

SPECIFICATIONS

FOR INSTALLING STORE FRONT GLASS DOORS AND WINDOWS,
RECEPTION WINDOWS AND LEVEL SECURITY
AT THE
OREGON DEPARTMENT OF TRANSPORTATION
3339 HIGHWAY 99 SOUTH
ROSEBURG, OREGON

November 27, 2012



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00 01 07 SEALS PAGE

PROJECT: SHADY MAINTENANCE STATION
MAIN OFFICE BUILDING INSTALL
STOREFRONT ENTRY DOORS
3339 HIGHWAY 99 SOUTH
ROSEBURG, OREGON 97470

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01 11 00 SUMMARY OF WORK

PART 1 GENERAL

SPECIFICATIONS FOR INSTALLATION OF STORE FRONT DOORS AND WINDOWS, RECEPTION WINDOWS AND LENE SECURITY AT THE SHADY MAINTENANCE STATION MAIN OFFICE BUILDING

1.01 EXPLANATION OF CONTRACT DOCUMENTS:

The Conditions of the Contract and the General Requirements (Division 1) of these Specifications apply to the Work described under each Section hereof. The Contractor shall instruct each subcontractor to become fully familiar with them.

1.02 DIVISION AND PARAGRAPH NUMBERING:

Numbering and lettering of Divisions and Paragraphs in these Specifications are merely for identification and may not be consecutive. Divisions included are listed in the "Table of Contents." Contractor shall check his copies of the Project Manual with the Table of Contents to be sure they are complete.

1.03 ADDITIONAL DEFINITIONS

The term "Owner" means the "State of Oregon" acting through the Oregon Dept of Transportation.

The term "Project Manager" means the individual representing the State of Oregon for this Project, and noted as Project Manager on the title sheet of these specifications.

Unless specifically noted otherwise, all notices and other correspondence with the Owner shall be directed to the attention of the Project Manager.

The term "approved" means "approved by the Project Manager".

The term "for approval" means "for the Project Manager's approval".

The term "as directed" means "as directed by the Project Manager".

The term "product" includes materials, systems, and equipment.

The term "furnish" means "supply and deliver to the project site".

The term "install" describes operations at the project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

The term "provide" means "furnish and install, complete, in place and ready for operation and use".

The term "Installer" means the Contractor or entity engaged by the Contractor, either as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including, installation, erection, application, and similar operations.

The term "selected" means "selected by the Project Manager".

Where the words "or approved" are used, the Project Manager is the sole judge of quality and suitability of proposed substitution.

1.04 SUB-CONTRACTS:

Divisions of Specifications into trade Sections conforms roughly to customary practice. They are used for convenience only. The Owner and the Project Manager are not bound to define limits of any subcontract and will not enter into disputes between the Contractor and his employees, including subcontractors.

The General Contractor shall perform at least 51 percent of the Work.

1.05 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

Where references are made to other Sections regarding Related Requirements Specified Elsewhere, it is for the convenience of the Contractor only and shall not limit the Contractor's responsibility under other Sections not so referenced. As previously noted, each Section of the Specifications is bound by all applicable requirements of all Sections in Division 1.

1.06 WORDING OF SPECIFICATIONS:

These are abbreviated or "streamline" type specifications and frequently include incomplete sentences. The omission of words or phrases such as "The Contractor shall", "according to the drawings", "in

conformity with", "shall", "shall be", "as noted", "a", "an", "and", are all intentional. Omitted words or phrases shall be supplied by inference, in the same manner as they are in the notes on the Drawings. Titles and headings are frequently a part of the Specifications, and the same as the text of the article or paragraph. Where question arises as to wording in the Drawings and Specifications, consult the Project Manager.

1.07 WORK COVERED BY CONTRACT DOCUMENTS:

Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, permits, fees, transportation, incidentals, and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

1.08 CONTRACTS:

All Work shall be performed under a single contract. The General Contractor shall perform at least 50 percent of the Work.

1.09 WORK BY OTHERS:

Items specifically noted in the Contract Documents as:

1. "By Others"
2. "N.I.C." (Not in Contract)
3. "By Owner"

1.10 OWNER FURNISHED ITEMS:

A. Items specifically noted: "Furnished by Owner"

B. Owner furnished items shall be installed by the Contractor unless noted otherwise.

1.11 EXISTING CONDITIONS

The Contractor acknowledges that he has satisfied himself as to the nature and location of the Work, the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, or similar physical conditions at the site, the conformation and conditions of the ground, the character, quality and quantity of surface and sub-surface materials to be encountered, the character of equipment and facilities needed preliminary to and during the prosecution of the Work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself with all of the available information concerning these conditions will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The Project Manager assumes no responsibility for any understanding or representations made during or prior to the bidding or execution of this Contract, unless (1) such understanding or representations are expressly stated in the Contract, and (2) the Contract expressly provides that responsibility therefore is assumed by the Project Manager. Representations made, but not so expressly stated, and for which liability is not expressly assumed by the Project Manager in the Contract shall be deemed only for the information of the Contractor and the Project Manager shall not be liable or responsible therefore. The Site information on the Drawings represents the best information available to the Project Manager during preparation of the Contract Documents, but cannot be guaranteed to be complete to the bid date.

1.12 UNACCEPTABLE EXISTING CONDITIONS:

A. Exposed to view, or noted in the Contract Documents, or otherwise accessible to verify prior to bid opening date:

1. Repair or replace as part of this Work.
2. No additional payments by Owner will be made.

B. Concealed, and not accessible to verify prior to bidding:

1. Repair or replace where necessary;

2. Upon notification from Contractor, Owner will issue Change Order authorizing Contractor to perform this Work and Contract Sum will be adjusted accordingly.

1.13 CONTRACTOR USE OF PREMISES:

- A. The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents, and shall not unreasonably encumber the site with any materials or equipment.
- B. Confine operations to Project Areas directed by the Owner.
- C. Obtain Owner's permission for use of any existing facilities, utilities, areas, materials, etc., not specifically provided for the Contractor's use in the Contract Documents.

END OF SECTION

01 31 13 PROJECT COORDINATION

PART 1 GENERAL

1.01 SCOPE:

- A. Contractor is responsible for Project coordination.
- B. Cooperation between the various crafts and subcontractors shall be required for proper execution of the Work.
- C. Prior to the installation of materials or equipment with the Work of other Sections, by Owner, or by other contracts, verify the requirements of the other crafts, Owner, or other contract materials or equipment.
- D. Bring deviations to the attention of the Project Manager immediately.
- E. Maintain at the site, copies of all communications and directives from Authorities having jurisdiction. Notify Project Manager of all such communications and provide Project Manager with copies when requested.
- F. Neither the Owner nor the Project Manager will interfere with the Contractor's right and responsibility to coordinate or divide the Work among the Subcontractors or to establish the extent of the Work to be performed by any Subcontractor. The Owner and the Project Manager will not enter into disputes between the Contractor and his employees, including subcontractors.

1.03 SCHEDULES

A. Contractor's Construction Schedule:

Prior to proceeding with the Work, Contractor shall submit a proposed progress schedule. The progress schedule shall include dates of submission and dates reviewed submittals will be required for each product, as well as the dates for starting and completion of the various stages of construction. Provide in bar or line graph form prepared by a competent draftsman, prior to first payment request.

Include critical dates for procurement of products. Indicate, at suitable scale, percentage of Work scheduled for completion at any time.

Enter actual progress on Chart prior to each progress payment for direct comparison with Schedule. If Contractor fails to deliver Schedule on time or properly update Schedule, with each payment request, Project Manager may withhold Progress Payment approval until such time as Contractor complies with these requirements.

Do not proceed with work at the site until Project Manager has approved construction schedule.

If in Project Manager's opinion, Work progress falls behind approved Schedule, Contractor shall take necessary action to regain lost time. Contractor shall increase Work amount, or number of shifts, or establish overtime operations, or all of them, and submit for review Schedule revisions in which progress rate will be regained, all without additional cost to the Owner.

Contractor's failure to comply with any of these requirements shall be grounds for determination that the Contractor is not prosecuting the Work with such diligence as will insure Project completion within specified time. Upon such determination Owner may terminate Contractor's right to proceed with the Work, or any separable part thereof, in accordance with Contract Conditions.

B. Testing Schedule

Prior to proceeding with the Work, the General Contractor shall submit, for approval by the Project Manager, a schedule of required testing and Inspections, including the names addresses and phone numbers of the proposed testing agencies.

C. Schedule of Values

Before the first Application for Payment, the Contractor shall submit to the Project Manager a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Project Manager may require. This schedule, unless objected to by the Project Manager, shall be used as a basis for reviewing the Contractor's Applications for Payment.

1.04 SUPERINTENDENT

- A. General Contractor's Superintendent (as defined in the General Conditions) shall remain at project site during all times during which Work under this contract is being carried out, regardless of the type of trades involved or apparent significance of work being performed.
- B. Superintendent shall not be changed or replaced prior to Final Completion of the project without the Project Manager's written consent.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

3.01 COORDINATION:

- A. Do all necessary work to receive or join work of all trades.
- B. Coordinate the Work to provide adequate clearances for proper installation and maintenance of materials and equipment.

END OF SECTION

01 33 23 SHOP DRAWING PRODUCTS PRODUCT DATA AND SAMPLES

PART 1 GENERAL

1.01 DESCRIPTION:

- A. Related Work Specified Elsewhere
 - 1. Substitutions and Product Options: Section 01 62 00
 - 2. Closeout Submittals: Section 01 77 00

1.02 GENERAL REQUIREMENTS:

A. Submittals:

1. Submittals are defined as documents required by the Contract to be submitted to the Project Manager for review, and may include shop drawings, product data, samples, or a schedule of construction events.
2. Shop drawings, Product Data, Samples and other Submittals are not part of the Contract. Their purpose is to demonstrate, for those portions of the Work for which Submittals are required, the way the Contractor proposes to conform to the requirements of the Contract and the design concept expressed in the Contract.
3. The Contractor shall review, approve and submit to the Project Manager all Shop Drawings, Product Data, Samples and other Submittals required by the Contract regardless of whether the document originated with the Contractor or with some other subcontractor or supplier. They shall be submitted at the time required by the Contract, or, if no time is specified, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor that are not required by the Contract may be returned without action or may not be returned at all.
4. Informational Submittals upon which the Project Manager is not expected to take responsive action may be so identified in the Contract.
5. The Project Manager's review of any Submittal does not relieve the Contractor from its responsibility to follow the requirements of the Contract. The Project Manager is not responsible for ensuring that Submittals are correct. Failure of the Project Manager to discover that a submittal varies from the requirements of the Contract Documents shall not relieve the Contractor of its responsibilities to conform to the Contract nor provide a basis for a change order. Nevertheless, the Project Manager shall review any Submittals provided in order to make a general determination about whether they appear to meet Contract requirements or the intended design of the project. The Contractor remains responsible for following the contract, including, but not limited to:
 - a. Confirming and correlating all dimensions;
 - b. Fabricating and construction techniques;
 - c. Coordinating the work with that of all other trades and subcontractors;
 - d. Satisfactorily performing the Work in strict accordance with the contract documents;
 - e. The means and methods of construction;
 - f. Conforming to all the requirements of the Contract.

B. Submittals Shall Include:

1. Date and revision dates.
2. Project title and number.
3. Name of Contractor, Supplier and Manufacturer.
4. Identification of product material.
5. Relation to adjacent structure or material.
6. Field dimensions, clearly identified as such; other dimensions critical to product installation, or relevant to installation of other adjacent products.
7. Specification Section number.
8. Applicable standards such as ASTM, Federal Specification, etc.

9. Identification of deviations from Contract Documents.
10. Contractor's note or stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents.
11. Transmittal letter with all submittals containing: the number of drawings, data or samples submitted; notification of deviation from the Contract Documents; other pertinent data.

PART 2 - PRODUCTS

2.01 SHOP DRAWINGS:

- A. Defined as: Original drawings prepared by the Contractor, Subcontractor, Supplier or Distributor which illustrate some portion of the Work; showing fabrication, layout, setting or erection details.
- B. Prepared by qualified detailer.
- C. Identify details by reference to contract sheet and detail number.
- D. Minimum size sheet 8"x11", maximum 24"x36".

2.02 PRODUCT DATA:

- A. Defined as: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- B. Manufacturer's standard schematic drawings;
 1. Modify to delete extraneous information.
 2. Supplement standard information as applicable to project.
- C. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data;
 1. Clearly mark each copy to identify pertinent materials, products or models.
 2. Show dimensions, weights, and clearances required.
 3. Show performance data.

2.03 SAMPLES:

- A. Defined as: Physical examples to illustrate materials, colors, equipment or workmanship, and to establish standards by which completed work is judged.
- B. Office Samples: Sufficient size and quantity to illustrate:
 1. Functional characteristics of product or material, with integrally related parts and attachment devices.
 2. Full range of color samples.
- C. Field samples and mock-ups:
 1. Erect at Project site in location acceptable to the Project Manager.
 2. Include work of all trades required in finished work.
 3. After review, approved field samples may be used in construction of Project.

PART 3 - EXECUTION

3.01 CONTRACTOR'S RESPONSIBILITY:

- A. Review submittals prior to submission to Project Manager. When tendering a Submittal for review, the Contractor represents that it has determined and verified materials, field measurements and field construction criteria related thereto, or shall do so, and has checked and coordinated the information contained with such Submittals with the requirements of the Work and of the Contract. The

Contractor shall expressly note where any submittal differs from or varies from the requirements of the Contract, notwithstanding any belief on the part of the Contractor that the variance is obvious.

- B. Verify: field measurements, field construction criteria, catalog numbers and similar data.
- C. Coordinate with requirements of Work and Contract Documents.
- D. Contractor's responsibility for errors and omissions in submittals is not relieved by Project Manager's or Project Manager's review of submittals.
- E. Contractor's responsibility for deviations from the Contract Documents is not relieved by review of submittals unless Project Manager gives written acceptance of specific revisions expressly requested by the contractor.
- F. Begin no work which requires submittals until return of submittals with appropriate stamp and initials or signature indicating approval.

3.02 SUBMISSION REQUIREMENTS:

- A. Submit at least 14 days before the date each reviewed submittal is needed.
- B. Submit 3 of copies of shop drawings and product data which the Contractor requires for distribution plus 2 copies which the Project Manager will retain.
- C. Unless a greater quantity is specified in the various Specifications Sections, submit the number of Office Samples Contractor requires for distribution plus 2 of all Office Samples which the Project Manager will retain.

3.03 PROJECT MANAGER'S REVIEW: The Project Manager shall have fourteen (14) days to review any Submittals. The Project Manager shall review the Submittals and return them to the Contractor stamped with one of the following notations:

- A. "APPROVED": This means that the Contractor immediately can begin the work encompassed by the Submittal.
- B. "APPROVED AS CORRECTED": This means the Contractor is required to make any revisions suggested by the Project Manager and, upon correction, may immediately begin the work indicated by the Submittal or may incorporate the material or equipment covered by the Submittal into the Work.
- C. "REVISE AND RESUBMIT": This means the Contractor is required to revise the Submittal and resubmit it to the Project Manager. No work shown on the Submittal, or which is dependent upon approval of the Submittal or material or equipment covered by the Submittal, may be incorporated into the Work until the Contractor has made the necessary revisions, resubmitted the Submittal and received the Submittal back marked either "APPROVED" OR "APPROVED AS CORRECTED"
- D. "NOT APPROVED": This means that the Project Manager has found the Submittal, material or product data to be unacceptable and not in conformance with the Contract. Generally speaking, rejection of a Submittal simply indicates the Project Manager's belief that the defects in the Submittal are so great that it cannot be revised in order to make it conform to the Contract. The Contractor may not begin work indicated by the Submittal, nor incorporate material or equipment, nor proceed with Work dependent upon approval of the Submittal, into the Work based on any Submittal, product data or material that has been marked "NOT APPROVED."
- E. "SUBMIT SPECIFIED ITEM": This means that additional information is required to permit a full review. Work may begin on incorporating the material or equipment covered by the Submittal into the Work, only if it is not affected by the item to be submitted. However, if any material or equipment is

affected by the item to be submitted, then no work may begin until the Submittal is resubmitted and returned marked either "APPROVED" or "APPROVED AS NOTED."

3.04 RESUBMISSION REQUIREMENTS:

- A. Revise initial drawings as required and resubmit as specified for initial submittal.
- B. Indicate changes which have been made other than those requested by the Project Manager.

END OF SECTION

01 14 13 CODES AND STANDARDS

PART 1 GENERAL

1.01 GENERAL

All Products and Execution of the Work shall comply with Reference Standards as specified and defined herein and as supplemented in the respective Sections of the Specifications.

1.02 REFERENCE STANDARDS

- A. The term Reference Standards as used throughout these specifications shall include Standard Specifications, Manufacturer's Directions or recommendations, and all applicable Codes, Policies, Regulations, and Ordinances, issued by authorities having jurisdiction.
- B. Reference Standards listed in the respective Sections of the Specifications shall be in addition to Reference Standards specified in this Section.

1.03 STANDARD SPECIFICATIONS

Reference herein to specifications issued by organizations or governmental bodies shall mean edition current on date of Invitation to Bid, unless otherwise noted. Wherever reference standard specifications contain provisions which conflict with these Contract Documents the Contract Documents shall govern.

Reference to ES reports, shall include current evaluation reports recognized by ICC, whether originated by ICBO, ICC, BOCA or other recognized code agency.

Comply with applicable Federal, State and Local Standards for VOC limitations, hazardous materials, etc.

1.04 MANUFACTURER'S DIRECTIONS

- A. All manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned, protected, and conditioned as directed by the manufacturer's printed instructions, unless specifically instructed to the contrary in writing by the Project Manager.
- B. The Contractor shall provide all accessories, incidentals, processes and labor required to complete the installation as provided in the manufacturer's recommendations.
- C. Should any provision in these Contract Documents be in conflict with manufacturer's recommendations, or in any other way reduce or nullify the manufacturer's warranty or responsibility, notify the Project Manager in writing prior to ordering the respective manufacturer's product.

1.05 CODE REQUIREMENTS

- A. The requirements of the Oregon State Structural Specialties Code and Fire and Life Safety Code, current edition; Oregon State Plumbing Code, current edition; Oregon State Mechanical Code, current edition, the Oregon State Electrical Code current edition, the Oregon Fire Code and the Oregon Energy Efficiency Code shall govern all construction.
- B. Comply with all applicable local, State, and Federal environmental regulations.
- C. Comply with all applicable safety codes, including but not limited to the "Oregon Occupational Safety and Health Code", and Workmen's Compensation Board OAR 437-83-2754 and 2755.

END OF SECTION

01 42 13 ABBREVIATIONS AND ACRONYMS

PART 1 GENERAL

1.01 ABBREVIATIONS:

A Reference to technical society, institutional, association or governmental authority is made in accordance with the following:

AA Aluminum Association
AAMA American Architectural Metals Assoc.
ACI American Concrete Institute
ADA Americans with Disabilities Act
AIA American Institute of Architects
AISC American Institute of Steel Construction
AITC American Institute of Timber Construction
ANSI American National Standards Institute
APA American Plywood Association
ARI Air-Conditioning and Refrigeration Institute
ARMA Asphalt Roofing Manufacturer's Assoc.
ASHRAE American Society of Heating, Refrigeration & Air Conditioning Project Managers
ASME American Society of Mechanical Project Managers
ASPE American Society of Plumbing Project Managers
ASTM American Society for Testing and Materials
AWI Architectural Woodwork Society
AWPA American Wood Preservers' Assoc.
AWS American Welding Society
AWWA American Waterworks Association
AASHO American Association of State Highway Officials
ASSE American Society of Sanitary Project Managerring
CGA Canadian Gas Association
CISPI Cast Iron Soil Pipe Institute
CPSC Consumer Product Safety Commission
CRSI Concrete Reinforcing Steel Institute
CS Commercial Standard of the U.S. Dept of Commerce
CSA Canadian Standards Association.
CSI Construction Specifications Institute
CTI Ceramic Tile Institute of America
DOC Department of Commerce
EPA Environmental Protection Agency
ETL Electrical Testing Laboratories
FCC Federal Communications Commission
FDA Food and Drug Administration
FHA Federal Housing Administration (of HUD)
FM FM Global
FS Federal Specifications (from GSA)
FSC Forest Stewardship Council
GA Gypsum Association
GSA General Services Administration
HI hydraulic Institute Standards
HUD U.S Dept. of Housing and Urban Development
IBC International Building Code (as modified by OSSSC)
ICBO International Conference of Building Officials
ICC International Code Council
KCMA Kitchen Cabinet Manufacturers Assoc.
MSS Manufacturers Standardization Society.
NAAMM National Association of Architectural Metal Manufacturers
NCMA National Concrete Masonry Association

NEC National Electrical Code
 NECA National Electrical Contractors Assoc.
 NEMA National Electrical Manufacturers Assoc.
 NFGC National Fuel Gas Code
 NFPA National Fire Protective Association, Inc.
 NRCA National Roofing Contractor's Association
 NSF National Sanitation Foundation
 OEESC Oregon Energy Efficiency Specialty Code
 OESC Oregon Electrical Specialty Code
 OMSC Oregon Mechanical Specialty Code
 OPSC Oregon Plumbing Specialty Code
 OSHA Occupational Safety and Health Administration
 OSHC Oregon State Highway Commission
 ORSC Oregon Residential Specialty Code (2008 ed)
 OSSC or OSSSC Oregon Structural Specialty Code (2010 ed.)
 PS Product Standard, U.S. Dept of Commerce
 SIGMA Sealed Insulating Glass Manufacturers Assoc.
 SDI or S.D.I. Steel Door Institute or Steel deck Institute (depending on context)
 SJI Steel Joist Institute
 SMACNA Sheet Metal and Air Conditioning Contractors National Association, Inc.
 TCA Tile Council of America.
 TEMS Tubular Exchanger Manufacturers Association.
 TIMA Thermal Insulation Manufacturer's Association
 UL Underwriter's Laboratories, Inc.
 UBC Uniform Building Code (as modified by OSSSC)
 UPC Uniform Plumbing Code
 USDA U. S. Department of Agriculture
 WCLIB West Coast Lumbermen's Inspection Bureau
 WWPA Western Wood Products Association

B. Other abbreviations used in these documents are in accord with ANSI Y1.1 "Abbreviation for Use on Drawings and in Text" , or are indicated in the Drawings or respective sections of the Specifications.

1.02 SYMBOLS AND MISCELLANEOUS ABBREVIATIONS

ACM Aluminum Composite matl. GYP Gypsum SL Structural line (Metal Bldg)
 AJH Authority Having Jurisdiction
 GB, GBD or GYP.BD = Gypsum Board SG Semi-Gloss
 BD Board HPL high pressure plastic lam SQ Square
 BOT Bottom of HVAC Heating Ventilating & Air Cond. SS or S.STL. Stainless Steel
 B.U. Built-Up ILO In lieu of STL. Steel
 C/C Center to center IN Inches SW Sidewalk
 CJ Ceiling Joist(s) ISF Inside Face TO Top of, eg. T0.PL
 CONC. Concrete LB or # Pounds TC Top of Curb
 CMU Conc. masonry units LSL Laminated strand lumber T&B Top and Bottom
 CMP Corrugated metal panel LVL Laminated veneer lumber UNO Unless Noted Otherwise
 EA. Each Matl. Material VCT Vinyl Composition Tile
 E/W Each Way MAX. Maximum WD Wood
 E.N. Edge nailing (sheathing) MEL Thermoset melamine WP Water Proof
 MIN. Minimum
 ENAM Enamel MTL Metal W/ With
 ES ICC Evaluation Service report NTS Not to Scale W/O Without
 FNDN Foundation OC On Center WR Water Resistant eg. WR.GB
 FO Face of; eg FO.CMU OSB Oriented Stand Board WRB" Water resistant barrier
 FOM Face of Masonry OSF Outside Face " Inches or second
 FOC Face of Concrete or Curb P.D.F. Power Driven Fastener ' Feet or Minute
 FOS Face of Studs PG Paving Grade or Page + Plus
 FSH Face of sheathing PL or Property Line or Plate - Minus

FT Feet P.LAM or HPL Plastic laminate. / Per; eg lb/sf
FTG Footing PN - P.N.Perimeter nailing (sheathing) # Number or Pounds
GVP Gypsum Veneer Plaster PSF Pounds/sq.ft. X By ; eg. 2 x 4
G.I Galvanized Steel / Iron PSI Pounds/sq.in. % Percent
PSL Parallel strand lumber @ At

END OF SECTION

01 45 00 QUALITY CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for quality-control services.
- B. Quality control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Project Manager.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
 3. Requirements for Contractor to provide quality-control services required by Project Manager, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- E. Repair and restore construction disturbed by inspection and testing activities.
- F. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 01 73 29 Cutting and Patching
 2. Section 01 31 13 Coordination.

1.03 RESPONSIBILITIES

- A. Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, Contractor shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. Costs for these services are included in the Contract Sum.
1. Inspections and testing required by the OSSC and in particular OSSC Chapter 17 relating to Structural Tests and Special inspections are applicable to this project. Inspections and Tests required by OSSC shall be the Contractor's responsibility unless specifically indicated elsewhere in the contract documents to be the Owner's responsibility.
 2. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform quality-control services. Costs for these services are included in the Contract Sum.
 3. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Owner's responsibility, the Owner will employ and pay a qualified independent testing agency to perform those services. The Contractor shall coordinate and cooperate with the Owner's testing agency.

- B. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.
1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.
- C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
1. Provide access to the Work.
 2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
 3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
 4. Provide facilities for storage and curing of test samples.
 5. Deliver samples to testing laboratories.
 6. Provide the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
 7. Provide security and protection of samples and test equipment at the Project Site.
- D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Project Manager and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.
1. The agency shall notify the Project Manager and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
 3. The agency shall not perform any duties of the Contractor.
- E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities, and shall include these events in the Contractor's Construction Schedule. Times for proposed inspections, tests, and sampling shall be incorporated into the Contractor's Construction Schedule."

1.04 SUBMITTALS

A. Testing Schedule

Prior to proceeding with the Work, the General Contractor shall submit, for approval by the Project Manager, a schedule of required testing and Inspections, including the names addresses and phone numbers of the proposed testing agencies.

- B. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Project Manager. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.

2. Submit a final report with closeout submittals, documenting all required special inspections and correction of any discrepancies noted in the inspections. This may be a copy of report required by OSSC 1704.1.2.
3. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address, and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and test method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and an interpretation of test results.
 - j. Ambient conditions at the time of sample taking and testing.
 - k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
 - l. Name and signature of laboratory inspector.
 - m. Recommendations on re-testing.

1.05 QUALITY ASSURANCE

- A. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are prequalified as complying with the American Council of Independent Laboratories' Recommended Requirements for Independent Laboratory Qualification and that specialize in the types of inspections and tests to be performed.
1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

PART 2- PRODUCTS (Not Applicable)

PART 3- EXECUTION

3.01 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 1 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.
- C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION

01 50 11 TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE:

A. Removal of temporary facilities: 01 74 00 CLEANING & WASTE MANAGEMENT

1.02 REQUIREMENTS OF REGULATORY AGENCIES:

A. Comply with all applicable codes, ordinances and laws. Pay all permits and fees required for temporary facilities and controls.

1.03 UTILITIES:

A. Temporary Heat:

1. Furnish as required to protect the work, and to provide proper conditions for installation and curing of work of the respective trades.
2. The General Contractor shall provide all fuel for temporary heat generated by independent heating devices and shall be responsible for all damage to the building, its contents and persons.
3. Fuel for operation of the permanent heating equipment until the date of Substantial Completion shall be paid for by the Contractor.

B. Temporary Lights and Power:

1. Furnish adequate lights and power for safe working conditions, as required by O.S.H.A. or other applicable regulatory agencies.
2. Temporary power and light service equipment, installation, and fees paid for by the General Contractor.
3. Each Contractor shall provide extension cords and lamps as necessary for the work under his contract, and shall provide his own connections to and extensions from the power panel.
4. Cost of electrical power until the date of Substantial Completion shall be paid for by the Contractor.

1.04 CONSTRUCTION AIDS:

- A. Provide all necessary construction aids, including, but not limited to ladders, ramps, hoists, runways, etc.
- B. Contractor shall be responsible for all such apparatus, equipment and construction meeting the requirements of labor and State and local laws.

1.05 BARRIERS:

A. Construct barricades, fences, railings, and similar safety precautions in accordance with, but not necessarily limited to applicable safety codes, including but not limited to the "Oregon Occupational Safety and Health Code", and WCD Administrative Rules 437-83-2754 thru 437-83-2755.

B. Project Limits Barricade: At Contractor's option.

1.06 PROJECT ACCESS LOCATIONS:

- A. Limit to locations approved by the Project Manager or noted on the drawings.
- B. Upon completion of the Project restore to original condition, unless noted otherwise.

1.07 SPECIAL CONTROLS:

- A. Noise Control: The Contractor shall prevent all unnecessary noise from his operations and those from his employees and subcontractors.
- B. Dust Control: During the entire period of construction, the Contractor shall exercise all reasonable and necessary means to abate dust. Necessary sprinkling and wetting shall be performed so that the site will not become excessively dusty at any time and the amount of dust carried in the air will be kept to a minimum.
- C. Water Control: Perform pumping, trenching, damming, and under draining necessary to keep site free from water during construction. Dispose of water in a manner acceptable to local regulation, taking care that no existing water disposal facilities are impeded, clogged, damaged, or interfered with in any way.
- D. Rubbish and Debris: Allow no excess accumulation of non-reusable material at the job site. Dispose of accumulations of rubbish and debris in a satisfactory manner, in accordance with the rules and regulations of the pollution control agencies having jurisdiction.
- E. Protection of Existing Improvements:
 - 1. The Contractor is hereby cautioned and notified that he is responsible for the protection of existing improvements which are to remain in place, throughout the execution of this contract. Temporary enclosures, walls, covers, or other protection shall be provided and maintained.
 - 2. Excavation and grading operations shall be conducted in such a manner that the streets, curbs, sewers, storm drains, utilities and other public and private facilities and improvements which are to remain in place permanently, or which are to remain in place temporarily during the performance of the contract work, will not be subject to damage, vertical settlement or horizontal movement. The Contractor shall furnish and install sheet piling, cribbing, bulkheads, shores, and other protective means as necessary. When no longer required, they shall be removed and disposed of by the Contractor.
 - 3. At points where the Contractor's operations are adjacent to or cross properties of railways, telegraph, telephone, power, gas, oil and water companies, or are adjacent to other property, (damage to which might result in significant expense, loss or inconvenience) no work shall be started until all arrangements necessary for the protection thereof have been made.
 - 4. The Contractor shall be solely and directly responsible to the Owners and Operators of such properties for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damages which result from carrying out the work to be done under the contract.

1.08 RESTORATION OF EXISTING IMPROVEMENTS:

- A. Restoration of Damage: Except as shown on the plans or as provided elsewhere in these specifications, the Contractor shall at his expense repair or replace curbs, sidewalks, driveways, utilities, street surfaces, plant materials, and any and all structures, substructures, and finishes damaged by his operations. This requirement extends to all such work now in place or completed prior to the time damage is incurred. These repairs and replacements shall be similar and equal in every respect to the original work, and acceptable to the Project Manager.
- B. Restoration of Services: In the event of interruption to domestic water, or to other utility services as a result of the Contractor's operations, the Contractor shall promptly notify the proper authority. He shall cooperate with said authority in restoration of service as promptly as possible, and shall bear all costs of repair. In no case shall interruption of any water or utility service be allowed to exist outside working hours unless prior approval is received.

1.09 FIELD OFFICE BUILDING:

- A. The General Contractor shall provide a weather tight office building on the premises, where directed, for joint use of the Contractor and the Project Manager.

- B. Provide layout table for drawings; adequate light; storage for protection of Project Record Drawings.
- C. Remove from premises upon completion of the Project, or sooner if requested.

END OF SECTION

01 60 00 PRODUCTS REQUIREMENTS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE:

01 41 13 Codes and Standards
01 33 23 Shop Drawings, Product Data, and Samples
01 62 00 Substitutions and Product Options

1.02 PRODUCT DELIVERY STORAGE AND PROTECTION

A. Transportation and Handling:

1. Timing: Arrange Product deliveries in accord with Construction Progress Schedule; coordinate to avoid conflict with Work and site conditions.
2. Delivery and inspection: Deliver Products undamaged, in Manufacturer's original containers or packaging, and with legible identifying labels intact. Immediately upon delivery, inspect shipments to assure that Products are properly protected and undamaged.

B. Storage and Protection:

1. General: Follow Manufacturer's instructions. Maintain product identity labels legible and intact. Store Products subject to weather damage in weather tight enclosures. Maintain storage at room temperature and humidity within ranges required by Manufacturer's recommendations.
2. Exterior Storage: Store fabricated Products above ground, on blocking or skids; prevent Product damage and discoloration. Cover Products subject to deterioration with impervious sheet coverings; provide adequate ventilation to prevent condensation.
3. Inspection of Stored Products: Arrange storage to permit easy access for inspection. Make periodic inspections of stored Products to assure that Products are maintained as specified and are free from damage, discoloration, and deterioration.
4. Protection after Installation: Provide substantial coverings as necessary to protect installed Products against damage. Remove covering when no longer needed.

1.03 INAPPROPRIATE PRODUCTS AND METHODS:

- A. Should any materials be found to be contrary to the Contract, the material no matter in what stage of completion, may be rejected by the Project Manager and if rejected shall be removed from the site at once.
- B. If the Contractor believes that any specified product, method, or system is inappropriate for use, or any specified result cannot be achieved, he shall so notify the Project Manager at least 7 days prior to Bid opening, or prior to execution of the Agreement if the project is not bid. Failure to deliver such notice of objection within the specified time limit, shall for the purposes of this Contract, establish that the Contractor agrees that the specified products, methods, or systems are appropriate, and achievable, and the Contractor's responsibility to provide and warrant such product, method, or system shall not later be voided or reduced. If after the agreement is signed, the Contractor notifies the Project Manager that a specified result, product, or system cannot be provided, then it shall be the Contractor's responsibility to provide a substitute which is acceptable to the Project Manager.

PART 2 PRODUCTS

2.01 NUMBER OF ITEMS SPECIFIED:

Wherever in these specifications an article, device, or equipment is referred to in the singular number, such reference shall apply to as many such articles as are shown on the Drawings or are required to complete the installations.

2.02 CONFORMANCE WITH SPECIFIED PRODUCT DESCRIPTIONS

- A. Conform to applicable Specifications and Reference Standards.
- B. Furnish all materials of a kind by one manufacturer, except component parts of an assembly need not be the product of a single manufacturer unless otherwise indicated.
- C. Furnish all items new and free from defects, of size, type, and quality specified.
- D. Refer to Section 01 62 00 for requirements concerning proprietary specifications and product options.
- E. Items shown on the drawings, but not otherwise described or noted, shall be provided in conformance with applicable code requirements.

PART 3 EXECUTION

3.01 PREPARATION AND INSPECTION

- A. No Product shall be applied or installed until conditions and surfaces are acceptable to Applicator or Installer. Prior to ordering products, field verify existing conditions and dimensions critical to product installation.
- B. Notify Project Manager of unacceptable condition or surfaces.
- C. Failure to notify Project Manager of unsatisfactory condition or subsurface before Work is started shall place full responsibility for final results upon the installer or applicator. This shall not relieve the General Contractor from any responsibilities under this Contract.
- D. Prior to covering, concealing or otherwise affecting the Work of other trades, verify with General Contractor that the Work of the other trade is complete and may be so concealed, covered, or affected. A Subcontractor who fails to make such verification shall assume complete responsibility for any necessary corrective measures. This requirement shall not relieve the General Contractor from any responsibilities under this Contract.

3.02 MANUFACTURER'S INSTRUCTIONS:

Perform Work in accord with manufacturer's instructions. Do not omit preparatory or installation procedures required by Manufacturer, unless specifically modified or exempted by Contract Documents. When Contract Documents require Work to comply with Manufacturer's instructions, obtain and distribute such instructions to parties performing Work, and if requested, include copy to the Project Manager. Maintain one copy of Manufacturer's instructions at job site during installation and until acceptance. Handle, install, connect, clean, condition, and adjust Products in strict accordance with Manufacturer's instructions and in conformance with specified requirements. Should job conditions or specified requirements conflict with Manufacturer's instructions, consult Project Manager for further instructions. Do not proceed with Work without clear instructions.

3.03 RESTORATION OF DAMAGE:

Except as shown on the plans or as provided elsewhere in these specifications, the Contractor shall at his expense repair or replace curbs, sidewalks, driveways, utilities, street surfaces, plant materials, and any and all structures, substructures, finishes and other work damaged by his operations. This requirement extends to all such work now in place or completed prior to the time damage is incurred. These repairs and replacements shall be similar and equal in every respect to the original work, and acceptable to the Project Manager.

END OF SECTION

01 62 00 SUBSTITUTIONS AND PRODUCT OPTIONS

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE:

01 33 23 Shop Drawings Product Data and Samples
01 60 00 PRODUCT REQUIREMENTS

1.02 PRODUCTS LIST

Before Contractor's first request for payment, submit to Project Manager complete list of major Products proposed for use; include proprietary names, Manufacturer's name, and installing subcontractor's name.

1.03 CONTRACTOR'S OPTIONS

A. Definition of Descriptive Specification: For the purposes of this Contract Descriptive Specification shall mean one or more listed requirements describing a Product, or reference to Standard Specifications or Standards issued by a named Agency, Manufacturer or similar Organization.

B. For Products specified only by Descriptive Specifications select any product meeting specified requirements.

C. For Products specified by listing proprietary names of Products:

1. If no Descriptive Specification is included, select any named Product.
2. If descriptive specification is included it shall take precedence. Contractor shall verify with supplier that the named Product may be provided to meet the requirements of the descriptive specification including requirements in addition to named manufacturers regular standards. If Product cannot be provided to meet the specifications, notify Project Manager at least seven days prior to Bid Opening, or prior to execution of the Agreement if the Project is negotiated. Failure to deliver such notice within the specified time limit shall for the purposes of this Contract establish that the Contractor has made the required verifications, and he shall be responsible either to provide the Product as specified, or to provide an approved substitute Product at no additional cost to the Owner.

D. Items shown on the drawings, but not otherwise described or noted, shall be provided in conformance with applicable code requirements.

1.04 SUBSTITUTIONS:

A. Submit requests for substitution approvals in triplicate and include complete data substantiating compliance of proposed substitution with Contract Documents as follows:

1. Identity of product for which substitution is requested, including specification page and paragraph.
2. Identity of proposed substitution, including drawings, photographs, performance and test data, and any other information necessary for evaluation.
3. Quality comparison of proposed substitution with specified product.
4. Changes required in other Work because of substitution.
5. Effect on Construction progress schedule.
6. Cost comparison of proposed substitution with specified product.
7. Any required license fees or royalties.
8. Availability of maintenance service.
9. Source of replacement materials.

B. In making request for substitution, Manufacturer/Contractor represents:

1. He has personally investigated proposed Product, and determined that it is equal to or superior in all respects to that specified.
2. He will provide the same guarantee for substitutions as for product specified.

3. He will coordinate installation of proposed substitution into Work, making such changes as may be required for the Work to be complete in all respects.
4. He waives all claims for additional costs related to substitution which consequently become apparent.
5. Data submitted with substitution request is complete and accurate.

C. During Bidding Period:

1. No request for approval will be considered unless written request in triplicate has been received by the Project Manager at least seven days prior to date set for bid opening.
2. Request submitted without self addressed and stamped envelope will not be individually acknowledged.
3. Project Manager will issue addenda prior to Bid Opening listing all approved substitutions.

D. After Contract Award approval will be granted only when:

1. Specified product can not be delivered without project delay, or
2. Specified product has been discontinued, or
3. Specified product has been replaced by a superior product, or
4. Specified product can not be guaranteed as specified, or
5. Specified product will not perform properly, or
6. Specified product will not fit within the designated space, or
7. Specified product does not comply with governing codes or regulations, or
8. Substitution will be clearly in Owners interest.

E. Substitutions will not be considered if:

1. They are indicated or implied on shop drawings or project data submittals without formal request for substitution as described herein above.
2. Acceptance will require substantial revision of the Contract Documents.
3. Project Manager does not agree that the proposed substitution meets the requirements listed herein above.

01 62 00 SUBSTITUTIONS AND PRODUCT OPTIONS

SUBSTITUTION REQUEST FORM

TO: Oregon Department of Transportation
ATTN: Raymond F. Cooper
3500 NW Stewart Parkway.
Roseburg, OR 97470

Project: ESB Shady Office Store Front Doors
and Reception Windows Security
Door and Windows

We hereby submit for your consideration the following product instead of the specified item for the above project:

<u>Section</u>	<u>Paragraph</u>	<u>Specified Item</u>
----------------	------------------	-----------------------

Proposed Substitution: _____

Attached data includes product description, specifications, drawings, photographs, performance and test data, adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes description of changes to Contract Documents which proposed substitution will require for its proper installation.

The Undersigned also states that the following paragraphs, unless modified on the attachments, are correct.

1. The proposed substitution does not effect dimensions shown on the Drawings.
2. The Undersigned will pay for changes to the building design, including Project Managing, design, detailing, and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.

Submitted by:

Signature

Firm

Address

Telephone

For Use by Design Consultant
 Accepted Accepted as Noted

Not Accepted Received Too Late

By _____

Date _____

Remarks _____

Attachments:

END OF SECTION

01 73 19 CUTTING AND PATCHING

PART 1 GENERAL

1.01 DESCRIPTION:

A. Related requirements specified elsewhere:

1. Section 01 11 00: Summary of Work
2. Section 01 31 13: Coordination
3. Section 01 50 00: Temporary Facilities and Controls

B. Execute cutting, patching and fitting required to:

1. Make all Work fit properly.
2. Uncover Work to provide for installation of ill-timed Work.
3. Remove and replace defective Work, or Work not conforming to the Contract Documents.
4. Repair and restore construction disturbed by inspection and testing activities.

1.02 PAYMENT FOR COSTS:

Costs caused by defective or ill-timed Work or Work not conforming to the Contract Documents, including costs of additional professional services shall be borne by the Contractor.

PART 2 PRODUCTS

2.01 Materials for the replacement of Work removed shall comply with the Contract Documents for type of Work to be done.

PART 3 EXECUTION

3.01 PREPARATION AND PROTECTION:

- A. Obtain written permission from Project Manager or his representative prior to removing, bending, boring, or making cuts or cores in any structural element other than as specifically indicated in the Drawings and Specifications.
- B. Provide shoring, bracing and support as required to maintain structural integrity of the Project.
- C. Provide protection for other portions of the Project, including protection from the weather or other sources of damage.

3.02 PERFORMANCE:

- A. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances and finishes.
- B. Execute cutting and demolition work by methods which will prevent damage to other Work, and will provide proper surfaces to receive installation of repairs and new Work.
- C. Restore Work which has been cut or removed; install new products to Provide completed Work which is in compliance with the Contract Documents.
- D. Refinish entire surfaces as necessary to provide an even finish, to nearest intersections. Unless noted or detailed otherwise repairs and replacements shall match existing adjacent surfaces,

END OF SECTION

01 74 00 CLEANING AND WASTE MANAGEMENT

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE:

Rubbish Control and removal: Section 01 50 00 Temporary Facilities
Project Closeout: Section 01 77 00

PART 2 PRODUCTS

2.01 CLEANING MATERIALS

Use only those which will not create hazards to health or property, and which will not damage surfaces.

Use only those recommended by Manufacturer of surface to be cleaned.

Use only on surfaces recommended by cleaning material manufacturer.

PART 3 EXECUTION

3.01 GENERAL

Follow cleaning Material and Surface Manufacturer's instructions.

3.02 DURING CONSTRUCTION

- A. Remove rubbish and debris on regular basis.
- B. Clean surfaces prior to painting and continue cleaning as needed until painting is complete.
- C. Schedule cleaning so that resultant dust and contaminants will not fall on wet or newly coated surfaces.

3.03 FINAL CLEANING

- A. Perform final cleaning prior to Owner Occupancy or Final Completion, whichever of the two is earlier.
- B. Employ skilled workmen for final cleaning.
- C. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign matter from all exposed interior and exterior surfaces.
- D. Clean and polish glass, mirrors, fixtures, hardware, resilient floor covering and other glossy surfaces.
- E. Vacuum clean carpets.
- F. Hose clean exterior paved surfaces; rake clean other surfaces of grounds, after removal of temporary facilities. Remove nails and other ferrous metal debris from grounds with magnetic pick-up.
- G Ventilating System: Clean permanent filters and replace disposable filters if units were operated during construction. Clean ducts, blowers, and coils if units were operated without effective filters during construction.
- H. Remove rubbish dirt and extraneous materials from the interiors of conduits, catch basins, manholes, and other construction work.

END OF SECTION

01 77 00 CLOSEOUT PROCEDURES

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

A. Comply with Contract Conditions and specified administrative requirements in closing out Work. In particular note the following requirements:

1. Liquidated damages: General Conditions
2. Warranties and Bonds: General Conditions; Section 01 78 36
3. Partial Owner Occupancy: General Conditions
4. Cleaning and Trash Removal: 01 74 00 Cleaning
5. Record Documents: 01 78 39 Project Record Documents
6. Operation and Maintenance Data: 01 78 23

1.02 SUBSTANTIAL COMPLETION

A. When Contractor considers Work Substantially Complete, as defined in the General Conditions he shall submit to Project Manager:

1. Written notice that Work, or designated portion thereof is Substantially Complete.
2. List of items to be completed or corrected.

B. Project Manager will, as soon as possible after receipt of notice, inspect to verify completion status.

C. Should Project Manager considers that Work is not Substantially Complete:

1. Project Manager will notify Contractor in writing, giving reasons therefore.
2. Contractor shall remedy Work deficiencies, and send second notice of Substantial Completion to Project Manager.
3. Project Manager will reinspect Work.

D. When Project Manager concurs that Work is Substantially Complete, he will:

1. Prepare Certificate of Substantial Completion using AIA form G704, accompanied with Contractor's list of items to be completed or corrected, as verified by Project Manager.
2. Submit Certificate to Project Manager and Project Manager for their written acceptance of the responsibilities assigned to them in the Certificate.

1.03 FINAL COMPLETION

A. When Contractor considers Work complete, he shall submit written certification that:

1. Contract Documents have been reviewed.
2. Contractor has inspected Work for compliance with Contract Documents.
3. Work has been completed in accordance with the Contract Documents.
4. Equipment and Systems have been tested in presence of Owner's Representative and are operational.
5. Work is complete and ready for final inspection

B. Project Manager will, as soon as possible after receipt of Contractor's Certification, inspect to verify completion status.

C. Should Project Manager considers Work incomplete or defective:

1. Project Manager will notify Contractor in writing, listing incomplete or defective Work.
2. Contractor shall immediately remedy deficiencies, and send second written certification to Project Manager that Work is complete.
3. Project Manager will reinspect Work.

D. When Project Manager finds Work acceptable under Contract Documents, he shall request final closeout submittals.

1.04 REINSPECTION FEES

- A. Should Project Manager be required to make more than two final inspections due to Contractor's failure to correct specified deficiencies, Owner will compensate Project Manager for additional services, and deduct Project Manager's compensation amount from Contractor's final payment as follows:
1. Project Manager's time at \$100.00 per hour.
 2. Project Manager's employees at 2.5 times the direct personnel expense.
 3. Others at 1.20 times the direct cost incurred.
 4. Charges will be made for necessary travel time, commercial air fare, auto expense computed at 50 cents per mile, room and board, and all other expenses incurred in making inspections.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS TO PROJECT MANAGER

- A. All closeout submittals shall be made at one time to Project Manager, except that extra materials shall be delivered at one time to the Project site, with letter of transmittal listing items to Project Manager with verifying signature of receipt by Owner's representative.

- B. Contractor shall submit evidence of payments and release of liens as follows:

1. Contractor's Affidavit of Payment of Debts and Claims, AIA Document G706.
2. Contractor's Affidavit of Release of Liens, AIA Document G706A including:
3. Consent of Contractor's Surety to Final Payment, AIA Document G707.
4. Contractor's release or Waiver of Liens.
5. Duly sign and execute all submittals before delivery to Project Manager.

- C. Submit the following documents and extra materials as required by code or specified elsewhere:

1. Building Official's Certificate of Mechanical and Electrical Inspections.
2. Building Official's Certificate of Occupancy.
3. Certificate of Insurance for Products and Completed Operations.
4. Owners Operating and Maintenance Manuals; see Section 01 78 23.
5. Project Record Documents; see Section 01 78 39.
6. Warranties and Bonds; see Section 01 78 36, and the following:
Roofing, Flashing, Damproofing: see Division 7, all Sections.

- D. Submit final statement of accounting to Project Manager, including the following:

1. Original Contract Sum.
2. Additions and deductions resulting from:
Deductions for uncompleted Work.
Penalties and Bonuses.
Previous change orders.
Deductions for Liquidated Damages.
Deductions for Reinspection Payments.
Other adjustments.
3. Total Contract Sum, as adjusted.
4. Previous payments.
5. Sum remaining due.

1.06 FINAL ADJUSTMENTS AND FINAL PAYMENT

- A. Project Manager will prepare and issue final Change Order, reflecting approved adjustments to Contract Sum not previously made by Change Orders.
- B. Contractor shall follow procedures specified in Supplementary Conditions in making final application for payment.

END OF SECTION

01 78 23 OPERATION AND MAINTENANCE DATA

1.01 GENERAL

Compile full details for care and maintenance of materials, equipment, and systems, where specified herein or in other Specification Sections. Instruct Owner's personnel in maintenance of Products and in operation of equipment and systems.

1.02 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

01 33 23 Shop Drawings, Product Data, and Samples.

01 77 00 Closeout Procedures

01 78 39 Project Record Documents.

Demonstrating Mechanical and Electrical Equipment; Divisions 15 and 16 respectively.

1.03 PREPARATION AND FORM OF SUBMITTALS

A. Data preparation shall be done by personnel:

1. Completely familiar with the requirements of this Section.
2. Trained and experienced in maintenance and operation of described products.
3. Sufficiently skilled as technical writer to communicate essential data.
4. Sufficiently skilled as draftsman to prepare required drawings.

B. Prepare data in form of instruction manual as follows:

1. Bind with 8-1/2 x 11 inch, commercial quality three ring binders with durable covers, tabs and index.
2. Bind in drawings with edges reinforced against tear-out, and folded to match size of text pages.
3. Provide fly-leaf with labeled tabs for each separate product.
4. Label Binder Cover "Operation and Maintenance Instructions" and list:
Project Title, Identity of Separate Structures if applicable, and Identity of Subject matter in manual.

1.04. GENERAL CONTENT OF ALL MANUALS:

A. Table of contents, neatly typed and systematically ordered, listing:

1. Contractor, name of responsible principal, address, and telephone number.
2. Each Product including name, address, and telephone number of
Subcontractor or installer
Recommended Maintenance Contractor
Local source for replacement parts

B. Product Data:

Include only those sheets which are pertinent to specified Product. Annotate each sheet to clearly identify specific product or part installed and data applicable to installation. Delete references to inapplicable data.

C. Drawings:

1. Supplement product data where necessary to clearly illustrate relationship of component parts, and control or flow diagrams.
2. Do not use Project Record Documents as Maintenance Drawings.

D. Written Text:

1. Provide where necessary to supplement Product Data and Drawings.
2. Provide logical sequence of instructions for each procedure.
3. Organize text with separate headings for different procedures.

E. Warranties, Bonds, and Maintenance Contracts:

1. Provide copy of each.

2. Include proper procedures in event of failure.
3. Include instances which might affect validity of Warranties, bonds, or Contracts.

1.05 MANUAL FOR MATERIALS AND FINISHES

- A. Include Manufacturer's Data as follows:
 - Catalog number, size, composition, color and texture designations.
 - Required reordering information.
 - Recommended cleaning materials, methods, and maintenance schedules.
 - Cautions against detrimental cleaning materials and methods.
- B. Submit specified information for the following:
 - Finish Hardware: Section 08 70 00
 - Painting: Section 09 90 00
 - Miscellaneous Specialties: Section 10 20 00

1.06 MANUAL FOR WEATHER PROTECTION MATERIALS

- A. Include Manufacturer's data as follows:
 - Applicable manufacturing standards.
 - Instructions for inspection, maintenance and repair.

1.07 MANUALS FOR MECHANICAL AND ELECTRICAL EQUIPMENT AND SYSTEMS

- A. Include the following Data:
 1. Equipment Directory:
 - List equipment, by nameplate designation, location and area served.
 - Describe function, operating characteristics, and limiting conditions.
 - List complete nomenclature and commercial number of replaceable parts.
 - Performance curves, data and tests.
 2. Operating procedures including:
 - Start-up, break-in, routine and normal operating instructions.
 - Special operating instructions (including summer-winter variations)
 - Sequences required, regulation, shutdown, and emergency
 3. Maintenance Procedures, including:
 - List of equipment requiring routine maintenance or servicing.
 - Recommended schedule and routine operations for maintenance.
 - Disassembly, repair and reassembly.
 - Adjusting and Checking.
 - Manufacturer's printed operating and maintenance instructions.
 - Parts list, and recommended parts to remain in storage.
 4. As installed control system diagrams, and description of sequences of operation.
 5. Color-code Legend, if any.
 6. Electrical panelboard circuit directories indicating:
 - Electrical Service Controls Communications, if any.
- B. Submit specified information for the following:
 - Electrical and Mechanical Equipment specified in Divisions 21 through 28

1.08 ADDITIONAL DATA

- Prepare and include additional data:
 - When need becomes apparent during instruction of Owner's personnel.
 - As specified in other Sections of Specifications.

1.09 SUBMITTAL SCHEDULE

- A. Preliminary Draft:

1. Submit two copies of proposed format.
2. Project Manager will review, and return one copy with comments.

B. Final Submittal:

Submit in final form, one complete copy, 15 days prior to Final inspection.

Copy will be returned with comments

Submit 2 copies, in approved final form, with closeout submittals.

1.10 INSTRUCTION OF OWNER'S PERSONNEL

A. Prior to final acceptance, instruct Owner's Personnel in necessary operation, adjustment and maintenance of Products, Equipment and Systems.

B. Operating and Maintenance Manual shall constitute basis of instruction.

C. Review manual with Owners personnel in detail to explain all aspects of operations and maintenance.

END OF SECTION

01 78 36 WARRANTIES AND BONDS

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. Bonds and Insurance required prior to Construction, and General and Extended Warranties by General Contractor, are specified in the General Conditions.
- B. Submittal of Bonds and Warranties specified herein: Section 01 77 00.

1.02 CERTIFICATES OF WARRANTY

- A. Provide for all Products incorporated into the Work when required by the respective Sections of the Specifications.
- B. Certificates of Warranty or Guarantee required by this Section or in the respective Sections of the Specifications, are in addition to warranties or guarantees required from the General Contractor and Specified in the Supplementary Conditions, and will in no manner reduce or nullify the General Contractor's warranty or guarantee responsibilities.
- C. All Certificates of warranties and guarantees shall:
 - 1. Be type written or professionally printed and be duly signed by the installing Subcontractor, or representative of the Product Manufacturer, authorized to legally bind the Subcontractor or Product Manufacturer.
 - 2. Warranty that the Product will be replaced or properly repaired, without delay and without cost to Owner, should the Product fail to properly function or provide proper service within the specified warranty period.
 - 3. Warranty period shall begin upon Substantial Completion, or if a Certificate of Substantial Completion is not issued, or if Work which is to be covered by warranty is not then complete, Warranty period shall begin upon the date of Final Acceptance.
 - 4. Additional warranty conditions shall be as specified in the respective Sections of the Specifications.
- D. Warranty Submittals Shall include:
 - Project name and address
 - Description of Product, and reference to Specification Section
 - Length of Warranty as specified.
 - Date of beginning for Warranty Period.
 - Conditions of warranty as specified above.
 - Additional conditions of warranty as required for Product by Specifications.
 - Statement that the signator agrees to provide said warranty.
 - Typed Name of individual signing warranty, signature, and date.
- E. Submit with Project Closeout Submittals as specified in Section 01 77 00.
- F. Where extended Warranties or specific conditions of Warranty are called for in the respective Sections of the Specifications or in the Supplementary Conditions, but where no Certificate of Warranty is required to be submitted, the General Contractor may, at his option, and to protect his own interests, require the respective Subcontractors or Suppliers to provide him with Certificates of Warranty covering his Warranty obligations to the Owner.

1.03 UNCOVERING AND CORRECTION OF WORK - WARRANTIES

- A. Warranty Period:
 - 1. The warranty period relating to faulty Products and workmanship will begin on the date appearing on the Certificate of Substantial Completion, or if a Certificate of Substantial Completion is not issued, on the date appearing on the final Certificate for Payment to the Contractor, whichever is earlier. The Owner's occupancy or use of the Project will not alter the Warranty Period herein defined.

2. The Contractor shall and hereby does warrant against ordinary wear and usage the following Work as noted, and for the following periods of time after the start of the Warranty Period as defined above:
 - a. Warranties for Work and for periods of service as called for in the respective Sections of the Specifications, regardless of limitations or conditions written into any certificates of warranty or guarantee which might be submitted.
 - b. 10 years: Weather tightness of Sealants, Roofing, Moisture barrier, Damproofing, Flashing, Roof Accessories, and other Work which is a component part of Roofing or other weather protective or moisture protective elements of the Work.
 - c. 10 years: Air tightness of insulating glass.
 - d. 3 years: Applied finishes against delaminating from surface to which applied.
 - e. 2 years: Effectiveness of soil sterilizers; Mechanical and electrical work and equipment specified in Divisions 21 through 28.

The above warranties are an extension to run concurrently with the one-year statutory warranty, and are in addition to any Guarantee, Bond or warranties called for elsewhere in the Contract Documents. Should any Work covered by Warranty fail to properly function or to provide proper service within the Warranty period, the Contractor shall correct the defect immediately, at no cost to the Owner, following receipt of written notice from the Owner. Should any other damage be incurred, either as a direct result of the subject defect, or as a result of the Contractor's failure to promptly correct the defect, then the Contractor shall also correct the resulting damage to the Owner's satisfaction, at no additional cost, whether or not said damage is to Work provided under this contract. If delay in correction of a defect covered by warranty can reasonably be expected to create a risk of significant future damage, contingent expenses, or danger to persons or property, and if the Contractor does not act with promptness commensurate to such risk, or if the Owner cannot contact the Contractor after making a reasonable effort, then the Owner may at his option, have the defect corrected and the Contractor shall pay all related costs billed to the Owner.

Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty except that the remaining warranty period shall be a minimum of one year following acceptance of the subject correction Work.

END OF SECTION

01 78 39 PROJECT RECORD DOCUMENTS

1.01 MAINTENANCE OF DOCUMENTS

A. Maintain at Project Site for Owner one record copy each of:

1. Contract Drawings and Project Manual.
2. Addenda, Field Orders, Change Orders and other Contract Modifications.
3. Other written instructions.
4. Approved Shop Drawings, Product Data, and Samples.
5. Field Test Reports.

B. Store Project Record Documents in field office apart from documents to be used for construction, and maintain in clean dry, legible condition; available at all times for inspection by Project Manager or Owner.

C. Keep Record Drawings Current; do not Conceal any Work until required information has been recorded. Lack of current Record Documents shall be grounds for withholding progress payments.

1.02 RECORDING

A. Documents shall be maintained by a competent draftsman. If Project Manager considers submitted drafting to be unacceptable, redraft until acceptable at no additional cost to Owner. Marking shall be by waterproof, felt tip pens.

B. Label each Document "PROJECT RECORD" in 1" high printed letters.

C. Required Drawings:

1. Maintain one print of Contract Drawings as "work set"; using Marking devices specified to record all Contract changes.
2. Prior to submittal, transfer recorded information to one additional print. Contractor may retain "work set" for his records.

D. Mark Drawings to record:

1. Depths of foundation elements in relation to floor elevation.
2. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
4. Field changes of dimensions and details.
5. Changes made by Change Order or other Contract Modifications.
6. Details not on original Contract Drawings.

E. Specifications and Addenda: Legibly mark to record the following:

1. Manufacturer, trade name, catalog number, and Supplier of each Product actually installed.
2. Changes made by Change Order or other Contract Modification.

1.03 SUBMITTALS

A. Submit Record Documents as specified in Section 01 77 00 Closeout Procedures, accompanied by transmittal letter, in duplicate, containing:

1. Project Title.
2. Date.
3. Contractor's name and address.
4. Title and number of each Record Document.
5. Signature of Contractor, or his authorized representative.

END OF SECTION

06 10 00 ROUGH CARPENTRY

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

General and Supplementary Conditions, Division 1, and accompanying Drawings.
06 20 00 Finish Carpentry

1.02 QUALITY ASSURANCE

Evidence of Grade:

1. Framing Lumber: Each piece stamped with grade mark and trademark of Western Wood Products Association (WWPA), except that exposed lumber shall be stamped in a concealed location or supplied with a certificate of inspection with each delivery.
2. Plywood: Identify as to grade, species, panel index, and glue type by stamp of American Plywood Association (APA); stamp on back side of exposed panels.
3. Other materials: Provide certificate of compliance or other proof of compliance with these specifications if requested by Project Manager.

1.03 DELIVERY STORAGE AND PROTECTION

- A. Protect from moisture, damage and discoloration. Do not store ferrous metal or wood products in damp areas or in contact with ground.
- B. Identify wood products as to grades and store respective grades separated.

PART 2 PRODUCTS

2.01 GENERAL

A. Lumber:

1. Dimensions: Specified lumber dimensions are nominal unless specifically noted as "net".
2. Surfacing: Provide all lumber surfaced four sides (s4s) to standard net dimensions unless otherwise scheduled or noted on the drawings.
3. Moisture Content: Kiln Dried, or 19% maximum at time of closing in of structure, for 2" or less nominal thickness. Other lumber cured dry as market affords.
4. Species: Douglas Fir, Larch unless scheduled or noted otherwise.
5. Grade: as scheduled or noted in the Drawings for specific application.

B. Plywood and OSB (Oriented Strand Board):

1. All panels shall be APA grade stamped and shall meet the requirements of the latest edition of U.S. Product Standard PS-1 and/or APA PRP-108 performance standards, as applicable.
2. Dimensions, surfacing, grade and span rating as scheduled or noted in the drawings for specific application. Where span rating is not scheduled or noted, provide panels with span rating as required by code for framing spaced 6" wider than actual conditions of installation.
3. All panels which have any edge or surface exposed to the weather shall have APA "Exterior" exposure classification. Unless otherwise scheduled or noted all other panels shall have "Exposure 1" exposure classification.
4. Plywood: All panels shall be Douglas Fir (APA Group 1), and shall be minimum 5 ply, regardless of the number of layers; as defined by APA.
5. Oriented Strand Board (OSB): All panels shall have HUD/FHA materials release for the intended material use.

C. Preservative Treatment

1. All wood products faced with metal or in contact with earth, concrete, or masonry shall be preservative pressure treated. Wood preservative shall be ACQ or approved preservative that does not contain arsenic, chromium or other EPA classified hazardous preservatives. Treatment shall comply with AWPA specifications and preservative retentions applicable to the intended use of the treated material.

D. Fasteners and other Rough Hardware:

1. Type and sizes specified, noted on Drawings, or required by code.
2. Manufactured Framing Connectors and hangers shall be ICC approved, and shall be attached only with the fastener type recommended by the manufacturer.
3. All Fasteners and other rough hardware exposed to moisture shall be hot dip galvanized or approved type non ferrous metal.
4. Fasteners shall meet the following standards:
Bolts: Fed Spec. FF-B-575. - ASTM A307
Nuts: Fed Spec. FF-N-836. - ASTM A307
Expansion Shields: Fed Spec. FF-S-325.
Lag Screws and Lag Bolts: Fed. Spec. FF-B-561.
Toggle Bolts: Fed. Spec. FF-B-588.
Wood Screws: Fed. Spec. FF-S-111.
Nails and Staples: Fed. Spec. FF-N-105B
5. Provide washers under all Nuts and under heads of bolts and lags; bevel type where on sloped bearing.

E. Other Materials:

1. Provide, all materials required to properly complete carpentry Work which are not specifically required to be provided by Others, or by trades under other Sections of these Specifications.
2. All materials shall be: new, in conformance with reference standards, suitable for the intended use, and subject to the approval of the Project Manager.

2.02 MATERIALS SCHEDULE

A. Studs:

- 2"to 4" thick, 2"to 4" wide: Stud grade and better.
- 2"to 4" thick, 6"and wider: No. 2 and better.

B. Concealed Horizontal Wood Framing:

- 2"to 4" thick, 2"to 4" wide: No. 1 and better.
- 2"to 4" thick, 6"and wider: No. 1 and better.

C. Exposed Structural Wood Framing:

Select Structural

D. Other Structural Wood Framing:

No. 1 and better

E. Plywood Wall Sheathing (if any):

APA CD-INT, with exterior glue, 1/2" thick unless noted otherwise.

F. Plywood Roof Sheathing:

APA CD-INT, with exterior glue, except APA AC-EXT at exposed soffits. Panels 5/8" thickness with 40/20 span rating unless noted otherwise. Option: With the exception of exposed eave areas roof sheathing may be 19/32" or 5/8" thick OSB type APA Rated Sheathing grade with 40/20 span rating, Exposure 1 durability classification.

G. Exposed Plywood Siding and soffits:

APA 303 Exterior plywood, premium face veneers, 16" span rating, (OC grade without patches), 5/8" thick unless detailed otherwise. Pattern noted

H. Framing Connectors and Hangers:

Simpson, Silvers, K/C Metals, or approved; type recommended by manufacturer for condition of use. Type referenced in ES reports, and recognized by OSSSC, whether originated by ICBO, ICC, BOCA or other recognized code agency. Obtain Project Manager's approval prior to substitution for items specifically described by Manufacturer and Model No. in the Drawings.

I. (For wood framed buildings) Water Resistive Barrier (WRB) and Penetration Flashing Wrap:

See Section 07 27 00 Water Resistive Barrier. DuPont™ Tyvek® DrainWrap™, or approved, vapor permeable, polyethylene fiber sheeting; 9 ft widths. Water resistive barrier shall meet the requirements ASTM 2273 and ORSC R703 for an enhanced drainage WRB.

Flashing Wrap DuPont "FlexWrap NF™" or approved self adhering flashing material complying with AAMA 711-07.and ORSC R703..

Seam Tape: 2 or 3 inch wide, DuPont™ Tyvek® Tape or approved. Fasteners: Tyvek® Wrap Caps or other manufacturer approved (#4 nails w/ 1" plastic cap fasteners).

J. Construction Adhesive / Subfloor Adhesive:

Liquid Nails "LN-902/LNP-902", Chem Link Inc. "BuildSecure" construction adhesive or approved low VOC construction adhesive meeting APA Specification AFG-01, and ASTM D3498. All construction adhesives shall have a VOC rating of 70 gpl or less.

K. Materials specified in other Sections:

Trusses: Refer to 06 17 53 Shop Fabricated Wood Trusses

Cement board siding: Refer to 06 20 00 Finish Carpentry

Water Resistive Barrier (WRB): Section 07 27 00 Water Resistive Barrier

PART 3 EXECUTION

3.01 GENERAL

A. Preparation:

Verify suitability of construction and surfaces to receive Work of this Section. Verify field measurements prior to fabrication. Notify General Contractor of unsuitable conditions, and variations from Drawing dimensions. Notify Project Manager of significant variations from Drawing dimensions. Do not proceed with Work until all conditions are satisfactory.

B. Workmanship:

1. Accurately locate, lay out, cut, fit, and install rough carpentry items and framing items furnished under other sections.
2. Provide for installation and support of Work furnished by other trades, including backing, blocking, clearances etc.
3. Install Work to true lines, plumb and level unless shown otherwise.
4. Set Horizontal or sloping members with crown up.

C. Selection of Lumber Pieces:

1. Carefully select individual pieces so that knots and obvious defects will not interfere with placing bolts, proper nailing or making proper connections.
2. Cut out and discard all defects which will render a piece unsuitable for its intended function. Lumber may be rejected by the Project Manager, whether or not installed, for excessive warp, twist, bow, crook, mildew, fungus, stain, or mold as well as for improper cutting and fitting.

D. Shimming:

Do not shim sills, studs, joists, headers, beams, or other framing components, without specific approval of the Project Manager.

E. Notching and Boring:

1. Do not notch, bore, or cut members except as noted in the Drawings or approved in advance by the Project Manager.

2. Studs: Maximum notch = 20% of stud width; Maximum bored hole = 33% of stud width with minimum 3/4" between edge of hole and stud edge.
3. Joists: Do not notch joists without specific approval of Project Manager. Maximum bored hole = 15% of joist depth in center 1/3 of span and with hole bored at centerline of joist depth.

F. Bearings:

1. Make all bearings full unless shown otherwise.
2. Finish all bearing surfaces on which structural members are to rest to ensure even support. Where Lumber members slope, cut or notch ends as required to give uniform bearing.

G. Alignment:

1. On all framing members to receive a finish material, align the finish subsurface to vary not more than 1/8" from plane of surfaces of adjacent framing members or $l/180 \times$ distance between the members, whichever is less.
2. Alignment along length of any framing member shall remain within 1/8" of true line or 1/240 of any portion, whichever is less.

3.02 PRESERVATIVE TREATED LUMBER

A. Pressure treated Lumber:

Use only preservative pressure treated lumber for all applications in contact with earth, masonry, or concrete, whether or not separated by moisture barrier. Wood preservative shall be ACQ or approved preservative that does not contain arsenic, chromium or other EPA classified hazardous preservatives. Treatment shall comply with AWPA specifications and preservative retentions applicable to the intended use of the treated material.

B. Brush coat or dip with ACQ or approved preservative that does not contain EPA classified hazardous preservatives.

1. Cut surfaces of pressure treated materials.
2. All faces of wood faced with metal.
3. Ends of members bearing on plates required to be pressure treated; minimum 6" from bearing end.

3.03 SILL SEALER (Capillary break)

Apply fiberglass sill sealer under sill plates of all exterior walls in contact with concrete or masonry. Apply continuous bead of specified construction mastic, or approved caulking under all plates, rim joists and perimeter blocking of all exterior walls and all party walls which are not in contact with masonry or concrete. Refer to sections and details in the drawings for sealant locations.

3.04 FASTENING

A. General:

1. Provide necessary nails, spikes, screws, and bolts for proper installation of carpentry work; sizes and quantities required by building code and approved by the Project Manager.
2. Use only hot dipped galvanized or approved non-ferrous type hardware in locations exposed to exterior or extremes of humidity.
3. Do all fastening without splitting wood, preboring as required; replace all split members.
4. Use washers under all nuts and under heads of bolts, and lag screws which bear on wood; beveled type for even bearing on sloped surfaces.

B. Bolting:

1. Drill holes 1/16" larger than nominal bolt diameter.
2. Bolt threads shall not bear on wood.

C. Lag Screws and Wood Screws:

1. Prebore holes same diameter as root of thread; enlarge holes to shank diameter for length of shank.
2. Screw, do not drive to install.

D. Framing Connectors:

1. Secure with nails, screws or bolts recommended by manufacturer.
2. Nail and/or bolt all spaces provided in the specified connector or hanger.

E. Nailing:

1. Drive nails perpendicular in lieu of toe nailing where feasible.
2. Spot galvanized nail heads with zinc rich paint if finish abraded.
3. Conform to OSSC for nailing requirements not specified herein or noted on the Drawings. Nailing requirements scheduled in the Drawings shall take precedence in the event they exceed those specified herein.

3.05 WALL FRAMING

A. Plates and Sills

1. Nominal 2 x width shown unless noted otherwise.
2. Single plates at floors and bottoms of openings, top plates doubled.
3. Unless detailed otherwise, provide double 2 x header on edge of minimum nominal depth in inches equal to 1-1/2 times opening width in feet.
4. Stagger ends of double plates 4'-0"; splice plates abutting at corners.
5. Anchor to masonry or concrete with 1/2" x 10"- "J"bolts at 48"oc unless noted otherwise.
6. Anchor bolts within 12" of each end of each piece; minimum 2 bolts per piece.

B. Studs and Furring:

1. Nominal 2x4 spaced 16" oc unless noted otherwise.
2. Double studs at openings, triple studs at corners and intersections.
3. Double trimmer studs at openings 6 feet and wider.
4. Provide backing for anchoring all edges of finish materials.
5. Anchor to abutting masonry with 3/8" anchor bolts top, bottom and 36"oc.

C. Blocking:

1. Install 2" nominal blocking as detailed and as required for installation of finishes, cabinets, equipment, mirrors, specialties and other items.
2. Provide firestopping as required by OSSC Chapter 7.
3. Solid block joists and rafters at each bearing, and not over 48"oc in doubled joists that are spaced under walls to clear piping.
4. 2x12 flat block for traverse rods at all windows and doors.
5. 2X6 or wider flat block at wall mounted door stops, towel bars, grab bars, etc.

D. Sheathing Paper:

See Section 07 27 00 Water Resistive Barrier.

3.06 PLYWOOD SHEATHING

A. Sheathing

1. Lay with face grain perpendicular to supports, unless noted otherwise.
2. Joints centered over supports; staggered; spaced 1/16".

END OF SECTION

06 20 00 FINISH CARPENTRY

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

General and Supplementary Conditions, Division 1, and accompanying Drawings.
06 10 00 Rough Carpentry – blocking and support
09 90 00 Painting

1.02 QUALITY ASSURANCE

Reference Standards:
Conform to the requirements of Architectural Woodwork Institute (AWI) Publication "Architectural Woodwork Quality Standards" published 2003, as the Project Manager judges it applicable and as supplemented herein.

1.03 SUBMITTALS

- A. Shop Drawings: Submit in accordance with Section 01 33 23, for all Work except standard dimension standing and running trim, and lumber. Identify each item as to location, grade, specie, and finish type.
- B. Samples: Submit approved manufacturer's full line of colors, patterns and textures for color selection and approval of all factory prefinished Products used in finish carpentry.

1.04 DELIVERY STORAGE AND PROTECTION

Protect from moisture, damage and discoloration. Do not deliver to job site until notified by General Contractor that project is conditioned and prepared to handle and store Products without damage. Maintain 50 degree F. minimum in interior spaces where Finish Carpentry Materials are located.

PART 2 PRODUCTS

2.01 GENERAL

- A. Conform to AWI "Custom" grade requirements unless noted otherwise.
- B. Provide all necessary rough and finish hardware items, including screws, anchors, brackets, etc. required for completion of the Work, but not specifically required to be furnished under other Sections.

2.02 TRIM

- A. Definition: Frames, casings, surrounds, fascias, and other millwork not specified elsewhere.
- B. Maximum moisture content at time of surfacing: 15% exterior, 10% interior.
- C. Minimum lengths:
 - Opening trim - 1 piece, single length
 - Standing trim - Joints no less than full story height apart.
 - Running Trim - Joints no closer than 12 feet apart.
- C. Interior:
 - Species: Douglas Fir or Pine
 - Grain: Vertical
 - Surface Texture: Smooth

2.03 PLASTIC LAMINATE COUNTER TOPS

- A. Manufacturer: Formica, Wilson Art, Nevamar, or approved.
- B. Type: Federal Specification L-P-508f type I; 1/16" thick, general purpose plastic laminate unless noted otherwise.
- C. Colors: 3 colors to be selected from submitted samples.

PART 3 EXECUTION

3.01 GENERAL

A. Preparation:

1. Inspection: Verify that surfaces to receive Finish Carpentry are straight, plumb, true, solid, rigid, properly prepared, and completed to the point that Work of this Section may properly commence and be completed in accordance with the original design.
2. Field Measurements: Prior to fabrication, verify field dimensions as required for accurate fit. Notify Project Manager of significant variations from plan dimensions.
3. Discrepancies: Do not proceed until all discrepancies have been resolved, and all conditions are satisfactory.

B. Workmanship: Conform to AWI "Custom" grade requirements unless noted otherwise.

C. Finishing:

1. Sand all finished wood surfaces as required to produce uniformly smooth surface, except do not sand wood scheduled to be rough or textured.
2. Use proper size nails or screws to hold members without splitting wood; set for puttying unless noted otherwise; galvanized for exterior applications.
3. Coarse or cross grain sandpaper marks, hammer marks, scratches, stains or other imperfections will not be accepted.

D. Installation Of Items Furnished Under Other Sections:

1. Install in accurate locations shown on the Drawings, in accordance with approved shop drawings.
2. Install plumb and level; moving parts without rattle, drag, or binding.

3.02 TRIM INSTALLATION

Accurately miter exterior corners, cope interior corners, miter or scarf end to end joints and scribe to abutting surfaces; Joints located only over solid support. Kerf backs of flat grained members over 5" wide or 1" thickness.

3.03 DOOR AND WINDOW INSTALLATION

A. See Section 07 27 00 Water Resistive Barrier. Do not install exterior windows or doors until WRB including sill flashing, is in place and approved.

B. Door clearances

1. The clearance between the door and frame head and jambs shall be 1/8" (3.2 mm) in the case of both single swing and pairs of doors.
2. The clearance between the meeting edges of pairs of doors shall be 1/8" (3.2 mm) to 1/4" (6.3 mm), for fire rated doors 1/8" (3.2 mm) \pm 1/16" (1.6 mm).
3. The clearance at the bottom shall be [3/4" (19.1 mm)] [5/8" (15.8 mm)].
4. The clearance between the face of the door and door stop shall be 1/16" (1.6 mm) to 1/8" (3.2 mm).
5. All clearances shall be, unless otherwise specified, subject to a tolerance of \pm 1/32" (0.8 mm).

C. Install labeled doors in accordance with code and UL rating requirements.

3.04 FINISH HARDWARE AND SPECIALTIES INSTALLATION

- A. Install in accordance with manufacturer's recommendations.
- B. Remove hardware, with the exception of prime coated items, tag, box, and reinstall after finish painting work is completed.

3.05 PLASTIC LAMINATE COUNTER TOPS

- A. Install in accordance with manufacturer's recommendations with waterproof adhesive over 3/4" exterior grade plywood unless detailed otherwise.
- B. Use full sheets, without cross seams except where counter runs are longer than laminate is commercially available; "ELL" shaped pieces not allowed.
- C. Seal with clear silicone sealant as required to prevent leakage of water from deck without the use of metal trim unless specifically detailed.

END OF SECTION

07900 SEALANTS AND CAULKING

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

Contract Conditions, Division 1, and accompanying Drawings.

1.02 QUALITY ASSURANCE

Warranty: Refer to Supplementary Conditions.

1.03 DELIVERY STORAGE AND PROTECTION

Deliver and store materials protected from damage, in original tightly sealed containers bearing identification of manufacturer, and type of material. Maintain seals intact until time of use.

PART 2 PRODUCTS

2.01 SEALANTS

A. General:

1. Unless noted otherwise all sealants shall be approximate color of adjacent surfaces.
2. Sealant materials shall be type recommended by manufacturer for use in application for which sealant is proposed.

B. Acrylic Latex Sealant:

Gibson-Holmans "Eternaflex", Sonneborn "Sonnolac", or approved.

B. Polyurethane Sealants:

Sikaflex-1a, or approved, one part, gun grade sealant meeting Federal Specification TT-S-00230C.

C. Silicone, Polysulfide Sealants:

Sika, GE, Dow, Gibson-Holmans or approved, one part, gun grade sealant meeting Federal Specification TT-S-00230C.

2.02 ACCESSORY PRODUCTS

- A. Primer and Surface Conditioner: Products recommended by Manufacturer of sealant to be applied.

- B. Backer Rod: Closed cell, polyethylene gasketing rod, by same manufacturer as sealant with which to be used; and with diameter 1/4 greater than width of joint in which to be installed.

- C. Rope Yarn: Raveled strands of non-staining fiber or cotton wicking.

PART 3 EXECUTION

3.01 PREPARATION

A. Inspection:

Examine all surfaces upon which this Work is to be applied and notify General Contractor of all conditions detrimental to proper installation. Do not proceed until all unsatisfactory conditions have been corrected. Proceeding with installation implies acceptance by the installing Subcontractor of all subsurfaces and other conditions affecting this Work.

- B. Surface Preparation:
 - 1. Allow concrete to dry at least 4 weeks before caulking or sealing.
 - 2. Remove all dust and dirt and make sure that joints are dry and free of any bond reducing matter before proceeding.
 - 3. Prime unpainted surfaces as recommended by Manufacturer of sealant.

3.02 BACKING INSTALLATION:

- A. Joints to receive acrylic latex sealant:
If joint is deeper than 3/4" and no suitable backstop is provided, pack with rope yarn to within 1/2" of surface before applying sealant.
- B. Joints to receive other sealant types:
Install Backer Rod behind sealant in accordance with Manufacturer's directions.
Stretch taut and force into joint to uniform depth, approximately 1/2 joint width, but not to exceed 1/2".
Replace any punctured backer rod with undamaged material.

3.03 SEALANT SELECTION

- A. Read Manufacturer's recommendations, and verify that sealant is intended for use with materials and conditions of application to be encountered.
- B. Sealants:
 - 1. Use specified Polyurethane Sealant, or Silicone Sealant for general sealing applications, unless specifically noted otherwise.
 - 2. Acrylic Latex Sealant may be used for joints in wood frame construction, and in all interior applications to be painted, unless noted otherwise.
 - 3. Joint sealing in interior areas subject to high moisture or humidity, such as bathrooms, showers, etc. shall be done with silicone sealant.
 - 4. Sealant types called for in the Drawings shall take precedence.

3.04 APPLICATION OF SEALANT

- A. Install in strict accordance with Manufacturer's current recommendations, taking care to produce beads of proper width and depth. Seal joints using gun type dispenser, before applying final coat of paint. Install flush with adjacent surfaces, tool smooth and remove all surplus sealant immediately.
- B. In addition to sealant locations specified elsewhere or noted in the Drawings:
 - 1. Seal all holes in building envelope (i.e. exterior ceilings, walls, and floors), including all electrical, plumbing, and HVAC penetrations.
 - 2. Seal outlets, switch boxes, and recessed fixtures on exterior walls with approved sealant or have foam face gaskets installed.

END OF SECTION

08110 HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

The work of this Section includes Hollow Metal Doors and Frames together with related hardware.

A) Opening preparation, Framing, and installation will be incidental installation.

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

General and Supplementary Conditions, Division 1, and accompanying Drawings.

06100 Rough Carpentry
07600 Flashing and Sheet Metal
07900 Sealants and Caulking
08110 Hollow Metal Doors and Frames
08710 Finish Hardware
09900 Painting
10200 Interior Specialties
16500 Electrical

1.02 SUMMARY

A. The work of this Section includes doors together with related hardware. A) Opening preparation, miscellaneous and installation.

1.02 SCOPE OF WORK

A. General: This Section Includes standard steel doors and door frames for exterior applications,

1.02 QUALITY ASSURANCE

- A. Reference Standards:
Conform to ANSI A250.8 - 2003 SDI-100 "Recommended Specifications for Standard Steel Doors and Frames published by Steel Door Institute, as the Architect judges it applicable and as modified herein.
- B. Regulatory Requirements: Fire rated steel frames shall be of the types tested and approved by a testing agency that is acceptable to regulatory agency having jurisdiction. Fire rated steel frames shall bear labels of testing agency.

Provide Underwriters (UL) label on doors and frames for class indicated on door schedule.

1.03 SUBMITTALS

Shop Drawings: Submit in accordance with Section 01340 showing manufacturer's standard details of stock items and detailed shop drawings of variations from standards. Show anchors, rough openings, cut-outs, joints, welds, profiles, reinforcing, core, label compliance, etc., for every door and frame required.

Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress schedule to avoid construction delays.

1.04 DELIVERY STORAGE AND HANDLING

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-Finished doors and frames.
- B. Inspect doors and frames on delivery for damage. Minor damages may be repaired provided refinished items match new work and are acceptable to Construction Project Manager; otherwise, remove and replace damaged items as directed.

- C. Store doors and frames at building site under cover. Place units on minimum 4-inch high wood blocking. Avoid using non-vented plastic or canvas shelters that could create a humidity camber. If cardboard wrappers on doors become wet, remove cartons immediately. Provide minimum ¼-inch spaces between stacked doors to promote air circulation.

PART 2 PRODUCTS

2.01 GENERAL

All products shall Conform to Reference Standards and Regulatory Requirements.

2.02 MANUFACTURES

- A. Available Manufactures: Subject to compliance with requirements, manufactures offering products that may be incorporated in the work the following or the approved equal.
 - 1. Steel Doors and Frames:
 - a. Amweld Building Products, Inc.
 - b. Ceco Door Products.
 - c. Curries Co.
 - d. Steelcraft.

2.2 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip: Commercial-quality carbon steel, pickled and oiled, complying with ASTM A 569 (ASTM A 569M).
- B. Cold-Rolled Steel Sheets: Carbon steel complying with ASTM A 366 (ASTM A 366M), commercial quality, or ASTM A 620 (ASTM A 620M), drawing quality, special killed.
- C. Galvanized Steel Sheets: Zinc-coated carbon steel complying with ASTM A 526 (ASTM A 526M), commercial quality, or ASTM A 642 (ASTM A 642M), drawing quality, hot-dip galvanized according to ASTM A 525, with A 60 or G60 (ASTM A 525M, with Z 180 or ZF 180) coating designation, mill phosphatized.
- D. Supports and Anchors: Fabricated from not less than 0.0478-inch thick steel sheet; 0.0516-inch thick galvanized steel where used with galvanized steel frames.
- E. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where items are to be built into exterior walls, hot-dip galvanize complying with ASTM A 153, Class C or D as applicable.

2.02 DOORS

- A. HM on schedule
 - 1. Exterior Doors: SDI Level 2 – Performance level B - Heavy Duty , Model 2 - seamless composite, 18 ga. Min (0.0516-inch thick galvanized steel sheet faces.) min., 1-3/4" thick; flush end closure treatment required at top of doors.
 - 2. Interior Doors: None

2.03 FRAMES

- A. HM on schedule:

Provide metal frames for doors, according to ANSI/SDI 100.

 - 1. Type: Welded unit type; 16 ga (0.0635-inch thick galvanized steel sheet) exterior; No seams, penetrations or visible at joints.
 - 2. Anchors: Special types where indicated, standard elsewhere; minimum 4 per jamb including floor clip, for doors up to 7'-6" high; add 1 anchor per 24" or fraction thereof over 7'-6" high. Stud anchors weld to frame type; friction fit or twist in type not approved.
 - 3. Door Silencers: Except on weather stripped frames, drill stops receive 3 silencers on strike jambs of single-door frames.

2.04 FABRICATION

- A. Fabricate steel doors and frame units to be rigid, neat in appearance, and free from defects, warp, or buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly as Project site. Comply with ANSI/SDI 100 requirements.
 - 1. Internal Construction: Manufacturer's standard core materials according to SDI Standards:
 - 2. Clearances: Not more than 1/8-inch at jambs and heads, except not more than 1/4-inch between non-fire-rated pairs of doors. Not more than 3/4-inch at bottom.
- B. Fabricate exposed faces of doors and panels from only cold-rolled steel sheet.
- C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Fabricate concealed stiffeners, reinforcement, edge channels, from either cold or hot-rolled steel sheet.
- E. Galvanized Steel Doors, Panels and Frames: For the following locations, fabricate doors panels, and frames from galvanized steel sheet according to SDI 112. Close top and bottom edges of doors flush as an integral part of door construction or by an addition of minimum 0.0635-inch thick galvanized steel channels, with chamber webs placed even with top and bottom edges. Seal joints in top edges of doors against water penetration at exterior locations.
- F. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- G. Reinforce doors and frames to receive surface-applied hardware. Do all drilling and tapping for hardware at factory, except drilling and tapping for surface-applied hardware may be done at Project site.
 - 3. Reinforce all doors for closers.
- H. Locate hardware as indicated on Shop Drawings or, if not indicated, according to the Door and Hardware Institute's (DHI) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

2.05 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
- B. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for steel sheet finishes.
- C. Apply primers and organic finishes to doors and frames after fabrication.

2.06 GALVANIZED STEEL SHEET FINISHES

- A. Surface Preparation: Cleaning surfaces with non-petroleum solvent so that surfaces are free of oil or other contaminants. After cleaning, apply a conversion coating of the type suited to the organic coatings applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.
- B. Factory Priming for Field-Painted Finish: Where field after installation is indicated, apply air-dried primer specified below immediately after cleaning and pretreatment.
 - 1. Shop Primer: Zinc-dust, zinc-oxide primer paint complying with performance requirements of FS TT-P-641, Type 11.

2.07 STEEL SHEET FINISHES

- A. Surface Preparation: Solvent-clean surfaces to comply with SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel to comply with SSPC-SP 5 (White Blast Cleaning) or SSPC-SP

- 8(Pickling).
- B. Pretreatment: Immediately after surface preparation, apply a conversion coating of type suited to organic coating applied over it.
 - C. Factory Priming for Field-Painted Finish: Apply shop primer that complies with ANSI A224.1 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a sound foundation for field-applied topcoats. Apply primer immediately after surface preparation and pretreatment.

2.08 OPENINGS:

- A. General: Make provisions for openings where indicated, as detailed, and in accordance with Reference Standards.

PART 3 EXECUTION

3.01 Examination

- A. Field verify dimensions prior to fabrication.
- B. Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.
 - 1. Verify rough openings sizes and wall thickness are acceptable.
 - 2. Verify finish hardware requirements for each opening; verify frame reinforcement, preparation and anchorage. Verify requirements and coordinate with door and hardware supplier.

3.02 INSTALLATION

- A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufactures' data, and as specified.
- B. Placing Frames: Comply with provisions of SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
- C. Door Installations: Fit hollow-metal doors accurately in frames, within clearances specified in ANSI/SDI 100

3.03 ADJUSTING AND CLEANING

- A. Prime Coat Touchup: Immediately after erection, sand smooth and rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
- B. Protection Remove: Immediately before final inspection, remove protective wrapping from doors and frames. Remove temporary coverings and protection of adjacent work areas.
- C. Adjust strike plate to hold door tight to stops when closed.
- D. Inspect each opening for operation, hardware, appearance and installation. Make required adjustments.

END OF SECTION

081700 HOLLOW METAL DOOR FINISH HARDWARE

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

General and Supplementary Conditions, Division 1, and accompanying Drawings.

- 06100 Rough Carpentry
- 07600 Flashing and Sheet Metal
- 07900 Sealants and Caulking
- 08110 Hollow Metal Doors and Frames
- 10200 Interior Specialties
- 16500 Electrical

1.02 SCOPE

Hardware for hollow steel doors including but not limited to:
Thresholds, butts, closers, locks, kickplates
Weatherstripping, seals and door gaskets.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
Conform to requirements for Underwriters (UL) label for class indicated on door schedule.
- B. To provide a higher level of coordination the following building materials must be provided by the same sub-contractor.
 - 1. 08110 - Steel Doors and Frames
 - 2. 08710 - Door Hardware
- C. Reference Standards:
 - 1.. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 1998.
 - 2. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures; National Fire Protection Association; 2003.
 - 3. OSSC - Oregon Structural Specialty Code - Latest edition.
- D. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.
- E. Hardware Supplier Qualifications: Company specializing in supplying commercial door hardware with five years of experience.
- F. Hardware supplier shall be a factory direct distributor for all products and services required for this project.

1.04 SUBMITTALS

- A. Hardware Submittal: Prepare a vertical schedule of hardware:
 - 1. Door numbers must be in numerical sequence.
 - 2. List each opening, door size, door hand, door and frame material, description of to and from, manufacturer's numbers and finish.
 - 3. Indicate Manufacturer's name and numbers, finish, keying, fastening, dimensions, clearances,
 - 4. Deliver twp copies of this schedule and two sets of catalog cut sheets for architect and contractor.
 - 5. Hardware supplier will retype schedule when changes occur during the project and will supply the contractor with 4 new schedules.

- B. **Manufacturer's Recommendations:**
Prior to installation, deliver to all installing personnel, complete manufacturer's recommendations for installation.
- C. **Manufacturer's Installation Instructions:** Indicate special procedures, perimeter conditions requiring special attention.
- D. **Maintenance Data:** Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
 - 1. Provide a copy of the as-built record of the hardware schedule installed in the project with the operations and maintenance manuals.
- E. **Warranty:** Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- F. Prior to final project acceptance, supplier's representative shall make one field inspection and certify, in writing to the Architect, that hardware installation complies with the project documents, approved hardware schedule, and Manufacturer's instructions, and that installation is complete and all hardware items have been properly installed and correctly adjusted, or provide a list of items that require correction.
- G. Prior to final project acceptance, supplier's representative shall instruct Owner how to properly adjust and maintain hardware.
- H. **Template Hardware:**
Send direct to door and frame Manufacturer prints or physical templates together with approved hardware materials list, for all metal doors.

1.05 DELIVERY STORAGE AND PROTECTION

Coordinate with General Contractor and ship hardware for prehung doors direct to manufacturer, together with approved hardware materials list.

Package each item separately, and each package marked with item number shown on Contractors hardware list. Include all necessary screws, fasteners, templates.

Store protected from moisture and damage.

1.06 COORDINATION

- A. Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware.
- B. Furnish templates for door and frame preparation.
- C. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- D. Coordinate Owner's keying requirements during the course of the Work.

1.07 WARRANTY

- A. See Section 01780 - Closeout Submittals, for additional warranty requirements.
- B. Provide one year warranty for all door hardware.
- C. Provide ten year warranty for door closers.

1.08 MAINTENANCE PRODUCTS

- A. Provide special wrenches and tools applicable to each different or special hardware component.
- B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

PART 2 PRODUCTS

2.01 RESPONSIBILITY

- A. This specification is intended as a guideline for quality and operation and is not to be construed as a complete list. It is the specific responsibility of the hardware supplier to furnish complete hardware for all openings that is functional, meets the Owner's intended use, and in full compliance with all State and Local Building Codes, Fire Codes, disability and accessibility codes. Any supplier bidding on this section of the work shall notify the Project Manager prior to bidding of discrepancies or will be assumed to have included correct material to make this compliance.

2.02 MANUFACTURERS

- A. Manufacturers shall be as listed in the Hardware schedule of approved by the Project Manager.
- B. Substitutions: See Section 01640 – Substitutions and Product Options.

2.03 GENERAL REQUIREMENTS FOR DOOR HARDWARE PRODUCTS

- A. Provide products that comply with the following:
 - 1. Applicable provisions of Federal, State, and local codes.
 - 2. ANSI/ICC A117.1, American National Standard for Accessible and Usable Buildings and Facilities.
- B. Finishes: Identified in schedule at end of section.

2.04 KEYING

- A. Provide locks and Medeco cylinder cores for construction purposes. Final core combining and keying to be done by the Owner.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Mounting heights for hardware from finished floor to center line of hardware item:
 - 1. Locksets: 40-5/16 inch to center of horizontal lever handle.
 - 2. Push/Pulls: 45 inch to center of handle.

3.03 FIELD QUALITY CONTROL

- A. Provide an Architectural Hardware Consultant to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

- A. Adjust work under provisions of Section 01700.
- B. After building ventilation system has been completed and balanced, test and adjust any Closers for complete, silent, and smooth operation. Comply with the following:

1. Closing Time from 70 degrees open to 3 inches from Latch of 3 seconds.
2. Maximum required Door Opening Force (excluding unlatching force):
 - a. Exterior Doors- 8-1/2 lbs.
 - b. Interior Doors- 5 lbs.
- C. Test and adjust all Locks and Latches, including Lock Keyways for smooth and easy operation.

3.05 CERTIFICATION OF COMPLIANCE

- A. Prior to final project acceptance, supplier's representative shall make one field inspection and certify, in writing to the Architect, that hardware installation complies with the project documents, approved hardware schedule, and manufacturer's instructions, and that installation is complete and all hardware items have been properly installed and correctly adjusted, or provide a list of items that require correction.
- B. Prior to final project acceptance, supplier's representative shall instruct Owner how to properly adjust and maintain Hardware.

3.06 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01700.
- B. Do not permit adjacent work to damage hardware or finish.

3.07 SCHEDULE

A. HARDWARE GROUP 1 EXTERIOR STEEL DOOR ENTRANCES.

1.	DOORS D3				
2.	3 EA	BUTTS FBB 199 5 X 4.5	NRP	630	STANLEY
3.	1 EA	LOCK L9496 X L583-375	06 - RHODES	630	SCHLAGE
4.	1 EA	MEDECO CORE - OFCI	VERIFY TYPE	626	MEDECO
5.	1 EA	SURFACE CLOSER	4111	ALUM	LCN
6.	1 EA	DOOR BOTTOM	2211APK	630	PEMKO
7.	1 EA	THRESHOLD	270A X 282A	630	PEMKO
8.	1 EA	WALL STOP	WS407CCV	630	IVES
9.	1 EA	KICKPLATE	12" X 2" LDW	630	QUALITY
10.	1 EA	WEATHERSTRIPPING	303V	630	PEMKO

Provide called out name brands or the approved equal by the ODOT Project Manager

3.08 LOCATIONS

- A. Hinges: Top hinge 6" from hinge top to edge of door rabbet; Bottom hinge 10" between hinge bottom and finish floor; intermediate hinge centered between top and bottom hinges.
- B. Lock and Latches: Center at 36" above finish floor; dead locks 50" above finish floor.
- C. Push-Pulls: 46" above finish floor
- D. Thresholds set in heavy sealant bead entire length both sides of threshold.

END OF SECTION

SECTION 08411 - ALUMINUM FRAMED STORE FRONTS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

- A. General and Supplementary Conditions, Division 1, and accompanying Drawings.
 - 1. Section 01 45 00 - Quality Requirements.
 - 2. Section 06 10 00 - Rough Carpentry.
 - 3. Section 08 70 11 – Finish Hardware.

- B. Section Includes:
 - 1. Entrance and storefront systems, complete with reinforcing, fasteners, anchors and attachment devices.
 - 2. Aluminum doors complete with hardware.
 - 3. Accessories necessary to complete work.

1.02 SYSTEM REQUIREMENTS

- A. Design Requirements:
 - 1. Drawings are diagrammatic and do not purport to identify nor solve problems of thermal or structural movement, glazing, anchorage or moisture disposal.
 - 2. Requirements shown by details are intended to establish basic dimension of units, sight lines and profiles of members.
 - 3. Provide concealed fastening.
 - 4. Provide entrance and storefront systems, including necessary modifications, to meet specified requirements and maintaining visual design concepts.
 - 5. Attachment considerations are to take into account site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening or fracturing connection between units and building structure or between units themselves.
 - 6. Anchors, fasteners and braces shall be structurally stressed not more than 50% of allowable stress when maximum loads are applied.
 - 7. Provide for expansion and contraction without detriment to appearance or performance.
 - 8. Assemblies shall be free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.
 - 9. Not Permitted: Vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.

- C. Thermal Requirements:
 - 1. Framing systems shall accommodate expansion and contraction movement due to surface temperature differentials of 180 degrees Fahrenheit (82 degrees Celsius) without causing buckling, stress on glass, failure of joint seals, excessive stress on structural elements, reduction of performance, or other detrimental effects.
 - 2. Ensure doors function normally within limits of specified temperature range.

1.4 SUBMITTALS

- A. General: Submit in accordance with Section 01 33 23.
- B. Product Data:
 - 1. Submit manufacturer's descriptive literature and product specifications.
 - 2. Include information for factory finishes, hardware, accessories and other required components.
 - 3. [Include color charts for finish indicating manufacturer's standard colors available for selection.]
- C. Shop Drawings:
 - 1. Submit shop drawings covering fabrication, installation and finish of specified systems.
 - 2. Include following:
 - a. Fully dimensioned plans and elevations with detail coordination keys.
 - b. Locations of exposed fasteners and joints.
 - 3. Provide detailed drawings of:
 - a. Composite members.
 - b. Joint connections for framing systems and for entrance doors.
 - c. Anchorage.
 - d. System reinforcements.
 - e. Expansion and contraction provisions.
 - f. Hardware, including locations, mounting heights, reinforcements and special installation provisions.
 - g. Glazing methods and accessories.
 - h. Internal sealant requirements as recommended by sealant manufacturer.
 - 4. Schedule of finishes.
- D. Samples:
 - 1. Submit samples indicating quality of finish, in required colors, on alloys used for work, in sizes as standard with manufacturer.
 - 2. Where normal texture or color variations are expected, include additional samples illustrating range of variation.
- E. Manufacturer's Instructions: Submit manufacturer's printed installation instructions.

1.5 QUALITY ASSURANCE

- A. Single Source Responsibility:
 - 1. To ensure quality of appearance and performance, obtain materials for each system from either a single manufacturer or from manufacturer approved by each system manufacturer.
- B. Installer Qualifications: Certified in writing by Contractor as qualified for installation of specified systems.
- C. Perform Work in accordance with AAMA SFM-1 and manufacturer's written instructions.
- D. Conform to requirements of ANSI A117.1 and local amendments.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Protect finished surfaces as necessary to prevent damage.
- B. Do not use adhesive papers or sprayed coatings which become firmly bonded when exposed

- to sun.
- C. Do not leave coating residue on any surfaces.
- D. Replace damaged units.

1.8 WARRANTY

- A. Provide warranties in accordance with Section 01 78 36.
- B. Provide written manufacturer's warranty, executed by company official, warranting against defects in materials and products for 2 years from date of Substantial Completion.
- C. Provide written installer's warranty, warranting work to be watertight, free from defective materials, defective workmanship, glass breakage due to defective design, and agreeing to replace components which fail within [2] years from ship date.
 - 1. Warranty shall cover following:
 - a. Complete watertight and airtight system installation within specified tolerances.
 - b. Completed installation will remain free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.
 - c. System is structurally sound and free from distortion.
 - d. Glass and glazing gaskets will not break or "pop" from frames due to design wind, expansion or contraction movement.
 - e. Glazing sealants and gaskets will remain free from abnormal deterioration or dislocation due to sunlight, weather or oxidation.
- D. Provide written warranty stating organic coating finish will be free from fading more than 10%, chalking, yellowing, peeling, cracking, pitting, corroding or non-uniformity of color, or gloss deterioration beyond manufacturer's descriptive standards for 2 years from date of Substantial Completion and agreeing to promptly correct defects.
- E. Provide a written thermal integrity warranty for 2 years from ship date against thermal barrier system failure resulting from the following:
 - 1. Longitudinal and transverse thermal barrier shrinkage.
 - 2. Thermal barrier cracking.
 - 3. Structural failure of the thermal barrier material.
 - 4. Loss of adhesion or loss of prescribed edge pressure on glazing material resulting in excessive air and water infiltration.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

- A. Subject to compliance with requirements indicated, provide products by one of the following:
 - 1. United States Aluminum, 200 Singleton Drive, Waxahachie, Texas 75165; (972) 937-9651 (voice); (972) 937-0405 (data). Or the approved equal by the ODOT Project Manager.
- B. Substitutions: Submit under provisions of Section 01 60 00, a minimum of 10 days prior to bid date.
- C. Acceptable Entrance Doors:

Series	Stiles	Top Rail	Bottom Rail	Glazing Infill
400	3 1/2" (88.9)	3 3/16" (81)	6 1/2" (165.1)	1/4" (6) 1" (25)
ADA bottom rail option for any Series			9 1/2" (241.3)	

Note. 10 inch tall bottom rails meet requirements of ADA, and can be specified on any standard or heavy duty system.

2.1 MANUFACTURERS AND PRODUCTS

1. Standard Duty Doors: Series [400]

D. Acceptable Storefront Framing Systems:

1. Framing System: Series [400]

2.2 FRAMING MATERIALS AND ACCESSORIES

A. Aluminum:

1. ASTM B221, alloy 6063-T5 for extrusions; ASTM B209, alloy 5005-H34 for sheets; or other alloys and temper recommended by manufacturer appropriate for specified finish.

B. Anchorage Devices:

1. Manufacturer's standard formed or fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.

C. Fasteners:

1. Aluminum, non-magnetic stainless steel or other materials warranted by manufacturer to be non-corrosive and compatible with components being fastened.
2. Do not use exposed fasteners, except where unavoidable for application of hardware.
3. For exposed locations, provide countersunk Phillips head screws with finish matching items fastened.
4. For concealed locations, provide manufacturer's standard fasteners.
5. Provide nuts or washers of design having means to prevent disengagement; deforming of fastener threads is unacceptable.

D. Expansion Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt anchors.

E. Protective Coatings: Cold-applied asphalt mastic complying with SSPC-Paint 12, compounded for 30 mil (0.77 mm) thickness for each coat; or alkyd type zinc chromate primer complying with FS TT-P-645.

F. Glazing Gaskets:

1. Compression type design, replaceable, molded or extruded, of neoprene, or ethylene propylene diene monomer (EPDM).
2. Conform to ASTM C509 or C864.
3. Profile and hardness as required to maintain uniform pressure for watertight seal.
4. Provide in manufacturer's standard black color.

G. Weatherstripping:

1. Wool pile conforming to AAMA 701.2; or extruded EPDM elastomeric conforming to ASTM C509 or C864.
2. Provide EPDM or vinyl-blade gasket weatherstripping in bottom door rail, adjustable for contact with threshold.

I. "Anti-Walk" Edge Blocking: "W" shaped EPDM blocks for use in keeping glazing material stationary under vibration or seismic loading.

J. Baffles (at weep holes): Type as recommended by system manufacturer and shown in published installation instructions.

2.4 DOOR HARDWARE

See drawing for details

2.5 FABRICATION

- A. Coordination of Fabrication:
1. Check actual frame or door openings required in construction work by accurate field measurements before fabrication.
 2. Fabricate units to withstand loads which will be applied when system is in place.
- B. General:
1. Conceal fasteners wherever possible.
 2. Reinforce work as necessary for performance requirements and for support to structure.
 3. Separate dissimilar metals and aluminum in contact with concrete utilizing protective coating or pre-formed separators which will prevent contact and corrosion.
 4. Comply with Section 08 80 10 for glazing requirements.
- C. Aluminum Framing:
1. Provide members of size, shape and profile indicated, designed to provide for glazing from [exterior] and [interior].
 2. Fabricate frame assemblies with joints straight and tight fitting.
 3. Reinforce internally with structural members as necessary to support design loads.
 4. Maintain accurate relation of planes and angles, with hairline fit of contacting members.
 5. Seal horizontals and direct moisture accumulation to exterior.
 6. Provide flashings and other materials used internally or externally that are corrosive resistant, non-staining, non-bleeding and compatible with adjoining materials.
 7. Provide manufacturer's extrusions and accessories to accommodate expansion and contraction due to temperature changes without being detrimental to appearance or performance.
 8. Make provisions in framing for minimum edge clearance, nominal edge cover and nominal pocket width for thickness and type of glazing or infill used in accordance with recommendations of manufacturer and FGMA Glazing Manual.
 9. Provide tight fitting, injection molded, plastic water deflectors at all intermediate horizontals.
- D. Entrance Doors:
1. Fabricate with mechanical joints using internal reinforcing plates and shear blocks attached with fasteners and by welding.
 2. Provide extruded aluminum glazing stops of [square] [beveled and mitered (for single glazing only)] design, [permanently anchored on security side and removable on opposite side.]
- E. Hardware:
1. [Receive hardware supplied in accordance with Section 08710 and install in accordance with requirements of this Section.]
 2. Cut, reinforce, drill and tap frames and doors as required to receive hardware.
 3. Comply with hardware manufacturer's templates and instructions.
 4. Use concealed fasteners wherever possible.
- F. Welding:
1. Comply with recommendations of the American Welding Society.
 2. Use recommended electrodes and methods to avoid distortion and discoloration.
 3. Grind exposed welds smooth and flush with adjacent surfaces; restore mechanical finish.

- G. Flashings: Form from sheet aluminum with same finish as extruded sections. Apply finish after fabrication. Material thickness as required to suit condition without deflection or "oil-canning".

2.6 FINISH

- A. Dark Bronze Anodized Color:
 - 1. Conforming to AA-M12C22A [34] [44] and AAMA 608.1.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with Section 01400.
- B. Verify dimensions, tolerances and method of attachment with other Work.

3.2 INSTALLATION

- A. Erection Tolerances:
 - 1. Limit variations from plumb and level:
 - a. 1/8 inch (3 mm) in 10 feet (3 M) vertically.
 - b. 1/8 inch (3 mm) in 20 feet (6 M) horizontally.
 - 2. Limit variations from theoretical locations: 1/4 inch (6 mm) for any member at any location.
 - 3. Limit offsets in theoretical end-to-end and edge-to-edge alignment: 1/16 inch (2 mm) from flush surfaces not more than 2 inches (51 mm) apart or out-of-flush by more than 1/4 inch (6 mm).
- B. Install doors and hardware in accordance with manufacturer's printed instructions.
- C. Set units plumb, level and true to line, without warp or rack of frame.
- D. Anchor securely in place, allowing for required movement, including expansion and contraction.
- E. Separate dissimilar materials at contact points, including metal in contact with masonry or concrete surfaces, with bituminous paint or pre-formed separators to prevent contact and corrosion.
- F. Seal perimeter members as shown on manufacturer's installation instructions or as required for unique job conditions. Set other members with internal sealants and baffles as called for in manufacturer's installation instructions. Use sealants as recommended by sealant manufacturer.
- G. Coordinate installation of perimeter sealant and backing materials between assemblies and adjacent construction in accordance with requirements of Section 07920.
- H. Glazing: Refer to requirements of Section 08810. Utilize "anti-walk" edge blocking on all vertical edges of glazing.

3.3 ADJUSTING

- A. Test door operating functions. Adjust closing and latching speeds and other hardware in accordance with manufacturer's instructions to ensure smooth operation.

3.4 CLEANING

- A. Clean surfaces in compliance with manufacturer's recommendations; remove excess mastic, mastic smears, foreign materials and other unsightly marks.
- B. Clean metal surfaces exercising care to avoid damage.

END OF SECTION

08 70 11 FINISH HARDWARE

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

Contract Conditions, Division 1, and accompanying Drawings.
06 10 00 Rough Carpentry – Blocking for stops.
06 20 00 Finish Carpentry - Installation
09 90 00 Painting

1.02 SCOPE OF WORK

A. Provide hardware for all doors scheduled in the drawings.

B. Hardware supplier shall prepare a complete vertical schedule in compliance with the specifications and drawings.

1.02 QUALITY ASSURANCE

A. Regulatory Requirements:

Conform to requirements for Underwriters (UL) label for class indicated on door schedule.

1.03 SUBMITTALS

Materials List:

A Hardware Schedule (see 2.02 below)

Submit 5 copies of draft hardware schedule for Project Manager's approval. Resubmit as required with modifications requested by Project Manager. Submit 5 copies of final schedule in accordance with Section 01 33 23. Include with each copy a complete description showing appearance and function of each item of hardware. Show for each opening, all hardware, indicating Manufacturer's name and numbers, finish, keying, fastening, dimensions, clearances, and calling attention to any deviations proposed from specified hardware and reason for proposed deviation.

Manufacturer's Recommendations:

Prior to installation, deliver to all installing personnel, complete manufacturer's recommendations for installation.

Template Hardware:

Send direct to door and frame Manufacturer prints or physical templates together with approved hardware materials list, for all metal doors.

1.04 DELIVERY STORAGE AND PROTECTION

Coordinate with General Contractor and ship hardware for prehung doors direct to manufacturer, together with approved hardware materials list.

Package each item separately, and each package marked with item number shown on Contractors hardware list. Include all necessary screws, fasteners, templates. Store protected from moisture and damage.

PART 2 PRODUCTS

2.01 KEYING

A. Furnish Construction cylinders with keying method independent of final keying system.

B. Final Keying: By Owner

2.02 HARDWARE SCHEDULE

A. Hardware supplier shall prepare a complete vertical schedule in compliance with the specifications and drawings including the following:

For each opening list opening number, door size, door hand, and frame material, door label, and each hardware item indicating Manufacturer's name and numbers, finish, keying, fastening, dimensions, clearances.

Detailing and selection of hardware to provide clearances, swings, etc. specified, or shown on the Drawings shall be the responsibility of the Contractor.

All doors shall be accessible for use by the handicapped, and shall comply with requirements of ANSI A117.1 and the American With Disabilities Act. Make hardware selections and adjustments accordingly.

All Butts shall be ball bearing type. 3 per door. Butt size per hardware manufacturer recommendation for door size and conditions of installation. All exterior butts shall be stainless steel or nonferrous base metal.

Provide Stops for all interior doors.

Provide closers for all exterior doors.

All hardware shall be - dull chrome finish.

Schedule shall be prepared by a member of the American Society of Architectural Hardware Consultants or a person who is responsible and the equivalent thereof. This individual shall be available for consultation at all times and make one final inspection to verify that all hardware items have been properly installed in accordance with applicable codes and the manufacturer's recommendations.

Hardware finish and function shall be subject to the Owner's final approval prior to ordering any hardware item.

All exterior hardware shall be ANSI grade 1

All interior hardware shall be ANSI grade 1 or grade 2.

B. Approved Manufacturers:

Locksets and Latches:.....	Schlage
Butts.....	McKinney
Kick Plates, Push, Pull, Flush Bolts.....	Cipco
Stops, Silencers.....	Glynn Johnson
Thresholds, Weatherstripping.....	Pemko
Closers.....	LCN

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in strict accordance with Manufacturer's instructions and in accordance with requirements of Section 06 20 00 Finish Carpentry.

B. Adjust as required to operate smoothly and silently, without rattle, bind or drag.

C. Contact contractor if there is no blocking behind door stop locations. Do not mount stops to plaster or gypsum board without proper backing.

3.02 LOCATIONS

- A. Hinges: Top hinge 6" from hinge top to edge of door rabbet; Bottom hinge 10" between hinge bottom and finish floor; intermediate hinge centered between top and bottom hinges.
- B. Lock and Latches: Center at 36" above finish floor; dead locks 50" above finish floor.
- C. Thresholds set in heavy sealant bead entire length both sides of threshold.

END OF SECTION

09 29 00 GYPSUM DRYWALL

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

General and Supplementary Conditions, Division 1, and accompanying Drawings.
06 10 00 Rough Carpentry - Wood to receive Gypsum Drywall.
09 90 00 Painting

1.02 QUALITY ASSURANCE

A. Reference Standards:

Conform with OSSC Chapter 25, and applicable requirements of ASTM C840.

B. Allowable Tolerances:

Maximum deflection or deviation from true plane 1/360 of span or 3/8" whichever is less.

1.03 DELIVERY STORAGE AND PROTECTION

Deliver and store protected from moisture or other damaging elements. Compounds and finish products in original unopened containers, Manufacturer's original labels thereon and intact until time of use.

1.04 COORDINATION

Coordinate with painting subcontractor. If required to maintain uniform texture and/or paint sheen, painting subcontractor and gypsum drywall subcontractor shall coordinate for application of primer sealer by painting subcontractor prior to application of sprayed texture. Irregularities in drywall finish texture, color or paint sheen will not be accepted.

PART 2 PRODUCTS

2.01 MANUFACTURER

All gypsum panels to be of one manufacturer; Celotex, US Gypsum, Gold Bond, or approved.

2.02 MATERIALS

A. Standard Panels: Fire Resistive Finish Panels: Type "X" fire rated board, 1/2" thickness unless scheduled otherwise, tapered edges, conforming to ASTM C-36.

B. Joint System: ASTM C745, as recommended by panel Manufacturer.

2.04 OTHER MATERIALS

Other Materials: Provide all other materials, not specifically described, but required for a complete and proper installation, as recommended by gypsum panel Manufacturer.

PART 3 EXECUTION

3.01 GENERAL

A. Preparation and Inspection:

1. Verify that surfaces to receive Work specified herein are straight, true, plumb, square, secure, rigid, dry and otherwise properly prepared. Notify General Contractor of defects requiring correction
2. Obtain verification from General Contractor that blocking has been installed and properly located for door stops, grab bars, towel bars, cabinet mounting, and similar items.
3. Do not proceed until all conditions are satisfactory.

B. Surfaces to be finished:

Refer to finish schedule. Unless noted otherwise finish closets and alcoves same as scheduled for spaces to which they are adjacent.

3.02 INSTALLATION

A. General:

1. Install wallboard in accordance with Reference Standards, including Manufacturer's directions, and applicable Codes.
2. Install all panels parallel, using maximum lengths, staggering end joints away from center of surface.
3. Abut all edges without forcing; all ends on framing.
4. Install wall panels vertical (parallel with framing), all ends and edges on framing (studs, plates or 2" solid blocking).
5. Install top layer of double layer panels with long dimensions perpendicular to framing; base layer parallel to framing in double layer (2 hour) construction.
6. Install ceiling panels with long dimensions perpendicular to framing. End and edge joints of face layer offset 24" from joints in base layer in double layer construction.
7. Provide metal trim at all exterior corners and at exposed edges; apply joint compound in three coats as indicated below.

B. Fastening: Comply with OSSC requirements. Refer to OSSC table 2508.1 and GA-216 for minimum fastener size and spacing, as modified by OSSC Chapter 23 for gypsum board used as sheathing, and OSSC Chapter 7 for fire resistive requirements. Nail or screw all panels using single nailing method as described in reference standards, except screw attach panels at ceilings and where applied over metal framing or furring. Double nailing system not allowed for fire rated assemblies.

C. Nail and Joint Treatment: Conform to ASTM C745; 3 coat application.

D. Finishes:

1. Coordinate with painting contractor to provide sealer coat over taped and filled joint areas prior to applying texture finishes.
2. Interior: Spray Splatter Finish: USG "Spray Texture" or approved, on all gypsum board surfaces scheduled to be painted unless "smooth" or other texture noted. Knock down splatter finish with trowel prior to setting. Sample texture is subject to Project Manager's approval.
3. All exposed gypsum board to receive Gypsum Association "level 4" finish.

3.03 CLEANING AND REPAIR

After trim has been applied, and prior to painting, correct surface damage and defects. Leave Work clean, uniform, and without defects which will be apparent after finish is applied.

END OF SECTION

09 65 00 RESILIENT FLOORING

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

General and Supplementary Conditions, Division 1, and accompanying Drawings.

1.02 REFERENCE STANDARDS

A. Slab preparation:

1. ASTM F-710-98 – Standard Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring.

B. Codes and Standards:

1. Conform to the following fire test data:

- a. Flame Spread: 75 or less per ASTM E84.
- b. Smoke Density: 450 or less per ASTM E662.
- c. Critical Radiant Flux: Not less than 0.45 watts/cm² per ASTM E648.

1.03 SUBMITTALS

A. Product Data: Submit product data including manufacturer's SPEC-DATA sheets for all specified products.

B. Samples Submit Manufacturer's full line of colors and patterns for selection and approval by the Project Manager. After selection, submit 3 verification samples of each color and pattern selected for distribution to Owner, Project Manager and General Contractor.

C. Quality Assurance Submittals:

1. Submit test reports showing compliance with specified performance characteristics and physical properties.
2. Submit Manufacturer's installation and maintenance instructions.

D. Submit the following:

1. Maintenance Data: Maintenance data for installed products in accordance with Division 1 sections. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance. Include maintenance data with closeout submittals.
2. Warranty: Submit Manufacturer's standard materials warranty for Owner's acceptance. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

E. Extra Stock: Provide one extra unopened box of tile flooring, and at least 4 square yards of sheet flooring in one piece, for maintenance purposes.

1.04 DELIVERY STORAGE AND PROTECTION

A. Do not deliver or store any flooring material in building until Project Manager and flooring contractor agree that the area in question is thoroughly dry and proper temperatures will be maintained. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations, areas to receive Floor Covering shall be clean, fully enclosed, weather tight with the permanent HVAC set at a uniform temperature of 65-80 degrees F for a minimum of seven days prior to installation. The Floor Covering material should be conditioned in the same manner. Minimum temperature shall be a minimum of 55 degrees F after installation.

C. Store materials in areas that are fully enclosed, weather tight with the permanent HVAC system set at a uniform temperature of 65-80 degrees F for 48 hrs prior to installation.

PART 2 PRODUCTS

2.01 MATERIALS

A. Sheet Vinyl:

1. Homogeneous inlaid pattern sheet vinyl flooring; Minimum .080" wear layer and minimum .080 overall gauge; 6'-0" minimum width material full length of space to be covered. Type Recommended by Manufacturer for installation over slab on grade. Mannington Lifelines II or approved.

2. Manufacturer and Type: Mannington Lifelines II or approved.

3. One color and one pattern to be selected by Project Manager from approved manufacturer's full line.

B. Adhesive: Made or recommended by flooring Manufacturer; waterproof stabilized type.

C. Wall Base: Rubber or vinyl as scheduled, top set cove type except flush type at carpeted areas. Conforming to ASTM F1861. Preformed outside and inside corners unless otherwise approved by the Project Manager. Standard color to be selected.

D. Reducer strips: Beveled vinyl to match thickness of flooring. Color selected from Manufacturer's standard line.

E. Weld Rod: Product of floor covering manufacturer. Color shall match field color of sheet vinyl covering.

PART 3 EXECUTION

3.01 GENERAL

A. Inspection:

1. Verify that surfaces to receive Work specified herein are clean, level, rigid, and properly prepared. Notify General Contractor of defects requiring correction. Verify that moisture content of subsurface, building air temperature and relative humidity are within limits recommended by flooring Manufacturer. Do not proceed until all conditions are satisfactory.

2. Visually inspect materials prior to installation. Material with visible defects shall not be installed.

B. Protection: Protect adjacent work areas and finish surfaces from damage during product installation.

C. Material Conditioning:

Place material to be used in the Work area at least 48 hours before laying. Maintain minimum temperature of 70 degrees F. 48 hours before, during, and after installation.

D. Surface Preparation

1. General: Prepare floor substrate in accordance with manufacturer's instructions.

a. Floor Substrate: Prepare floor substrate to be smooth, rigid, flat, level, permanently dry, clean and free of foreign materials such as dust, paint, grease, oils, solvent, curing and hardening compounds, sealers, asphalt and old adhesive residue.

b. Reference Standard ASTM F 710-08 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

3. Concrete Floor Substrate:

a. Concrete Moisture Test: Test using calcium chloride test, as per ASTM F 1869, or as recommended by flooring manufacturer.

- b. Concrete pH Test: Perform pH tests on concrete floors regardless of the age or grade level. If the pH is greater than 9, it must be neutralized prior to beginning the installation.
- c. Document test results, and do not proceed with installation until results are within limits recommended by flooring manufacturer.

4. Wood Substrate: . Refer to Division 6 Carpentry sections for wood subfloor construction. Refer to manufacturer's Installation requirements for information regarding preparation of wood substrates.

E. Surfaces to be finished:

Refer to finish schedule. Unless noted otherwise finish closets and alcoves same as scheduled for spaces to which they are adjacent.

3.02 INSTALLATION

A. General:

1. Install in accordance with Reference Standards, including approved Manufacturer's recommendations.
2. Lay with adhesive cement to insure good contact, with close even joints in a true and smooth plain.
3. Replace flooring showing imperfections in material, installation or underlying surface. Repair underlying surface before replacing flooring.
4. Heat and quick roll flooring not seated; if flooring still does not seat, remove and replace as required to seat properly.
5. Weld seams in accordance with flooring manufacturer's recommendations.

B. Welding

- 1.. Weld all joints of flooring and base using equipment and procedures recommended by flooring manufacturer. Vinyl shall be heat welded.
2. Heat Welding shall consist of routing joint, inserting a welding rod into routed space, and terminally fusing into a homogeneous joint.
3. Upon completion of welding, surface across joint shall finish flush, free from voids, and recessed or raised areas.
4. Fusion of Material: Joint shall be fused a minimum of 65 percent through thickness of material, and after welding shall meet specified characteristics for flooring.

C. Base and Edge:

1. Place resilient edge strips butted tightly to flooring and secure with adhesive. Place at all unprotected edges of flooring unless otherwise shown.
2. Place resilient wall base at columns, casework and other permanent fixtures in room or areas where base is scheduled or shown. Install in as long lengths as practicable with preformed exterior corners. Tightly bond base to backing throughout length, with continuous contact at horizontal and vertical surfaces.
3. Where resilient sheet flooring is scheduled to be self coved, provide wood or plastic cove radius support approximately 7/8" radius, but no sharper than recommended by Manufacturer for bending radius. Trim exposed edge of base or wainscot with stainless steel cap, unless colored cap is scheduled.

C. Pattern:

1. Lay flooring square with axis of room with pattern all in one direction; except lay rubber mat carpet tile in parquet pattern (alternate directions).

2. Lay sheet flooring with minimum number of seams.

3.03 CLEANING AND REPAIR

A. Upon completion of installation, immediately remove surplus adhesive. As soon as possible after installation and in accordance with timing and methods recommended by flooring Manufacturer, thoroughly clean and buff flooring. Apply one coat of polymer recommended by Manufacturer of Flooring.

B. Repair or replace when directed all flooring not properly seated, improperly aligned, damaged or stained at no cost to Owner.

END OF SECTION

09 90 00 PAINTING

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

General and Supplementary Conditions, Division 1, and accompanying Drawings.
09 29 00 Gypsum Drywall
Divisions Divisions 22 through 28: shop priming of equipment, exposed duct interiors etc.

1.02 DESCRIPTION

The term "Paint" as used herein includes enamels, paints, sealers, fillers, emulsions, stains, and other coatings, whether or not pigmented and whether used as a prime, intermediate or top coat.

1.03 QUALITY ASSURANCE

A. Labels: Each Product container shall bear Manufacturer's label indicating: Manufacturer's name, Type of Material, Manufacturer's stock or product number, and if applicable color and instructions for reducing.

B. Warranty: Refer to Supplementary Conditions. Work of this Section is subject to specified warranty against delamination of applied finishes, and where design is dependent upon integrity of coating for moisture protection of structure it is subject to specified warranty for moisture resistive elements of the Work. Also refer to Section 01 60 00 Product Requirements regarding responsibility for inappropriate methods or materials.

C. Interior paints shall be low VOC meeting Green Seal Standard (GS-11) with Certified VOC less than 25g/L. Submit certification for interior paints.

1.04 SUBMITTALS

A. Color Samples:

1. Submit Manufacturer's full line of colors for material type specified, for selection by Project Manager. Provide stained wood samples on type and quality of wood specified for Work. Specifically note any limitations on availability.
2. If requested by Project Manager, submit duplicate samples approximately 8"x10" for each color and texture selected, and if so directed, furnish actual brush-outs on walls and panels in designated areas.

B. Test Samples: If requested by Project Manager, obtain test samples from material proposed for use, or used on Project. Submit 1 quart samples from each 50 gallons or part thereof, selected at random from sealed containers. Stir thoroughly before taking sample. If test results indicate nonconformance with specifications, replace with conforming product and pay test costs.

C. Extra Stock: Provide one extra unopened 1 gallon container of each top coat material and/or color used.

D. Maintenance Instructions: Submit with Closeout Submittals Manufacturer's printed instructions for proper maintenance of any finishes requiring special attention or special maintenance procedures.

1.05 DELIVERY STORAGE AND PROTECTION

A. Deliver materials in original sealed containers; Manufacturer's labels intact and legible at time of use.

B. Store only approved materials at job site, and store only in a suitable area as designated by General Contractor. Protect from contamination or damage by the elements.

C. Use all means necessary to insure safe storage and use of materials. Remove waste ,debris, rags, and empty cans daily.

D. Do not deliver or store any painting material in building until Project Manager and painting contractor agree that the area in question is thoroughly dry and proper temperatures will be maintained.

E. Protect Painting Work and Work of other trades with suitable coverings.

1.06 COORDINATION

Coordinate with drywall subcontractor. If required to maintain uniform texture and/or paint sheen, painting subcontractor and gypsum drywall subcontractor shall coordinate for application of primer sealer by painting subcontractor prior to application of sprayed texture. Irregularities in drywall finish texture, color or paint sheen will not be accepted.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Materials selected for coating systems for each type surface shall be the product of a single Manufacturer.

B. Paints as manufactured Sherwin-Williams, or approved.

C. Use only products which are recommended by approved Manufacturer for use with the materials, and under conditions of service to be encountered by the Work. Refer to Section 01 60 00 for further requirements.

2.02 MIXING AND TINTING

A. Color and sheen as directed by the Project Manager.

B. Unless noted otherwise, or color is scheduled, all Products shall be available in a wide range of custom colors, including deep tones and accent colors.

C. Use tinting colors recommended by Manufacturer for each type of finish.

D. Fungicidal agent shall be incorporated into the paint by the Manufacturer, otherwise add fungicide to coating mix, in accordance with Manufacturer's recommendations prior to application.

PART 3 EXECUTION

3.01 GENERAL

A. Inspection and Coordination:

1. Inspect surfaces to receive Finishes. Notify General Contractor of unsatisfactory conditions requiring correction. Do not proceed until all conditions are satisfactory.

2. Coordinate with General Contractor and verify that Work of other Trades is sufficiently completed, cured, approved, and ready to receive finishes. Do not proceed until directed by General Contractor.

3. Test surfaces to be painted with standard moisture meter and do not apply initial coating until moisture content is within required limits.

4. Do not paint putty, caulking or sealants, concrete, plaster, or other similar products (which are required to cure), until thoroughly cured.

5. Obtain Project Manager's color schedule before priming.

B. Job Conditions:

Apply paint only under dry and dust free conditions; maintain conditions until paint is cured. Provide 40 foot candles minimum lighting for preparation and painting.

C. Surfaces to be finished:

1. Unless otherwise noted on the Drawings, all surfaces shall be painted except the following: glass, flat concrete, galvanized fences, rubber, plastic laminate, ceramic tile, resilient flooring, acoustic tile, fire rating and instruction labels, anodized aluminum, items specified as "prefinished", and items specifically noted or scheduled not to receive finish.

2. Unless noted or scheduled otherwise finish closets and alcoves same as scheduled for spaces to which they are adjacent.

3. Frames and Trim and wood siding: Back prime with scheduled primer, prior to installation, touch-up with same material prior to finish coats.

4. Doors: Remove to paint bottom edges; Prime top, bottom, side edges and cut outs with two coats of specified primer.

5. Hardware: Remove hardware from doors and other items to receive finish coatings; replace upon completion.

3.02 SURFACE PREPARATION

A. General: Strictly comply with Product Manufacturer's recommendations.

B. Wood Preparation:

1. Clean soiled surfaces with alcohol.

2. Except where rough sawn or bandsawn textures are specified, sand wood to smooth and even surface, then dust or vacuum clean.

3. Apply sealer to all knots, pitch and resinous sap wood before priming.

4. Fill holes, cracks, open joints, and other defects with plastic wood.

5. Test for moisture, and do not paint if moisture content is over 14%.

6. Apply clear primer sealer to smooth surfaced softwoods before applying penetrating stain.

C. Plaster and Gypsum wallboard Preparation:

1. Fill narrow, shallow cracks and small holes with spackling compound, notify General Contractor to repair cracks wider than 1/16" and holes over 1/8", and other larger defects, and surface irregularities.

2. Sand untextured surfaces smooth without raising nap of paper on wallboard.

3. Remove surface salts from plaster by dry brushing; fill holes and cracks.

4. Test surface for moisture content and proceed as follows:

Moisture content over 12%: Do not paint.

Moisture content 8 to 12%: Treat with Alkali-Proof Sealer before painting.

Moisture content less than 8%: Paint as scheduled.

3.03 APPLICATION

A. General:

1. Do not apply initial coating until moisture content of surface is within limitations recommended by paint Manufacturer. Test with Moisture meter.

2. Apply coating with suitable brushes, rollers or spraying equipment. Rate of application shall not exceed that as recommended by paint Manufacturer for the surface involved. Keep brushes, rollers, and spraying equipment clean, dry, free from contamination, and suitable for the finish required. Apply stain by brush unless noted otherwise.

3. Comply with Product Manufacturer's recommendations for drying time between succeeding coats.

4. Vary slightly the color of succeeding coats.

5. Sand and dust between each coat to remove defects visible at 5 ft. distance.

6. Finish coats shall be smooth, free of brush marks, streaks, laps, pile-up, and skipped or missed areas.

7. Leave all parts of moldings and ornaments clean and true to details without excessive coating build-up in corners or depressions.

8. Cut paint edges clean and sharp against other materials or colors, without overlap.

B. All Painted Wood: Back prime all Frames, Trim and Siding immediately upon delivery to Site. Face runs not permitted. Notify Project Manager if exterior frames have not been treated with "Wood Life" or approved clear preservative by millwork supplier.

C. Stained and Natural Finished Wood: Adjust natural finishes as necessary to match appearance of different adjacent materials or species.

D. Coverage: Provide additional coats as required to meet the following requirements:

1. With the exception of semi-transparent stains and clear finishes, all paint films shall be completely and uniformly opaque, regardless of the Dry Mil Thickness (DMT) or number of coats specified.

2. Dry Mil Thickness (DMT) shall be no less than recommended by Manufacturer or scheduled herein, whichever is greater.

3. Both the number of coats and Dry Mil Thickness (where scheduled) are minimums and independent of each other.

3.04 CLEANING AND REPAIR

A. Immediately remove spills, and splatters. Repair or replace when directed all Work, including Work by Others, damaged or stained by this Trade and leave in top condition at time of final acceptance.

3.05 PAINTING SCHEDULE

A. General:

1. Work scheduled herein is in addition to shop coats specified.

2. Prime coats may be omitted from existing finished surfaces, provided existing coating is sound.

3. DMT (Dry Mil Thickness) is minimum total including primers where scheduled.

4. The terms "gloss", "semi-gloss", "egg shell", etc. are subjective and vary between coating manufacturers. The degree of sheen or gloss shall be modified as directed by the Project Manager and demonstrated on approved samples, regardless of such terms used in the plans or specifications to describe the degree of sheen or gloss.

C. Interior Coatings: (Refer to room finish schedule)

END OF SECTION

10200 INTERIOR SPECIALITIES

PART 1 - GENERAL

1.01 CONDITIONS

Work of this Division is bound by the Contract General Conditions, Supplementary Conditions, this Specification and accompanying Drawings.

1.02 Related work described elsewhere
16500 Electrical

1.03 SUBMITTALS

Provide shop drawings or product data for all light fixtures.

Contractor shall furnish the Project Manager a set of as-built drawings. Final payment to the Contractor will not be authorized until these drawings have been submitted to and accepted by the Project Manager.

1.04 REGULATORY REQUIREMENTS

Conform to the requirements of the Oregon Electrical Specialty Code, latest adopted edition. If any conflict occurs between adopted code rules and this Specification, the codes are to govern. Nothing in these drawings and specifications shall be construed to permit work not conforming with governing codes.

All electrical equipment shall bear the label of the testing laboratories recognized by the State of Oregon as meeting the testing standards for minimum electrical safety.

Materials shall, where rated, be UL listed and conform to applicable ANSI, NEMA, ISA and OSHA, or other recognized standards.

PART 2 - PRODUCTS

2.01 GENERAL:

A. All materials shall be new, of the best quality and free from defects. They shall be designed to insure satisfactory operation and operating life in the environmental conditions which will prevail where they are being installed.

Each type of material shall be of the same make and quality. The materials furnished shall be of the standard products of manufacturer's regularly engages in the production of such equipment.

Fixtures and equipment shall be current models for which replacement items or component parts are readily available. Unless otherwise provided, all electrical items used shall be substantially the same as items of manufacturer which, on the date of opening bids, have been in successful commercial use and operation for not less than one year in projects and units of comparable size.

B. Protection. Materials and equipment delivered to the site shall be stored and protected in such a manner as to effectively prevent damage from climatic conditions, condensation, dust, physical abuse. A location shall be chosen which will not interfere with the operations of other contractors or the Owner. Storage and handling shall be performed in manners which will afford maximum protection to the equipment and materials.

C. All wire and cable for electric circuits shall conform to the latest requirements for the current edition of the OESC and shall meet all ASTM specifications.

D. Manufacturer's with equivalent devices meeting specifications. Lithonia, General Electric, Hubbell, Cuttler Hammer and Leviton. Numbers have been listed as to style, grade and as a guide.

E. Wall Switches. Heavy duty AC quiet type, Federal Specification W.S. 896 (de).
Single Pole. Slater; 20 amp, 120/277 VAC.
3 Way. Slater, 20 amp, 120 /277 VAC.

C. Receptacles. Heavy duty AC, Federal Specification WC-596a
Single. Slater, 20 amp, 125VAC.
Duplex. Slater, 20 amp, 125VAC.

G. Combination Devices.
Combination Switch and Receptacle. Slater, 20 amp 125VAC receptacle and switch.
Two Single Pole Switches. Slater, 20 amp, 120/277VAC.

H. Groundfault Interrupter Receptacle.
Duplex Receptacle, Slater 20 amp, 125VAC, SIR-20-f.

I. Cover Plates.
Nonconductive smooth plastic. All switches and dimmers to be gauged and covered by one plate.
Wall plates to be standard size and meeting Federal specification WW-455A noncombustible, supplied with metal mounting screws matching color of plate. Slater 891000 Series - match existing. Switches and devices shall be ganged wherever possible.

Weather Resistant (WP) Cover Plates. Slater; self-closing 3780SC, provide appropriate gasket to box.

Cover plates in unfinished areas and where exposed conduit is used:
Raised galvanized to be used in unfinished areas or where conduits run exposed.
Labeling of switch shall be by Melamine Plate attached to cover plate. Verify areas with Project Manager prior to installation of cover plates.

J. Enclosed Switches & Breakers
Provide all disconnects, fused, with or without circuit breakers, and unfused, as required by code for equipment and installations furnished under this and other Divisions of these specifications.

K. Provide circuit breakers with sufficient interrupting capacity per the utility company service available fault current estimate.

L. All equipment shall be one brand, as much as is possible, and one style of circuit breakers so as to minimize maintenance parts inventories.

M. The main electrical characteristics of the panels for the project shall be suitable to operate at the voltages, phase and frequency as required. All bus shall be braced to withstand the available fault current of the system. All bus shall be copper.

N. Identification cards in panel doors shall be machine printed to identify all circuits. Spare blank cards shall also be provided in each door. Panels shall be fitted with flush lift latches and shall have hinges on the side rather than on the top. Outdoor enclosures shall have full piano hinges and shall be gasketed.

O. Ground fault circuit interrupters (GFCI) designed to protect against hazards caused by ground faults shall be compatible with other adjacent breakers in the panel. GFCI shall be used where required by code.

- P. Door and key lock. Panels inside lockable buildings shall not require locking doors.
- Q. Provide all luminaires, bulbs, heaters, fans, ventilators, mounting hardware, branch conduits, etc., needed to make a complete, operational, working system. Lamps. Install lamps in every luminaire.
- R. Provide all conduit, junction boxes, risers, UG entries and appurtenances as required for all telemetry, networking, low voltage control lines and connections to transmitters, sensors, PLCs, relays, and recorders provided for the control system. Needed connections with existing circuits shall also be provided.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. Materials and equipment shall be installed in accordance with the approved recommendations of the manufacturer to conform with the contract documents. The installation shall be accomplished by workmen skilled in this type of work. Wire connections shall be made with pressure-type solderless connectors. Splicing. No splices or taps permitted in service or feeder circuits. Splices or taps in branch circuits permitted only in junction boxes where circuits divide. Provide blank covers or plate over all boxes that do not contain devices or are not covered by equipment.

B. Coordinate the work of this Section with the work of other sections and trades. Study all drawings that form a part of this contract and confer with the various trades involved to eliminate conflicts between the work of this Section and the work of other trades. Check and verify outlet locations indicated on Architectural drawings, door swings, installation details and layouts of suspended ceilings and locations of all plumbing, heating and ventilating equipment.

C. Centered on Built-in Work. In the case of doors, cabinets, recessed or similar features, or where outlets are centered between two such features, such as between a doorjamb and a cabinet, make these outlet locations exact. Relocate any outlets which are located off center.

3.02 CUTTING OF BUILDING CONSTRUCTION

A. Obtain permission from the Engineer or Project Manager prior to cutting. Locate cuttings so they will not weaken structural components. Cut carefully and only the minimum amount necessary. Cut concrete with diamond core drills except where space limitations prevent the use of such drills.

B. All construction materials damaged or cut into during the installation of this work must be repaired or replaced with materials of like kind and quality as original materials by skilled labor experienced in that particular building trade.

3.03 TESTS

A. The Contractor shall notify the Project Manager ten (10) working days prior to performance of any test.

B. The Contractor shall certify in writing that the above tests have been completed and shall provide documentation of test data.

C. Demonstration of Completed Electrical Systems and Controls.
At the point of substantial completion of the project, the Electrical Contractor shall provide necessary personnel to demonstrate the essential features of the electrical systems:

3.04 CLEANUP

A. Contractor shall continually remove debris, cuttings, crates, cartons, etc., created by his work. Such clean up shall be done at sufficient frequency to eliminate hazard to the public, other workmen, the building or the Owner's employees.

B. Contractor shall carefully clean cabinets, panels, wiring devices, cover plates, light fixtures, etc., to remove dirt, cuttings, paint, plaster, mortar, concrete, etc. Blemishes to finished surfaces of apparatus shall be removed and new finish equal to the original applied.

3.05 WORKMANSHIP AND INSPECTION

A. Workmanship shall be of the best quality and none but competent mechanics shall be employed. All shall be under the supervision of a competent foreman. All completed work shall represent a neat and professional appearance. All work and materials shall be subject to inspection at any and all times by representatives of the Project Manager.

END OF SECTION

SECTION 16 50 00 ELECTRICAL

PART 1 - GENERAL

1.01 WORK INCLUDED:

- A. Installing new metal conduits, copper wiring, panel breakers, switch controls as required.

1.02 RELATED WORK:

General and Supplementary Conditions, Division 1, and accompanying Drawings.
10 20 00 Interior Specialties

1.03 REFERENCES:

- A. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
 - ANSI C80.1-94: Rigid Steel Conduit, Zinc-Coated
 - ANSI C80.3-94: Electrical Metallic Tubing, Zinc-Coated
 - ANSI C80.5-94: Rigid Aluminum Conduit
 - ANSI C80.6-94: Intermediate Metal Conduit (IMC), Zinc-Coated
- B. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS:
 - IEEE 141-93: IEEE Redbook---Electrical Power Distribution
- C. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA):
 - NEMA AB 3-01: Molded Case Circuit Breakers
 - NEMA FB 1-03: Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable
 - NEMA GR 1-01: Grounding Rod Electrodes and Grounding Rod Electrode Couplings
 - NEMA PB 1-00: Panelboards
- D. STATE OF OREGON BUILDING CODE:
 - OSESC-2011: Oregon State Electrical Specialty Code (NEC-2011)
- E. UNDERWRITERS LABORATORIES (UL):
 - UL 20-00: General Use Snap Switches

1.04 SUBMITTALS:

- A. Operation and Maintenance Manuals, including cut sheets, installation instructions, operation instructions, and maintenance instructions (including "debug" sequences) for all electrical and electronic devices provided as part of the project.
- B. Submit "As Built" drawings as follows:
 - 1. Hand-marked "as built" drawings of the electrical systems and associated equipment.

1.05 QUALITY ASSURANCE:

- A. Provide the written manufacturer Warranties for all electrical products, but not less than minimum one year.
- B. Provide a one year contractor's parts and labor warranty for all electrical work.

- C. Comply with all provisions of OSESC-2011 (NEC-2011), and the directions of the authority having jurisdiction (AHJ).
- D. Comply with all Federal regulations, with all electrical standards which apply, and with State of Oregon and City of Prospect ordinances and regulations.
- E. Obtain all permits and Inspections and obtain a certificate of approval from the Inspector prior to requesting final payment.
- F. All equipment and materials supplied (except those indicated as to be relocated and re-used) are to be new, of current manufacture, and in full compliance with all applicable codes and standards.
- G. Provide all equipment and materials, used on this project, approved by UL, FM, and complying with all applicable ANSI, ASTM, and NEMA standards.

1.06 DESIGN CRITERIA:

- A. Conduit/Conductors: Maximum voltage drop in any one circuit not more than 3 percent for branch circuits or for feeder circuits and not more than 5 percent for combination of branch and feeder circuits. Size service conductors using Article 230 of NEC-2011.
- B. Panels/Breakers/Protection: Use Article 210.20 of NEC-2011 to select branch circuit protection and Article 240 of NEC-2011 to select feeder circuit protection; use Article 230 of NEC-2011 to select service protection and disconnect.
- C. Use Article 230 of NEC-2011 for motor short circuit calculations; use IEEE Standard 141-93 (Red Book) for other short-circuit calculations.

1.06 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver products to the site in original packaging and undamaged.
- B. Store and protect products from dust, rain, moisture, and damage.
- C. Store circuit labels in original packaging, protecting from rain, dust, and damage. Install labels only if clean. Do not install dirty, wet, or damaged labels.
- D. Protect installed equipment, wiring, and labels from rain, dirt, dust, and damage.

PART 2 - PRODUCTS

2.01 IDENTIFICATION:

- A. Labels:
 1. Wire Labels: Provide black letters on white or yellow, pre-printed, permanent material, with adhesive backing, Brady, 3M, or approved equal
 2. Panel Labels: Provide typed or pre-printed letters, on white, permanent material labels, with adhesive backing, Specified Products or approved equal.
 3. Equipment Labels: Provide plastic tape with adhesive backing, printed in the field using proper tool for each tape type, "Dymo" Tape, or approved equal.
 4. Conductor Insulation Colors: Select in compliance with NEC-2011 and codes and standards.

2.02 PANELS AND PANELBOARDS:

A. Branch Panels:

1. Enclosure: Provide metal-enclosure, with copper buss work braced for minimum 10,000 A.I.C., space for main breaker, and 40 branch circuit breaker slots for full-sized breakers. Provide flush lift latches with locks. (Obtain like keys when possible.) Deliver keys to Owner at completion of project.
2. Provide pre-primed and finished assembly with not fewer than two coats of light gray enamel paint.
3. Arrange the circuits in the panels to balance load currents, as equally as possible, between phases, for. panels multi-phase panels.
4. Identify branch circuits with individual circuit (breaker) numbers. Provide a type-written card which identifies the load each circuit services. Arrange the circuits as shown in the drawings. Any deviations from that arrangement shall be noted on the hand-marked "as-built" drawings.
5. Provide surface panels with metal face trims having no sharp edges or corners. Access panel on front (for access to interior) may be screw-on type.

2.03 BUILDING DISTRIBUTION DEVICES:

A. Over current Devices:

1. Provide molded case circuit breakers, thermal magnetic type, with short circuit rating capacity to with withstand the maximum short circuit duty which can be expected at the breaker location in the electrical system. Provide bolt-in type breakers in branch panel boards. Provide minimum short circuit breaking of 10,000 A.I.C. for 120 volt and 240 volt breakers, but selected to withstand the maximum short circuit duty which can be expected for the subject circuit.

B. Grounding Devices:

1. Conductors: Bare or green insulated copper.
2. Connectors: Cast, set screw, or bolted type.
3. Electrodes: Copper clad, steel, minimum 3/4-inch diameter by eight (8) feet long.

C. Disconnects:

1. Provide disconnect switches correctly selected for motor-driven equipment shown on the drawings and schedules (if disconnect switches are not supplied with the equipment).
2. Provide NEMA switch rated for up to 20 Amps for motors up to 1 horsepower.
3. Provide all switches with a defeatable cover interlock.

2.04 BUILDING DISTRIBUTION SYSTEM MATERIALS:

A. Conduit, Raceways, Boxes, and Fittings:

1. Provide raceways and conduit of specified types for all electrical systems wiring, except where clearly shown or otherwise specified. Provide all fittings, boxes, hangers, and

appurtenances. Size raceways and conduit as shown on drawings or as required by OSESC-2011 (NEC-2011). Provide all home runs in conduit.

2. Metallic Conduit:

- a. GRC: Threaded rigid heavy wall galvanized steel,
- b. IMC: Threaded intermediate galvanized steel,
- c. EMT: Zinc-coated steel electrical metallic conduit,
- d. ARC: Threaded rigid heavy wall aluminum,
- e. Flex: Flexible metal with and without poly (vinylchloride) (PVC) jacket, as required by NEC-2011.

3. Fittings:

- a. GRC, IMC, and ARC:
 - i. Attach threaded couplings/fittings only to threaded conduit,
 - ii. Use threaded locknuts and threaded bushings to attach to boxes and devices,
 - iii. Provide insulated, grounding-type threaded bushings for sizes 1-1/4-inch and larger.
- b. EMT:
 - i. Use steel compression ring type connectors with insulated throat for conduit terminations.
 - ii. Use steel compression ring type, concrete-tight, couplings.

4. Metallic Boxes:

- a. Place outlet boxes flush and concealed: provide galvanized, stamped, steel with screw ears, knock out plugs, mounting holes, fixtures studs, (if required), RACO or equal.
- b. Provide surface outlet boxes on ceilings the same as flush outlet boxes, preceding. Provide surface outlet boxes on wall as cast steel or aluminum with threaded hubs.
- c. Large Boxes: For boxes larger than 4-11/16 inches square, when required, provide welded steel construction with screw cover and painted, in steel gauge as required by physical size. Hoffman, Circle AW, or equal.

6. Other Box Types:

- a. Any conduits, fittings, boxes, etc., not specified in the preceding are not approved. If conduits, fittings, boxes, etc., are not specified are required or offered as a substitute, provide complete cut sheets and justify---to Engineer---the requirement or the cost savings available to the Owner.

B. Conductors and Connectors:

1. Conductors (Up to 600 Volts):

- a. 12 AWG minimum wire size unless noted otherwise,
- b. 8 AWG and larger to be stranded,
- c. Stranding: Copper---concentric or compressed, Aluminum---compacted,
- d. Insulation: THHN, THWN, or XHHW, unless otherwise noted or specified,
- e. Fluorescent Fixtures: Provide wiring for fluorescent fixtures rated at 90 Degree C,
- f. Cable Manufacturers: General Electric, Hatfield, Anaconda, Rome, or equal.

2. Connectors:

- a. Branch Circuit Conductor Splices: Provide live spring type, Scotch-Lok, Ideal Wing Nut, or self-stripping type, 3M series 560.

C. Wiring Devices and Plates:

1. Provide specification grade wiring devices with special devices as indicated on the drawings. Should the drawings indicate a device other than those listed in this paragraph, provide devices of the same grade and manufacturer as specified below. Furnish a matching cap for all special purpose devices that do not have the common 120 VAC NEMA 5-15R, or 5-20R configuration. Devices of comparable grade manufactured by Arrow-Hart, Bryant, General Electric, Hubbell, Leviton, Pass & Seymour, and Sierra, are approved. All lighting switches and receptacles installed shall be by the same manufacturer and shall be identical in appearance, characteristics, and color.

2. Wall switches: Provide commercial grade, with color-coded faces, rated at 15, 20, or 30 amps with nylon toggle, neoprene rocker, silver-cadmium oxide contacts, corrosion-resistant brass and nickel-plated yoke, one-piece copper alloy contact arm, and brass terminal screws accepting up to 10 AWG wire. Bryant 4801L, 4901L, and 3003, or equal. Provide for 120 and 240 Volt service in color selected by Owner.

3. Receptacles:

a. Straight-Blade Type: Provide with washer-type break-off plaster ears, copper-alloy self-grounding strap, grounding screw, interlocking center-splined bushing, one-piece grounding systems, nickel and brass plated wrap-around steel yoke, nylon face and base, brass terminal screws accepting up to 10 AWG wire, break-off tap for two circuit wiring, and eight wiring pockets for feed-through wiring with clamp-type terminals, complying with NEMA WD-1 and UL-20. Bryant 5262 2-pole, 125, 250 volt, 15 and 20 amp, single and duplex.

b. Locking Type: Provide flush receptacles with matching lugs and connectors, wide nickel-plated mounting straps, NEMA line number and rating molded in face, high-impact molded face, both mounting straps grounded, number 10 bronze terminal screws, one-piece rivet less copper-alloy contact, molded re-enforced thermoplastic polyester base, and terminal screws for 14 to 8 AWG solid or stranded conductors. Provide Bryant 4700/70615 series for 15 amps, and 7000, 7100, and 7200 series for 20/30 amps.

4. Wall Plates: Provide high-impact nylon and metal plates for switches, receptacles, and GFCI receptacles. Bryant N and S series, or equal.

PART 3 - EXECUTION

3.01 COORDINATION AND INSPECTION:

A. Preparation: Inspect building walls, ceiling, and purlin layout to establish precise locations for all electrical panels, boxes, lighting, conduit, and so on. Establish locations for interfaces to mechanical (infrared heaters and garage door opener), electrical (lighting, receptacles) equipment.

B. Coordination: Coordinate with other building trades (HVAC contractor, Plumbing contractor, General Contractor) to establish the locations of devices installed by these contractors and require the pulling of conductors, installation of conduit to serve these devices.. Confirm that information provided in the drawing schedules. If changes have occurred---based upon approved alternates or approved substitutions, incorporate the changes into the schedules of the electrical drawings and into the field layout required to serve the devices installed by those contractors.

C. Coordinate the electrical work schedule with the schedules of other building trades.

3.02 IDENTIFICATION:

A. Branch Circuit Panels:

1. Indicate panel number with laminated plastic labels. Indicate voltage/phase and feeder source, feeder wire size, and feeder breaker or fuse size with white permanent labels on the inside of the panel door.
2. Provide type written panel directories for all distribution panels; use protective, clear transparent covers, accurately accounting for every breaker installed, including spares. Indicate the actual room device numbers or names on the schedules; confirm numbers/names at the end of construction. Update the numbers/names shown on the panel schedules shown in the drawings.

B. Control Systems:

1. Use various colors of wires to identify/distinguish circuit conductors throughout; use wrap-around number/letters, use those identifications ; otherwise, use identifiers which are used on the operation and maintenance manual circuit diagrams.

3.03 INSTALLATION:

A. Panels:

1. Install panels plumb and level, located as shown on the drawings, as approved by the Project Manager and the general contractor.
2. Install a gutter for each panel installed (or use existing gutter for existing panel which is to be replaced).

B. Overcurrent and Protection:

1. Install breakers (main and branch circuit) which are sized to both as both overcurrent and protection devices.

C. Grounding:

1. Size all grounding conductors in accordance with Article 250, NEC-2011, with special attention to Tables 250-66 and 250-122, OSESC-2011.
2. Install grounding conductor connectors made up tight and located for future servicing and to insure low impedance.
3. Ensure that the electrical system ground to the cold water service and structural steel from the building ground system.

D. Conduit, Raceway, Boxes, and Fittings:

1. Route exposed and concealed conduit parallel or at right angles to the structural building lines, and neatly offset into boxes. Follow building surfaces when attaching conduit directly to building surface. Provide conduit fittings to "saddle" conduit under beams or purlins.
2. Securely support exposed or concealed conduit, providing support at intervals as specified by the OSESC-2011 and within 18 inches of each outlet box, ell, fitting, panel, and other similar devices.
3. Keep conduit and raceways closed with suitable plugs or caps during construction to prevent entrance of dirt, moisture, concrete, or other foreign objects. Clean and dry raceways before installation of wire and at time of acceptance.
4. Install GRC or IMC galvanized steel conduits for wiring underground, in cast-concrete

construction, in damp locations, in hazardous areas, and where subject to mechanical injury, with threaded fittings made tight. Test underground conduit and below-grade cast-concrete construction conduit to prove that the conduit is water tight.

5. EMT may be employed in all other dry, protected, locations.
6. ARC may be used, on approval of engineer and Owner, wherever EMT is acceptable.
7. Provide flex where flexibility is necessary as at lighting fixtures, fans, infrared heating units, and air compressor motors.
8. Size outlet boxes according to code in order to accommodate all wires, fittings, and devices connected to boxes.
9. Provide 4-inches square, minimum 1-1/2 inches deep, boxes for flush mounted wall switches and receptacles connected to conduit systems; mount one- or two-gang plaster ring mounted vertically. Where three or more devices are installed at one location, use one-piece, multiple gang, tile box or gang box with suitable device ring.
10. Provide multi-gang boxes as required to accept devices installed with no more than one device per gang. Equip all metallic boxes with grounding provisions.
11. Provide pull boxes---where shown on drawings---or where required to limit the number of bends in any conduit to not more than three 90 degree bends or equivalent. Use galvanized boxes of code-required size with removable covers installed so that covers will be accessible after work is completed.

E. Conductors and Connectors:

1. Conductors:
 - a. Use pulleys or blocks for aligning conductors when pulling conductors in conduit. Pull conductors in accordance with manufacturer's specifications with respect to pulling tensions, bending radii of the cable, and pulling compounds.
 - b. Install all bushings and raceway terminations prior to pulling conductors. Make-up and insulate wiring promptly after installation of conductors.
 - c. Allow concrete to set and forms to be stripped prior to pulling conductors into conduit embedded in concrete.
 - d. Provide conduct sizes as shown on the drawings or according to OSESC-2011. Any conductor sizes shown are for copper wire. Aluminum conductor may be substituted for copper in circuits of 125 VAC capacity or more only if approved by Project Manager.
2. Connectors:
 - a. Provide tool-applied, spade, flared lug terminations at screw connections for control and special system wiring.
 - b. Make-up tight (and re-tighten after an eight hour period) all screw and bolt type connectors.
 - c. Apply all tool-applied compression connectors per manufacturer's recommendations and physically check for tightness.
3. Color Coding:
 - a. Provide phase color coding consistent at all feeder terminations: A-B-C left-to-right or A-B-C top-to-bottom.
 - b. Ensure that switchlegs, travelers, etc., are consistent with the phases to which they are connected or provide a color distinctive from that listed.
 - c. Color code for less than or equal to 250 Volts phase-to-phase:

Phase A - Black Neutral - White
Phase B - Red Ground - Green
Phase C - Blue

- d. Color code for greater than 250 volts phase-to-phase:
Phase A - Brown Neutral - White
Phase B - Orange Ground - Green
Phase C - Yellow

4. Tests: Perform insulation resistance tests on all feeders and circuits over 100 amps with 1000 volt megger. Provide a written test report listing the results of the tests and submit to the Project Manager. Disconnect equipment---which may be damaged by insulation resistance testing prior to performing tests.

F. Wiring Devices and Plates:

1. Install devices and finish plates plumb with the building lines.
2. Install finish plates and devices after painting is complete. Replace scratched or paint-spattered finish plates and devices.
3. Install wall-mounted receptacles vertically at the centerline height shown on the drawings unless otherwise noted or instructed in writing.
4. Test receptacles for line-to-neutral, line-to-ground, and neutral-to-ground faults. Correct any defects discovered.
5. Give all special plugs, provided with the receptacles, to the Owner in the plug cartons along with a letter stating the date and the name of the Owner's representative who received the materials.

PART 4 - EXECUTION

4.01 CLEANING

After all equipment and fixtures are installed, the components shall be thoroughly cleaned. Remove all stickers and tags from equipment and fixtures.

END OF SECTION

SECTION 17920 CARD ACCESS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

Contract Conditions, Division 1, and accompanying Drawings.
01 31 13 Shop Drawings Product Data and Samples
01 60 00 Substitutions and Product Options
06 10 00 Rough Carpentry – Blocking for stops.
06 20 00 Finish Carpentry – Installation
08 41 00 Aluminum Framing Store Fronts
08 70 11 Finish Hardware
10 20 00 Interior Specialties
16 50 00 Electrical

1.02 SCOPE OF WORK

- A. Provide hardware for all doors scheduled in the drawings.
- B. Hardware supplier shall prepare a complete vertical schedule in compliance with the specifications and drawings.

1.02 QUALITY ASSURANCE

- A. Regulatory Requirements:
Conform to requirements for Underwriters (UL) label for class indicated on door schedule.

1.03 SUBMITTALS

Materials List:

A Hardware Schedule

Submit 3 copies of draft hardware schedule for Project Manager's approval. Resubmit as required with modifications requested by Project Manager. Submit 3 copies of final schedule in accordance with Section 01 33 23. Include with each copy a complete description showing appearance and function of each item of hardware. Show for each opening, all hardware, indicating Manufacturer's name and numbers, finish, keying, fastening, dimensions, clearances, and calling attention to any deviations proposed from specified hardware and reason for proposed deviation.

1.04 DELIVERY STORAGE AND PROTECTION

Store protected from moisture and damage.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide a complete and functional Card Access System as shown on the plans and described in this specification.
- B. System shall control door hardware.
- C. The access control system will utilize proximity card readers, proximity card readers and transit standard readers for door access to control hardware. The system will be required to connect to existing software in off location offices for programming and updates. This is part of the Lenel system and will connect via the owner WAN intranet to the Salem offices.

1.2 QUALITY ASSURANCE

- A. Underwriters Laboratories, Inc., listed, and NEG approved.

1.3 SUBMITTIAL AND RECORD DOCUMENTATION

- A. Submit product data describing all components whether listed in specifications or on plans needed for a complete installation.
- B. Submit shop drawings which shall include complete wiring and schematic diagrams for equipment furnished, equipment layout, and other details.
- C. Include performance field test reports with operation and maintenance manuals.

PART 2 – PRODUCTS

Each door will require electrified strikes Adams Rite or the approved equal by the ODOT Project Manager.

A. System Controller

1. 12 VAC or 12VDC input power
2. 16 - 32 card reader capacity
3. Ethernet TCP/IP
4. Lenel, LNL-500 with ethlan device
5. See plans for addition information.

B. Proximity Ready

1. 5-16 VDC
2. Wiegand technology
3. LED indicating system power.
4. HID ProxPro model 5355.
5. This device is to be installed at all exterior or interior building locations as shown on plans.

C. Dual Reader Interface Module

1. 12 VAC or 12VDC input power
2. Reader communications, clock/data, Wiegand Data1(DataO)
3. Door contact supervision
4. Bi-color status LED support
5. On board jumpers for 5-12 VDC reader
6. Lenel LNL 1320

- D. Altronix Power Supply/Charger
1. Power Supply converts a 115 VAC/60Hz input, to 24VDC
 2. UL Listed for Access Control System.
 3. Enclosure Dimensions 13" H x 13.5" W x 3.25" D
 4. Supports Lenel LNL-500 Intelligent System Controller and Lenel LNL-1320 Dual Card Reader Interface module.
- E. Single Channel Remote Digital Receiver and Transmitter
1. Remote Digital Receiver Linear, DXR-701 or the approved equal.
 2. Remote Digital Transmitter Linear, DXT-21 or the approved equal. Provide (3) units to owner.
- F. Wiring spec:
1. Door locks - w181p-2051grb. - 18 gauge / 1pair
 2. Card readers - w226c-2077gbf. - 22 gauge / 6 pair
- G. Oregon Department of Transportation will provide the following products for the project:
1. One LNL-500 with ethlan device.
 2. One LNL-1320 (services 2 card readers).
 3. One HID ProxPro (model 5355) keypad/card reader.
 4. One HID ThinLine II (model 5395) card reader.
- H. Contractor will provide all additional security parts, materials and labor including additional LNL-1320 board and additonal HID ProxPro (model 5355) keypad/card reader as required to make a complete and functional security system.
- I. LCN Automatic Operator Actuators & Accessories:
1. LCN 8310 series 6" surface mounts.
 2. LCN 8310-852T wall mounted actuator.
 3. LCN 8310-869S surface mount box.
 4. LCN 8310-876 Escutcheon tapered stainless steel escutcheon covers between wall and back of wall plate actuators.
 5. LCN 4600 Electric AutoEqualizer.
- J. Electric Strike:
1. Adams Rite 7100 electric Strike.
- K. Panic Bar:
1. Adams Rite 8800 panic bar.

PART 3 - EXECUTION

All Lenel equipment will be installed by one of the following certified Lenel system installers:

1. Cook Security Group - 503-786-5173
2. Reece Security Solutions- 503-682-9900
3. Convergint Technologies - 503-228-8522
4. Aronson Security Group - 503-639-9988

3.1 OPERATION

- A. When card is read by proximity reader and correct PIN is entered it will unlock the door associated with that particular reader and no other door. The system shall record date, time, and person who has accessed the door.

- B. Programming of system shall be done in cooperation with owner.

3.2 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals according to Section 165000 Electrical Identification.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Provide services of factory-authorized service representative to supervise the field assembly and components connections and the pretesting, testing, and adjusting of the system.
- B. Inspection: Verify that units and controls are properly installed, connected, labeled and that interconnection wires and terminals are identified.
- C. Pretesting: Align and adjust the system and pretest all components, wiring, and functions to verify they conform to specified requirements. Replace malfunctioning or damaged items with new items. Retest until satisfactory performance and conditions are achieved. Acquire an IP address from the owner for the system so remote programming can be tested during the system functional testing.
- D. Acceptance Test Schedule: Schedule test after pretesting has been successfully completed and system has been in normal functional operation for at least two weeks. Provide a minimum of 10 days' notice of acceptance test performance schedule. Acceptance testing shall be done with owner representative present.

3.5 CLEANING

- A. Clean installed items using methods and materials recommended by manufacturer.

3.6 DEMONSTRATION

- A. Provide (1) hour training and demonstration or as indicated in project requirements.

3.7 ON-SITE ASSISTANCE

- A. Occupancy Adjustments: When requested within one year of substantial completion, provide on-site assistance in tuning and adjusting the system to suit actual occupied conditions and to optimize performance. Provide up to two requested adjustment periods at the site for this purpose without additional cost.

END OF SECTION

17 95 00 SUPPLEMENTAL ATTACHMENT "A"
Access Control/Automation and Latches

Access Control System "Lenel" includes all charges for installation and function, inclusive of all necessary modules, components, enclosures, mounting hardware, HID readers, open/close button device; wiring/cabling, and interfacing/programming for function

Contractor Requirements:

Primary Contractor must be a Value Added Reseller (VAR) and in good standing with the manufacturer of the Departments access control system (Lenel). VAR's employees shall possess the technical knowledge, experience, and skill needed to perform the required work in an efficient and professional manner. At least one (1) on-site employee must be (Lenel) Gold or Platinum certified and certified State of Oregon Class A Limited Energy Technician and hold a State of Oregon General Journeyman Electricians License. VAR and any sub-Contractor must have a minimum of five (5) years verifiable experience successfully completing jobs of a similar nature; all employees assigned to work on these projects must have a minimum of four (4) years verifiable experience installing, terminating and interfacing door and access control hardware, equipment and associated wiring. All Contractor and sub-Contractor references validating duration of experience shall be attached as part of Bid Submittal. This information must show the Company's certifications, licenses, and specific project work history as well as each employee that will be assigned these jobs. Projects and experience must be similar in scope and nature. Failure to provide this information at time of bid submittal shall be grounds for bid rejection.

Project Scope:

The purpose of this project is to provide and install all necessary equipment, materials, and supplies required to manage building entry and door schedules at various ODOT Shady Maintenance Office, through the Owners centralized access control system.

VAR shall be responsible for all phases of the project work required to integrate each door with the Lenel On-Guard system in Salem, OR.

Access at the selected doors shall be accomplished through the installation of new Lenel, HID and electrified door hardware at each location. The Lenel equipment shall be programmed and connected by the VAR to Owners network switch in order to communicate to the Owners centralized system.

This project shall include but not be limited to providing all labor and materials necessary. Such as door hardware, i.e. electrified strikes, locksets and or exit devices; door closures, covers/plugs i.e. door jamb plates, etc. All low and high-voltage wiring/cabling, conduit, connectors, junction boxes; misc. hardware; access control equipment; power supplies, batteries and enclosures; terminating, and on-site programming.

All wiring and or cabling shall be installed above existing ceiling or in attic space, inside walls and or door frames to the extent possible. Contractor shall minimize the use of stick-up style raceways.

Contractor shall provide and install equipment, and materials compatible with Owners access control system (Lenel), locksets (Schlage D-Series), and keying system (Medco).

Contractor shall coordinate obtaining Medco keyed cylinders for new locksets or rim panic devices that are replaced with Owner's Key and Lock Coordinator, Ray Christiansen (503-986-2915) and Oregon Lock & Access, located in Salem, OR.

This shall be done prior to installation to ensure these devices are available and installed during project timeframe. Contractor shall be responsible for the installation and or replacement of these devices.

Building will receive a card reader at a Public Entry shall be equipped with an HID 5355AGK00 ProxPro keypad device. This device shall be placed in a secure area near the Lenel main panel and interfaced with the Lenel system. It shall serve to override the preprogrammed open/close schedule in the event of an emergency.

Main Entrance receiving a card reader equipped with an ADA Door Operator and remote interior/exterior door activation buttons shall be interfaced with the access control system. Ensuring that these doors do not open when in a "card only mode" if the exterior ADA button is pushed. Door should open only after the presentation of a valid card read.

Interior Doors receiving a card reader without a Schlage D-series lockset with "classroom" function, shall have one installed.

Exterior doors receiving a card reader that requires the replacement of the entry/exit hardware i.e. crash bars, door knobs, dead bolts, etc. shall have an exterior key way. This keyway must accept owners Medeco cylinder. This cylinder is the responsibility of the Contractor to order and install prior to the end of the installation.

Contractor will install on the Main Exterior door a manual opening with push button assist operators with ADA wall mount stainless steel 6" diameter wall plate actuator

Contractor shall pre-schedule the start day/time with the on-site contact person prior to the beginning of each job, as noted above; at the conclusion of each job Contractor shall go over the system installation with the site Manager or designee and provide basic system operation and equipment location. Contractor shall coordinate with Owner's on-site representative and Contract Administrator located in Salem, OR a minimum of 24 hours prior to testing of installed components.

All contracted work must be finalized and tested before starting work at another job location; unless, multiple crews are used to complete individual projects or pre-approval has been given by the Contract Administrator.

VAR will be required to complete and submit all necessary Owner provided paperwork to obtain an access device for at least one employee for the sole purpose of system testing. This must be completed prior to start of work.

Owner shall provide the following: Site contacts and phone numbers, Access device request form, IP, Gateway, sub-net, port, and address information for on-site set-up of (Lenel) equipment; software programming at the head-in system located in Salem and access credentials to site occupants.

The Department reserves the right to delete sites or portions of proposed work due to financial constraints.

Contractor shall ensure appropriate safeguards are used and in place to protect or notify visitors of hazards/delays when performing work in all public areas. Contractor employees must not interfere with the business operations, block exits or entries, impede, or cause delays in any Owner business operations. Failure to implement or put into place the necessary safeguards may result in breach of Contract.

Security at these locations is critical and at no time shall Contractor leave a site unsecured or a door unusable. Failure to secure a site shall result in the Owner contracting for on-site security until issue is corrected by Contractor. All charges for this security response shall be deducted from Contractors final payment.

All work shall be performed and the appropriate equipment installed in such a manner as to pass without exception in the trade. Work and/or materials/equipment found to be less than high quality or commercial grade, sub-par, inadequately installed and/or of questionable nature shall be remove, replaced, or modified at Contractor's expense. Work to correct these failings shall be completed within 15 days of notification from the Owner.

Door strikes will be Adams Rite or the approved equal by the Project Manager.

Contractor Responsibility:

- A. Copies of Certificates for each installer required by Access Control manufacturer to verify certification of training and qualifications necessary to perform installation e.g. *Lenel*.
- B. Documentation validating Equipment Installer Qualifications required and noted below.

Site Security and Access:

Security and Access are primary concerns during this project; Contractor shall ensure that security is not compromised and access is not impeded throughout the course of their work. Contractor shall coordinate with the Project Manager on any required closures 24 hours prior to work. At no time shall the building be left unsecured. Contractor shall provide a 24-hour contact number to the Project Manager for immediate response by their representative to such an event.

Use of Brand names:

Any brand or trade names used by ODOT in bid specifications are for the sole purpose of describing and establishing the standard of quality, performance, or characteristics desired and are not intended to limit or restrict competition. The only exception is the *Lenel* access control equipment which is necessary because of compatibility requirements. Contractors may submit bids for substantially equivalent products for other designated items identified in the document; however, all such brand substitutions shall be at the sole discretion of ODOT.

Project shall consist of the following:

Installation of all high and low voltage electrical wiring, inclusive of conduit, connector's and other hardware necessary for operation and function of door operator, and access control equipment.

Installation of enclosures, batteries, mounting hardware, and power supplies required for operation and function of the following access control equipment Lenel modules (LNL-500); HID card readers (three (3) #5365 MiniProx; Lenel 1320 Dual Reader and associate hardware. This equipment shall be integrated with the Lenel system and connected to ODOT network switch. Contractor will supply one (1) Linear Model DXR-701 single Channel Digital Receiver and three (3) Linear portable Transmitters model DXT-21. Altronix model AL400ULX Multi-Agency Approved Power Supply/Charger.

Work shall include but not be limited to the following:

Contractor to provided Lenel control panel and modules, enclosures, power supplies, etc. These will be mounted on a Contractor install ½" x 4' x 4' plywood backboard inside Network room of the Maintenance Station or closest ODOT network switch location.

Equipment Installer Qualifications:

Access Control: (Requires a minimum five (5) years of verifiable commercial experience, success and in-service performance of this type of work and equipment installation). **All Lenel equipment will be installed by one of the following certified Lenel system installers:**

1. Cook Security Group - 503-786-5173
2. Reece Security Solutions- 503-682-9900
3. Convergint Technologies - 503-228-8522
4. Aronson Security Group - 503-639-9988

Card reader systems requires a Lenel certified installation company (VAR*) who has successfully completed the installation, programming, and interfacing of Lenel/HID access control and audio/intercom equipment with automated gate systems. At a minimum 1 Master certified Lenel installer shall be on-site during this facet of the project.

END OF SECTION

Electric Strikes Assemblies
Product Specification

Part 1 - General

- 1.01 Conditions
- 1.02 Scope of Work
- 1.03 Related Work
- 1.04 References
- 1.05 Quality Assurance
- 1.06 Submittals
- 1.07 Warranty

Part 2 - Products

- 2.01 Acceptable Manufacturer's
- 2.02 Material Requirements
- 2.03 Finishes

Part 3 - Execution

- 3.01 Examination
- 3.02 Installation
- 3.03 Adjustment & Cleaning
- 3.04 Protection
- 3.05 Schedules

1.01 Conditions

General Conditions and Supplementary Conditions are part of the specification whether contained herein or not.

1.02 Scope of Work

A. Work in this section includes integrated door opening systems including associated finish hardware, unless specified elsewhere.

1.03 Related Work

A. The following sections of this specification should be examined in order to identify materials or equipment which may be obtained through this section and may require coordination with other trades.

- 1. Section 01010 – Summary of Work
- 2. Section 06100 – Rough Carpentry, Blocking for Hardware
- 3. Section 08110 - Metal Doors and Frames
- 4. Section 08710 - Door Hardware
- 5. Section 09900 - Painting
- 7. Section 16000 – Electrical
- 8. Section 17920 – Card Access

1.04 References

The following references established standards for architectural hardware as specified in this section.

A. American National Standards Institute (ANSI)

- 1. Locks & Lock Trim - ANSI A156.2
- 2. Exit Devices - ANSI A 156.3
- 3. Door Controls / Closers - ANSI A156.4
- 4. Auxiliary Locks & Associated Products – ANSI A156.5
- 5. Mortise Locks & Latches - ANSI A156.13
- 6. Closer / Holder / Release Devices - ANSI A156.15

- 7. Auxiliary Hardware - ANSI A156.16
- 8. Americans with Disabilities Act (ADA) – ANSI A117.1

1.05 Quality Assurance

A. A base specification has been established for each product type to assure proper quality levels. This includes the manufacturer's name, brand, and catalog number.

B. Hardware shall be installed by people knowledgeable and skilled in the application, installation and adjustment of commercial grade door hardware.

1.06 Submittals

A. Submit shop drawings with proposed Door Strike Assembly system, product and hardware options, to the Project Manager.

B. Provide Owner Manual, instruction sheets and installation details as required under the provision of Section - 017823.

1.07 Warranty

A. Provide manufacturer's standard five-year limited warranty against defects in material and workmanship unless noted otherwise.

- a. Door Closers - 10 Years

2.01 Acceptable Electric Strikes system manufacturer:

A. The Rite Door® Adams Rite Manufacturing, Co. 260 Santa Fe Street, Pomona, CA 91767 Phone: (800)872.3267 Fax: (800)232.7329 www.adamsrite.com

2.02 Material Requirements

C. Hardware Requirements:

- 1. Provide a complete Door Strike Assembly including the installation and adjustment of the latching mechanism within the door construction.
- 2. Latching Hardware
 - ii. Electrification
 - 1. Electric Latch Retraction
 - a. Power Supply
- 3. Wire Transfers
 - a. Mortised into door edge
 - b. Concealed Wire

2.03 Finishes

A. Finish:
Description of Finish - Dark Bronze Anodized

B. Finish Requirements

- a. Door Hardware:

3.02 Installation

A. Mount furnished hardware accessories at heights indicated in Recommended Locations for Standard Doors and Frames, except if otherwise indicated or to comply with requirements of governing regulations, or if otherwise directed by the Project Manager.

B. Install furnished hardware accessories in compliance with the manufacturer's instructions, templates and recommendations. Comply with specified degree of opening for doors with automatic operators, overhead door closers, etc. Securely fasten all furnished parts. Make sure all operating parts move freely and smoothly without binding, sticking and void of any excessive clearance.

C. Remove or protect furnished hardware accessories, prior to any painting or finishing that is to be completed after the installation of the hardware accessories.

3.03 Adjustment and Cleaning

A. Adjust and check door assembly and each operating item of hardware to ensure correct operation and function. Units which cannot be adjusted to operate as intended for the application made shall be replaced.

B. Final Adjustment: Wherever hardware installation is made more than a month prior to building acceptance or occupancy of a space or area, the installer shall return to the work during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items. Hardware Accessories shall be cleaned as necessary to restore correct operation, function, and finish. Do not use cleaners that will harm finish.

END OF SECTION

23 05 00 COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Refer to Division 1, Summary of Work.

1.03 WORK INCLUDED

A. Provide all materials, labor, equipment together with all incidental items not shown or specified, which are required by code and good practice to provide complete systems.

1.04 COORDINATION

A. Coordinate all work in Division 23 with work specified in other Divisions to provide a complete installation. Expense of changes required because of lack of supervision or coordination shall be borne by the Contractor. Such changes shall be to the satisfaction of and directly supervised by the Project Manager.

PART 2 - PRODUCTS

2.01 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle materials and equipment in a manner to prevent damage and deterioration. Store in original container. Indoor units, if stored outside, must be covered.

2.02 MATERIALS

A. All materials employed in permanent construction shall be new, full weight, in first class condition and suitable for space provided. All similar materials shall be of one manufacturer.

PART 3 - EXECUTION

3.01 CLEANING SYSTEMS

A. After all equipment, pipes, and duct systems are installed, system shall be thoroughly cleaned per Division 1. Remove all stickers and tags from equipment and fixtures. Clean all piping systems prior to installation of insulation or painting. Repair or replace any discoloration or damage to system, building finish, or furnishing resulting from failure to properly clean systems.

3.02 ACCESS TO EQUIPMENT AND ACCESSORIES

A. Install equipment with adequate access for service. Provide access doors where shown or required for proper access to valves, dampers, motors, and all other mechanical equipment requiring maintenance where area is not accessible by other means.

3.03 SEISMIC REQUIREMENTS

A. All piping, ductwork, and equipment shall be provided with hangers, transverse bracing, longitudinal bracing, bolts, and connection types per OSSC and SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems. Seismic calculations shall be provided by the Contractor. Coordinate with Structural Project Manager.

3.04 PAINTING

A. Inside ducts visible through face of grilles or diffusers, paint one coat flat black.

B. Prepare all mechanical equipment, piping, and ductwork for painting if painting is required in Division 1, Painting.

C. All outside equipment without factory finish and outside duct work shall be painted. Provide necessary protection of work installed by other trades. Prepare surfaces to receive paint using a cleaning solution as recommended by paint manufacturer. Paint with one coat of primer followed by two coats Rustoleum enamel, and one coat enamel as selected by Project Manager.

3.05 VIBRATION ISOLATION AND EQUIPMENT BASES

A. Provide complete vibration isolation supports for all equipment where required to prevent transmission of vibration to the building. Size springs in accordance with manufacturer's recommendations. Where fan and motor are mounted separately, provide integral steel fan and motor base. Maximum of 10% transmissibility. Provide minimum 3" high concrete equipment bases for pumps, boilers, tanks, etc., as required.

END OF SECTION

23 07 00 HVAC INSULATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUBMITTALS

A. Provide Shop Drawings for all insulation products to be used on this project.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All glass fiber coverings and liners shall have a composite fire and smoke hazard rating as tested by procedure ASTM-E-84, NFPA 255 and UL-723, not exceeding 25 flame spread, 50 smoke developed. All accessories, such as adhesive, mastic cements, tape, and fabric cloths for fitting shall have the same component ratings as listed above. Materials must conform to the Uniform Mechanical Code, latest edition. Insulating characteristics shall meet OEESC, latest edition.

2.02 DUCT INSULATION

A. Outside Duct Wrap: Fiberglass blanket with thermal conductance of 0.27 BTU per inch per square foot per deg. F. per hour at a mean temperature of 75F, 0.75 lb/cu ft. density, FSK foil reinforced fire-resistant facing, and vapor barrier of 0.5 perm rating. Knauf Friendly Feel Duct Wrap with FSK jacket or equal.

2.03 PIPE INSULATION

A. Flexible Closed Cell: Flexible, closed cell polyolefin thermal insulation, 1.5 lbs. per cubic foot density with a maximum K factor of 0.23 BTU per inch per square foot per deg. F. per hour at a mean temperature of 75F, non-toxic, non corrosive with zero water vapor transmission. Pre-slit for above ground applications. Nomaco, Imcolock, or equal.

B. Field Applied Jackets and Fitting Covers: One piece, molded PVC jacket or aluminum jacket 0.016 inch thick.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:

1. Prior to all Work of this section, carefully inspect the installed Work of other trades and verify that all such Work is complete to the point where installation may properly commence.
2. Verify that the Work of this section may be installed in accordance with all pertinent codes and regulations and the approved Shop Drawings.

B. Discrepancies:

1. In the event of discrepancy, immediately notify the Project Manager.
2. Do not proceed with installation in the areas of discrepancy until all such discrepancies have been fully resolved.

3.02 APPLICATION

A. Duct Insulation:

1. Provide duct insulation as required by code, minimum R-5 in unconditioned spaces and R-8 when located outside the building. See Section 23 31 00 for additional requirements.
2. Use internal liner to meet insulation requirements for interior or exterior exposed ducts, where exterior insulation would be subject to damage such as mechanical rooms, storage areas, etc., or where acoustical isolation is required.

3.03 INSTALLATION

A. General:

1. Insulation shall be applied on clean, dry surfaces, after inspection and release for insulation.
2. All insulation shall be continuous through wall and ceiling openings and sleeves.
3. Insulate and cover all fittings, valve bodies, etc., as specified herein.

B. Duct Insulation:

1. Outside Duct Wrap - Lap joints and seams a minimum of 2 inches. Insulation seams shall be firmly butted together and stapled 6 inches on center. Seams, joints, penetrations, and damage to the facing shall be sealed with a 3 inch minimum FSK or foil pressure-sensitive tape designed for use with duct insulation. Insulation on ducts larger than 24 inches wide shall be secured with mechanical fasteners and speed clips spaced 18 inches on center. Cut fasteners flush and seal. Wire where required and seal to maintain vapor barrier.

3.05 CLEANING UP

- A. Prior to acceptance of the building, thoroughly clean all exposed portions of the insulation installation, removing all labels and all traces of foreign substance. Remove all debris accumulated by this Work.

END OF SECTION