SPECIFICATIONS FOR NW DISTRICT ADA RESTROOM RENOVATIONS

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01019

CONTRACT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Schedule of values.
B. Application for payment.
C. Change procedures.
D. Alternatives.

1.2 RELATED SECTIONS

A. Section 01600 - Material and Equipment: Product substitutions.

1.3 SCHEDULE OF VALUES

A. Submit a printed schedule on Contractor's standard form. Electronic media printout will be considered.

B. Submit Schedule of Values in duplicate within 20 days after date of Owner-Contractor Agreement.

C. Revise schedule to list approved Change Orders, with each Application For Payment.

1.4 APPLICATIONS FOR PAYMENT

A. Submit four copies of each application on Contractor's electronic media driven form.
B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
C. Payment Period: 30 days.
D. Submit waiver of liens from vendors.
E. Include an updated construction progress schedule.
F. Certified payroll records.

1.5 CHANGE PROCEDURES

A. The Architect/Engineer/Designer may issue a Notice of Change that includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required.

B. The Contractor may propose changes by submitting a request for change to the Architect/Engineer/Designer describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, the effect on the Contract Sum/Price and Contract Time, and a statement describing the effect on Work by the MoDOT District or other Contractors.

C. Stipulated Sum/Price Change Order: Based on Notice of Change and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Architect/Engineer/Designer.

D. Construction Change Directive: Architect/Engineer/Designer may issue a directive instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute the change.

E. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract. Architect/Engineer/Designer will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.

F. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

G. Execution of Change Orders: Architect/Engineer/Designer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.6 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specify requirements.

B. If, in the opinion of the Architect/Engineer/Designer, it is not practical to remove and replace the Work, the Architect/Engineer/Designer will direct an appropriate remedy or adjust payment.

1.7 ALTERNATIVES

A. Accepted Alternatives will be identified in Owner-Contractor Agreement.

END OF SECTION

01039

COORDINATION AND MEETING REQUIREMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coordination and project conditions.
B. Preconstruction meeting.
C. Cutting and Patching.
D. Alteration project procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to and placing in service, such equipment.
C. Coordinate space requirements, supports, and installation of mechanical and electrical Work, which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
D. In finished areas, except as otherwise indicated, conceal pipes, ducts and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
E. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion.
F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 PRECONSTRUCTION MEETING

A. Architect/Engineer/Designer will schedule a meeting.
B. Attendance Required: District representative, Architect/Engineer/Designer and Contractor.
C. Record minutes and distribute copies within 5 days after meeting to participants, with two copies to District, Architect/Engineer/Designer, participants and those affected by decisions made.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching.
B. Submit written request in advance of cutting or altering elements, which affect:
    1. Structural integrity of element.
    2. Integrity of weather-exposed or moisture-resistant elements.
    3. Work of Owner or separate contractor.
C. Execute cutting, fitting, and patching to complete Work, and to:
    1. Uncover Work to install or correct ill-timed Work.
    2. Remove and replace defective and non-conforming Work.
    3. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Cut masonry and concrete materials using masonry saw or core drill.
E. Fit Work tight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
F. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
G. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
H. Identify hazardous substances or conditions exposed during the Work to the Architect/Engineer/Designer for decision or remedy.

3.2 ALTERATION PROJECT PROCEDURES

A. Materials: As specified in Product sections; match existing Products and work for patching and extending work.
B. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Architect/Engineer/Designer for review.
C. Patch or replace portions of existing surfaces that are damaged, lifted, discolored or showing other imperfections.
D. Finish surfaces as specified in individual Product sections.

END OF SECTION

01300

SUBMITTAL REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.
B. Construction progress schedules.
C. Proposed Products list.
D. Product Data.
E. Shop Drawings.
F. Manufacturer's instructions.

1.2 RELATED SECTIONS

A. Section 01300 - Submittals
B. Section 01400 - Quality Control: Manufacturers' field services and reports.
C. Section 01700 - Contract Closeout: Contract warranties, bonds, manufacturers' certificates and closeout submittals.

1.3 REFERENCES

A. AGC Associated General Contractors of America publication "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".

1.4 SUBMITTAL PROCEDURES

A. Transmit each submittal with Architect/Engineer/Designer accepted form.
B. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number and specification section number, as appropriate.
C. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work and coordination of information is in accordance with the requirements of the Work and Contract Documents.
D. Schedule submittals to expedite the Project, and deliver to Architect/Engineer/Designer at business address. Coordinate submission of related items.
E. For each submittal for review, allow 15 days excluding delivery time to and from the contractor.
F. Identify variations from Contract Documents and Product or system limitations, which may be detrimental to successful performance of the completed Work.
G. Submittals not requested will not be recognized or processed.

1.5 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial schedule in duplicate within 15 days after date established in Notice to Proceed.
B. Revise and resubmit as required.
C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
D. Submit a horizontal bar chart with separate line for each major portion of Work or operation, identifying first workday of each week.

1.6 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name and model number of each product.
B. For products specified only by reference standards, give manufacturer, trade name, model or

catalog designation and reference standards.

1.7 PRODUCT DATA

A. Product Data for Review:
   1. Submitted to Architect/Engineer/Designer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
   2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.

B. Product Data for Information:
   1. Submitted for the Architect/Engineer/Designer's knowledge as contract administrator or for the Owner.

C. Product Data for Project Closeout:
   1. Submitted for the Owner's benefit during and after project completion.

D. Submit the number of copies, which the Contractor requires, plus two copies that will be retained by the Architect/Engineer/Designer.

E. Mark each copy to identify applicable products, models, options and other data. Supplement manufacturers' standard data to provide information specific to this Project.

F. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01700 - CONTRACT CLOSEOUT.

1.8 SHOP DRAWINGS

A. Shop Drawings for Review:
   1. Submitted to Architect/Engineer/Designer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
   2. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.

B. Shop Drawings for Information:
   1. Submitted for the Architect/Engineer/Designer's knowledge as contract administrator or for the Owner.

C. Shop Drawings For Project Closeout:
   1. Submitted for the Owner's benefit during and after project completion.

D. Indicate special utility and electrical characteristics, utility connection requirements and location of utility outlets for service for functional equipment and appliances.

E. Submit in the form of one reproducible transparency and one opaque reproduction.

1.9 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, and start-up, adjusting and finishing, to Architect/Engineer/Designer for delivery to owner in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention and special environmental criteria required for application or installation.

C. Refer to Section 01400 - Quality Control, Manufacturers' Field Services article.

END OF SECTION

01400

QUALITY CONTROL REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality assurance - control of installation.
B. Tolerances
C. References and standards.

1.2 RELATED SECTIONS

A. Section 01300 - Submittals: Submission of manufacturers' instructions and certificates.
B. Section 01600 - Material and Equipment: Requirements for material and product quality.
C. Section 01650 - Starting of Systems.

1.3 QUALITY ASSURANCE - CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions and workmanship, to produce Work of specified quality.
B. Comply with manufacturers' instructions, including each step in sequence.
C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer/Designer before proceeding.
D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes or specified requirements indicate higher standards or more precise workmanship.
E. Perform Work by persons qualified to produce required and specified quality.
F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.4 TOLERANCES

A. Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.
B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer/Designer before proceeding.
C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.5 REFERENCES AND STANDARDS

A. For Products or workmanship specified by association, trade or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
B. Conform to reference standard by date of issue current on date for receiving bids or date specified in the individual specification sections, except where a specific date is established by code.
C. Neither the contractual relationships, duties or responsibilities of the parties in Contract nor those of the Architect/Engineer/Designer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

PART 2 EXECUTION

2.1 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.

2.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.
B. Seal cracks or openings of substrate prior to applying next material or substance.
C. Apply manufacturer required or recommended substrate primer, sealer or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROL REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Temporary Controls: protection of the Work.
B. Construction Facilities: progress cleaning.

1.2 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification sections.
B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.
C. Provide protective coverings at walls, projections, jambs, sills and soffits of openings.
D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage or movement of heavy objects, by protecting with durable sheet materials.
E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
F. Prohibit traffic from landscaped areas.

1.3 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.
B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces and other closed or remote spaces, prior to enclosing the space.
C. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.
D. Collect and remove waste materials, debris and rubbish from site periodically and dispose off-site.
E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.15 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

01600

MATERIAL AND EQUIPMENT REQUIREMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Products.
B. Transportation and handling.
C. Storage and protection.
D. Product options.
E. Substitutions.

1.2 RELATED SECTIONS

A. Instructions to Bidders: Product options and substitution procedures.
B. Section 01400 - Quality Control: Product quality monitoring.

1.3 PRODUCTS

A. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
B. Provide interchangeable components of the same manufacture for components being replaced.

1.4 TRANSPORTATION AND HANDLING

A. Transport and handle Products in accordance with manufacturer's instructions.
B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct and products are undamaged.
C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement or damage.

1.5 STORAGE AND PROTECTION

A. Store and protect Products in accordance with manufacturers' instructions.
B. Store with seals and labels intact and legible.
C. Store sensitive Products in weather tight, climate controlled, enclosures in an environment favorable to Product.
D. For exterior storage of fabricated Products, place on sloped supports above ground.
E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
F. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
H. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement or damage.
I. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.6 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description is acceptable.
B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and

meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

1.7 SUBSTITUTIONS

A. Architect/Engineer/Designer will consider requests for Substitutions only within 15 days after date established in Notice to Proceed.

B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

D. A request constitutes a representation that the Contractor:

1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
2. Will provide the same warranty for the Substitution as for the specified Product.
3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Will reimburse Owner for review or redesign services associated with re-approval by authorities.

E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request or when acceptance will require revision to the Contract Documents.

F. Substitution Submittal Procedure:

1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
2. Submit shop drawings, product data and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
3. The Architect/Engineer/Designer will notify Contractor in writing of decision to accept or reject request.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

01650

STARTING OF SYSTEMS REQUIREMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Starting systems.
B. Demonstration and instructions.
C. Testing, adjusting and balancing.

1.2 RELATED SECTIONS

A. Section 01400 - Quality Control: Manufacturers field reports.
B. Section 01700 - Contract Closeout: System operation and maintenance data and extra materials.

1.3 STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.
B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, and control sequence and for conditions that may cause damage.
C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
D. Verify that wiring and support components for equipment are complete and tested.
E. Submit a written report in accordance with Section 01300 that equipment or system has been properly installed and is functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of Final Completion.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

01700

CONTRACT CLOSEOUT REQUIREMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Closeout procedures.
B. Final cleaning.
C. Adjusting.
D. Project record documents.
E. Operation and maintenance data.
F. Spare parts and maintenance Products.
G. Warranties.

1.2 RELATED SECTIONS

A. Section 01500 - Construction Facilities and Temporary Controls: Progress cleaning.
B. Section 01650 - Starting of Systems: System start-up, testing, adjusting and balancing.

1.3 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer/Designer's review.
B. Provide submittals to Owner that is required by governing or other authorities.
C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments and sum remaining due.
D. Owner will occupy portions of the building as specified in Section 01010.

1.4 FINAL CLEANING

A. Execute final cleaning prior to final project assessment. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
B. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
C. Clean or replace filters of operating equipment used during construction and/or adjustment.
D. Clean debris from roofs, gutters, downspouts and drainage systems.
E. Clean site; sweep paved areas, rake clean landscaped surfaces.
F. Remove waste and surplus materials, rubbish and construction facilities from the site.

1.5 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.6 PROJECT RECORD DOCUMENTS

A. Store record documents separate from documents used for construction.
B. Record information concurrent with construction progress.

C. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.

3. Changes made by Addenda and modifications.

D. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish main floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.

E. Submit documents to Architect/Engineer/Designer'swith claim for final Application for Payment.

1.7 OPERATION AND MAINTENANCE DATA

A. Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project and subject matter of binder when multiple binders are required.

C. Internally subdivide the binder contents with permanent page dividers, logically organized; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Submit 1 draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned with Architect/Engineer/Designer comments. Revise content of all document sets as required prior to final submission.

E. Submit two sets of revised final volumes, within 10 days after final inspection.

1.8 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra Products in quantities specified individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

1.9 WARRANTIES

A. Execute and assemble transferable warranty documents from Subcontractors, suppliers and manufacturers.

B. Submit prior to final Application for Payment.

C. For items of Work delayed beyond date of Final Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of the warranty period.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

02050

DEMOLITION

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. The work to be done under these Specifications shall include all labor, materials, equipment and services necessary to complete all demolition of designated components; disconnecting abandon utilities, and removing utilities as noted on Plan.

PART 2 PRODUCTS

This Section not used.

PART 3 EXECUTION

3.1 PROTECTION OF EXISTING FACILITIES

A. The contractor shall, as soon as he receives a Notice to Proceed with work, enter the premises and do any and all things necessary to protect the premises from damage by unauthorized persons. The contractor shall protect all existing equipment, pavements, tracks, poles, pipes, utilities, etc., which are not affected by demolition work.

3.2 DEMOLITION REQUIREMENTS

The work under this contract shall consist of the following:

A. Demolition and removal of all components as shown on the plans.
B. Provide, erect, and maintain temporary barriers and security devices.
C. Protect existing areas that are not to be demolished.
D. Disconnect cap and identify designated utilities. See Plan for specific instructions.
   1. Seal sanitary sewer lines being demolished at the floor/wall.
   2. Disconnect electric wires as per rules and regulations of authorities having jurisdiction.
   3. The contractor shall arrange removal of any other wires.
   4. Maintain and preserve utilities traversing premises as long as same are required.
E. Demolish components indicated in an orderly and careful manner.
B. Perform all other incidental work necessary to fully complete the contract.
F. All rubbish, non-reusable fill, debris, equipment, etc., resulting from demolition work shall be removed from the premises during and-or upon completion of work, leaving the site area acceptable to the satisfaction of the owner.
G. The contractor shall furnish the disposal site for all demolition materials.
H. The contractor shall take whatever steps necessary to control dust during demolition and removal.

END OF SECTION

03505

SELF-LEVELING UNDERLAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Liquid applied, gypsum based self-leveling floor underlayment.

1.2 RELATED SECTIONS

A. Section 03346 - Concrete Floor Finishing: Concrete floor substrate.

1.3 REFERENCES

A. ASTM C472 - Method for Physical Testing of Gypsum Plasters and Gypsum Concrete.
B. ASTM E286 - Test Method for Surface Flammability of Building Materials Using a Tunnel Furnace.

1.4 SUBMITTALS FOR REVIEW

A. Section 01300 - Submittals: Procedures for submittals.
B. Product Data: Provide physical characteristics and product limitations.

1.5 SUBMITTALS FOR INFORMATION

A. Section 01300 - Submittals: Procedures for submittals.
B. Manufacturer's Instructions: Indicate mix instructions.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Section 01600 - Material and Equipment: Environmental conditions affecting products on site.
B. Do not install underlayment until floor penetrations and peripheral work are complete.
C. Maintain minimum ambient temperatures of 24 hours before, during and 72 hours after installation of underlayment.
D. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS

2.1 MATERIALS

A. Underlayment: Gypsum based mix.
B. Water: Potable and not detrimental to underlayment mix materials.
C. Primer: Manufacturer's recommended type.
D. Joint and Crack Filler: Latex based.

2.2 MIXING

A. Site mix materials in accordance with manufacturer's instructions.
B. Mix to achieve following characteristics:
    1. Density: minimum dry density.
    2. Compressive Strength: minimum in accordance with ASTM C472.
    3. Fire Hazard Classification: Flame/Smoke rating of 0/0 in accordance with ASTM E286.
C. Mix to self-leveling consistency.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01039 - Coordination and Meetings: Verification of existing conditions prior to beginning work.
B. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum bi-products or other compounds detrimental to underlayment material bond to substrate.

3.2 PREPARATION

A. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
B. Vacuum clean surfaces.
C. Prime substrate in accordance with manufacturer's instructions. Allow it to dry.
D. Close floor openings.

3.3 APPLICATION

A. Install underlayment in accordance with manufacturer's instructions.
B. Place to thickness indicated.

3.4 CURING

A. Air cure in accordance with manufacturer's instructions.

3.5 APPLICATION TOLERANCE

A. Top Surface: Level to 1/8 inch per foot.

3.6 FIELD QUALITY CONTROL

A. Section 01400 - Quality Assurance: Field inspection.
B. Placed Material: Inspecting for conformance to specification requirements.

3.7 PROTECTION OF FINISHED WORK

A. Section 01700 - Contract Closeout: Protecting installed work.
B. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION

06112

FRAMING AND SHEATHING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Structural wall and ceiling framing.
B. Preservative treatment of wood.
C. Fire retardant treatment of wood.
D. Miscellaneous framing and sheathing.
E. Concealed wood blocking for support of toilet and bath accessories, wall cabinets and wood trim.

1.2 RELATED SECTIONS

A. Sections 08111 and 08520: Window and Door openings to receive wood blocking.

1.3 REFERENCES

A. ALSC (American Lumber Standards Committee) - Softwood Lumber Standards.
C. NFPA (National Forest Products Association).
D. SPIB (Southern Pine Inspection Bureau).
E. WCLIB (West Coast Lumber Inspection Bureau).
F. WWPA (Western Wood Products Association).

1.4 SUBMITTALS FOR REVIEW

A. Shop Drawings For Site Fabricated Truss Frame: Indicate dimensions, wood species and grades, component profiles, drilled holes, fasteners, connectors, erection details and sequence.

1.5 QUALITY ASSURANCE

A. In lieu of grade stamping exposed to view lumber and plywood, submit manufacturer's certificate certifying that products meet or exceed specified requirements.
B. Design structural shop fabricated trusses under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State of Missouri.

1.6 DELIVERY, STORAGE AND PROTECTION

A. Section 01600 - Material and Equipment: Transport, handle, store and protect products.
B. Protect trusses from warping or other distortion by stacking in vertical position, braced to resist movement.

PART 2 PRODUCTS

2.1 ACCESSORIES

A. Fasteners and Anchors:
1. Fasteners: Hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.

PART 3 EXECUTION

3.1 FRAMING

A. Set structural members level and plumb, in correct position.
B. Make provisions for erection loads and for sufficient temporary bracing to maintain structure safe, plumb and in true alignment until completion of erection and installation of permanent bracing.
C. Place horizontal members, crown side up.
D. Construct load bearing framing members' full length without splices.
E. Double members at openings over 24 inches wide. Space short studs over and under opening to stud spacing.
F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists. Framed rigidly into joists.
G. Bridge joists or other framing in excess of 8 feet span at mid-span. Fit solid blocking at ends of members.
H. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joint 4 inches.
I. Coordinate installation of wood decking, wood chord metal joists, glue laminated structural units, prefabricated wood trusses or plywood web joists.

3.2 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.
B. Surface Flatness of Floor: 1/4 inch in 10 feet maximum and 1/2 inch in 30 feet maximum.

END OF SECTION

07210

BUILDING INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Provide building insulation where indicated on the Drawings, as specified herein and as needed for a complete and proper installation.

B. Related work:

1. Documents affecting work of this Section include but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Upon completion of this portion of the Work, complete and post a certificate of insulation compliance in accordance with pertinent requirements of governmental agencies having jurisdiction.

1.3 DELIVERY, STORAGE AND HANDLING

A. Comply with pertinent provisions of Section 01620.

PART 2 PRODUCTS

2.1 MATERIALS

A. Provide the following building insulation where shown on the Drawings or otherwise needed to achieve the degree of insulation required under pertinent regulations of governmental agencies having jurisdiction.

1. Interior Wall Insulation - 3-1/2" thick, unfaced glass fiber acoustical insulation complying with ASTM 665, Type I. Equal to Owens-Corning Fiberglass Corporation, Toledo, Ohio 43659. (Typical of all interior walls).

2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Remove, or protect against, projections in construction framing that may damage or prevent proper insulation.

3.2 INSTALLATION

A. Install the work of this Section in strict accordance with the original design, requirements of governmental agencies having jurisdiction, and the manufacturer's recommended installation procedures as approved by the Architect, anchoring all components firmly into position.

END OF SECTION

07900

JOINT SEALERS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Sealants and joint backing.
B. Precompressed foam sealers.
C. Hollow gaskets.

1.2 RELATED SECTIONS

A. Section 07311: Sealants required in conjunction with waterproofing.
B. Section 09260 - Gypsum Board Systems: Acoustic sealant.

1.3 REFERENCES

A. ASTM C834 - Standard Specification for Latex Sealing Compounds.
B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
C. ASTM C1193 - Standard Guide for Use of Joint Sealants.
D. ASTM D1056 - Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.
B. Applicator Qualifications: Company specializing in performing the work of this section and approved by manufacturer.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.6 COORDINATION

A. Section 01039 - Coordination and Meetings: Coordination requirements.
B. Coordinate the work with all sections referencing this section.

1.7 WARRANTY

A. Section 01700 - Warranties.
B. Correct defective work within a five-year period after Date of Substantial Completion.
C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal and exhibit loss of adhesion or cohesion or do not cure.

1.8 SEALANTS

A. Type I - General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, single component, paintable.
    1. .Standard colors matching finished surfaces. Applications: Use for:
        a. Interior wall and ceiling control joints.
        b. Joints between door and window frames and wall surfaces.

c. Other interior joints for which no other type of sealant is indicated.

B. Type II - Bathtub/Tile Sealant: White silicone; ASTM C920, Uses M and A; single component, mildew resistant.

1. Applications: Use for:

a. Joints between plumbing fixtures and floor and wall surfaces.

PART 2 PRODUCTS

2.2 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D1056, sponge or expanded rubber; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate surfaces and joint openings are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

A. Remove loose materials and foreign matter that might 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 disfiguration.

3.3 INSTALLATION

A. Perform installation in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C .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.

D. Install sealant free of air pockets, foreign embedded matter, ridges and sags.

E. Tool joints concave.

3.4 CLEANING

A. Clean adjacent soiled surfaces.

3.5 PROTECTION OF FINISHED WORK

A. Protect sealants until cured.

END OF SECTION

08111

STANDARD STEEL DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Non-rated, fire rated and thermally insulated steel doors and panels.

1.2 RELATED SECTIONS

A. Section 08112 - Standard Steel Frames.
B. Section 08710 - Door Hardware.
C. Section 09900 - Painting: Field painting of doors.

1.3 REFERENCES

A. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
B. ASTM A525 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
C. ASTM E152 - Methods of Fire Tests of Door Assemblies.
D. NFPA 80 - Fire Doors and Windows.
E. NFPA 252 - Fire Tests for Door Assemblies.
F. SDI-100 - Standard Steel Doors and Frames.
G. UL 10B - Fire Tests of Door Assemblies.

1.4 SUBMITTALS FOR REVIEW

A. Section 01300 - Submittals: Procedures for submittals.
B. Shop Drawings: Indicate door elevations, internal reinforcement, closure method and cutouts for glazing and louvers.

1.5 SUBMITTALS FOR INFORMATION

A. Section 01300 - Submittals: Procedures for submittals.
B. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

A. Manufacturer: Specializing in manufacturing products specified in this section with three years experience.

1.7 REGULATORY REQUIREMENTS

A. Installed Door and Panel Assembly: Conform to NFPA 80 for fire rated class as scheduled.

1.8 DELIVERY, STORAGE AND PROTECTION

A. Section 01600 - Material and Equipment: Transport, handle, store and protect products.
B. Accept doors on site in manufacturer's packaging. Inspect for damage.
C. Break seal on site to permit ventilation.

1.9 PROJECT CONDITIONS

A. Section 01039 - Coordination and Meetings.
B. Coordinate frame installation with size, location, and installation of service utilities.
C. Coordinate the work with door opening construction, doorframes and door hardware installation.
D. Sequence installation to ensure wire connections are achieved in an orderly and expeditious manner.

PART 2 PRODUCTS

2.1 ACCEPTABLE PRODUCTS:

A. Allied Steel Products, Inc.
B. Amweld/Div. American Welding & Mfg. Co.
C. Ceco Corp.
D. Curries Mfg., Inc.
E. Pioneer Builders Products Corp./Div. CORE Industries, Inc.
F. Steelcraft/Div. American Standard Co.
G. Republic Builders Products Corp./Subs. Republic Steel.

2.2 DOORS AND PANELS

A. Fabricate doors with hardware reinforcement welded in place.
B. Attach fire rated label to each fire rated door unit.
C. Type and Design:
    1. Tightly hemmed vertical seam on lock and hinge edges, with top flush channel and beveled lock edge, in the dimensions and types shown on the drawings, reinforced for the finish hardware being provided under Section 08710 of these Specifications, and in the following gauges:
        a. Interior Doors: 18 gauge honeycomb core. Labeled and/or Non-labeled.

2.3 FINISH

A. Steel Sheet: Exterior doors to be galvanized to ASTM A525.
B. Primer: Air-dried.
C. Paint per Specification Section 09900: color as selected.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01039 - Coordination and Meetings: Verification of existing conditions before starting work.
B. Verify that opening sizes and tolerances are acceptable.

3.2 INSTALLATION

A. Install doors in accordance with SDI-100 and DHI.
B. Coordinate installation of doors with installation of frames and hardware specified in Section 08710.
C. Touch-up finished doors.

3.3 ERECTION TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.4 ADJUSTING

A. Section 01650 - Starting of Systems: Adjusting installed work.
B. Adjust door for smooth and balanced door movement.

3.5 SCHEDULE

A. Refer to Door and Frame Schedule on architectural drawings.

END OF SECTION

08112

STANDARD STEEL FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Non-rated and fire rated steel frames.

1.2 RELATED SECTIONS

A. Section 08111 - Standard Steel Doors.
B. Section 08710 - Door Hardware: Hardware, silencers and weather stripping.

1.3 REFERENCES

A. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
B. ASTM A525 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
C. ASTM E152 - Methods of Fire Tests of Door Assemblies.
D. DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
E. NFPA 80 - Fire Doors and Windows.
F. NFPA 252 - Fire Tests for Door Assemblies.
G. SDI-100 - Standard Steel Doors and Frames.
H. UL 10B - Fire Tests of Door Assemblies.

1.4 SUBMITTALS FOR REVIEW

A. Section 01300 - Submittals: Procedures for submittals.
B. Shop Drawings: Indicate frame elevations, reinforcement, anchor types and spacing, location of cutouts for hardware and finish.

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.6 REGULATORY REQUIREMENTS

A. Fire Rated Frame Construction: Conform to NFPA 252 or UL 10B.
B. Installed Frame Assembly: Conform to NFPA 80 for fire rated class same as fire door.

1.7 DELIVERY, STORAGE AND PROTECTION

A. Section 01600 - Material and Equipment: Transport, handle, store and protect products.
B. Accept frames on site in manufacturer's packaging. Inspect for damage.

1.8 PROJECT CONDITIONS

A. Section 01039 - Coordination and Meetings.
B. Coordinate the work with frame opening construction, door and hardware installation.

C. Sequence installation to ensure wire connections are achieved in an orderly and expeditious manner.

1.9 FRAMES

A. Frames: To suit SDI-100 Grade and Model of door specified in Section 08111.

PART 2 PRODUCTS

2.1 FRAMES

A. 16 gauge. To suit SDI-100 Grade.
   1. Provide drywall wrap around frames for interior and exterior doors.

2.2 ACCESSORIES

A. Removable Stops: Rolled steel channel shape, butted corners; prepared for countersink style tamper proof screws.
B. Bituminous Coating: Fibered asphalt emulsion.
C. Primer: Zinc chromate type.
D. Silencers: Specified in Section 08710.
E. Weatherstripping: Specified in Section 08710.

2.3 FABRICATION

A. Fabricate frames as welded unit.
B. Mullions for Double Doors: Fixed type, of same profiles as jambs.
C. Transom Bars for Glazed Lights: Fixed type, of same profiles as jamb and head.
D. Fabricate frames with hardware reinforcement plates welded in place. Provide mortar guard boxes.
E. Reinforce frames wider than 4" with roll formed steel channels fitted tightly into frame head, flush with top.
F. Configure exterior frames with special profile to receive recessed weather stripping.
G. Attach fire rated label to each fire rated door unit.

2.4 FINISH

A. Steel Sheet: Galvanized.
B. Primer: Air-dried.
C. Paint per Specification Section 09900: color as selected.
D. Coat inside of frame profile with bituminous coating.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01039 - Coordination and Meetings: Verification of existing conditions before starting work.
B. Verify that opening sizes and tolerances are acceptable.

3.2 INSTALLATION

A. Install frames in accordance with SDI-100 and DHI.
B. Coordinate with masonry, gypsum board or concrete wall construction for anchor placement.
C. Coordinate installation of glass and glazing.
D. Coordinate installation of frames with installation of hardware specified in Section 08710 and doors in Section 08111.
E. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

3.3 ERECTION TOLERANCES

A. Maximum Diagonal Distortion: 1/8" measured with straight edges, crossed corner to corner.

3.4 SCHEDULE

A. Refer to Door Schedule on drawings.

END OF SECTION

08710

DOOR HARDWARE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Hardware for hollow steel doors.
B. Weatherstripping, seals and door gaskets.

1.2 RELATED SECTIONS

A. Section 08111 - Standard Steel Doors.
B. Section 08112 - Standard Steel Frames.

1.3 REFERENCES

A. NFPA 80 - Fire Doors and Windows.
B. NFPA 101 - Life Safety Code.
C. NFPA 252 - Fire Tests of Door Assemblies.
D. UL 10B - Safety Fire Tests of Door Assemblies.

1.4 SUBMITTALS FOR REVIEW

A. Section 01300 - Submittals: Procedures for submittals.
B. Shop Drawings:
   1. Indicate locations and mounting heights of each type of hardware, schedules and catalog cuts.
   2. Submit manufacturer's parts lists and templates.
C. Samples:
   1. Submit 1 sample of hinge, latchset, lockset and closer, illustrating style, color and finish.
   2. Samples will be incorporated into the Work.

1.5 SUBMITTALS AT PROJECT CLOSEOUT

A. Section 01700 - Operation and Maintenance Data.
B. Section 01300 - Procedures for submittals.
C. Maintenance Data: Include data on operating hardware, lubrication requirements and inspection procedures related to preventative maintenance.
D. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.

1.6 REGULATORY REQUIREMENTS

A. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc., as suitable for the purpose specified and indicated.

1.7 DELIVERY, STORAGE AND PROTECTION

A. Section 01600 - Material and Equipment: Transport, handle, store, and protect products.
B. Package hardware items individually, label and identify each package with door opening code to match hardware schedule.

1.8 PROJECT CONDITIONS

A. Section 01039 - Coordination and Meetings.
B. Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware and recessed items.
C. Sequence installation to ensure utility connections are achieved in an orderly andexpeditious manner.
D. Coordinate Owner's keying requirements during the course of the Work.

1.9 WARRANTY

A. Provide five-year manufacturer warranty for door closers.

1.10 MAINTENANCE PRODUCTS

A. Section 01730 - Operation and Maintenance Data.
B. Provide special wrenches and tools applicable to each different or special hardware component.
C. Provide maintenance tools and accessories supplied by hardware component manufacturer.

1.11 EXTRA MATERIALS

A. Section 01730 - Operation and Maintenance Data.

PART 2 PRODUCTS

2.1 KEYING

A. Door Locks: Keyed in like-groups. Master keyed.
B. Include construction keying, and control keying with removable core cylinders. Key to the existing keying system where requested.
C. Supply keys in the following quantities:
    1. Two master keys.
    2. Four construction keys.
    3. Three change keys for each lock.

2.2 KEY CABINET

A. Cabinet Construction: Sheet steel construction, piano hinged door with lockmaster keyed to building system.
B. Cabinet Size: Size for project keys plus 10 percent growth.
C. Hooks for all keys.
D. Horizontal plastic strips for key hook labeling with clear plastic strip cover over labels.
E. Finish: Baked enamel, finish, colors as selected.

2.3 FINISHES

A. Finishes: Identified in Schedule.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01039 - Coordination and Meetings: Verification of existing conditions before starting work.
B. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
C. Verify that electric power is available to power operated devices and is of the correct characteristics.

3.2 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions.
B. Use templates provided by hardware item manufacturer.

3.3 FIELD QUALITY CONTROL

A. Section 01400 - Quality Control 01650 - Starting of Systems: Field inspection, testing, and adjusting.
B. Architectural Hardware Consultant will inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.4 ADJUSTING

A. Section: 01650 - Starting of Systems: Adjusting installed work.
B. Adjust hardware for smooth operation.

3.5 SCHEDULE

Hardware Group 1:	Doors **x & x**	
1 ½ Pr. Butts (hinges)	BB1168 x 26D x 4 ½ x 4 ½	Hager
1 Passage Lockset	93KON15D-S3-626	Best
3 Silencers	608	Rockwood
1 Door Crash Stop	CS115-25	Ives

END OF SECTION

09260

GYPSUM BOARD SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Gypsum board and joint treatment.

1.2 RELATED SECTIONS

A. Section 06112 - Framing and Sheathing: Building wood framing system.
B. Section 06112 - Wood Blocking and Curbing.
C. Section 07212 - Batt Insulation: Thermal insulation.

1.3 REFERENCES

A. ASTM C36 - Standard Specification for Gypsum Wallboard.
B. ASTM C475 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
C. ASTM C630 - Standard Specification for Water-Resistant Gypsum Backing Board.
D. ASTM C645 - Standard Specification for Non-Load (Axial) Bearing Steel Studs,Runners (Track) and Rigid Furring Channels for Screw Application of Gypsum Board.
E. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
F. ASTM C1002 - Standard Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases.
G. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
H. GA-201 - Using Gypsum Board for Walls and Ceilings.
I. GA-214 - Recommended Specification: Levels of Gypsum Board Finish.
J. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.
K. GA-600 - Fire Resistance Design Manual.
L. UL - Fire Resistance Directory.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840.
B. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years experience.

PART 2 PRODUCTS

2.1 FRAMING MATERIALS

A. Studs and Tracks: ASTM C645; galvanized sheet steel, 0.036-inch thick, C shape.
B. Furring, Framing, and Accessories: ASTM C645.
C. Fasteners: ASTM C1002.
D. Anchorage to Substrate: Tie wire, nails, screws and other metal supports, of type and size to suit application; to rigidly secure materials in place.
E. Adhesive: GA-216.

2.2 GYPSUM BOARD MATERIALS

A. Standard Gypsum Board: ASTM C36; 1/2 or 5/8 inch thick, maximum available length in place; ends square cut, tapered edges.

B. Fire Rated Gypsum Board: ASTM C36; fire resistive type, UL or WH rated; 5/8 inch thick, maximum available length in place; ends square cut, tapered edges.
C. Moisture Resistant Gypsum Board: ASTM C630; 5/8 inch thick, maximum available length in place; ends square cut, tapered edges.
D. Gypsum Backing Board: ASTM C442; standard or fire rated type; 3/8 thick; square edges, ends square cut, maximum available size in place.
E. Gypsum Sheathing Board: ASTM C79; moisture resistant type; 5/8 inch thick, maximum available size in place; ends square cut, tongue and grooved edges; water repellent paper faces.
F. Cementitious Backing Board: High density, glass fiber reinforced, 1/2 inch thick; 2 inch wide, coated glass fiber tape for joints and corners.

2.3 ACCESSORIES

A. Corner Beads: Metal.
B. Edge Trim: GA-201 and GA-216; Type LC exposed reveal bead.
C. Joint Materials: ASTM C475; reinforcing tape, joint compound, adhesive and water.
D. Textured Finish Materials: Latex based texturing material, containing fine aggregate.
E. Fasteners: ASTM C1002, Type S12 and GA-216.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01039 - Coordination and Meetings: Verification of existing conditions before starting work.
B. Verify that site conditions are ready to receive work and opening dimensions are as indicated on drawings.

3.2 WALL FURRING INSTALLATION

A. Erect wall furring for direct attachment to concrete masonry and/or concrete walls.
B. Erect furring channels horizontally; space maximum 16 inches o.c., not more than 4 inches from floor and ceiling lines or abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.

3.3 CEILING FRAMING INSTALLATION

A. Install in accordance with ASTM C754.
B. Coordinate location of hangers with other work.
C. Install ceiling framing independent of walls, columns and above ceiling work.
D. Reinforce openings in ceiling suspension system that interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of openings.
E. Laterally brace entire suspension system.

3.4 GYPSUM BOARD INSTALLATION

A. Install gypsum board in accordance with GA-201, GA-216 and GA-600.
B. Erect single layer standard gypsum board horizontal, with ends and edges occurring over firm bearing.
C. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
D. Erect exterior gypsum sheathing horizontally, with edges butted tight and ends occurring over firm bearing.
E. Use screws when fastening gypsum board to furring or framing.
F. Treat cut edges and holes in moisture resistant gypsum board with sealant.

G. Place control joints 12 feet apart, or consistent with lines of building spaces as directed.
H. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

3.5 JOINT TREATMENT

A. Tape, fill, and sand exposed joints, edges and corners to produce smooth surface ready to receive finishes.
B. Feather coats on to adjoining surfaces so that camber is maximum 1/32 inch.

3.6 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

09511

SUSPENDED ACOUSTIC CEILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Suspended metal grid ceiling system and perimeter trim.
B. Acoustic tile.

1.2 RELATED SECTIONS

A. Section 15940 - Air Outlets and Inlets: Air diffusion devices in ceiling system.
B. Section 16510 - Interior Luminaries: Light fixtures in ceiling system.
C. Section 15140: Placement of special anchors or inserts for suspension system.

1.3 REFERENCES

A. ASTM C635 - Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
B. ASTM C636 - Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
C. ASTM E580 - Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint.
D. ASTM E1264 - Classification of Acoustical Ceiling Products.
E. UL - Fire Resistance Directory.

1.4 SYSTEM DESCRIPTION

A. Installed System: Conform to UL Design for ceiling and floor assembly.
B. Suspension System: Rigidly secure acoustic ceiling system including integral mechanical and electrical components with maximum deflection of 1:240.

1.5 SUBMITTALS FOR REVIEW

A. Section 01300 - Submittals: Procedures for submittals.
B. Shop Drawings: Indicate grid layout and related dimensioning, junctions with other work or ceiling finishes, interrelation of mechanical and electrical items related to system.
C. Product Data: Provide data on metal grid system components and acoustic units.
D. Samples: Submit two full size samples illustrating material and finish of acoustic units.

1.6 QUALITY ASSURANCE

A. Conform to CISCA requirements.
B. Grid Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience.
C. Acoustic Unit Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

1.7 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire rated assembly and combustibility requirements for materials.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01600 - Material and Equipment: Environmental conditions affecting products on site.
B. Maintain uniform temperature of minimum 60 degrees F and maximum humidity of 65 percent prior to, during and after acoustic unit installation.

1.9 PROJECT CONDITIONS

A. Section 01039 - Coordination and Meetings.
B. Sequence work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat is provided, dust-generating activities have terminated and overhead work is completed, tested and approved.
C. Install acoustic units after interior wet work is dry.

1.10 EXTRA MATERIALS

A. Section 01730 - Operation and Maintenance Data.
B. Provide 64 sq. ft. of extra tile to Owner.

PART 2 PRODUCTS

2.1 SUSPENSION SYSTEM MATERIALS

A. Fire Rated Grid: ASTM C635, intermediate duty, listed by UL for use in a one-hour assembly, exposed T.
B. Grid Materials: Commercial quality cold rolled steel with galvanized coating.
C. Exposed Grid Surface Width: 15/16 inch with reveal.
D. Grid Finish: color as selected.
E. Accessories: Stabilizer bars, clips, splices, perimeter moldings, and hold down clips required for suspended grid system.
F. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements and ceiling system flatness requirement specified.

2.2 ACOUSTIC UNIT MATERIALS

A. Acoustic Panels: ASTM E1264, conforming to the following:
    1. Size: 24 x 24 inches.
    2. Thickness: 5/8 inches.
    3. Composition: Mineral.

2.3 ACCESSORIES

A. Gypsum Board: Fire rated type; 5/8 inch thick, ends and edges square, paper faced.
B. Touch-up Paint: Type and color to match acoustic and grid units.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01039 - Coordination and Meetings: Verification of existing conditions before starting work.
B. Verify that layout of hangers will not interfere with other work.

3.2 INSTALLATION - LAY-IN GRID SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C636 and as supplemented in this section.
B. Install system in accordance with ASTM E580.
C. Install system capable of supporting imposed loads to a deflection of 1/240 maximum.
D. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustic unit size.
E. Install after major above ceiling work is complete. Coordinate the location of hangers with other work.
F. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
G. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
H. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner or support components independently.
I. Do not eccentrically load system, or produce rotation of runners.
J. Perimeter Molding:
    1. Install edge molding at intersection of ceiling and vertical surfaces with continuous gasket.
    2. Use longest practical lengths.
    3. Miter corners.
    4. Provide at junctions with other interruptions.
K. Form expansion joints as required. Form to accommodate plus or minus 1-inch movement. Maintain visual closure.
L. Install light fixture boxes constructed of gypsum board above light fixtures in accordance with UL assembly requirements and light fixture ventilation requirements.

3.3 INSTALLATION - ACOUSTIC UNITS

A. Install acoustic units in accordance with manufacturer's instructions.
B. Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.
C. Lay directional patterned units one way with pattern parallel to longest room axis. Fit border trim neatly against abutting surfaces.
D. Install units after above ceiling work is complete.
E. Install acoustic units level, in uniform plane, and free from twist, warp and dents.
F. Cutting Acoustic Units:
    1. Cut to fit irregular grid and perimeter edge trim.
    2. Cut square reveal edges to field cut units.
    3. Double cut and field paint exposed edges of tegular units.
G. Install hold-down clips to retain panels tight to grid system within 20 ft. of an exterior door.

3.4 ERECTION TOLERANCES

A. Section 01400 - Quality Control: Tolerances.
B. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
C. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

09651

VINYL COMPOSITION TILE FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Resilient tile flooring.
B. Resilient base.

1.2 RELATED SECTIONS

A. Section 03300 - Self-Leveling Underlayment.

1.3 REFERENCES

A. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile.
B. ASTM F1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing.
C. FS L-F-001641 - Floor Covering Translucent or Transparent Vinyl Surface with Backing.
D. FS L-F-475 - Floor Covering Vinyl, Surface (Tile and Roll), with Backing.
E. FS SS-T-312B - Tile, Floor: Asphalt, Rubber, Vinyl and Vinyl Composition.

1.4 PERFORMANCE REQUIREMENTS

A. Conform to BOCA code for fire performance ratings as follows:
   1. Critical radiant flux (CRF): Minimum 0.45 watt per square centimeter, per ASTM E 648.
   2. Flame spread: Maximum 75, per ASTM E84.
   3. Smoke developed: Maximum 450, per ASTM E84.
   4. Smoke density: Maximum 450, per ASTM E662.

1.5 SUBMITTALS FOR REVIEW

A. Section 01300 - Submittals: Procedures for submittals.
B. Selection Samples: Submit manufacturer's complete set of color samples for Architect/Engineer's initial selection.
C. Verification Samples: Submit two samples, 12 x 12 inches in size illustrating color and pattern for each resilient flooring product specified.

1.6 SUBMITTALS AT PROJECT CLOSEOUT

A. 01730 - Operation and Maintenance Data: Procedures for submittals.
B. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping and re-waxing.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Material and Equipment: Transport, handle, store and protect products.
B. Protect roll materials from damage by storing on end.
C. Store materials for 2 days prior to installation in area of installation to achieve temperature stability. Store materials in manufacturer’s shipping packages.
D. Maintain ambient temperature required by adhesive manufacturer 2 days prior to, during, and 24 hours after installation of materials.
E. Store highly flammable materials (adhesives, fillers, solvents) segregated from other materials and arranged to facilitate fire fighting.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

1.9 EXTRA MATERIALS

A. Section 01730 - Operation and Maintenance Data.
B. Provide 75 sq ft of flooring, 20 lineal feet of base and 5 percent of installed materials of each type and color specified.

PART 2 PRODUCTS

2.1 MATERIALS - TILE FLOORING

A. Vinyl Composition Tile: ASTM F1066, Type IV:
1. Size: 12 x 12 inches.
2. Thickness: 0.125 inch.
3. Pattern: As selected.
1. Construction: Through-Pattern Vinyl Composition Tile
2. Static Load Limit: 125 p.s.i.
3. Warranty: Limited Five Year Commercial Warranty

2.2 MATERIALS - BASE

A. Base: Vinyl; top set coved.
1. Height: 4 inch.
2. Thickness: 0.080 inch thick.
3. Finish: Matte.
4. Length: Roll.
5. Accessories: Internal corners and end stops.

2.3 ACCESSORIES

A. Subfloor Filler: White premix latex.
B. Primers and Adhesives: Use non-staining and waterproof types as recommended by the flooring material manufacturer. Asphalt emulsions and other non-waterproof types will not be acceptable.
C. Moldings and Edge Strips: Same material as flooring.
D. Filler for Coved Base: Plastic.
E. Sealer and Wax: Types recommended by flooring manufacturer.
F.Fillers and Leveling Compounds: As recommended by the flooring material manufacturer for filling small cracks, holes, and depressions in the substrate.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that concrete floors are dry to maximum moisture content of 7 percent and exhibit negative alkalinity, carbonization, and dusting.
B. Verify floor and lower wall surfaces are free of substances that may impair adhesion of new adhesive and finish materials.

3.2 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes and other defects with sub-floor filler to achieve smooth, flat, hard surface.
B. Prohibit traffic until filler is cured.
C. Clean substrate.
D. Apply primer as required to prevent "bleed-thru" or interference with adhesion by substances that cannot be removed.
E. Thoroughly clean all surfaces to receive covering. Where replacement of existing floor tile is specified on the drawings, remove all traces of floor tile adhesive. The floor surface temperature shall be 60 degrees F or highter.

3.3 INSTALLATION - TILE FLOORING

A. Install in accordance with manufacturer's instructions.
B. Mix tile from container to ensure shade variations are consistent when tile is placed.
C Spread only enough adhesive to permit installation of materials before initial set.
D. Set flooring in place, press with heavy roller to attain full adhesion.
E. Lay flooring with joints and seams parallel to building lines to produce symmetrical tile pattern.
F. Install tile to ashlar pattern. Allow minimum 1/2 full size tile width at room or area perimeter.
G. Scribe flooring to walls, columns, cabinets, floor outlets and other appurtenances to produce tight joints.
H. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.
I. Install edge strips at unprotected or exposed edges, where flooring terminates and where indicated. Secure metal strips, where required, before installation of flooring with stainless steel screws.
J. Install flooring in recessed floor access covers. Maintain floor pattern.
K. At movable partitions, install flooring under partitions without interrupting floor pattern.
L. Install feature strips and floor markings where indicated. Fit joints tightly.

3.4 INSTALLATION - BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
B. Miter internal corners. At external corners, 'V' cut back of base strip to 2/3 of its thickness and fold. At exposed ends, use premolded units.
C. Install base on solid backing. Bond tightly to wall and floor surfaces.
D. Scribe and fit to doorframes and other interruptions.

3.6 CLEANING

A. Keep surfaces of resilient covering free of adhesive while installing. Remove excess adhesive from floor, base, and wall surfaces within recommended working time.
B. Remove soil, stain, and extraneous material caused by installation of resilient material from adjacent surfaces.
C. Clean and finish resilient covering surfaces as recommended by the manufacturer. Remove and replace defective, off color, or improperly installed materials than cannot be made to satisfactorily match adjacent surfaces.
D. Clean, seal, and wax resilient flooring products in accordance with manufacturer’s instructions.

3.7 PROTECTION OF FINISHED WORK

A. Protecting installed work.
B. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

09900

PAINTING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Surface preparation.
B. Field application of paints, stains, varnishes and other coatings.

1.2 RELATED SECTIONS

A. Section 05500 - Metal Fabrications: Shop primed items.

1.3 REFERENCES

A. ASTM D16 - Standard Terminology Relating to Paint, Varnish, Lacquer and Related Products.
B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.
C. NACE (National Association of Corrosion Engineers) - Industrial Maintenance Painting.
D. NPCA - Guide to U.S. Government Paint Specifications; National Paint and Coatings Association.
E. PDCA - Architectural Specifications Manual; Painting and Decorating Contractors of America.
F. SSPC - Steel Structures Painting Manual; Steel Structures Painting Council.

1.4 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

1.5 SUBMITTALS FOR REVIEW

A. Section 01300 - Submittals: Procedures for submittals.
B. Samples:
    1. Submit two paper chip samples, 2 x 4 inches in size illustrating range of colors and textures available for each surface finishing product scheduled.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
B. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years experience.

1.7 DELIVERY, STORAGE AND PROTECTION

A. Section 01600 - Material and Equipment: Transport, handle, store and protect products.
B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
C. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation and instructions for mixing and reducing.
D. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01600 - Material and Equipment: Environmental conditions affecting products on site.
B. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
C. Do not apply exterior coatings during rain or snow or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
D. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior, unless required otherwise by manufacturer's instructions.
E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.
F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.9 PROJECT CONDITIONS

A. Section 01039 - Coordination and Meetings.
B. Sequence application to the following:
    1. Do not apply finish coats until paintable sealant is applied.
    2. Back prime wood trim before installation of trim.

1.10 EXTRA MATERIALS

A. Section 01730 - Operation and Maintenance Data.
B. Supply 1 gallons of each color, type and surface texture; store where directed.
C. Label each container with color, type, texture and room locations in addition to the manufacturer's label.

PART 2 PRODUCTS

2.1 MATERIALS

A. Coatings: Ready mixed, except field-catalyzed coatings. Prepare pigments:
    1. To a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
    2. For good flow and brushing properties.
    3. 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; commercial quality.
C. Patching Materials: Latex filler.
D. Fastener Head Cover Materials: Latex filler.

2.2 FINISHES

A. Refer to finish schedule on drawings for surface finish.

2.3 BRAND OF PAINT

A. Sherwin-Williams or equal.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01039 - Coordination and Meetings: Verification of existing conditions before starting Work.

B. Verify that surfaces and substrate conditions are ready to receive Work as instructed by the product manufacturer.
C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
D. Test shop applied primer for compatibility with subsequent cover materials.
E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
    1. Plaster and Gypsum Wallboard: 12 percent.
    2. Masonry, Concrete and Concrete Unit Masonry: 12%.
    3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
    4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.
    5. Concrete Floors: 8 percent.

3.2 PREPARATION

A. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons and fittings prior to preparing surfaces or finishing.
B. Surfaces: Correct defects and clean surfaces that affect work of this section.
C. Marks: Seal with shellac those that 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. Concrete Floors: Remove contaminations, acid etch and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow it to dry.
F. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
G. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
H. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with a solvent. Prime paint bare steel surfaces.
I. Metal Doors Scheduled for Painting: Prime metal door top and bottom edge surfaces.

3.3 APPLICATION

A. Apply products in accordance with manufacturer's instructions.
B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
C. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

3.4 CLEANING

A. Collect waste material that may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.5

SCHEDULE - INTERIOR SURFACES

A. Interior Gypsum Drywall
   1. One coat of vinyl latex primer sealer.
   2. Two coats of latex eggshell enamel.

E. Steel - Unprimed:
   1. One coat of alkyd primer.
   2. Two coats of alkyd enamel, gloss.

F. Steel - Shop Primed:
   1. Touch-up with zinc chromate primer.
   2. Two coats of alkyd enamel, gloss.

END OF SECTION

10800

TOILET AND BATH ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Toilet room accessories.

1.2 RELATED SECTIONS

A. Section 06112: Placement of concealed anchor devices and placement of backing plate reinforcement.

1.3 REFERENCES

A. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process.
C. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
D. ASTM C1036 - Standard Specification for Flat Glass.
E. FS DD-M-411C -- Mirrors, Glass.

1.4 COORDINATION

A. Section 01039 - Coordination and Meetings.
B. Coordinate the work with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

PART 2 PRODUCTS

2.1 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with 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 3 keys for each accessory to Owner.
C. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof type.
D. Expansion Shields: Fiber, lead or rubber as recommended by accessory manufacturer for component and substrate.

2.2 FINISHES

A. Chrome/Nickel Plating: ASTM B456, Type SC 2, satin finish, unless otherwise noted.
B. Baked Enamel: Pretreat to clean condition, apply one coat of primer and minimum two coats epoxy baked enamel.
C. Galvanizing for Items other than Sheet: ASTM A123 to 1.25 oz/sq yd. Galvanize ferrous metal and fastening devices.
D. Shop Primed Ferrous Metals: Pretreat and clean, spray apply one coat primer and bake.
E. Back paint components where contact is made with building finishes to prevent electrolysis.

2.3 TOILET ROOM ACCESSORIES

A. Toilet Paper Dispenser: Double roll surface mounted bracket type, chrome-plated zinc alloy brackets eccentric-shaped plastic spindle for 1/2 revolution delivery designed to prevent theft of tissue roll.
B. Paper Towel Dispenser: Surface Mounted automatic. Four D-sized batteries. Non-perforated paper towels. Provide one roll of towels. Equal to Bobrick B-72974.
C. Soap Dispenser: Equal to Bobrick B-2111 surface mounted soap dispenser for liquid and lotion soaps and detergents.
    1. Minimum Capacity: 40 ounces.
    2. Surface mounted type 304 stainless steel with satin finish.
    3. Corrosion resistant valve.
D. Mirrors: Stainless steel framed, 6 mm thick float glass, abrasion-resistant coated mirror.
    1. Size: As indicated on drawings.
    2. Frame: 0.05 inch channel shapes, with mitered and welded and ground corners, and tamperproof hanging system; No.4 bright annealed finish.
    3. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
    4. Shelf: Stainless steel; gage and finish to match mirror frame, turned down edges, welded to frame; 5 inches deep, full width of mirror.
E. Grab Bars: Stainless steel, 1-1/4 inches outside diameter, minimum 0.05 inch wall thickness, nonslip grasping surface finish, exposed flange mounting; 1-1/2 inches clearance between wall and inside of grab bar. Length and Configuration: As indicated on drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01039 - Coordination and Meetings: Verification of existing conditions before starting work.
B. Verify exact location of accessories for installation.
C. Verify that field measurements are as indicated on product data.

3.2 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.
B. Provide templates and rough-in measurements as required.

3.3 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.

END OF SECTION

15050

MATERIALS AND METHODS

PART 1 GENERAL

1.1 OPERATION PRIOR TO ACCEPTANCE

A. When any equipment is operable, and it is to the advantage of the Contractor to operate the equipment, he may do so provided that he properly supervises the operation, and retains full responsibility for the equipment operated. Before final acceptance by the owner, the Contractor shall properly clean the equipment, install clean filter media, make all required adjustments and complete all punch list items.

1.2 WARRANTY

A. Warrant to Owner that materials, equipment, and workmanship provided under this Division of the Specifications will be free from defects for a period of one year from the date of acceptance by Owner. Additional equipment warranty requirements are stated in other sections of the specifications.

PART 2 PRODUCTS

2.1 MATERIALS

A. Products are to be new and free from defects, and are to be installed by competent specialist for each trade in accordance with the manufacturer's recommendations. Materials or equipment not meeting these standards, or the acceptance of the Engineer, may be rejected and will be replaced at no additional costs to the owner.

PART 3 EXECUTION

3.1 PIPING INSTALLATION

A. Conceal piping in pipe chases, walls, furred spaces and above ceiling, unless otherwise indicated.

3.4 ACCESS PANELS AND DOORS

A. Install access panels and doors for concealed equipment and valves.

3.5 TESTS

A. Field test mechanical equipment furnished and installed under this Contract as required by the Engineer Tests.
B. Perform tests required by governing authorities, in addition to tests specified in individual Sections.
C. Complete final installation and testing 14 days prior to Contract Substantial Completion Date.
D. All pipe work shall be tested at the pressure equal to the design working pressure of the pipe for the intended service and maintain this pressure for not less than two hours with not more than 1% drop in pressure.
E. Notify architect/owner of any test failures. Submit weekly pipe test log listing service; section tested, initial and final pressure, time and temperature.

END OF SECTION

15400

PLUMBING SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Water piping.
   2. Sanitary drainage.
   3. Testing.

B. Comply with other Division 15 Sections, as applicable. Refer to other Divisions for coordination of work.

1.2 SUBMITTALS

A. Make submittals for all products specified in the specification.

PART 2 PRODUCTS

2.1 MATERIALS

A. Water Piping Above Grade, Type "L" hard drawn, seamless copper water tube, ASTM B88 and Federal Specification WW-T-799. Joined with wrought copper pressure fittings, ANSI B16.22. Make joints using "lead free" solder and a non-corrosive paste-type flux. Core solder is not allowed. Solder will be solid string or wire type. Where soldered copper piping is connected to threaded brass piping, use a cast brass adaptor.

B. Make piping connections to fixtures and equipment with chrome-plated seamless brass tube, ASTM B-125 and Federal Specification WW-T0791. No ferrous piping or materials are allowed in water piping smaller than 4 inches.

2.2 SANITARY DRAINAGE

A. Sanitary Drainage lines (Soil, Waste and Vent): Cast iron soil pipe and fittings, coating inside and outside, ASTM A74 and Federal Specification WW-P-401. Label with Cast Iron Soil Pipe Institutes' "Mark of Quality and Permanence". Weights of pipe are required by code for location and duty. Joints shall be fabricated by use of "Push-On" type gasketed joints (above or below ground) or "No-Hub" mechanical joints (above ground only). Where permitted by local codes, PVC-DWV Plastic Schedule 40, NSF Seal CS-272 may be used for sanitary drainage pipes (soil, waste, and vent), with solvent-welded joints.

2.3 VALVES

A. Valves for Domestic Water Piping Systems: Nibco S580 or equal.

2.4 COMMERCIAL TYPE WATER HAMMER ARRESTERS

A. Provide commercial type water hammer arrester on hot and cold water supplies as generally indicated, with precise location and sizing to be in accordance with PD1-WH201.

B. Water hammer arresters, where concealed, shall be accessible by means of access doors or removable panels.

C. Water hammer arresters shall be in accordance with PD1-WH201, as furnished by Watt, Josam or equal.

D. Vertical capped pipe columns will not be permitted.

2.6 PLUMBING FIXTURES

A. Provide and install fixtures as shown on plans.

PART 3 EXECUTION

3.1 PIPING INSTALLATION

A. Install piping neatly and parallel with or perpendicular to lines of the structure. Install pipe hangers to maintain accurately aligned piping systems, adequately supported both laterally and vertically. Install horizontal soil, waste, and vent pipe with a grade of 1/4" per foot where possible and not less than 1/8" per foot. Where practicable, connect two or more vents together and extend as one vent through roof. Make vent connections to stacks by appropriate use of 45 wyes, long sweep quarter bends, sixth, eighth or sixteenth bends, except that sanitary tees may be used on the vertical stacks.

B. Extend condensate drain piping from units with condensate discharge.

C. Install drains at all low points and vents at high points in water distribution system.

3.2 PIPING

A. Refer to Section 15700 for insulation requirements.

3.3 PIPE TESTS

A. Test water piping before installing equipment and before insulation is applied, using specified methods and conditions. Subject piping to test for not less than 24 hours under inspection by the Engineer. Make necessary replacements and repairs and repeat tests until entire system is accepted as satisfactory. Work includes testing equipment. After installation of equipment, operate systems; clean out scale, dirt, oil, waste and foreign matter, and correct additional leaks. Test underground piping prior to backfilling.

B. Test plumbing drainage systems under 10 foot static head. Test water systems under 150 PSIG hydrostatic pressure.

C. Flush system thoroughly of dirt and foreign matter, then fill with water treated with 50 ppm of chlorine. During filling process, open valves and faucets several times to assure treatment of entire system. Leave treated water in system for 24 hours after which time system may be flushed; if residual chlorine is not less than 10 ppm, repeat flushing. After sterilization, receive approval by regulatory agency on samples of water in system.

END OF SECTION

15440

PLUMBING FIXTURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Plumbing fixtures and trim.
B. Related Sections:
   1. Refer to other Divisions for coordination of work.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's descriptive literature for all products specified.

PART 2 PRODUCTS

2.1 FITTINGS AND PIPING

A. Provide brass fittings and piping in connection with plumbing fixtures; polished chrome-plated where exposed to view.
B. Provide tight-fitting wall or floor escutcheons of chrome-plated brass wherever pipes pass through floors, walls or ceilings.
C. Provide required water, waste, soil, and vent connections to plumbing fixtures and equipment, together with fittings, supports, fastening devices, cocks, valves and traps, leaving all in complete working order.

2.2 FIXTURES

A. Provide new plumbing fixtures, first quality, free from mars or chips. Sufficient means to support each fixture in an adequate and rigid manner that permits no perceptible movement of fixture by manually applied forces. Fixtures to be standard products as manufactured by American Standard, Crane, Eljer or Kohler. The space between fixtures and floor or walls to be sealed with silicone sealant.
B. Each fixture shall be complete with required trim, and exposed piping and trim shall be polished chrome-plated brass. Each fixture shall be furnished with stop valves having metal-to-metal seats.
C. Provide for each lavatory and sink, a flow-limiting device that will limit flow to not more than 3 g.p.m. Devices shall be integral with fixture trim, wherever possible and shall be products of the fixture trim Manufacturer in all cases.
D. Provide plumbing fixtures as scheduled on Drawings.
E. See Specification Section 15410 - Compressed Air Piping, 2.2 Valves and Specialties.

PART 3 EXECUTION

3.1 INSTALLATION

A. Plumbing fixtures and equipment shall be set in place at locations indicated on the Drawings, leveled and connected. Fixtures shall be protected from damage during construction.
B. Installation procedures shall be in accordance with these Specifications and the Manufacturer's directions.

3.2 ADJUSTING AND CLEANING

A. Prior to final acceptance, inspect faucets, flush valves, stop valves, and similar devices, to determine that they operate properly and discharge the proper quantities of water. Correct any deficiencies as directed by the Engineer.

B. Clean fixtures, trim and accessories of foreign materials, including labels.

END OF SECTION

16100

ELECTRICAL WORK

16101 GENERAL

A. Requirements of the conditions of the contract and Instruction to Bidders, and General Conditions, apply to all work of this Section.

B. Provide complete electrical service where shown on the drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:
   1. Panelboards as needed.
   2. Branch circuit wiring, in conduit for lighting, receptacles, junction boxes and motors.
   3. Hangers, anchors, sleeves, chases, supports, for fixtures and other electrical material and equipment in association therewith.
   4. Lighting fixtures and lamps.
   5. Wiring system, in conduit, for equipment and control provided under other Sections of these specifications.
   6. Other items and services required to complete the system.

C. Related Work
   1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these specifications

16102 FIELD CONDITIONS AND MEASUREMENTS

A. The Electrical Contractor shall visit the site of the work and familiarize himself with all available information concerning the structural, excavations, the location condition bearing on transportation, handling, and storage of materials. The Electrical Contractor shall make his own estimate of the facilities needed, and difficulties of execution of the contract including local conditions, availability of labor, uncertainties of weather, transportation, and other contingencies. Failure of the contractor to acquaint himself with all available information concerning these conditions will not relieve him from responsibility for estimating the difficulties and costs or successfully performing the complete work.

16103 CLEANUP

A. The Electrical Contractor shall have electrical rubbish and debris removed from the premises as directed. On completion of the electrical contract all associated debris and rubbish shall be removed from the premises.

B. All electrical equipment and materials furnished by this contractor shall be thoroughly cleaned and ready for use upon completion of the work.

16104 GUARANTEE

A. Contractor guarantees by his acceptance of the contract, that all work installed shall be free from any defects in workmanship and/or materials and that all apparatus will develop capacities and characteristics specified and that if, during a period of one year or as therefore specified, from substantial completion of work, any such defects in workmanship, materials or performance appear, he will with no cost to owner remedy such defect.

16105 CODES

A. All electrical work shall be done in strict accordance with the National Electrical Code and all regulations, laws and ordinances which may be applicable.

16106 SUBMITTALS

A. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
   1. Materials list of items proposed to be provided under this section.
   2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
   3. Manufacturer's recommended installation procedures which, when approved by the owner/architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

B. Submittals shall include the following:
   1. Panelboards
   2. Lighting fixtures
   3. Wiring devices
   4. Electric cord reels

C. Samples
   1. When so requested by the owner/architect, promptly provide samples of items scheduled to be exposed in the final structure.
   2. When specifically so requested by the Contractor and approved by the Architect, approved samples will be returned to the Contractor for installation on the work.

D. Manuals: Upon completion of this portion of the work, and as a condition of its acceptance, deliver to the owner/architect two copies of an operation and maintenance manual. Include with each manual.
   1. Copy of the approved record documents for this portion of work.
   2. Copies of all circuit directories.
   3. Copies of all warranties and guarantees.

16107 QUALITY ASSURANCE

A. Use adequate number of skilled workmen who are thoroughly trained and experienced in the crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

B. Without additional cost to the owner, provide such other labor and materials as are required to complete the work of this section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these contract documents.

16108 CONDUIT

A. All interior wiring above grade shall be installed in electrical metallic tubing with screw coupling fittings.

B. All interior wiring below slab shall be Galvanized Rigid Steel conduit. Schedule 40 PVC conduits may be used if approved by Owner/Architect. If PVC is used the last two feet to point of emergence shall be Galvanized Rigid Steel conduit with grounding bushing and a grounding conductor sized according to ART. 250-95 of the National Electrical Code shall be installed.

C. Wiring in office areas shall be concealed, wiring in shop and storage areas shall be installed on surface.

D. All exterior wiring shall be in galvanized Rigid Steel Conduit.

E. Type MC cable with grounding conductor or type AC cable may be used for fixture whips.

16109 WIRE AND CABLE

A. Building wire and cable with 600 volt insulation shall be 98% conductivity copper unless otherwise noted. The minimum size conductor for lighting and power shall be No. 12 AWG. The minimum size conductor for control shall be No. 14 AWG.

B. Conductors sized No. 10 and smaller shall be Type "THHN" solid or stranded as required unless otherwise noted, sizes No. 8 and larger shall be type "THHN" stranded unless otherwise noted.

C. Conductors shall be colored coded as required by governmental agencies having jurisdiction or as required by the National Electrical Code.

D. Contractor shall provide and install all telephone and data cable and equipment as required by the project and per specifications sections 16930.

E. Contractor shall provide and install all of the grounding and grounding field as required by this project and per specification section 16931.

F. Tele/ data cables installed above accessible ceilings may be installed without conduit. Tele/data cables installed above non-accessible ceilings and on surface shall be in conduit. Open cables installed in space used for environmental air shall be rated for plenum use.

16110 JUNCTION AND OUTLET BOXES

A. Outlet Boxes
   1. Provide standard one-piece units, galvanized or sherardized steel of shape and size best suited to that particular location, of sufficient size to contain enclosed wires according to ART. 370-16 of the National Electrical Code.
   2. Provide outlet boxes 2 1/8" deep for 1" conduits.
   3. For lighting outlets, provide standard 4" octagon or square units with 3/8" fixture stud and box hanger where required.
   4. For switches and receptacles, provide standard boxes with plaster or dry wall ring with stainless steel cover plate for concealed devices and pressed steel boxed with galvanized or cadmium plated steel cover plates for exposed devices.

B. Junction or Pull Boxes
   1. Interior junction boxes shall be galvanized code-gauge sheet steel units with screw-on covers, of size and shape required to accommodate wires without crowding, and to suit the location.
   2. Exterior boxes shall meet NEMA 3R or 4 standards.

16111 LIGHTING FIXTURES

A. Install lighting fixtures, complete with lamps, as shown on drawings and schedules. Manufacturers shown on schedules are for quality and type only, manufacturers of equal quality will be accepted if approved by owner.

16112 WIRING DEVICES

A. Toggle switches - Mount 48" above finished floor.
   1. Single pole Leviton 5521-I

B. Receptacles - Mount 18" above Finished Floor
   1. Duplex receptacles Leviton 5800-I
   2. Ground Fault Interrupter duplex receptacles Leviton 6599-I

C. Outlets in finished walls shall be 4' x 4" x x1 1/2" outlet box with plaster ring and a cover plate.

D. Devices of the following manufacturers will be accepted as equal.
   1. Hubbel
   2. Arrow-Hart
   3. General Electric

16113 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation as approved by the Architect.

16114 EXECUTION

A. Surface Conditions
   1. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

16115 PREPARATION

A. Coordinate
   1. Coordinate as necessary with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this section.
   2. Coordinate the installation of electrical items with the schedule for work of other trades to prevent unnecessary delays in the total work.

B. Data indicated on the drawings and in these specifications are as exact as could be secured but there absolute accuracy is not warranted. The exact locations, distances, levels and other conditions will be governed by actual construction and the drawings and specifications should be used only for guidance in such regard.

C. Verify all measurements at the building. No extra compensation will be allowed because of differences between work shown on the drawings and actual measurements at the site of construction.

D. The electrical drawings are diagrammatic, but are required to be followed as closely as actual construction and work of other trades will permit. Where deviations are required to conform actual construction and the work of other trades, make such deviations without additional cost to the owner.

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16116 INSTALLATION OF CONDUCTORS

A. Unless otherwise shown use #12 type THHN conductors for all branch circuits protected by 20 amp circuit breakers. Where so indicated on the drawings, use larger wires to limit voltage drops.

B. Use identified (white) neutrals and color-coded phase wires for all branch circuit wiring.
   1. Make splices electrically and mechanically with pressure-type connectors.
   2. Insulate splices with a minimum of two half-lapped layers of Scotch Brand #33 vinyl-plastic electrical tape where insulation is required.

C. Tape all joints with rubber tape 1 1/2 times the thickness of the conductor insulation, than cover with vinyl-plastic electrical tape specified above.

16117 TESTING AND INSPECTION

A. Make required tests in the presence of the owners representative and required approvals from the owner/architect and governmental agencies having jurisdiction.

B. Make written notice to the owner/architect adequately in advance of each of the following stages of construction.
   1. When all rough in is complete, but not covered.
   2. At completion of the work of this section.

C. When material and/or workmanship is found to not comply with the specified requirements, within three days after receipt of notice of such non-compliance remove the non-complying items from the job site and replace them with items complying with the specified requirements, all at no additional cost to the owner.

D. In the owner/architect's presence:

1 Test all parts of the electrical systems for phase to phase and phase to ground short circuits and prove that all such items provided under this section function electrically in the required manner.

2. Immediately submit to the architect a report of maximum and minimum voltages and a copy of the recording voltmeter chart.

3. Also measure voltages between phase wires and neutral and report these voltages to the Architect.

16118 PROJECT COMPLETION

A. Upon completion of the work of this section, thoroughly clean all exposed portions of the electrical installation, removing all traces of soil, labels, grease, oil, and other foreign material and using only the type cleaner recommended by the manufacturer of the item being cleaned.

B. Thoroughly indoctrinate the owner's operation and maintenance personnel in the contents of the operations and maintenance manual required to be submitted under article 16106 of this section of these specifications.

END OF SECTION

16930

TELECOMMUNICATIONS
(SPECIFICATIONS AND REQUIREMENTS)

All MODOT building shall conform to EIA/TIA Building Telecommunications These Wiring standards are as follow TIA\EIA – 568A, 569, 570, 606, 607, TSB72 and TSB75.

All MODOT Building shall be wired using the T586B wiring scheme.

The contractor shall provide all necessary equipment, materials and level 5E certification as required to complete and tune up the network system Ethernet.

All cable runs and equipment shall be certified and a full set of reports and prints submitted to the MODOT before acceptance of the building cable and wiring system.

All cable runs (Home Run) shall be duplex run of four pair twisted cable, 24 gauge, plenum rated. Each run shall include two cables; one telephone run level 5E, or level 3 (verify) and one data run level 5E with compatible dual modular phone RJ/45 and data RJ/45jacks and face plates installed in electric boxes and ¾" rigid conduit where required. All raceways and J hooks shall be installed as set forth in EIA/TIA Standard and N.E.C.

All telephone and data cable above accessible ceiling may be installed without conduit. All telephone and data cable installed above non-accessible ceiling and on surface shall be in conduit. All telephone and data cable installed in sheet rock wall shell be in conduit terminated with a suitable electrical box. All telephone and data cable in modular furniture shall be installed furniture raceway and terminated in non-metallic surface mount boxes.

The following is some of the requirements required for the building of a Cabling System, but is not necessarily limited to the following:

Phone jacks RJ/45 shall be in ivory color, data jacks RJ/45 shall be in Orange color, face plates, blank face plates and non-metallic surface mount boxes shall be in ivory color.

Level 5E patch cord for all connections, and labeling for all cable, faceplates (D1 = Data, V1 = =Voice) and level 5E patch panels.

Relay rack, shall be 19" X 7'and clear aluminum, with vertical wire management 6" X 7' clear aluminum and relay rack installation kit.

Telephone blocks, (1) use 25 pair punch down block, type 66ml,for level 3 (2) use 100 pairs, 110 connecting block, for level 5E. All patch panels shall be level 5E, 24 ports 48 ports as required per building.

Wall mount Relay Rack 7' x 19", with:
- Vertical Organizers.
- Horizontal Combination Organizers.
- 48 Port Patch Panel.

END OF SECTION

16931

GROUNDING AND GROUND FIELD (SPECIFICATIONS AND REQUIREMENTS)

Requirements for MoDOT Project Office shall follow the TIA/EIA - 607 Commercial Building Grounding Requirements for Telecommunications.

This building will require a separate telecommunications ground system. The requirements for this ground system is (15 ohms to ground or less), and shall be tested and certified at time of installations.

This system will consist of the following:

A. A (TMGB) Telecommunications Main Ground Busbar (Erico grounding bar kit p/n b544a017 or equivalent). This Grounding Busbar shall be located in the telecommunication room and serves as the dedicated extension of the building grounding electrode system for telecommunications only.

B. A Number four Green Insulated stranded copper cable run from the (TMGB) in the telecommunication room to the new grounding electrode system located outside the building.

C. The grounding electrode system shall consist of all specifications found in the IEEE Green and Emerald Books. Their shall be a minimum of (4) or (as many as needed) copper electrodes (5/8" x 8') spaced 8' apart, connected with number four bare copper cable as needed to achieve 15 ohms to ground or less.

D. All connectors and splices shall be of copper compression type and meet the specifications of the Standard IEEE 837 latest revision and the specifications of the NEC code, section 250-81 and 250-91.

E. There shall be no other grounding electrode system connected to this Telecommunication room grounding electrode system except by a number six stranded green copper cable connected to the Building (TMGB) Main Grounding Bar or system.

REV. on 12-22-03

END OF SECTION