	SPARE	34
35	SPARE	-	20	1	C	20	1	-	SPARE	36
37	R-PICU ROOM 107	1440	*20	1	A	60	3	-	PANEL 'LPJA'	38
39	BUBBLE WALL	800	*20	1	B			-		40
41	R-PAT. ROOM 110	1440	*20	1	C			-		42

NOTES:
* BREAKERS SHOWN ARE EXPECTED TO BE RECLAIMED.
CONTRACTOR SHALL NOTIFY ENGINEER IF QUANTITY OF RECLAIMED BREAKERS, NOT CIRCUIT NUMBER, DIFFERS FROM SCHEDULE.

'LPJ' LOAD SUMMARY

	LTS	RCPTS	HSPTL	MISC	TOTAL (KVA)	TOTAL (AMPS)
TOTAL CONNECTED LOAD	2.5	1.4	10.1	3.4	17.4	48.3
DEMAND FACTOR	SEE DEMAND FACTOR TABLE					
TOTAL DEMAND LOAD	2.5	1.4	4.0	3.4	11.4	31.5
CONTINUOUS (DESIGN) FACTOR	1.25	1.00	1.00	1.00		
TOTAL DESIGN LOAD	3.1	1.4	4.0	3.4	12.0	33.2

Service equipment shall be permanently and legibly marked to show the available fault current and date.
2014 NEC 110.24(A)(B).

Legibly identify each breaker or switch for it's use or purpose on the circuit directory in the panel/switchboard per 2014 NEC 408.4.

AVAILABLE FAULT CURRENT CALCULATIONS

EMERGENCY SYSTEM UTILITY CONTRIBUTION

Utility Fault Current	6006 Amperes	kVA	=	760
		E	=	480
I = (kVAx1000)/(Ex1.732) = trans FLA		trans FLA	=	902.1563

FAULT CURRENT FROM GENSET TO DISTRIBUTION PANEL 'GPDPA'

Feeder: 4 sets 4 # 350
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): PVC
Voltage: 480

Conductor Length (distance)	L	=	46
ASC	ISCA	=	6,006
# conductors per phase	N	=	4
Phase conductor constant	C	=	19868
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.013
M = 1/(1+f)	M	=	0.987
ISCA = ISCA x M	ISCA	=	5,928

FAULT CURRENT FROM DISTRIBUTION PANEL 'GPDPA' TO DIST. PANEL 'GPDP'

Feeder: 2 sets 4 # 350
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 480

Conductor Length (distance)	L	=	40
ASC	ISCA	=	5,928
# conductors per phase	N	=	2
Phase conductor constant	C	=	19667
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.026
M = 1/(1+f)	M	=	0.975
ISCA = ISCA x M	ISCA	=	5,779

FAULT CURRENT FROM DISTRIBUTION PANEL 'GPDP' TO DIST. PANEL 'CBDP'

Feeder: 2 sets 4 # 3/0
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 480

Conductor Length (distance)	L	=	40
ASC	ISCA	=	5,779
# conductors per phase	N	=	2
Phase conductor constant	C	=	19638
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.039
M = 1/(1+f)	M	=	0.962
ISCA = ISCA x M	ISCA	=	5,561

FAULT CURRENT FROM DISTRIBUTION PANEL 'CBDP' TO PANEL 'EMPL4'

Feeder: 1 sets 4 # 2/0
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 480

Conductor Length (distance)	L	=	44
ASC	ISCA	=	5,561
# conductors per phase	N	=	1
Phase conductor constant	C	=	9691
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.087
M = 1/(1+f)	M	=	0.911
ISCA = ISCA x M	ISCA	=	5,069

FAULT CURRENT FROM PANEL 'EMPL4' TO PANEL 'LEM4'

Feeder: 1 sets 4 # 1
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 208

Conductor Length (distance)	L	=	15
ASC	ISCA	=	5,561
# conductors per phase	N	=	1
Phase conductor constant	C	=	6256
Voltage L-L	EL-L	=	208
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.111
M = 1/(1+f)	M	=	0.900
ISCA = ISCA x M	ISCA	=	5,005

AVAILABLE FAULT CURRENT CALCULATIONS

NORMAL SYSTEM UTILITY CONTRIBUTION

Utility Fault Current	46200 Amperes	kVA	=	2000
		E	=	480
I = (kVAx1000)/(Ex1.732) = trans FLA		trans FLA	=	2405.697

FAULT CURRENT FROM UTILITY TO MAIN SWITCHBOARD 'MSBA'

Feeder: 11 sets 4 # 500
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): PVC
Voltage: 480

Conductor Length (distance)	L	=	150
ASC	ISCA	=	46,200
# conductors per phase	N	=	11
Phase conductor constant	C	=	23256
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.096
M = 1/(1+f)	M	=	0.913
ISCA = ISCA x M	ISCA	=	41,295

FAULT CURRENT FROM MAIN SWITCHBOARD 'MSBA' TO SWITCHBOARD 'MSB'

Feeder: 4 sets 4 # 350
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 480

Conductor Length (distance)	L	=	100
ASC	ISCA	=	41,295
# conductors per phase	N	=	4
Phase conductor constant	C	=	16667
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.223
M = 1/(1+f)	M	=	0.817
ISCA = ISCA x M	ISCA	=	33,724

FAULT CURRENT FROM SWITCHBOARD 'MSB' TO PANEL 'NPDP'

Feeder: 2 sets 4 # 350
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 480

Conductor Length (distance)	L	=	24
ASC	ISCA	=	33,724
# conductors per phase	N	=	2
Phase conductor constant	C	=	16667
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.088
M = 1/(1+f)	M	=	0.919
ISCA = ISCA x M	ISCA	=	31,008

FAULT CURRENT FROM PANEL 'NPDP' TO DISTRIBUTION PANEL 'CBDP'

Feeder: 2 sets 4 # 3/0
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 480

Conductor Length (distance)	L	=	16
ASC	ISCA	=	31,008
# conductors per phase	N	=	2
Phase conductor constant	C	=	19638
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.084
M = 1/(1+f)	M	=	0.922
ISCA = ISCA x M	ISCA	=	28,601

FAULT CURRENT FROM DISTRIBUTION PANEL 'CBPD' TO PANEL 'EMPL4'

Feeder: 1 sets 4 # 2/0
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 480

Conductor Length (distance)	L	=	44
ASC	ISCA	=	31,008
# conductors per phase	N	=	1
Phase conductor constant	C	=	9091
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.542
M = 1/(1+f)	M	=	0.649
ISCA = ISCA x M	ISCA	=	20,116

AVAILABLE FAULT CURRENT CALCULATIONS

NORMAL SYSTEM UTILITY CONTRIBUTION

Utility Fault Current	46200 Amperes	kVA	=	2000
		E	=	480
I = (kVAx1000)/(Ex1.732) = trans FLA		trans FLA	=	2405.697

FAULT CURRENT FROM UTILITY TO MAIN SWITCHBOARD 'MSBA'

Feeder: 11 sets 4 # 500
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): PVC
Voltage: 480

Conductor Length (distance)	L	=	150
ASC	ISCA	=	46,200
# conductors per phase	N	=	11
Phase conductor constant	C	=	23256
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.096
M = 1/(1+f)	M	=	0.913
ISCA = ISCA x M	ISCA	=	41,295

FAULT CURRENT FROM MAIN SWITCHBOARD 'MSBA' TO SWITCHBOARD 'MSB'

Feeder: 4 sets 4 # 350
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 480

Conductor Length (distance)	L	=	100
ASC	ISCA	=	41,295
# conductors per phase	N	=	4
Phase conductor constant	C	=	16667
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.223
M = 1/(1+f)	M	=	0.817
ISCA = ISCA x M	ISCA	=	33,724

FAULT CURRENT FROM SWITCHBOARD 'MSB' TO PANEL 'LPS'

Feeder: 1 sets 4 # 3/0
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 480

Conductor Length (distance)	L	=	40
ASC	ISCA	=	33,724
# conductors per phase	N	=	1
Phase conductor constant	C	=	19638
Voltage L-L	EL-L	=	480
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.549
M = 1/(1+f)	M	=	0.646
ISCA = ISCA x M	ISCA	=	21,771

FAULT CURRENT FROM PANEL 'LPS' TO PANEL 'LPJ'

Feeder: 1 sets 4 # 1/0
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 208

Conductor Length (distance)	L	=	35
ASC	ISCA	=	21,771
# conductors per phase	N	=	1
Phase conductor constant	C	=	7692
Voltage L-L	EL-L	=	208
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	0.825
M = 1/(1+f)	M	=	0.548
ISCA = ISCA x M	ISCA	=	11,930

FAULT CURRENT FROM PANEL 'LPJ' TO PANEL 'LPJA'

Feeder: 1 sets 4 # 8
Conductor (Copper/Aluminum): Copper
Raceway (Steel/Aluminum): Steel
Voltage: 208

Conductor Length (distance)	L	=	10
ASC	ISCA	=	21,771
# conductors per phase	N	=	1
Phase conductor constant	C	=	1429
Voltage L-L	EL-L	=	208
f = (1.732xLxISCA)/(NxCxEL-L)	f	=	1.269
M = 1/(1+f)	M	=	0.441
ISCA = ISCA x M	ISCA	=	9,595

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CONTRACT & drawings property of path 21 architecture

No.	Description	Date

COLORADO LICENSED — 43240 — 8/5/2016 — PROFESSIONAL ENGINEER

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Sep 01, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	JD
Checked by	TF

Sheet Title:
ELECTRICAL SCHEDULES

Sheet Number
E.801

8/5/2016 4:59:02 PM

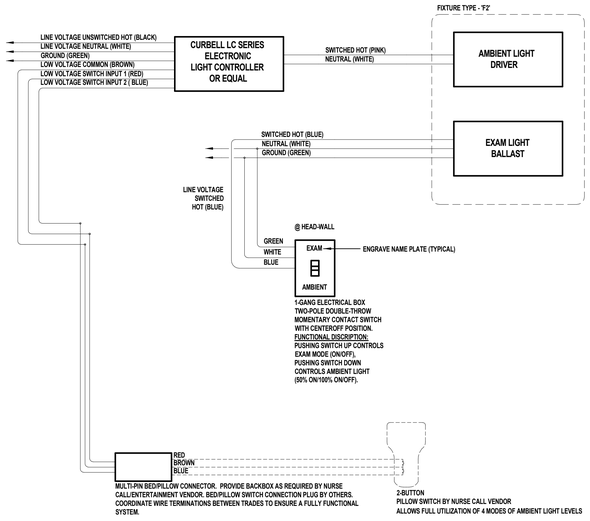
3RD FLOOR INTERIOR LUMINAIRE SCHEDULE

TYPE	DESCRIPTION
0	DESCRIPTION: FIXTURES INDICATED IN SCHEDULE BELOW ARE ACUITY LIGHTING TO BE PURCHASED THROUGH GRAYBAR DISTRIBUTORS LAMP(S): 825 8TH AVENUE SOUTH BALLAST(S): NASHVILLE, TN 37203 VOLTAGE: 1-800-678-4061 INSTALLATION: HCA@GRAYBAR.COM LUMINARE: QUOTATIONS CONTACT: JESS HOOVER 615-743-3232 jess.hoover@graybar.com
A	DESCRIPTION: 2' X 4' DIRECT/INDIRECT FLUORESCENT, RECESSED MOUNT WITH FLUSH BASKET, STATIC, DIE FORMED 20 GA. STEEL HOUSING, 20 GA. STEEL REFLECTOR WITH MATTE WHITE POWDERCOAT FINISH, LAMP COMPARTMENT CONSISTING OF 25 GA. PERFORATED REFRACTOR "BASKET" WITH .11 IN THICK WHITE ACRYLIC LENS INSERT, REMOVABLE BALLAST/LAMP MODULE TRAY, DUST COVER. LAMP(S): 2 - FO32/841/ECO BALLAST(S): PROGRAM START ELECTRONIC BALLAST, <10% THD VOLTAGE: 120/277V MULTI-TAP BALLAST INSTALLATION: REFER TO ARCHITECTURAL DRAWINGS LUMINARE: LITHONIA #2AV G 2 32 ADP MVOLT 2/1 BPLP ALG
A2	DESCRIPTION: 2' X 4' FLUORESCENT, K12.125" PATTERN ACRYLIC LENS, SPECIFICATION PREMIUM STATIC TROFFER, 20 GA. ROLLED EDGE DIE-FORMED STEEL HOUSING, HINGED AND LATCHED FROM EITHER SIDE, ENCLOSED SPRING LOADED CAM LATCH, WHITE REGRESSED ALUMINUM DOOR WITH MITERED CORNERS, PAINTED AFTER FABRICATION. LAMP(S): 2 - FO32/841/ECO BALLAST(S): PROGRAM START ELECTRONIC BALLAST, <10% THD VOLTAGE: 120/277V MULTI-TAP BALLAST INSTALLATION: RECESSED LAY-IN GRID LUMINARE: LITHONIA #2GTB 2 32 RW A12125 MVOLT 2/1 BPLP
B	DESCRIPTION: RECESSED 36" CIRCULAR LENSED FIXTURE. FIXTURE SHALL BE PROVIDED AS FULLY TUNABLE RGBW DEVICE. COORDINATE WITH MANUFACTURER FOR PROVISION OF CONTROLLER AS REQUIRED FOR FIXTURE TUNABILITY. LAMP(S): LED BALLAST(S): INTEGRAL LED DRIVER VOLTAGE: 277V INSTALLATION: REFER TO ARCHITECTURAL DRAWINGS LUMINARE: LUMENWERX #PORCR-36-ULO-FH-LED-80-5000-XX-277-D-1-XXX-W
C	DESCRIPTION: 6" LED MEDIUM BEAM RETROFIT DOWNLIGHT WITH 50 DEGREE CUT OFF, TWO-STAGE REFLECTOR SYSTEM, DIE-CAST ALUMINUM HOUSING, UNIVERSAL MOUNTING BRACKET, EXTRUDED ALUMINUM HEAT SINK, FLEXIBLE DISCONNECT, INTEGRAL LED DIMMING DRIVER, LED REFLECTOR/POWER MODULE, WIDE BEAM, SEMI-SPECULAR CLEAR, MATTE WHITE SELF-FLANGED LENSED REFLECTOR, HIGH EFFICACY LAMP(S): 1 - LEDM6/13BRO BALLAST(S): LED DIMMING DRIVER 1% TO 100% DIMMING, 120V-277V LUTRON HI-LUME A-SERIES, <10% THD VOLTAGE: 120/277V MULTI-TAP DRIVER INSTALLATION: REFER TO ARCHITECTURAL DRAWINGS LUMINARE: LITHONIA #RV6-40/15-R/BAR-277-XXX
C2	DESCRIPTION: 6" LED MEDIUM BEAM DOWNLIGHT WITH 50 DEGREE CUT OFF, TWO-STAGE REFLECTOR SYSTEM, DIE-CAST ALUMINUM HOUSING, UNIVERSAL MOUNTING BRACKET, EXTRUDED ALUMINUM HEAT SINK, FLEXIBLE DISCONNECT, INTEGRAL LED DRIVER, LED REFLECTOR/POWER MODULE, WIDE BEAM, SEMI-SPECULAR CLEAR, MATTE WHITE SELF-FLANGED LENSED REFLECTOR, HIGH EFFICACY LAMP(S): LED - 4000K BALLAST(S): INTEGRAL LED DRIVER VOLTAGE: 120/277V MULTI-TAP DRIVER INSTALLATION: REFER TO ARCHITECTURAL DRAWINGS LUMINARE: GOTHAM #EVO 40/26 6AR MD LSS MVOLT EZ1
C3	DESCRIPTION: 6" LED SHOWER LIGHT, REGRESSED DEAD FRONT LENS, MATTE WHITE SELF FLANGED REFLECTOR, SPECULAR CLEAR ALZAK REFLECTOR FINISH, 20 GA. STEEL HOUSING, 18 GA. SUPPORTING YOKE ASSEMBLY, JUNCTION BOX FOR THRU WIRING, WITH MINIMUM 55% EFFICIENCY AND MAXIMUM 400 CANDELA/SQUARE METER IN 65-DEGREE CONE, UL LISTED FOR WET LOCATIONS, IP65. LAMP(S): LED - 4000K BALLAST(S): INTERGRAL LED DRIVER VOLTAGE: 120/277V MULTI-TAP DRIVER INSTALLATION: RECESSED LUMINARE: GOTHAM #EVO 40/15 6 DFR MVOLT EZ1
C4	DESCRIPTION: SURFACE MOUNTED UNDERCABINET PUCK LIGHT, 30 DEGREE BEAM SPREAD. PROVIDE ALL REQUIRED POWER SUPPLIES AND LOW VOLTAGE CABLES AS REQUIRED FOR A FULLY FUNCTION SYSTEM. LAMP(S): 197LUMEN LED - 4100K BALLAST(S): REMOTE DRIVER EQUAL TO MP #LED12W350IIB LOCATE PER ARCH. DRAWINGS. VOLTAGE: 120V INSTALLATION: REFER TO ARCHITECTURAL DRAWINGS LUMINARE: MP LIGHTING #LS7-S-3-W41S-N-NA-XXXX ALTERNATES AS APPROVED BY ARCHITECT
C5	DESCRIPTION: 3" DIAMETER LED RECESSED DOWNLIGHT, 20 DEGREE BEAM SPREAD. PROVIDE ALL REQUIRED POWER SUPPLIES AND LOW VOLTAGE CABLES AS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM. LAMP(S): 340LUMEN LED - 3500K BALLAST(S): REMOTE DRIVER EQUAL TO OPTOLUM #PS96-277-1-S-NODIM LOCATE PER ARCH. DRAWINGS. VOLTAGE: 277V INSTALLATION: REFER TO ARCHITECTURAL DRAWINGS LUMINARE: OPTOLUM #DLH-19-35-8-S-XXXX-A ALTERNATES AS APPROVED BY ARCHITECT
D	DESCRIPTION: LED STRIP FIXTURE FOR ILLUMINATION OF NURSE STATION SURFACE. MOUNT FIXTURE PER ARCHITECTURAL DRAWINGS AND SECTIONS. CONTRACTOR SHALL PROVIDE BOTH LED TAPE LIGHT AS SPECIFIED AND RACEWAY WITH LENS FOR A COMPLETE ASSEMBLY. LAMP(S): INTEGRAL LED BALLAST(S): REMOTE MOUNTED DRIVER LOCATE PER NOTE ON DRAWINGS VOLTAGE: 120V INSTALLATION: REFER TO ARCHITECTURAL DRAWINGS LUMINARE: VOLT LIGHTING #PH41K-24V ALTERNATE AS ALLOWED BY ARCHITECT.
EX, EX-R	DESCRIPTION: DEVICES MARKED AS EX ARE EXISTING TO REMAIN AND DEVICES LABELED EX-R ARE EXISTING TO BE RELOCATED WITHIN PROJECT SCOPE. CONTRACTOR SHALL CLEAN AND RELAMP ALL FIXTURES WITH THIS LABEL. LAMP(S): EXISTING BALLAST(S): EXISTING VOLTAGE: EXISTING INSTALLATION: EXISTING LUMINARE: EXISTING
F	DESCRIPTION: 6" X 4' PATIENT OVERBED TANDEM STYLE FIXTURES. REFER TO MANUFACTURER RECOMMENDATIONS FOR INSTALLATION, EACH PATIENT BED LOCATION REQUIRES (1) FIXTURE ON EACH SIDE OF THE BED. LAMP(S): (1) FO28/841/ECO & (2) FO54/841/ECO BALLAST(S): 2 - ELECTRONIC RAPID START BALLASTS <10% THD VOLTAGE: 277V INSTALLATION: REFER TO ARCHITECTURAL RCP LUMINARE: HEALTHCARE #HPT410-F-MVOLT-LV-SL-IAM

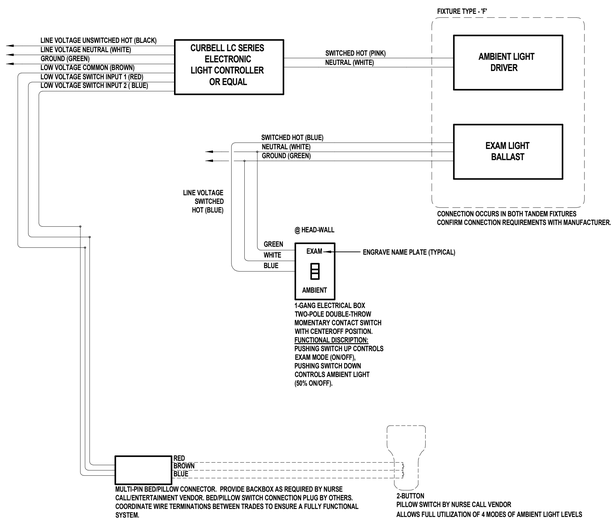
TYPE	DESCRIPTION
F2	DESCRIPTION: 2' X 4' PATIENT OVERBED MULTI-LEVEL DIRECT/INDIRECT STYLE FIXTURE. PROVIDE LOW VOLTAGE CONTROLLER ALLOWING AMBIENT/EXAM CONTROL AT THE HEADWALL AND AMBIENT/READING CONTROL AT THE PILLOW SWITCH. LAMP(S): LED - 4000K BALLAST(S): INTEGRAL LED DRIVER VOLTAGE: 277V INSTALLATION: REFER TO ARCHITECTURAL DRAWINGS LUMINARE: HEALTHCARE LIGHTING #HPT824 X 277 XXX LED40 FC100 LV3 1C DIM MW
NL	DESCRIPTION: LED NIGHT LIGHT, RECESSED MOUNTED 18 GA. STEEL BACK BOX, CAST ALUMINUM FACEPLATE, FINISH AS SELECTED BY ARCHITECT, POYESTER POWDERCOAT FINISH, WARM WHITE LED LAMPS, ZWATT. LAMP(S): LED - 3000K BALLAST(S): INTEGRAL LED DRIVER VOLTAGE: 120V/277V INSTALLATION: REFER TO ARCHITECTURAL DRAWINGS LUMINARE: HEALTHCARE-LIGHTING #HNL610 MVOLT LED30 XXXX

LIGHTING FIXTURE SCHEDULE NOTES :

1. SUBMIT LAMP DATA SHEETS WITH LIGHTING FIXTURE SUBMITTAL.
2. ALL LIGHTING FIXTURES SHALL BE SPECIFIED BY A MANUFACTURER LISTED IN THE SCHEDULE OR AN APPROVED SUBSTITUTION.
3. ALL FLUORESCENT BALLASTS SHALL BE ELECTRONIC. FOR FREQUENT START APPLICATIONS, USE PROGRAMMED START BALLASTS. SUBMIT BALLAST DATA SHEETS (INCLUDING HID) WITH LIGHTING FIXTURE SUBMITTAL.
4. ALL FLUORESCENT LAMPS SHALL BE LONG LIFE, HIGH ENERGY EFFICIENCY, HIGH PERFORMANCE.
5. ALL DIMMING BALLASTS SHALL BE MANUFACTURED BY LUTRON OR APPROVED SUBSTITUTION. SUBMIT DIMMING BALLAST DATA SHEETS WITH LIGHTING FIXTURE SUBMITTAL.
6. LOCATE ALL LIGHTING FIXTURES AS SHOWN ON ARCHITECTURAL REFLECTED CEILING PLANS. FOR THOSE LIGHTING FIXTURES NOT SHOWN ON THE RCP, LOCATE AS SHOWN ON ELECTRICAL PLANS.
7. PROVIDE FIXTURES WITH ALL FEED KITS, COUPLERS, END CAPS, SUPPORTS, CORNER FITTINGS, ETC. FOR A COMPLETE SYSTEM. SEE PLANS FOR EXACT CONFIGURATION.
8. T-8 AND T-5 FLUORESCENT LAMPS SHALL HAVE A COLOR TEMPERATURE OF 4100K.
9. CONTRACTOR SHALL VERIFY ALL CEILING TYPES, MOUNTING REQUIREMENTS, AND TRIM KITS WITH ARCHITECTURAL DRAWINGS.



02 TYPICAL PATIENT MULTI-MODE LIGHTING CONTROL DIAGRAM (F2)
NO SCALE



01 TYPICAL PATIENT MULTI-MODE LIGHTING CONTROL DIAGRAM (F)
NO SCALE

FEEDER SCHEDULE
600V MAX.

FEEDER TAG & AMPERE RATING	FEEDER DESCRIPTION
15.3, 20.3 15.4, 20.4	3#12, 1#12 G, 3/4" C 3#12, 1#12 N, 1#12 G, 3/4" C
25.3, 30.3 25.4, 30.4	3#10, 1#10 G, 3/4" C 3#10, 1#10 N, 1#10 G, 3/4" C
35.3, 40.3 35.4, 40.4	3#8, 1#10 G, 3/4" C 3#8, 1#8 N, 1#10 G, 3/4" C
45.3, 50.3 45.4, 50.4	3#6, 1#10 G, 3/4" C 3#6, 1#6 N, 1#10 G, 1" C
60.3 60.4	3#4, 1#10 G, 1" C 3#4, 1#4 N, 1#10 G, 1 1/4" C
70.3 70.4	3#4, 1#8 G, 1" C 3#4, 1#4 N, 1#8 G, 1-1/4" C
80.3 80.4	3#3, 1#8 G, 1-1/4" C 3#3, 1#3 N, 1#8 G, 1-1/4" C
90.3 90.4	3#2, 1#8 G, 1-1/4" C 3#2, 1#2 N, 1#8 G, 1-1/4" C
100.3 100.4	3#1, 1#8 G, 1-1/4" C 3#1, 1#1 N, 1#8 G, 1-1/2" C
110.3 110.4	3#1, 1#6 G, 1-1/4" C 3#1, 1#1 N, 1#6 G, 1-1/2" C
125.3, 150.3 125.4, 150.4	3#1/0, 1#6 G, 1-1/2" C 3#1/0, 1#1/0 N, 1#6 G, 2" C
175.3 175.4	3#2/0, 1#6 G, 2" C 3#2/0, 1#2/0 N, 1#6 G, 2" C
200.3 200.4	3#3/0, 1#6 G, 2" C 3#3/0, 1#3/0 N, 1#6 G, 2" C
225.3 225.4	3#4/0, 1#4 G, 2" C 3#4/0, 1#4/0 N, 1#4 G, 2-1/2" C
250.3 250.4	3#250KCM, 1#4 G, 2-1/2" C 3#250KCM, 1-250KCM N, 1#4 G, 2-1/2" C
300.3 300.4	3#350KCM, 1#4 G, 2-1/2" C 3#350KCM, 1-350KCM N, 1#4 G, 3" C
350.3 350.4	3#500KCM, 1#3 G, 3" C 3#500KCM, 1-500KCM N, 1#3 G, 3-1/2" C
400.3 400.4	2 SETS EACH OF [3#3/0, 1#3 G, 2" C] 2 SETS EACH OF [3#3/0, 1#3/0 N, 1#3 G, 2-1/2" C]
450.3 450.4	2 SETS EACH OF [3#4/0, 1#2 G, 2" C] 2 SETS EACH OF [3#4/0, 1#4/0 N, 1#2 G, 2-1/2" C]
500.3 500.4	2 SETS EACH OF [3#250KCM, 1#2 G, 2-1/2" C] 2 SETS EACH OF [3#250KCM, 1#250KCM N, 1#2 G, 2-1/2" C]
600.3 600.4	2 SETS EACH OF [3#350KCM, 1#1 G, 2-1/2" C] 2 SETS EACH OF [3#350KCM, 1#350KCM N, 1#1 G, 2-1/2" C]

DEMAND FACTOR TABLE

LOAD TYPES	FACTORS										NEC REFERENCE
LIGHTS	1.00										220.42
RECEPTACLES	0-10kVA	>10kVA									
	1.00	0.50									220.44
MOTORS	MAX	ALL OTHERS									
	1.25	1.00									220.50
HOSPITAL	0-50kVA	>50kVA									
	0.40	0.20									220.42 & 220.44
DIAGNOSTIC	1 PIECE OF EQUIPMENT		OVER 1 PIECE OF EQUIPMENT								
	1		1	2	3 or more						
	1.00		0.50	0.25	0.15						517.73(2)
ELEVATOR	1	2	3	4	5	6	7	8	9	10 or more	
	1.00	0.95	0.9	0.85	0.82	0.79	0.77	0.75	0.73	0.72	620.14
KITCHEN	1	2	3	4	5	6 or more					
	1.00	1.00	0.90	0.80	0.70	0.65					220.56
HEAT	1.00										220.51
MISCELLANEOUS	1.00										210.19
MISCELLANEOUS 2	1.00										

TRANSFORMER SCHEDULE
GENERAL PURPOSE- 480V-208Y/120V

KVA	PRIMARY FEEDER DESCRIPTION	GROUNDING ELECTRODE	SECONDARY FEEDER DESCRIPTION WITH SYSTEM/EQUIPMENT BONDING JUMPER
6	3#12, 1#12 G, 3/4" C	1#8	3#12, 1#12 N, 1#8 G, 3/4" C
9	3#12, 1#12 G, 3/4" C	1#8	3#10, 1#10 N, 1#8 G, 3/4" C
15	3#10, 1#10 G, 3/4" C	1#8	3#4, 1#4 N, 1#6 G, 1-1/4" C
30	3#4, 1#10 G, 1" C	1#6	3#1, 1#1 N, 1#6 G, 1-1/2" C
45	3#2, 1#6 G, 1-1/4" C	1#6	3#1/0, 1#1/0 N, 1#6 G, 2" C
75	3#1/0, 1#6 G, 1-1/2" C	1#2	3#250KCM, 1#250KCM N, 1#2 G, 3" C
112.5	3#4/0, 1#4 G, 2" C	1#2	2 SETS EACH OF [3#3/0, 1#3/0 N, 1#2 G, 2-1/2" C]
150	3#350KCM, 1#4 G, 2-1/2" C	1#1/0	2 SETS EACH OF [3#250KCM, 1#250KCM N, 1#1/0 G, 3" C]
225	2 SETS EACH OF [3#4/0, 1#2 G, 2" C]	1#2/0	3 SETS EACH OF [3#300KCM, 1#300KCM N, 1#2/0 G, 3" C]
300	2 SETS EACH OF [3#350KCM, 1#1 G, 3" C]	1#3/0 1#4/0	3 SETS EACH OF [3#400KCM, 1#400KCM N, 1#3/0 G, 3-1/2" C] 4 SETS EACH OF [3#350KCM, 1#350KCM N, 1#4/0 G, 3" C]

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CONTRACT & SPECIFICATION CONSTRUCTION

Consultant Team

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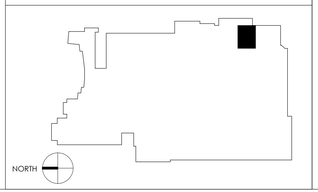
No.	Description	Date

COLORADO LICENSED ELECTRICAL ENGINEER 43940 PROFESSIONAL ENGINEER 8/5/2016

City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: *Erick B.*
Date: *Sep 01, 2016*
2015 INTERNATIONAL CODES & 2014 NEC

RSN: *1142126*
Permit #: *16-1162585*

KEY PLAN



TMCA - 3rd Floor Peds Renovation

1501 S Potomac St, Aurora, CO 80012

Issue	FOR CONSTRUCTION
Date	AUGUST 05, 2016
Project Number	16-018
Drawn by	JD
Checked by	TF

Sheet Title:
ELECTRICAL SCHEDULES

Sheet Number
E.802

8/5/2016 8:30:54 PM

COMcheck Software Version 4.0.4.0
Interior Lighting Compliance Certificate

Project Information

Energy Code:	2015 IECC
Project Title:	TMCA - Peds 3rd Floor
Project Type:	Alteration

Construction Site: Owner/Agent: Designer/Contractor:

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Healthcare Facility:Nurses Station	116	0.71	82
2-Healthcare Facility:Corridor/Transition >=8 ft wide	1008	0.79	796
3-Healthcare Facility:Patient Room	2250	0.62	1395
4-Healthcare Facility:Medical Supply	559	0.74	414
5-Healthcare Facility:Lounge/Breakroom	347	0.92	319
		Total Allowed Watts =	3007

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Healthcare Facility:Nurses Station (116 sq.ft.)				
LED 2: C: LED Other Fixture Unit 36W:	1	4	28	112
Linear Fluorescent 3: EX: 24" T8 17W: Electronic:	2	2	28	56
Healthcare Facility:Corridor/Transition >=8 ft wide (1008 sq.ft.)				
Linear Fluorescent 1: EX: 48" T8 32W: Electronic: Exemption:Exit Signs, Safety or Emergency Lighting	2	4	58	Exempt
Linear Fluorescent 2: EX-R: 48" T8 32W: Electronic: Exemption:Exit Signs, Safety or Emergency Lighting	2	6	58	Exempt
LED 1: B: LED Panel 60W:	1	2	64	128
Healthcare Facility:Patient Room (2250 sq.ft.)				
Linear Fluorescent 8: F-EXAM: 46" T5 HO 54W: Electronic: Exemption:Medical/Dental Procedure Lighting	2	4	108	Exempt
Linear Fluorescent 9: F-AMB: 46" T5 28W: Electronic:	1	4	28	112
LED 3: C4: LED MR 6W:	1	14	12	168
LED 4: C2: LED Panel 33W:	1	40	32	1280
LED 5: C3: LED Panel 33W:	1	9	32	288
LED 6: NL: LED MR 6W:	1	14	5	70
LED 7: F2: LED Panel 110W: Exemption:Medical/Dental Procedure Lighting	1	5	108	Exempt
Healthcare Facility:Medical Supply (559 sq.ft.)				
Linear Fluorescent 6: A: 48" T8 32W: Electronic:	2	3	58	174
Linear Fluorescent 7: A2: 48" T8 32W: Electronic:	2	6	58	348
Healthcare Facility:Lounge/Breakroom (347 sq.ft.)				

RSN: *1142126*
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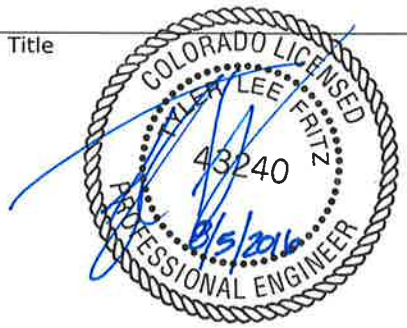
A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Linear Fluorescent 4: A: 48" T8 32W: Electronic:	2	4	58	232
Linear Fluorescent 5: EX-R: 24" T8 17W: Electronic:	2	1	28	28
			Total Proposed Watts =	2996

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2015 IECC requirements in COM*check* Version 4.0.4.0 and to comply with the mandatory requirements listed in the Inspection Checklist.

Name - Title



Signature

Date

RSN: *1142126*
Permit #: *16-1162585*