PROJECT MANUAL
FOR THE

CITY OF TORRANCE
GREENWOOD PARK
RESTROOM RENOVATIONS

AT

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Torrance, CA 90503

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For OWNER:
City of Torrance
Torrance, California

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SPECIFICATIONS

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SECTION 01 3200

CONSTRUCTION PROGRESS DOCUMENTATION

1.1 Scheduling Work

A. Before any of the work is started, the Contractor must confer with the Community Development Director or Designee and agree on a sequence of procedures: means of access to premises and building; delivery of materials and use of approaches; use of corridors, stairways, elevators, and similar means of communication; and the location of partitions, eating spaces for Contractor's employees, and the like.

B. No work can be scheduled between the hours of 7:00am and 5:00pm without written permission from the Community Development Director or Designee.

1.2 Pre-Construction Meeting

A. The Community Development Director or Designee will schedule a pre-construction meeting before any work takes place. The Contractor's Project Manager, superintendent, and a representative of all major subcontractors shall attend this meeting. Additional persons may be required to attend the preconstruction meeting if directed by the Community Development Director or Designee. At this time, the Contractor shall make pre-construction submissions including following:
   1. A typed list of the Contractors, Project Manager, Project Superintendent, and subcontractors (listed by trade) with a telephone number where they can be reached 24 hours/day, 7 days/week.
   2. Draft Schedule of Values.
   3. Draft Progress Schedule.

END OF SECTION

SECTION 01 3300

SUBMITTAL PROCEDURES

1.1 Schedule of Submittals

A. Within 10 working days after receiving a Notice to Award, the Contractor must complete the Schedule of Submittals, in format indicated below, in duplicate, listing all items that must be furnished for review and approval by the City. The schedule must indicate the type of items (such as sample, shop drawings, catalog cut, and so forth) and include the scheduled dates of submittal. In preparing the schedule, adequate time (10 business days or more exclusive of time in the mails) must be allowed for review and approval and possible resubmittal. Also, the schedule must be coordinated with the approved construction progress chart. The Contractor must revise and/or update the schedule as directed. Such revised schedules must be received by the Community Development Director or Designee within three (3) days after revision.

B. Schedule of Submittals Format

Project _____

Contract No. _____

Project Description _____

Spec. Section	Spec. Description	Paragraph Number	*Submittal Type	Date		Action Taken	Assigned Number
				Submittal	Returned		

*Submittal Type:

C – Certificate
S – Sample
SD – Shop Drawing
CD – Catalog Data
PL – Spare Parts List
MM – Maintenance Manual

1.2 Project Directory

A. At time of bid, together with bid documents, before work is performed on site, the Contractor must complete and submit to the Community Development Director or Designee a listing of all subcontractors, including subcontractor name, address, telephone number, fax number and email address.

1.3 Shop Drawings and Related Data

A. Submittal of shop drawings, samples and related data must conform to the requirements of the project. Prior to submittal, the Contractor must stamp the submittal to indicate that it has been reviewed and approved.

B. 2 prints of all approved shop drawings must be given to the Community Development Director or Designee. The approval of the drawings by the Community Development Director or Designee must not be construed as a complete check but indicates only that the general method of construction and

detailing is satisfactory. Approval of the shop drawings does not relieve the Contractor of responsibility for any error that may exist because the Contractor is responsible for the dimensions and design of adequate connections and details and for satisfactory construction of all work. The submission by the Contractor must be accompanied by a transmittal letter of a type approved by the Community Development Director or Designee.

1.4 Material, Equipment, and Fixture Lists

A. When required by the technical provisions, lists of materials, equipment, and fixtures must be submitted by the Contractor in accordance with the requirements specified for shop drawings. The lists must be supported by sufficient descriptive material, such as catalogs, cuts, diagrams, and other data published by the manufacturer, as well as by evidence of compliance with safety and performance standards, to demonstrate conformance to the specification requirements. Catalog numbers alone are not acceptable. No consideration will be given to partial lists submitted from time to time. Approval of materials and equipment is tentative, subject to submission of complete shop drawings indicating compliance with the contract documents.

1.5 Certificates of Compliance

A. Any certificates required for demonstrating proof of compliance of materials with specification requirements, including mail certificates, statements of application, and extended guarantees, must be signed and submitted in quadruplicate to the Community Development Director or Designee at least 10 days before delivery. The Contractor must review all certificates before submissions are made to the Community Development Director or Designee, to ensure compliance with the contract specification requirements and to ensure that the affidavit is properly signed. Certification must not be construed as relieving the Contractor from furnishing satisfactory material if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

1.6 A-E's Review of Submittals

A. When submittals are reviewed by the A-E on behalf of the Community Development Director or Designee, each submittal must be returned to the Contractor stamped or marked by the A-E in one of the following ways:
   1. NO EXCEPTIONS TAKEN: The Contractor is advised that means that fabrication, manufacture, or construction may proceed, provided the work complies with the contract documents.
   2. MAKE CORRECTIONS NOTED: The Contractor is advised that "B Action" means that fabrication, manufacture, or construction may proceed, provided the work complies with the A-E's notations and the contract documents.
   3. REJECTED: The Contractor is advised that means that no work may be fabricated, manufactured, or constructed and that the Contractor must make a new submittal to the A-E. Any submission marked “REJECTED” is not permitted on the site.

B. The A-E must return submittals to the Contractor, who is responsible for obtaining prints of them and for distributing them to the field and to subcontractors.

C. In the case of shop drawings in the form of manufacturers' descriptive literature, catalog cuts, and brochures stamped “NO EXCEPTIONS TAKEN” and “MAKE CORRECTIONS NOTED”, the A-E must return the stamped copies to the Contractor, who is responsible for distributing them to the field and to the subcontractors. If the shop drawings are stamped "REJECTED" the A-E will return stamped copies to the Contractor, who must submit new shop drawings to the A-E.

D. In the case of samples stamped " NO EXCEPTIONS TAKEN” and “MAKE CORRECTIONS NOTED”, the A-E must return one of the samples to the Contractor. In the case of samples stamped "REJECTED," the A-E must return all of the submitted samples.

END OF SECTION

SECTION 01 3543

ENVIRONMENTAL PROCEDURES

1.1 Scope

A. The work covered by this section consists of furnishing all labor, material, and equipment and performing all work required for compliance with environmental regulations and preventing pollution during, and as a result of, construction operations under this contract, in addition to those measures set forth in other technical provisions of these specifications.

B. The Contractor and subcontractors must comply with all applicable environmental federal, state, local environmental, health and safety laws and regulations.

1.2 Notification

A. The Contractor must, after receiving a notice of noncompliance with the foregoing provisions, immediately take corrective action. The notice, when delivered to its Contractor or its authorized representative at the site of the work, is deemed sufficient for this purpose. If the Contractor fails or refuses to comply promptly, the Community Development Director or Designee may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost because of any such stop orders may be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is subsequently determined that the Contractor was in compliance.

1.3 Environmental Regulatory Compliance

A. Within 10 days after receiving the Notice to Proceed, or not less than 5 days prior to commencing on-site work, the Contractor must submit any environmental documents that are required by federal, state or local environmental regulations. Plans must be approved by the Community Development Director or Designee prior to commencing on-site work and must describe and include, but is not limited to, the following:

1. Waste Minimization and Management Plan must describe how natural resources potentially impacted by construction will be protected or managed; construction wastes will be stored and disposed of or recycled; and pollutants associated with building materials will be controlled. The waste minimization and management section of the plan must also list materials and construction debris to be recycled, and address the disposal of solid and hazardous wastes and materials, including asbestos and lead-based paint.

1.4 Environmental Site Controls

A. Location of Hazardous Materials: The location of the Contractor's temporary storage of any hazardous materials and/or wastes must be appropriately marked and included in the health and Safety Plan (see Section 1.5 below).

B. Post-construction Cleanup or Obliteration: The Contractor must remove and properly dispose of all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, excess or waste materials, or any other vestiges of construction as directed by the Community Development Director or Designee. No separate or direct payment may be made for post-construction cleanup and all associated costs must be considered included in the contract price.

C. Historical and Archeological: Monuments, markers, and works of art must be protected. Items discovered that have potential historical or archeological interest must be preserved. The Contractor

must leave the archeological find undisturbed and must immediately report the find to the Community Development Director or Designee so that the proper authority may be notified.

D. Dust Control: The Contractor must keep the site free from dust in accordance with applicable regulations.

E. Noise Minimization: The Contractor must perform demolition and construction operations to minimize noise including conducting work during less sensitive hours of the day in accordance with applicable noise control regulations.

1.5 Health and Safety

A. Prior to commencing on-site work, the Contractor must submit an Occupational Safety and Health Administration (OSHA) Emergency Action Plan (EAP) to the Community Development Director or Designee to demonstrate compliance by the Contractor and subcontractors with applicable OSHA regulations. If the Contractor is not required by OSHA to develop a written EAP, i.e. if 10 or fewer are employed for the construction project or any other specific regulations identified by OSHA, then the Contractor shall submit to the Community Development Director or Designee a signed letter stating the Contractor shall meet OSHA's EAP requirements in a verbal communication to all employees.

B. The City of TORRANCE has provided a *Safety and Health Guide for Contractors*, as Attachment A to this section. Prior to commencing on-site work, Contractor must read the *Safety and Health Guide for Contractors* and must sign the attached Certificate of Understanding acknowledging and accepting the requirements stated therein.

C. Copies of Material Safety Data Sheets (MSDSs) for any hazardous material(s), as defined by OSHA's Hazard Communications Standard, must be included whenever such materials arrive on-site. MSDSs must be kept together and maintained centrally on-site through to project completion. Provide a copy of each MSDS in the Operating and Maintenance Manual.

D. The use of asbestos containing materials, in excess of one percent as defined by US Environmental Protection Agency regulations, is prohibited in the construction of this project. Provide an executed copy of the “Certificate of Asbestos and Lead-Based Paint (New Work)” in the Operating and Maintenance Manual.

E. The use of lead-based paint is prohibited in the construction of this project.

F. The use of lead-containing solder for plumbing and plumbing fixtures is prohibited in the construction of this project.

G. The Contractor must meet with the Community Development Director or Designee to review the Asbestos and Lead-Paint Inspection Report.

H. The Contractor must sign and submit to the Community Development Director or Designee the attached “Certificate of Asbestos and Lead-Based Paint” for this project.

END OF SECTION

Safety and Health Guide for Contractors

Certificate of Understanding

This *Safety and Health Guide for Contractors* was developed by the City of TORRANCE to provide guidance for contractors hired to perform repair, alteration, renovation, demolition, equipment installation, and other work requiring access to City of TORRANCE-owned or -leased property.

Distribution

A copy of this Certificate of Understanding should be signed by the Contractor's representative at the postaward orientation conference or before the commencement of work. A copy of this guide should be readily accessible where the work is being performed. The Community Development Director or Designee's representative (CDD) should thoroughly brief the Contractor's representative on the Contract Safety and Health Requirements contained herein.

Contractor's Verification Statement

As a representative of _____ (Contractor's name), I have received the *Safety and Health Guide for Contractors* prepared by the City of TORRANCE. As the Contractor's representative, I understand and accept the requirements contained herein, and I have reviewed each of the required sections of the guide with the CDD and/or the designated City of TORRANCE representative. I agree to review the contents of this guide with all subcontractors hired to perform work on City of TORRANCE property.

Contractor's Representative

Printed Name: _____ Contact Number: _____

Signature: _____ Date: _____

Designated City of TORRANCE Representative

Printed Name: _____ Contact Number: _____

Signature: _____ Date: _____

Safety Representative (If Required by City)

Printed Name: _____ Contact Number: _____

Signature: _____ Date: _____

City of TORRANCE or Project Manager

Printed Name: _____ Contact Number: _____

Signature: _____ Date: _____

Maintain a copy of this signed form in the City of TORRANCE and Contractor's project files.

Safety and Health and Related Environmental Requirements

The Contractor is required to meet all applicable OSHA, federal, state, and local safety, health, and related environmental requirements in addition to the City of TORRANCE requirements listed in this table.	
Issue	**City Requirements**
Asbestos	*Review of Facility Asbestos Survey:* Before any building maintenance, equipment installation, renovation, alteration, demolition, or other project begins, determine whether ACBM will be disturbed. Proper Work Practices: If ACBM is present, follow proper control procedures and work practices. *Consultation With Facility Asbestos Coordinator:* Consult with the facility manager or his or her designee before the start of any work likely to disturb ACBM. Disturbance means activities that crumble or pulverize ACBM or presumed asbestos-containing material (PACM) or generate visible debris. Operations may include drilling, abrading, cutting a hole, pulling cable, and crawling through tunnels or attics and spaces above the ceiling where asbestos is actively disturbed or asbestos-containing debris is actively disturbed.
Barricades, Barriers, and Warnings	Your barricades must meet the OSHA requirements. In addition, you assume control of your work area during your activities unless otherwise specified in writing by the Community Development Director or Designee (CE) or Community Development Director or Designee's representative (CER).
Confined Spaces	Confined space work must meet the OSHA requirements. You must have a comprehensive confined space program that includes a written program, employee training, entry and testing equipment, and rescue capabilities. If you require access to confined space requiring a permit, then the trained, designated City of TORRANCE representative must review and approve the project and permit. Entry into other confined spaces must be in accordance with OSHA regulations.
Electrical Work	Lock or rope off work areas involving exposed energized equipment or have an attendant present to prevent accidental contact by unqualified people. Refer to the Barricade section of this guideline for additional information.
Elevated Work and Fall Protection	Follow strictly the applicable OSHA fall protection requirements.
Excavation	All excavations 4 feet or more in depth must be properly shored or sloped and meet all OSHA requirements. Before any digging or drilling commences, inform the Community Development Director or Designee and call Dig Safe or its local equivalent to determine whether any underground utilities are located in the work area. Submit documentation that these notifications have been performed. You must not begin digging or drilling until you have verified that underground utilities have been identified and are properly marked so that work may be accomplished in a safe manner.
Fire Protection	Do not block, remove, or otherwise prevent City of TORRANCE fire extinguishers from being immediately accessible and usable. If a system must be impaired by a scheduled shutdown, notify the appropriate City of TORRANCE representative and do not proceed without City of TORRANCE authorization.
Hazard Communication	Inform the City of TORRANCE before any chemicals are used. Before materials are brought on site, provide material safety data sheets (MSDSs) and an inventory of materials. For projects that are anticipated to use substantial quantities of hazardous materials, you may be required to provide a routing, storage, and waste disposal plan. Upon request, the City of TORRANCE will make available to you MSDSs for hazardous materials the City of TORRANCE uses in the Contractor work area.
Hazardous Materials	Follow all OSHA requirements regarding hazardous materials. Hazardous materials include, but are not limited to, flammable and combustible liquids, gasoline, diesel fuel, motor oil, lubricating oil, hydraulic oil, corrosive cleaners, and battery acid. Provide secondary containment for all containers of liquids that are over 5 gallons in capacity. Immediately report all hazardous material releases ("spills"), regardless of how small or where they occur, to the designated City of TORRANCE representative. Releases include solids, liquids, and gases.
Hot Work	Do not begin any hot work until a City of TORRANCE qualified person has completed and signed a City of TORRANCE Hot Work Permit. The permit will be valid for only a single work shift. You must display the permit at the work site.

	You are prohibited from performing hot work (a) when the City of TORRANCE has not authorized it, (b) in locations in which fire protection systems have been impaired, (c) in the presence of explosive or flammable atmospheres, or (d) in locations were large quantities of flammable and combustible materials are unprotected.
Powered Industrial Trucks	Powered industrial trucks and other mobile equipment must follow all traffic rules of the City of TORRANCE facility. Perform refueling only in authorized locations following safe procedures.
Ladders	Strictly follow all OSHA requirements regarding ladders. Barricade the ladder use area to prevent contact with mobile equipment and employees.
Lead-Based Paint	*Review of Facility Lead Survey:* Before any construction, alterations, and/or repair activities begin, determine whether LBP will be disturbed. If the painted surface has not been tested, you must have it tested before beginning any activities that could potentially disturb LBP. *Proper Work Practices:* If LBP is present, follow proper control procedures and work practices. *Consultation With Community Development Director or Designee:* Consult with the Community Development Director or Designee or his or her designee before the start of any work likely to disturb LBP. Examples of activities that may affect LBP include paint removal by scraping, sanding, power tools, or heat guns; alterations that include removing drywall, structural steel, or other building materials coated with LBP; welding, cutting, or other hot work on coated metal surfaces; abrasive blasting of mail boxes and other equipment; and moving or cleaning of abrasive blasting enclosures.
Lockout/Tagout	Provide a copy of your lockout/tagout procedures, which must meet or exceed the OSHA Lockout/Tagout standard. You will be given access to and must review the City of TORRANCE lockout/tagout program. If you encounter a City of TORRANCE lockout/tagout device that prevents the continuation of work, do not make any attempts to remove, tamper with, or bypass the devices. Contact a City of TORRANCE Maintenance official and make arrangements to have the lockout device removed in accordance with City of TORRANCE lockout removal policies.
Personal Protective Equipment	Before beginning work, evaluate the work area for hazards, determine whether contract employees will be required to use personal protective equipment (PPE) to protect themselves from these hazards, and document the hazard assessment. Wear the PPE required by the City of TORRANCE facility in which you are working, regardless of your perception of hazard potential.
Regulated And Prohibited Materials	*Pesticides.* The City of TORRANCE has restricted the use of pesticides. Obtain prior approval of the district environmental compliance coordinator for special cases that may require the use of pesticide treatments. *Seventeen Chemical Prohibition.* Adhere to the City of TORRANCE Hazard Communication Program and chemical prohibition policies. Do not use on City of TORRANCE property any of the 17 chemicals prohibited by EPA unless a City of TORRANCE person authorizes its use (each of these chemical must be authorized separately). *Asbestos-Free Products.* Install no asbestos-containing products or materials in City of TORRANCE facilities. *Lead.* Apply no lead-based paint in City of TORRANCE facilities.
Scaffolding	Follow strictly the applicable OSHA scaffolding requirements. Provide adequate barrier protection around the scaffolding to prevent hazards to City of TORRANCE workers.
Walking and Working Surfaces	If the project requires temporary modifications to the means of egress, inform the designated City of TORRANCE representative before performing such actions, provide appropriate alternative means of egress, and communicated these to all employees.

Emergency Procedures

Preparations for Emergency	Be prepared for emergency situations. Ensure that emergency telephone numbers are site specific, readily available, easily read, and communicated to all employees. Train and authorize employees to implement emergency procedures.
Medical Emergencies	Have procedures and medical supplies to provide emergency medical services for your own personnel. Determine how to contact emergency medical services before work begins, and have on-site capabilities to contact such services immediately.
Fires	See Fire Protection above. In the event of a fire, you must: - Immediately remove personnel from the area or building following City of TORRANCE evacuation procedures. - Immediately contact the nearest City of TORRANCE employee and inform him or her of the fire. You may also activate an emergency alarm in the area. If no City of TORRANCE employees are on-site, immediately contact the local fire department. Personnel trained in the use and limitations of fire extinguishers may attempt to extinguish the fire if it is safe to do so.
Chemical Releases	See Hazardous Materials above. If the event of a hazardous material release, you must: - Immediately remove personnel from the area or building following City of TORRANCE evacuation procedures. - Immediately contact the designated City of TORRANCE representative and inform him or her of the release. You may also activate an emergency alarm in the area. If no City of TORRANCE employees are on-site, immediately contact the local fire department. Contractor personnel should not respond to the release unless specifically trained and protected to perform hazardous material response.
Power Outages	In the event of a power outage, you must: - Immediately stop work and assemble for a head count and possible facility egress. - Inform all contract employees that equipment may automatically restart when power resumes. - Immediately contact the designated City of TORRANCE representative and inform him or her of the status of contract work and personnel head count. Relay at this time all hazards created due to the power outage. When power resumes evaluate the status of operations that were being performed relative to hazard potential. For example, the interruption of ventilation in confined spaces may generate atmospheric hazards.
Accident Investigation and Reporting	As soon as is practical after an accident, investigate and document an accident investigation. The documentation must describe the incident and identify the causes and the corrective actions that will prevent future incidents. Report all accidents, whether or not they result in injury. Give the written report to the Community Development Director or Designee within 24 hours of the accident or incident.

Certificate of Asbestos and Lead-Based Paint

(New Work)

To: Community Development Director or Designee, City of Torrance

Subject: Certification for new construction

Facility name: _____

Facility address: _____

Certification for new construction:
This Contractor/Owner hereby certifies that no asbestos-containing material in excess of 1 percent as defined by applicable US Environmental Protection Agency regulations, and no lead-based paint has been furnished or installed at the referenced project.

Contractor/Owner name: _____

Signature: _____

Address: _____

_____

Telephone: _____ Date executed: _____

SECTION 014000

QUALITY REQUIREMENTS

PART 1 – GENERAL

1.1 CONTRACTOR QUALITY CONTROL

A. Contractor Quality Control: The Contractor is responsible for the overall quality of all its own work and the work performed by their subcontractors working under this contract. The quality of any part of the work installed must not be less than that required by the technical divisions of this specification. If the Community Development Director or Designee determines that the quality of work does not conform to the applicable specifications and drawings, the Contractor will be advised in writing of the areas of nonconformance, and within 7 days the Contractor must correct the deficiencies and advise the Community Development Director or Designee in writing of the corrective action taken.

B. Noncompliance with Quality Control Requirements: Failure of the Contractor to comply with the above requirements may be cause for termination for default as defined in the terms and conditions of the contract provisions and clauses, including those concerning, *Termination for Convenience or Default*, of the general contract clauses.

1.2 SUBMITTALS

A. Prior to the start of on-site work, the Contractor must submit to the Community Development Director or Designee a Contractor Quality Control Plan that includes the following information:
   1. Quality Control Organization: In chart form, showing relationship of Quality Control organization to other elements of Contractor's organization.
   2. Names and qualifications of personnel in Quality Control organization, including Contractor Quality Control Representative, inspectors, Independent Testing and Inspection Laboratory, and Independent HVAC Test and Balance Agency.
   3. Procedures for reviewing coordination drawings, shop drawings, certificates, certifications, or other submittals.
   4. Testing and inspection schedule, keyed to Construction Schedule, indicating tests and inspections to be performed, names of persons responsible for inspection and testing for each segment of work including preparatory, initial, and follow-up.
   5. Proposed forms to be used including Contractor's Daily Report, Contractor Test and Inspection Report and Non-Compliance Check-Off List.

B. INDEPENDENT TESTING AND INSPECTION LABORATORY: Submit the following.
   1. Name.
   2. Address.
   3. Telephone number.
   4. Names of full time registered engineer.
   5. Responsible officer.
   6. Copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by inspection.

1.3 QUALITY CONTROL PROCEDURES

A. Monitor quality control over Contractor staff, subcontractors, suppliers, manufacturers, products, services, site conditions, and workmanship.

B. Comply fully with manufacturer's published instructions, including each step in sequence of installation.

C. Should manufacturer's published instructions conflict with Contract Documents, request clarification from Community Development Director or Designee before proceeding.

D. Comply with specified standards as a minimum quality for work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons who are thoroughly qualified and trained in their respective trade, to produce workmanship of specified quality.

F. Perform tests required by governing authorities having jurisdiction and utilities having jurisdiction.

1.4 TESTING AND INSPECTION LABORATORY SERVICES

A. Selection and Payment:
   1. The Contractor shall pay for services of an Independent Testing and Inspection Laboratory to perform specified testing and inspection.
   2. Employment of Independent Testing and Inspection Laboratory in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

B. Quality Assurance:
   1. Comply with requirements of all applicable ASTM standards.
   2. Laboratory: Authorized to operate in State in which Project is located.
   3. Laboratory Staff: Maintain a full time registered engineer on staff to review services.
   4. Testing Equipment: Calibrated at reasonable intervals with devices of and accuracy traceable to either National Bureau of Standards or accepted values of natural physical constraints.

C. Laboratory Responsibilities. Contractor shall ensure the Laboratory has the following responsibilities and limits on authority:
   1. Test samples of mixes submitted by Contractor.
   2. Provide qualified personnel at Project site. Cooperate with Community Development Director or Designee and Contractor in performance of services.
   3. Perform specified sampling, testing, and inspection of Products in accordance with specified standards.
   4. Determine compliance of materials and mixes with requirements of Contract Documents.
   5. Promptly notify Contractor Quality Control Representative and Community Development Director or Designee of observed irregularities or non-conformance of work or Products.
   6. Submit one copy of all test results directly to the Community Development Director or Designee.
   7. Perform additional tests as required by Community Development Director or Designee.
   8. Attend appropriate preconstruction meetings and progress meetings.

D. Limits on Authority. Contractor shall ensure the Laboratory has the following limits on authority:
   1. Laboratory may not release, revoke, alter, or expand on requirements of Contract Documents.
   2. Laboratory may not approve or accept any portion of work.
   3. Laboratory may not assume any duties of Contractors.
   4. Laboratory has no authority to stop work.

1.5 CONTRACTOR FIELD INSPECTION AND TESTING

A. Contractor: Test and Inspect work provided under this Contract to ensure work is in compliance with Contract requirements. Required tests and inspections are indicated in each individual Specification Section.

B. Preparatory Inspection: Performed prior to beginning work and prior to beginning each segment of work and includes:
   1. Review of Contract requirements.
   2. Review of shop drawings and other submittal data after return and approval.
   3. Examination to assure materials and equipment conform to Contract requirements.
   4. Examination to assure required preliminary or preparatory work is complete.

C. Initial Inspection: Performed when representative portion of each segment of work is completed and includes:
   1. Performance of required tests.
   2. Quality of workmanship.
   3. Review for omissions or dimensional errors.
   4. Examination of products used, connections and supports.
   5. Approval or rejection of inspected segment of work.

D. Follow-Up Inspections: Performed daily, and more frequently as necessary, to assure non-complying work has been corrected.

E. Testing and Inspection: Perform testing and inspection in accordance with requirements in individual Specification Sections.

1.6 CONTRACTOR'S DAILY REPORT

A. In accordance with the terms and conditions of the contract provisions and clauses, including those concerning *Performance and Superintendence of Work by Contractor*, the Contractor shall submit daily report to Community Development Director or Designee, for days that work was performed. Include the following information:
   1. Date, weather, minimum and maximum temperatures, rainfall, and other pertinent weather occurrences.
   2. Daily workforce of Contractor and subcontractors, by trades.
   3. Description of work started, ongoing work, and work completed by each subcontractor.
   4. Coordination implemented between various trades.
   5. Approval of substrates received from various trades.
   6. Nonconforming and unsatisfactory items to be corrected.
   7. Remarks, to include at a minimum, any potential delays, schedule changes, workplace incidents or other items of note. However, nothing reported herein shall relieve the Contractor of the separate responsibility under other terms and conditions of the Contract provisions and clauses to provide specific notice to the Community Development Director or Designee,

1.7 CONTRACTOR'S TEST AND INSPECTION REPORTS

A. Prepare and submit, to Community Development Director or Designee, a written report of each test or inspection signed by Contractor Quality Control Representative performing inspection within 2 days following day inspection was made.

B. Include the following on written reports of inspection:
   1. Cover sheet prominently identifying that inspection "CONFORMS" or "DOES NOT CONFORM" to Contract Documents.
   2. Date of inspection and date of report.
   3. Project name, location, solicitation number, and Contractor.
   4. Names and titles of individuals making inspection, if not Contractor's Project Field Superintendent.
   5. Description of Contract requirements for inspection by referencing Specification Section.
   6. Description of inspection made, interpretation of inspection results, and notification of significant conditions at time of inspection.

7. Requirements for follow-up inspections.

1.8 NON-COMPLIANCE CHECK-OFF LIST

A. Maintain check-off list of work that does not comply with Contract Documents, stating specifically what non-complying, date faulty work is was originally discovered, and date work was corrected. No requirement to report deficiencies corrected same day it was discovered. Submit copy of Non-Compliance Check-Off List of non-complying work items to Community Development Director or Designee on a weekly basis.

1.9 COMPLETION AND INSPECTION OF WORK

A. Prior to final acceptance by Community Development Director or Designee, submit a certification signed by Contractor to Community Development Director or Designee stating that all work has been inspected and all work, except as specifically noted, is complete and in compliance with Contract Documents.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 016000

PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 PRODUCT OPTIONS AND SUBSTITUTIONS

A. Refer to the terms and conditions of the contract provisions and clauses, including those concerning *Optional Materials or Methods (Construction)*, *Materials and Workmanship*, *Information On "Equal" Products* and *Brand Name or Equal.*

B. Provide Products that comply with Contract Documents, which are undamaged and new at time of installation.

C. Provide Products complete with accessories, trim, finish, safety guards, and other devices and details needed for complete installation and intended use and effect.

D. Substitutions may be considered when the Contractor:

1. Becomes aware of a product or procedure that is more environmentally sensitive or is otherwise advantageous to the City;
2. Represents that he has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
3. Will provide the same guarantee for the substitution that he would for that specified; and
4. Will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects, at no additional cost to the City and at no extension of the Contract completion date.

1.2 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle Products in accordance with manufacturer's instructions, using means and methods that will prevent damage, deterioration and loss, including theft.

B. Schedule Product delivery to minimize long-term storage at Project site and prevent overcrowding of construction spaces.

C. Coordinate Product delivery with installation schedule to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

D. Deliver Products to Project site in undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

E. Promptly inspect shipments to ensure that Products comply with project requirements, quantities are correct, Products are undamaged, and properly protected.

F. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.3 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect Products in accordance with manufacturers' published instructions, with seals and labels intact and legible.

B. Store Products subject to damage by elements above ground, under cover in weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's published instructions.

C. For exterior storage of fabricated Products, place on sloped supports, above ground.

D. Provide off-site storage and protection when Project site does not permit on-site storage or protection.

E. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of Products.

F. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

G. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

H. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 017300

EXECUTION

PART 1 – GENERAL

1.1 LAYOUT OF WORK

A. The Contractor must lay out its work from City-established base lines and benchmarks indicated on the drawings and is responsible for all measurements based on them. The Contractor must furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor as may be required in laying out any part of the work from the base lines and benchmarks established by the City. The Contractor is responsible for the execution of the work to those lines and grades established or indicated by the Community Development Director or Designee.

1.2 CONTRACTOR'S TEMPORARY USE OF FACILITIES AND EQUIPMENT

A. No new facilities or equipment intended for the permanent installation, including materials-handling vehicles, may be used for temporary purposes unless specified in the Contract or unless the Contractor has the written permission of the Community Development Director or Designee.

1.3 CLEANING

A. Refer to the terms and conditions of the contract provisions and clauses, including those clauses *Debris and Clean Up*.

B. Cleaning During Construction:
   1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
   2. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
   3. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
   4. Collect and remove waste materials, debris, and rubbish from site as specified in the Environmental Compliance and Management Plan as required in Section 013543 - Environmental Procedures.

C. Final Cleaning:
   1. Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.
   2. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's published instructions.
   3. Complete following cleaning operations before requesting Community Development Director or Designee inspection for Substantial Completion.
      a. Clean Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove petro-chemical spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.
      b. Remove tools, construction equipment, machinery and surplus material from Project Site.

c. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
d. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.
e. Broom clean concrete floors in unoccupied spaces.
f. Provide final cleaning, waxing, and buffing of resilient tile, in accordance with manufacturer's requirements.
g. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo if required.
h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
i. Remove labels that are not permanent labels.
j. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that can not be satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical name plates.
k. Wipe surfaces of mechanical and electrical equipment, and other similar equipment. Remove excess lubrication, paint and mortar droppings and other foreign substances.
l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
m. Replace air disposable filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills. Clean ducts, blowers, and coils if units were operated without filters during construction.
n. Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace burned out bulbs, and defective and noisy starters in fluorescent and mercury vapor fixtures.
o. Leave Project clean and ready for occupancy.

4. Engage an experienced licensed exterminator to make a final inspection, and rid Project of rodents, insects, and other pests. Comply with regulations of local authorities having jurisdiction.
5. Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction.
6. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from Project Site and dispose of in accordance with requirements of local authorities having jurisdiction.
7. Where extra materials of value remain after completion of construction, they become City property and these materials should be stored as directed by Community Development Director or Designee.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 02 4119

SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Procedures for demolition and removal of existing building elements.
   2. Removal of designated building equipment and fixtures.
   3. Salvaged items.
   4. Salvaged material.
   5. Salvaged items for re-use.

B. Related Documents: The Contract Documents, as defined in Section 01 1000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
   1. Section 01 3543 - Environmental Procedures: Recycling and reuse of waste materials.
   2. MUST PROVIDE ASBESTOS AND LEAD TESTING RESULTS PRIOR TO ANY DEMO.
   3. MUST ALL BE ABATED BY LICENSED COMPANY.

1.2 SYSTEM DESCRIPTION

A. The extent of Selective Demolition Work is that Work necessary, and required to facilitate the new construction indicated.

B. Demolition shall be such that all construction, new and existing, can be performed, and completed in accordance with the construction documents.

C. The contractor shall visit the project site and familiarize himself with the existing conditions and project requirements.

D. Verify the scope of the Work under this Section including salvage material. The City of Torrance will be responsible for removing all materials and equipment which the City of Torrance wishes to salvage prior to the beginning of this Work.

1.3 QUALITY ASSURANCE

A. Engage only personnel who can demonstrate not less than five years successful experience in Work of similar character.

B. Performance Criteria:
   1. Requirements of Structural Work: Do not cut structural work in a manner resulting in a reduction of load-carrying capacity of load/deflection ratio.
   2. Operational and Safety Limitations: Do not cut operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in a manner intended or resulting in a decreased operational life, increased maintenance or decreased safety.
   3. Visual Requirements: Do not cut work which is exposed on the exterior or exposed in occupied spaces of the building in a manner resulting in a reduction of visual qualities or resulting in

substantial evidence of the demolition work judged by the Architect to be cut and patched in a visually unsatisfactory manner.

4. Loading: Do not superimpose loads at any point upon existing structure beyond design capacity including loads attributable to materials, construction equipment, demolition operations and shoring and bracing.
5. Vibration: Do not use means, methods, techniques or procedures which would induce vibration into any element of the structure.
6. Fire: Do not use means, methods, techniques or procedures which would produce any fire hazard unless otherwise approved by Community Development Director or Designee.
7. Water: Do not use means, methods, techniques or procedures which would produce excessive water run-off, and water pollution.
8. Air Pollution: Do not use means, methods, techniques or procedures which would produce uncontrolled dust, fumes or other damaging air pollution.

1.4 PROJECT SITE

A. Indicated "Existing Construction" was obtained from existing drawings or other information which may not reflect actual conditions. The Contractor shall verify all existing conditions and notify the Community Development Director or Designee of discrepancies before proceeding with the Work.

B. Perform the removal, cutting, drilling, etc., of existing work with extreme care, and using small tools in order not to jeopardize the structural integrity of the building.

C. Occupancy: Contractor shall not have full use of the facility during construction.

D. Condition of Structure: The City of Torrance assumes no responsibility for the actual condition of portions of the structure to be demolished.

E. Partial removal: Items of salvageable value to the Contractor may be removed from the structure as the work progresses if not claimed by the City of Torrance. Salvaged items must be transported from the site as they are removed.

F. Protection: Make sure that the safe passage of persons around the area of demolition is maintained during the demolition operation. Conduct operations to prevent injury to adjacent buildings, structures, other facilities, and persons.

1.5 PROTECTION OF EXISTING CONSTRUCTION

A. Provide temporary protection of existing construction (floors, roof, and walls) when adjoining new work and in traffic areas.

B. Provide temporary construction, constructed of framing and plywood, to protect existing construction and surrounding surfaces from damage by movement of materials and personnel.

C. The contractor is responsible for all damage to existing structure and shall replace or repair all areas of damage.

D. Repair, replace, or rebuild existing construction as required or as directed which has been removed, altered or disrupted to allow for new construction. Existing construction shall be corrected to match adjacent construction, new or existing.

E. Perform cutting of existing concrete and masonry construction with saws and core drills. Do not use jack-hammers or explosives.

1.6 SHORING AND BRACING

A. Provide temporary shoring of existing construction to allow removal of existing structural elements. Maintain shoring until new structural elements are in place and accepted.

PART 2 - PRODUCTS

2.1 SALVAGED ITEMS

A. The Contract Documents indicate the existing materials that are to be reinstalled in the new construction. The Contractor shall remove, protect and reinstall these items as indicated.
   1. Items for "Reinstallation" will be indicated as such within the Contract Documents.

B. Materials scheduled for reinstallation which are damaged by the Contractor to the extent that they cannot be reinstalled shall be replaced by the Contractor with equal quality material at no additional cost to the City of Torrance.

C. Coordinate with the Community Development Director or Designee on disposition of salvage items note scheduled for reinstallation, demolished materials, and equipment. Salvaged materials, not reinstalled, shall be delivered, as directed, to the City of Torrance.

2.2 SALVAGED MATERIALS

A. Removed and salvaged materials of value not designated for reinstallation, unless claimed as salvage by the City of Torrance, shall become the property of the Contractor and shall be removed from the premises by the Contractor and recycled, reused or disposed of as specified in Section 01 3543 - Environmental Procedures.

B. The City of Torrance will remove or, under separate contract, have all materials and equipment which the City of Torrance requires removed prior to Work under this Section begins.

2.3 SALVAGED ITEMS FOR RE-USE

A. Materials and items scheduled for re-use which are damaged by the contractor to the extent which they cannot be re-used shall be replaced by the Contractor at no additional cost to the City of Torrance.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 7300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Community Development Director or Designee prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City of Torrance.

3.2 PREPARATION

A. Temporary Support: Provide adequate temporary support for work to be cut to prevent failure. Do not endanger other work.

B. Provide adequate protection of other work during selective demolition to prevent damage and provide protection of the work from adverse weather exposure.

3.3 PROCEDURE

A. Employ only skilled tradesmen to perform selective demolition.

B. Cut work by methods least likely to damage work to the retained and work adjoining.

C. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete and masonry work.

D. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.

E. Where selective demolition terminates at a surface or finish to remain, completely remove all traces of material selectively demolished, including mortar beds. Provide smooth, even, substrate transition.

3.4 POLLUTION CONTROLS

A. Use temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level.

B. Comply with governing authorities pertaining to environmental protection.
   1. Protect natural resources as specified in Section 01 3543 - Environmental Procedures.

C. Clean adjacent portion of the structure and improvement of dust, dirt and debris caused by demolition operations, as directed by Community Development Director or Designee and governing authorities. Return adjacent areas to conditions existing prior to the start of the work.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Collect, recycle, reuse, and dispose of demolished materials as specified in Section 013543 - Environmental Procedures and as approved by the City of Torrance in the Solid Waste Management and Environmental Protection Plan.

3.6 SCHEDULE OF SELECTIVE DEMOLITION

A. Slab on Grade:
   1. Where indicated, saw cut perimeter of existing slab minimum of 50 percent of slab thickness to provide a breaking point to remove existing concrete.
   2. Break concrete slab to be removed into portions easily removed, maximum 3 foot dimensions in any side.
   3. Remove all concrete pieces within removed area down to the existing subgrade.

B. Exterior Masonry:
   1. Locate portion of existing masonry wall to be removed.
   2. Using small power tools, remove only that portion of the exterior wall which is required for the indicated new construction.

C. Interior Floor Finishes:
   1. Remove all interior floor tile finish material unless otherwise indicated on drawings.

D. Interior Walls and Partitions:
   1. All interior wall and partitions shall be removed unless otherwise indicated on drawings.
   2. Remove all top and bottom framing tracks and over head braces.

E. Plumbing:
   1. Remove all plumbing fixtures and accessories including all exposed supply, waste, and vent piping unless otherwise indicated on drawings.
   2. Concealed piping within and below slab construction shall be identified, and capped a minimum of 3 inches (8 cm) below finish floor.

F. Electrical Service:
   1. Remove all abandoned electrical conduit, boxes, and wiring back to the existing electrical service which is to remain.

G. Provide additional selective demolition as indicated and required by the Contract Documents and as required for indicated new construction.

END OF SECTION

SECTION 055000

METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Miscellaneous framing and supports.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

1.2 REFERENCES

A. American Institute of Steel Construction (AISC):
   1. Specifications for the Design, Fabrication and Erection of Structural Steel for Building

B. American National Standards Institute (ANSI):
   1. ANSI A14.3, "Ladders, Fixed, Safety Requirements."

C. American Society for Testing and Materials (ASTM):
   1. ASTM A36, "Structural Steel."
   2. ASTM A53, "Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless."
   3. ASTM A123, "Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."
   4. ASTM A153, "Zinc Coating (Hot-Dip) on Iron and Steel Hardware."
   5. ASTM A307, "Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength."
   6. ASTM A500, "Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes."
   7. ASTM A568, "Specification for General Requirements for Steel Sheet, Carbon, and High-Strength, Low Alloy Hot-Rolled and Cold Rolled."
   8. ASTM A627, "Specification for Homogeneous Tool-Resisting Steel Bars for Security Applications.
   9. ASTM A780, "Practice for Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings."
   10. ASTM B221, "Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tube."

D. American Welding Society (AWS):
   1. AWS D1.1 - Structural Welding Code.

E. Steel Structures Painting Council Specification (SSPC):
   1. Steel Structures Painting Manual.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures for submittals.
   1. Product Data:
      a. Submit complete descriptive data for all stock items.
   2. Shop Drawings:

a. Prepare Shop Drawings under seal of professional structural engineer registered in state where Project is located for products requiring structural engineering.
b. Include profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners and accessories, erection drawings, elevations, welded connections using standard AWS welding symbol with net weld lengths.
c. Take field measurements prior to preparation of shop drawings and fabrication when possible. Allow for trimming and fitting whenever taking of field measurements before fabrication might delay construction.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect Products.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel plates, angles, and other structural shapes shall conform to ASTM A36.

B. Steel pipe shall conform to ASTM A53, Grade B, Schedule 40.

C. Galvanized steel pipe and tube shall conform to ASTM A53.

D. Steel Tubing shall conform to ASTM A500.

E. Sheet Steel, Galvanized: ASTM A446.

F. Sheet and Strip Steel, Hot Rolled: ASTM A568.

G. Extruded Aluminum: ASTM B221.

H. Anchors and Fasteners for Aluminum: Stainless steel.

I. Welding Materials: AWS D1.1; type required for materials being welded.

J. Anchors
1. Threaded Type Concrete Inserts: Galvanized malleable iron or cast steel capable of receiving 3/4 inch diameter machine bolts.
2. Slotted Type Concrete Inserts: Welded box type fabricated with minimum 1/8 inch thick galvanized pressed steel plate with slot to receive 3/4 inch diameter square head bolt and knockout cover.
3. Expansion Shield for Masonry Anchorage: FS FF-2-325.
4. Toggle Bolts: FS FF-B-588.

K. Fasteners
1. Bolts, Nuts and Washers for Exterior Locations: ASTM A307, galvanized in accordance with ASTM A153.
2. Bolts, Nuts and Washers for Interior Locations: ASTM A307, Grade A, regular hexagon head.
3. Bolts, Round Head: ANSI B-18.5
4. Wood Screws, Flat Head Carbon Steel: ANSI B-18.6.1.
5. Plain Washers, Helical Spring Type Carbon Steel: FS FF-W-84.

L. Primers:

1. Primer for Painting: One of following:
   a. Tnemec, Kansas City, MO, (816) 474-3400: No. 99 red primer.
   b. Chessman-Elliot Company: Ceco No. 15 Primox.
   c. Rowe Products, Inc.: No. 7-C-19.
   d. Section 016000 – Product Substitutions. Substitutions: Permitted.
2. Touch-Up Primer for Galvanized Surfaces: FS TT-P-641.

2.2 FABRICATION

A. Fabricate steel items according to approved shop drawings and to applicable portions of AISC Specifications. Conceal welds where possible; grind exposed welds smooth and flush with adjacent finished surface. Ease exposed edges to small uniform radius.

B. Pre-assemble products in shop to greatest extent possible. Disassemble units to extent necessary for shipping and handling. Clearly mark units for re-assemble and installation.

C. For exposed to view fabrications, use materials which are smooth and free of surface blemishes including pitting, seams marks, roller marks, roller trade names and roughness. Remove blemishes by grinding or by welding and grinding, prior to cleaning, treating and application of surface finishes including zinc coating.

D. Fabricate items with joints tightly fitted and secured.

E. Fit and shop assemble in largest practical sections for delivery to Project site.

F. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.

G. Make exposed joints butt tight, flush and hairline.

H. Fabricate anchorage and related components of same material and finish as metal fabrication, unless indicated otherwise.

2.3 ROUGH HARDWARE

A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 sections.

B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

2.4 LOOSE STEEL LINTELS

C. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.

D. Weld adjoining members together to form a single unit where indicated.

E. Size loose lintels for equal bearing of one inch per foot of clear span but not less than 8 inches bearing at each side of openings, unless otherwise indicated.

F. Galvanize all surfaces of loose steel lintels located in exterior walls.

2.4 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports for applications indicated or which are not a part of structural steel framework, as required to complete work.

B. Fabricate units to sizes, shapes, and profiles indicated and required to receive adjacent other construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.
   1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
      a. Except as otherwise indicated, space anchors 24 inches on center and provide minimum anchor units in the form of steel straps 1-1/4 inch x 8 inches long.

2.5 MISCELLANEOUS STEEL TRIM

A. Provide shapes and sizes indicated for profiles shown. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination of assembly and installation with other work.

B. Galvanize miscellaneous framing and supports in the following locations:
   1. Exterior locations.

2.6 FINISHES, GENERAL

A. Comply with NAAMM “Metal Finishes Manual” for recommendations relative to application and designations of finishes.

B. Finish metal fabrications after assembly.

2.7 STEEL AND IRON FINISHES

A. Galvanizing: For those items indicated for galvanizing, apply zinc-coating by the hot-dip process compliance with the following requirements:
   1. ASTM A153 for galvanizing iron and steel hardware.
   2. ASTM A123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch thick and heavier.

B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
   1. Interiors (SSPC Zone 1A): SSPC-SP3 “Power Tool Cleaning”:

C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finish or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA1 “Paint Application Specification No. 1” for shop painting.

2.8 SHOP PAINTING AND PROTECTIVE COATING

A. Conform to Steel Structures Painting Council Specification 15-68T, Type 1, including preparation for painting.

B. Hot-Dip galvanizing and zinc coatings applied on products fabricated from rolled, pressed, and forged steel shapes, plates, bars and strips shall comply with ASTM Specification A123. Galvanized surfaces for which a shop coat of paint is specified shall be chemically treated to provide a bond for the paint. Except for bolts and nuts, all galvanizing shall be done after fabrication.

C. Clean surfaces of rust, scale, grease and foreign matter in accordance with SSPC SP-1 solvent cleaning, prior to finishing. Prepare surfaces for painting in accordance with SSPC-SP2 Hand Tool Cleaning, SSPC-SP3 Power Tool Cleaning or SSPC SP-7 Brush Off Blast Cleaning.

D. Do not prime surfaces in direct contact bond with concrete or where field welding is required.

E. Prime paint items scheduled with one coat.

F. Protect aluminum surfaces in contact with steel with zinc chromate primer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Community Development Director or Designee prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City.

3.2 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.3 INSTALLATION

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.

D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

E. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.

3.4 ADJUSTING AND CLEANING

F. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touch-up of field painted surfaces.
   1. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

G. For galvanized surfaces clean welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A780.

END OF SECTION

SECTION 061000

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Wood Framing.
   2. Concealed blocking behind wall mounted items.
   3. Sheathing material.
   4. Wood treatment.
   5. Building paper.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.2 REFERENCES

A. American Lumber Standards Committee (ALSC):
   1. Softwood Lumber Standards.

B. American Plywood Association (APA):
   1. Grades and Standards.

C. American Society for Testing and Materials (ASTM):
   1. ASTM A307 - Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
   2. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

D. American Wood Preservers Association(AWPA):
   1. AWPA - C1 - All Timber Products - Preservative Treatment by Pressure Process.
   2. AWPA - C15 - Wood for Commercial-Residential Construction Preservative Treatment by Pressure Processes.
   3. AWPA - C20 - Structural Lumber - Fire-Retardant Treatment by Pressure Processes.
   4. AWPA - C27 - Plywood - Fire-Retardant Treatment by Pressure Processes.
   5. AWPA - P5 - Waterborne Preservatives.

E. Underwriters' Laboratories, Inc. (UL):
   1. UL FR S - Fire Rated Treated Wood with Flame Spread and Smoke Developed Ratings of 25 or less in accordance with ASTM E84.
   2. UL 723 - Test for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures for submittals.
   1. Assurance/Control Submittals:
      a. Certificates:
         1) Pressure Treated Wood: Certification from treating plant stating chemicals and process used and net amount of preservative retained are in conformance with specified standards.

2) Preservative Treated Wood: Certification for water-borne preservative that moisture content was reduced to 19 percent maximum, after treatment.
3) Fire-Retardant Treated Wood: Certification from treating plant stating that fire-retardant treatment materials comply with governing code, ordinances and requirements of local authority having jurisdiction, and treatment will not bleed through finished surfaces.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with the following agencies:
1. Lumber Grading Agency: Certified by ALSC.
2. Plywood Grading Agency: Certified by APA.

B. Regulatory Requirements: Conform to applicable codes for fire-retardant treatment of wood surfaces for flame/smoke ratings.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.
1. Inspect wood materials for conformance to specified grades, species, and treatment at time of delivery to Project Site.
2. Reject and return unsatisfactory wood materials.

B. Provide facilities for handling and storage of materials to prevent damage to edges, ends and surfaces.

C. Keep materials dry. Stack materials off ground minimum 12 inches or, if on concrete slab-on-grade, minimum 1-1/2 inches, fully protected from weather. Provide for air circulation within and around stacks and under temporary coverings.

D. For materials pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Environmental Impact:
1. Formaldehyde: Products containing urea-formaldehyde will not be permitted.
2. Wood pressure treatment products: Products containing chromium will not be permitted. Products containing arsenic will not be permitted.
3. Use exterior plywood only. Interior plywood is not permitted.
4. All wood products to be FSC Certified.

PART 2 - PRODUCTS

2.1 LUMBER MATERIALS

A. Lumber, finished 4 sides, 15 percent maximum moisture content. Each piece of lumber to be factory marked with type, grade, mill and grading agency.
1. Light framing: Construction grade Douglas fir or southern pine, appearance grade where exposed.
2. Structural framing and timbers: No. 2 grade Douglas Fir, Southern Pine, or Spruce, appearance grade where exposed.

3. Boards: Construction grade.

2.2 NAILERS, BLOCKING, FURRING AND SLEEPERS

A. Wood for nailers, blocking, furring and sleepers: Construction grade, finished 4 sides, 15 percent maximum moisture content. Pressure preservative treat items in contact with roofing, flashing, waterproofing, masonry, concrete or the ground.

2.3 SHEATHING MATERIALS

A. Plywood, APA rated for use and exposure:
   1. Exterior wall sheathing: APA C-D rated 32/16 Sheathing, 1/2 inch minimal thickness, exterior type.
   2. Roof sheathing: APA rated 48/24 sheathing, 5/8 inch minimum thickness, exterior type.
   3. Backing panels: APA C-D plugged, 3/4 inch thick, exterior type.
   4. Security Ceiling: APA rated 48/24 sheathing, 5/8 inch minimum thickness, tongue and groove, exterior type.

2.4 BUILDING PAPER

A. Asphalt saturated felt, non-perforated.

2.5 FASTENERS

A. Fasteners: Provide manufacturers recommended power tools for each type of fastener.
   1. Bolts, Nuts, Washers, Lag Screws, and Wood Screws: ASTM A307, Medium carbon steel; size and type to suit application; galvanized for treated wood; plain finish for other interior locations, of size and type to suit application, unless otherwise noted.
   2. Expansion Shield Fasteners: For anchorage of non-structural items to solid masonry and concrete.
   3. Powder or Pneumatically Activated Fasteners: For anchorage of non-structural items to steel.
   4. Fasteners for Wood and Plywood (over 1/2 inch) to Light Gage Metal Framing and Metal Deck (up to 1/8 inch thick):
      a. Hilti PWH #3 with wings.
      b. ITW TEKS/4 with wings.
      c. Substitutions: Permitted
   5. Fasteners for Wood and Plywood (up to 2 inches thick) to Metal (from 1/8 inch to 1/4 inch thick):
      a. Hilti PFH #4 with wings.
      b. ITW TEKS/4 with wings.
      c. Substitutions: Permitted

   6. Fasteners for Non-Structural Wood Members to Masonry: 1/4 inch diameter x 3-1/4 inch with phillips flat head.
      a. Tapcon masonry anchors, by ITW Buildex.
      b. Kwik-Con II fastener, by Hilti.
      c. Substitutions: Permitted
   7. Fasteners for preservative treated lumber must be hot dipped galvanized, type 304 or 316 stainless steel, or zinc-polymer coated.

2.6 WOOD TREATMENT

A. Preservative Pressure Treated Lumber, Alkaline Copper Quat (ACQ): Type B, Ammoniacal Copper Quat or Type D, Amine Copper Quat.
   1. Manufacturers:
      a. Chemical Specialties, Incorporated, Charlotte, NC (800) 421-8661.
      b. Arch Wood Protection, Inc., Smyrna, GA (770) 801-6600
      c. Osmose Inc., Griffin, GA, (800) 241-0240
   2. Products:
      a. CSI: “Preserve”.
      b. Arch Wood: “Natural Select”
      c. Osmose: “Nature Wood”
   3. Impregnate lumber with preservative treatment conforming to AWPA Standard C1 and P5. Apply the preservative in a closed cylinder by pressure process in accordance with AWPA Standard C15.
   4. Retention of preservative:
      a. Moderate service conditions (weather exposure): 0.25 pounds per cubic foot (oxide basis).
      b. Severe conditions (constant contact with ground or water): 0.40 pounds per cubic foot (oxide basis).
   5. Remove excess moisture where shrinkage is a serious fault or where treated lumber will be in contact with plaster, or stucco, and where water-borne treated lumber is to be painted or stained.
   6. Lumber shall be dried to 15 to 19 percent moisture content after treatment, and material to be painted or stained shall have knots and pitch streaks sealed as with untreated wood.
   7. Liberally brush freshly cut surfaces, bolt holes and machined areas with the same preservative in accordance with AWPA Standard M4.
   8. Treatment material shall provide protection against termites and fungal decay and shall be registered for use as a wood preservative by the U. S. Environmental Protection Agency.

B. Fire Retardant Treatment:
   1. Manufacturers:
      a. Chemical Specialties, Incorporated, Charlotte, NC (800) 421-8661.
      b. Hickson Corporation, Smyrna, GA: (770) 801-6600.
      c. Hoover Treated Wood Products, Incorporated, Thomson, GA: (800) 832-9663.
   2. Products:
      a. CSI: “D-Blaze”.
      b. Hickson: “Dricon”.
      c. Hoover: “Pyro-Guard”.
   3. Lumber and plywood shall be treated as follows:
      a. Each piece of treated material shall bear the UL FR-S rating (flamespread and smoke developed less than 25) indicating compliance with an extended 30 minute tunnel test in accordance with ASTM E84 or UL 723.
      b. After treatment, all lumber shall be dried to an average moisture content of 19 percent or less.
      c. After treatment, all plywood, shall be dried to an average moisture content of 15 percent or less.
      d. All treated material shall meet interior Type A requirements in AWPA standard C-20 for lumber and C-27 for plywood.
      e. Chemicals used to treat material shall be free of halogens, sulfates and formaldehyde.

C. Wood Requiring Treatment:
   1. Lumber, Preservative Treated: Nailers, blocking, stripping, and similar items in conjunction with roofing, flashing, and other construction. Sills, blocking, furring, stripping, and similar items in contact with masonry or concrete.
   2. Lumber, Fire Retardant Treated: Interior framing, furring, blocking, nailers, and miscellaneous exposed wood. Do not treat furring in contact with masonry or concrete.
   3. Interior Plywood, Fire Retardant Treated: Exterior type plywood backing for electrical and telephone equipment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
   1. Verify that spacing, direction and details of supports are correct to accommodate installation of blocking, backing, stripping, furring and nailing strips.

C. Report in writing to Community Development Director or Designee prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City of Torrance

3.2 INSTALLATION - FRAMING

A. Set structural members level and plumb, in correct position.

B. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

C. Place horizontal members, crown side up.

D. Construct load bearing framing and curb members full length without splices.

E. Double members at openings as indicated on Drawings. Space short studs over and under opening to stud spacing.

F. Construct double joist headers at ceiling openings and under wall stud partitions that are parallel to roof trusses. Frame rigidly into roof trusses.

G. Bridge roof trusses as specified in Section 061753. Fit solid bridging at ends of members.

H. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joint 4 inches.

I. Place sill gasket directly on sill flashing. Puncture gasket clean and fit tight to protruding foundation anchor bolts.

J. Coordinate installation of wood decking and prefabricated wood trusses.

K. Install miscellaneous blocking, nailing strips and framing where required as backing for attachment of wall mounted fixtures, cabinetwork, and other items, and as detailed on Drawings. Coordinate to allow proper attachment of work of other Sections.
   1. Secure in place using fasteners specified. Use only recommended power tools for placement of fasteners.
   2. Recess heads of fasteners below surface of wood members.

L. Secure in place with appropriate fasteners. Use fasteners of correct size that will not penetrate members where opposite side will be exposed to view or require finishing. Do not split wood with fasteners; set panel products to allow expansion at joints.

M. Construct members of continuous pieces of longest possible lengths.

3.3 INSTALLATION - PLYWOOD

A. Secure roof sheathing with longer edge perpendicular to framing members and with ends staggered and sheet ends over bearing.

B. Use sheathing clips between sheets between roof framing members or provide solid edge blocking between sheets.

C. Secure wall sheathing with long dimension perpendicular to wall studs, with ends over firm bearing and staggered.

D. Install plywood in combination single and two span continuous.

E. Install telephone and electrical panel back boards with plywood sheathing material where required. Size the back board by 12 inches (25 cm) beyond size of electrical panel.

3.4 INSTALLATION - AIR INFILTRATION SEAL

A. Place material horizontally over wall sheathing, minimum 2 inch (5 cm) overlap and 6 inch (15 cm) endlap; weather lap edges and ends; fasten to sheathing with corrosion resistant fasteners.

3.5 SITE TREATMENT OF WOOD MATERIALS

A. Apply preservative treatment in accordance with manufacturer's published instructions.

B. Brush apply two coats of preservative treatment on wood in contact with cementitious materials and roofing and related metal flashings. Treat site-sawn cuts.

C. Allow preservative to dry prior to erecting members.

3.6 CONSTRUCTION

A. Site Tolerances:
   1. Framing Members: 1/4 inch from true position, maximum.

3.7 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field inspection.

B. Framing Inspection:
   1. Inspect wood framing installation and connections at completion of each phase of wood construction for correct installation, nailing, connections, and fasteners.
   2. Inspect and verify that types and spacing of fasteners are installed in locations specified or indicated on Drawings.
   3. Inspect types, locations, and fasteners for structural metal framing connectors.
   4. Inspect types, locations, and connections of hold-down anchors.
   5. Inspect wood to steel beam connections.

3.8 SCHEDULE - NAILING

CONNECTION	NAILING
Joist to sill or girder, toenail	3 - 8d
Bridging to joist, toenail each end	2 - 8d
Bottom Plate to joist or blocking, face nail	16d at 16 inches o.c.
Top plate to stud, end nail	2-16d
Stud to bottom plate	4-8d, toenail or 2-16d, end nail
Double studs, face nail	16d at 24 inches o.c.
Double top plates, face nail	16d at 16 inches o.c.
Top plates, laps and intersections, face nail	2 - 16d
Continuous header, two pieces	16d at 16 inches o.c. along each edge
Ceiling joists to plate, toenail	3 - 8d
Continuous header to stud, toenail	4 - 8d
Ceiling joists, laps over partitions, face nail	3 - 16d
Ceiling joists to parallel rafters, face nail	3 - 16d
Rafter to plate, toenail	3 - 16d
Built-up corner studs	16d at 24 inches o.c.
Built-up beams	20d at 32 inches o.c. at top and bottom staggered 2 - 20d at ends and at each splice

END OF SECTION

SECTION 078400

FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Firestopping in fire-rated wall assemblies.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM E 119 - Test Methods for Fire Tests of Building Construction and Materials.
   2. ASTM E 814 - Test Methods for Fire Tests of Through Penetration Fire Stops.

B. Underwriters' Laboratories, Inc. (UL):
   1. UL 1479 - Fire Tests of Through-Penetration Firestops.

1.3 DEFINITIONS

A. Firestopping: Sealing material or assembly placed in spaces between building materials to stop movement of smoke, heat, gasses, or fire through wall openings.

1.4 SYSTEM DESCRIPTION

A. Firestopping Materials: ASTM E 119, ASTM E 814, UL 1479 to achieve a fire rating as indicated on Drawings.

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures of submittals.
   1. Product Data: Product characteristics, performance, and limitation criteria.
   2. Assurance/Control Submittals:
      a. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
      b. Qualification Documentation: Firestopping installer documentation of experience indicating compliance with specified qualification requirements.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of this Section with minimum 5 years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver Products in manufacturer's original unopened containers or packages with labels intact, identifying product and manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions, where applicable.

B. Store and handle materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.8 PROJECT CONDITIONS OR SITE CONDITIONS

A. Environmental Requirements:
   1. Do not install materials when temperature of substrate material and ambient air is below 60 degrees F.
   2. Maintain minimum temperature before, during, and for 3 days after installation of materials.
   3. Keep away from heat, open flame, sparks, or other sources of ignition until curing is complete. Use only with adequate ventilation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturer's offering firestopping materials which may be incorporated in the work include the following:
   1. Nelson Firestop Products, Tulsa, OK (800) 331-7325.
   2. Hilti Firestop Systems, Tulsa, OK (800) 879-8000.
   3. The Rectorseal Corporation, Houston, TX (800) 231-3345.
   4. Specified Technologies, Incorporated (STI), Somerville, NJ (800) 992-1180.
   5. 3M Fire Protection Products, St. Paul, MN (800) 328-1687.
   6. Tremco Firestop System, Beechwood, OH (800) 321-7906.

B. Other products such as USG Firestop System by U.S. Gypsum Co. are acceptable if complying with requirements.

C. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 MATERIALS

A. Intumescent Latex Sealant: Single-component, intumescent, latex formulation.
   1. LBS, by Nelson Firestop Products.
   2. Metacaulk 950 or 1000, by RectorSeal.
   3. SpecSeal SSS100, by STI.
   4. CP 25WB+, by 3M.
   5. TREMstop WBM, by Tremco.

B. Intumescent Solvent-Release-Curing Sealant: Single component, intumescent, synthetic-polymer based, non-sag grade.
   1. CP 25N/S, by 3M.
   2. TREMstop WBM, by Tremco.

C. Intumescent Wrap/Strip: Single-component, elastomeric sheet with aluminum foil on one face.
   1. WRS, by Nelson Firestop Products.

2. Metacaulk Wrap Strip, by RectorSeal.
3. SpecSeal SSWRED Wrapstrip, by STI.
4. FS-195+ Wrap/Strip, by 3M.
5. TREMstop WS, by Tremco.

D. Intumescent Putty: Single-component, non-hardening, dielectric, intumescent putty.
1. FSP, by Nelson Firestop Products.
2. Metacaulk Fire Rated Putty, by RectorSeal.
3. SpecSeal Putty, by STI.
4. Moldable Putty+, by 3M.

E. Silicone Sealant: Single-component, moisture-curing, silicone-based elastomeric, non-sag grade.
1. CLK N/S, by Nelson Firestop Products.
2. FS 601, by Hilti.
3. Metacaulk 835+, by RectorSeal.
4. SpecSeal PEN 300, by STI.
5. 2000+ Silicone, by 3M.
6. FYRE SIL, by Tremco.

F. Silicone Foam: Two-component, silicone-based liquid elastomer that, when mixed, expands and cures in place to produce a flexible, nonshrinking foam.
1. FS Fireblocks, by Hilti.
2. SpecSeal PEN 200, by STI.
3. 2001 Silicone RTV Foam, by 3M.

G. Intumescent Collar: Factory-fabricated, intumescent collar.
1. PCS, by Nelson Firestop Products.
2. CP 642, by Hilti.
3. Metacaulk Pipe Collar, by RectorSeal.
4. SpecSeal SSC Collars, by STI.
5. Plastic Pipe Device, by 3M.
6. TREMstop D, by Tremco.

H. Intumescent Composite Sheet or Pillows and Mortar: Intumescent sheet used to firestop large openings.
1. CPS, by Nelson Firestop Products.
2. SpecSeal SSB Pillows and SpecSeal SSM Firestop Compound, by STI.
3. CS-195+ Composite Sheet, by 3M.
4. TREMstop PS, by Tremco.

I. Packing Material: Manufacturer's standard mastic, putty, ceramic fiber blanket, or mineral wool to be used as fill or backing material for firestopping.
1. FSB or Mineral Wool, by Nelson Firestop Products.
2. Mineral Wool, by Hilti.
3. Fire Safing or Backer Rod, by RectorSeal.
4. Mineral Wool Safing, by STI.
5. FireMaster Mastic, FireMaster Putty, or FireMaster Bulk, by 3M.
6. Cerablanket, by Tremco.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, and conditions are as required, and ready to receive Work.

C. Report in writing to Community Development Director or Designee prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City.

3.2 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.

B. Remove incompatible materials which may affect bond.

C. Place hangers or damming materials in penetration to hold firestopping materials where required.

3.3 INSTALLATION

A. Follow manufacturer charts for appropriate material to achieve required fire rating in various locations.

B. Install firestopping at penetrations of fire rated wall materials by sleeves, piping, ductwork, conduit, and other items in accordance with manufacturer's published instructions.

3.4 CLEANING AND PROTECTION

A. Clean excessive fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturer's of firestopping Products and of products in which opening and joints occur.

B. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations.

C. If damage occurs, cut out and remove damaged or deteriorated firestopping and install new materials.

3.5 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Inspection procedures.

B. Community Development Director or Designee will inspect each firestopping installation. Do not cover firestopping installations that will be concealed by other construction until City inspection.

3.6 SCHEDULES

A. Provide firestopping complying with UL assemblies specified below.

Penetration	Assembly	Nelson	Hilti	RectorSeal	STI	3M	Tremco
Metal Pipe	CMU Wall 8" Thick or Less	CAJ1224 or CAJ1203	CAJ1150 or CAJ1158	CAJ1114 or CAJ1115	CAJ1079 or CAJ1217	CAJ1001 or CAJ1009	CAJ1179 or CAJ1187
	Gypsum Board Partition	WL1083 or WL1030	WL1052 or WL1054	WL1026 or WL1034	WL1049 or WL1079	WL1003 or WL1009	WL1020 or WL1051
Non-Metallic Pipe	CMU Wall 8" Thick or Less	CAJ2086	CAJ2095 or CAJ2109	CAJ2021 or WJ2025	CAJ2064 or CAJ2045	CAJ2005	CAJ2082 or FA2024
	Gypsum Board Partition	WL2071	WL2078	WL2015 or WL2104	WL2093 or WL2029	WL2002 or WL2005	WL2083 or WL2082
Cable Tray	CMU Wall 8" Thick or Less	CAJ8049 or CAJ4033	CAJ4017	CAJ8043	CAJ4020 or CAJ4029	CAJ4003 or CBJ4020	CAJ4007 or WJA4005
	Gypsum Board Partition	WL4003	WL4006	N/A	WL4005 or WL4008	WL4004	WL3043 or WL3044
Insulated Metal Pipe	CMU Wall 8" thick or Less	CAJ5008 or CAJ5059	CAJ5045	WJ5016 or CAJ5070	CAJ5021 or CAJ5029	CAJ5001 or CAJ5002	CAJ5052 or CBT5005
	Gypsum Board Partition	WL5036	WL5022 or WL5029	WL5057	WL5014 or WL5051	WL5001	WL5034
Construction Gaps	CMU Wall to Metal Deck	N/A	HW-D-0008	TRC/PV120-14	U900Z020	U900Z028	U900Z013 or U900Z014
	Gypsum Board Partition to Metal Deck	N/A	HW-D-0003 or HW-D-0004	HWD0014 or TRC/PV120-14	HWD1001	U400V	WHPV60.01 or U900Z014

END OF SECTION

SECTION 07 9200

JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Sealing of interior partition joints.

B. Sealing of ceramic tile joints.

1.2 SUBMITTALS

A. Product Data: Required

B. Samples: Required

1.3 QUALITY ASSURANCE

A. Quality Standards:
1. SWRI (Sealant, Waterproofing and Restoration Institute) requirements for materials and installation.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Interior partition joints: Silicone Sealant - single component, 50 percent elongation capability, manufactured by GE or Dow.

B. Ceramic tile joints: Silicone Sealant - single component, solvent curing, fungus resistant, 25 percent elongation capability, manufactured by GE or Dow.

2.2 ACCESSORIES/MIXES

A. Joint Backing: Round open cell polyethylene urethane foam or butyl rod.

PART 3 – EXECUTION

3.1 Install all products in accordance with manufacturer’s guidelines and printed instructions.

END OF SECTION

SECTION 08 1100

METAL DOOR FRAMES

PART 1 – GENERAL

1.1 SUMMARY

A. Metal door frames.

1.2 SUBMITTALS

A. Product Data: Required

B. Shop Drawings: Required

1.3 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. UL 10B, NFPA 80 and ASTM E-152: Fire rated door and frame construction:
   2. Standards for Facility Accessibility by the Physically Handicapped.

B. Quality Standards:
   1. Hollow metal work: ANSI/SDI-100 Grade II Model 3 Standard Steel Doors and Frames.

PART 2 -PRODUCTS

2.1 Frames: 1 ¾" inch thick full flush design, seamless construction.

A. Frames: 16 gauge thick material, core thickness

2.2 FABRICATION

A. Steel Doors Frames
   1. Shop Assembly:
      a. Fabricate frames as welded unit.
   2. Shop/Factory Finishing:
      a. Steel sheet: Baked primer at interior doors.

PART 3 – EXECUTION

3.1 Install all products in accordance with manufacturer's guidelines and printed instructions.

END OF SECTION

SECTION 081400

WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Flush wood doors.
2. Wood wicket doors.

B. Related Sections:
1. Section 081100 - Metal Doors and Frames: Metal frames for wood doors.
2. Section 087100 - Door Hardware: Hardware coordination.
3. Section 099100 - Painting: Field painting of doors and frames.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM);
1. ASTM E 152 - Methods of Fire Tests of Door Assemblies.

B. Architectural Woodwork Institute (AWI):
1. AWI 1300 - Flush Hollow and Solid Core Doors.

C. National Electrical Manufacturers Association (NEMA):
1. NEMA LD-3 - High Pressure Decorative Laminates.

D. National Fire Protection Association (NFPA):
1. NFPA 80 - Specification for Fire Doors and Windows.

E. Window and Door Manufactures Association (WDMA):
1. WDMA I.S. 1A-97 - Architectural Wood Flush Doors.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures for submittals.
1. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, special blocking for hardware, and factory machining criteria. Indicate cutouts for door louvers.
2. Assurance/Control Submittals:
a. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
b. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with AWI 1300 for Custom Grade.

B. Qualifications:

1. Manufacturer: Company specializing in manufacturing Products specified with minimum 5 years documented experience.
2. Installer: Company specializing in performing the Work of this Section with minimum 5 years documented experience.

C. Regulatory Requirements:
1. Fire Door Construction: Conform to ASTM E 152.
2. Installed Fire Rated Door Assembly: Conform to NFPA 80.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.

B. Package, deliver, and store doors in accordance with AWI Section 013300.

1.6 WARRANTY

A. Closeout Procedures and Training: Procedures for closeout submittals.

B. Special Warranty:
1. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.
2. Warranty Period: Full life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
1. Algoma Hardwoods, Inc., Algoma, WI, (800) 678-8910.
2. Eggers Industries, Neena, WI, (920) 722-6444.
3. Mohawk Flush Doors, Inc., Northumberland, PA (717) 473-3557.
4. Marshfield DoorSystems, Incorporated, Marshfield, WI (800) 869-3667.

B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 MATERIALS

A. Solid Core Wood Doors (Interior Use): AWI 1300.
1. Thickness: Indicated on Drawings.
2. Veneer: AWI 1300-S-9 SLC-5 ME.
3. Face Veneer: AWI Custom quality rotary cut birch for paint finish.
4. Core Construction:
   a. Non Fire-Rated: SLC solid stave lumber.
   b. Fire-Rated: Type FD 1-1/2 solid stave lumber.
5. Grade: AWI Custom.

B. Provide fire-rated labeled doors where indicated on Drawings.

2.3 FABRICATION

A. Fabricate non fire-rated doors in accordance with AWI 1300.

B. Fabricate fire-rated doors to AWI 1300 and to Underwriters Laboratories Incorporated requirements. Attach fire rating label to doors.

C. Furnish and install lock blocks at lock edge, and top of door closer for hardware reinforcement.

D. Vertical Exposed Edge of Stiles:
   1. Wood Doors: Of same species as veneer facing.

E. Bond edge banding to cores.

F. Factory machine door for door hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware.

G. Factory fit doors for frame opening dimensions identified on approved shop drawings.

H. Doors may be provided pre-hung set in frames and ready for installation in rough openings. Metal door frames specified in Section 081100.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Community Development Director or Designee prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City.

3.2 INSTALLATION

A. Install non fire-rated doors in accordance with AWI Quality Standards requirements.

B. Install fire-rated doors in accordance with AWI Quality Standard and NFPA 80 requirements.

C. Machine cut for hardware. Install door hardware specified in Section 087100.

D. Install door louvers plumb and level.

E. Field paint doors and door louvers as specified in Section 099100, color as indicated on Drawings.

3.3 CONSTRUCTION

A. Interface with Other Work:
   1. Coordinate frame installation with size, location, and installation.
   2. Coordinate with door opening construction, door frame, and door hardware installation.

B. Site Tolerances:
   1. Conform to AWI requirements for fit and clearance tolerances.
   2. Conform to AWI 1300 requirements for maximum diagonal warp.

3.4 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field inspection.

B. Inspect door and frame installation, alignment, attachment to structure, hardware installation, and operation.

3.5 ADJUSTING AND CLEANING

A. Adjust hardware for smooth and balanced door movement.

3.6 PROTECTION

A. Section 017300 - Execution: Protecting installed work.

B. Protect finished Work from damage.

END OF SECTION

SECTION 08 7100

DOOR HARDWARE

PART 1 – GENERAL

1.2 SUMMARY

A. Finish Hardware for wood doors.

1.3 SUBMITTALS

A. Product Data: Required

B. Samples: Required

C. Door Schedule: Required

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Door Hardware: Obtain each type of hardware from a single manufacturer.
   1. Locksets: By Best, Corbin Russwin, Sargent, Schlage, Yale or approved equal. All mortise locks shall be ANSI A156.13 Grade 1, with cast or forged lever handles.
   2. Lock cylinder: Integral type by same manufacturer of locksets.
   3. Hinges: Full mortise type with stainless steel pins by Hager, McKinney, Stanley, Lawrence or Soss.
      1). Non-removable pins (NRP) at exterior doors and public interior exposure.
      2). Ball bearing at fire rated doors, oversized doors and doors with closers.
   4. Closers: Heavy duty overhead exposed type complying with ANSI/BHMA A156.4, sized to door conditions or adjustable for door size and barrier free by LCN, Norton, Yale or approved equal.
   5. Exit devices: Crash bar or push bar type by Corbin Russwin, Yale, Von Duprin or approved equal.
   6. Kick Plates: 10” stainless steel high surface mounted with counter sunk screws.
   7. Miscellaneous hardware: Dead locks, bolts, push/pull units, stops, holders, bumpers, thresholds, weatherstripping, silencers, astragals, etc. to be provided as required.
   8. Finishes: Satin stainless steel (US32D).

E. SCHEDULES
   1. See Drawings. Submit Hardware Schedule based on ANSI series standards and functions.

PART 3 – EXECUTION

3.1 Install all products in accordance with manufacturer’s guidelines and printed instructions.

END OF SECTION

SECTION 092900

GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Gypsum board and joint treatment.
   2. Finishing.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
   1. Section 09 2216 - Non-Structural Metal Framing: Metal framing for attachment of gypsum board.
   2. Section 09 9100 - Painting: Field paint finish on gypsum board.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C36 - Specification for Gypsum Wallboard.
   2. ASTM C79 - Test Method for Gypsum Sheathing Board.
   3. ASTM C557 - Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
   4. ASTM C630 - Specification for Water-Resistant Gypsum Backing Board
   5. ASTM C954 - Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Studs From 0.033 inches to 0.112 inches in Thickness.
   6. ASTM C1002 - Specification Steel Drill Screws for the Application of Gypsum Panel Products.
   7. ASTM C1177 - Specification for Glass Mat Gypsum Substrate for Use As Sheathing.
   8. ASTM C1178 - Specifications for Glass Mat Water Resistant Gypsum Backing Panel.
   9. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
   10. ASTM E119 - Test Methods for Fire Tests of Building Construction and Materials.

B. Gypsum Association (GA):
   1. GA-214 - Recommended Levels of Gypsum Board Finish.
   2. GA-216 - Application and Finishing of Gypsum Board.
   3. GA-253 - Application of Gypsum Sheathing.
   4. GA-600 - Fire Resistance Design Manual.

1.3 SUBMITTALS

A. Section 01 3300 - Submittal Procedures: Procedures for submittals.
   a. Product Data: Data on gypsum board, joint materials, and finish materials.

1.4 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: Company specializing in manufacturing Products specified with minimum 5 years documented experience.

2. Installer: Company specializing in performing the Work of this Section with minimum 5 years documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 01 6000 - Product Requirements: Transport, handle, store, and protect Products.

B. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

C. Stack gypsum board flat to prevent sagging.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Jobsite Requirements:
1. Establish and maintain environmental conditions for applying and finishing gypsum board in conformance with GA-216.
2. Maintain minimum 50 degrees F for 48 hours before application and finishing of gypsum board. Maintain temperature continuously until dry. Do not exceed 95 degrees F when using temporary heat sources.
3. Ventilate building spaces as required to dry joint treatment materials. Prevent drafts during hot, dry weather to avoid finishing materials from drying too rapidly.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Resource Management:
1. Recycled Content: Provide gypsum board products with paper backing manufactured from 100 percent post-consumer recycled paper and gypsum core containing minimum 10 percent recycled gypsum.
   a. Soil amendment from recycled scrap gypsum: Coordinate with Section 329200 - Turf and Grasses to identify requirements for gypsum soil amendment and to prepare scrap gypsum board for use as soil amendment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
1. Georgia-Pacific Gypsum Products, Atlanta, GA (800) 225-6119.
2. National Gypsum Company, Gold Bond Building Products, Charlotte, NC (800) 628-4662.
3. United States Gypsum Company, Chicago, IL (800) 874-4968.
4. Allied Stud Co., Phoenix, AZ, (800) 877-8823.
5. Consolidated Fabricators Corp., Paramount, CA, (800) 635-8335
6. Steeler, Inc., Seattle, WA (800) 275-2279
7. Western Metal Lath, Inc., Riverside, CA (909) 360-3500

B. Section 01 6000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 MATERIALS

A. Moisture-Resistant Gypsum Backing Board: ASTM C630; 1/2 and 5/8 inch thick, 48 inch width, maximum permissible length; ends and edges straight and solid, edges tapered. Board consisting of a noncombustible moisture-resistant gypsum core, surfaced on face and back with moisture-repellent paper bonded to the core. Type 'X' fire rated gypsum board where occurs.

B. Exterior Soffit Board: ASTM C1396; 1/2 and 5/8 inch thick, 48 inch width, maximum permissible length; ends and edges straight and solid, edges tapered. Board consisting of a noncombustible extra resistance to sagging and moisture gypsum core, surfaced on face and back with resin coated paper bonded to the core.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 7300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Community Development Director or Designee prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City.

E. Design non-axial load-bearing framing to accommodate 1/2 inch (13 mm) vertical deflection.

3.2 INSTALLATION

A. Install gypsum board in accordance with manufacturer's published instructions, GA-201 and GA-216.

B. Where applicable, install ceiling panels before the installation of wall panels.

C. Where applicable, install wall or ceiling panel patches flush over any openings left over from the construction process and from removed and not reinstalled items. Examples include, but not limited to: fixture backing plates, toilet partition anchors, modifications for plumbing, removed recessed toilet accessories, relocated recessed toilet accessories, removed walls, mechanical grills, electrical items, etc. not shown on drawings. Provide blocking where necessary to support wall panels.

D. Erect single layer gypsum board in most economical direction, with attachment to firm bearing surfaces over framing members. Do not align panel joints with edges of openings.

E. Treat cut edges, holes, fastener heads and joints, including those at angle intersections, in water resistant gypsum board and exterior gypsum soffit board with specified joint compound. Treat cut edges, holes, fastener heads and joints in water resistant glass mat embedded backing board with mastic or mortar. Treat prior to tile installation.

F. Place gypsum panels over supporting framing members with panel ends aligning and parallel with framing members.

G. Install fasteners from center of field of panel toward ends and edges. Install fasteners 3/8 inch from ends and edges of panels, and as follows:
   1. Ceiling: 12 inches on center, perimeter and field.
   2. Walls: 16 inches on center, perimeter and field.

3.3 GYPSUM SHEATHING INSTALLATION

A. Install gypsum board sheathing in accordance with manufacturer's published instructions, GA-216, GA-253 and GA-600, all latest editions.
   1. Erect single layer gypsum board horizontally, with edges butted tight, tongue up with attachment to firm bearing. Glass mat embedded board may be installed horizontally or vertically.

B. Provide construction control joints at maximum 30 feet on center, at inside corners, and at intersections.
   1. Locate panel, allowing 1/4 inch space between edge of panel and adjacent walls, beams, columns, and fascia construction.

C. Place edge trim where gypsum board abuts dissimilar materials. Use longest practical length.

D. Using screws, secure panels in place at maximum 12 inches on center to supporting substrate.

E. Protect all exposed gypsum core at perimeter edges, and penetrations by covering core with metal trim.

3.4 JOINT TREATMENT

A. Reinforce interior and exterior corners at ceiling and wall surfaces. Apply 3 inch wide initial coating of joint compound, pressing tape firmly into joint compound. Wipe off excess joint compound. Apply second coat of joint compound with tools of sufficient width to extend beyond joint center, approximately 4 inches. Draw joint compound down to a smooth even plane.

B. After drying or setting, sand or sponge joints, edges, and corners, eliminating high spots and excessive joint compound to produce smooth finish surface. Prepare surfaces to receive subsequent finishes to height of 6 inches above finish ceiling. Feather coats onto adjoining surfaces resulting in maximum camber of 1/32-inch in 12.

C. Sand after second and third applications of joint compound. Do not to raise nap of paper when sanding.

D. Install control joints full height of partition, consistent with lines of building spaces, with 1/2 inch between boards. Apply sealant at base of joint and control joint accessory piece at face.

E. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

3.5 FINISH

A. Apply gypsum board finish in accordance with manufacturer's published instructions and GA-214 Finish Levels.
   1. Level 4: All joints and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Prepared surface shall be coated with a drywall primer/sealer prior to the application of finish paint. Refer to specification section 099100.

a. Application: For use where gloss semi-gloss, enamel, or nontextured flat paints are specified or where severe lighting conditions occur. Generally in all areas except where noted otherwise.

3.6 CONSTRUCTION

A. Interface with Other Work:
1. Coordinate installation of firestopping Specified in Section 078400 at penetrations through fire-restive rated gypsum board partitions.
2. Coordinate installation of joint sealers specified in Section 079200 at penetrations of non fire-restive rated partitions.

END OF SECTION

SECTION 09 3013

CERAMIC TILING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Ceramic tile.

2. Mortar setting beds for floor and wall tile.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 03 3000 - Cast-In-Place Concrete.

3. Section 07 9200 - Joint Sealants

4. Section 09 2900 - Gypsum Board.

1.02 SUBMITTALS

A. Product Data: Manufacturer's data, standard specifications, Material Safety Data Sheets, and other technical information for each product specified

B. Material Samples: Manufacturer’s standard palette, indicating full range of tile colors, textures, and grout colors.

C. Mock-Ups: For each type, color, and texture, minimum one foot square or three full tile courses, on Plexiglas to demonstrate proper bond mortar and coverage; grout color, hardness and depth.

D. Installation Instructions: Manufacturer's preparation and installation instructions.

E. Product Certificates: Signed by manufacturer certifying that products furnished comply with requirements of this Specification.

1.03 QUALITY ASSURANCE

A. Comply with applicable parts of the following codes or standards as a minimum requirement:

1. ANSI A108, American National Standard Specifications for the Installation of Ceramic Tile.

2. ANSI A118, American National Standard Specifications for Ceramic Tile Installation Materials.

3. ANSI A136.1, Standard Specifications for Ceramic Tile.

4. ASTM A185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

5. ASTM C185 - Standard Test Method for Air Content of Hydraulic Cement Mortar.

6. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.

7. ASTM C150 - Standard Specification for Portland Cement.

8. ASTM C241 - Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic.

9. ASTM C206 - Standard Specification for Finishing Hydrated Lime

10. ASTM C503 - Standard Specification for Marble Dimension Stone.

11. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.

12. ASTM D4551 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane.

13. Tile Council of North America (TCNA) – Current edition of “Handbook for Ceramic Tile installation”.

B. Grade Certificate and Labeling: With each delivery of tile, furnish manufacturer’s “Master Grade Certificate” to the Project Inspector.

C. Source of Materials: Provide materials obtained from one source for each type and color of tile, grout, and setting materials.

D. Consistent Quality: Products shall be consistent in appearance and physical properties.

E. Comply with requirements of California Building Code and ADAAG.

F. Qualifications of Tile Manufacturer: Company specializing in ceramic tile, mosaics, pavers, trim units, and thresholds with five years minimum experience.

G. Qualification of Installation System Manufacturer: Company specializing in installation systems/ mortars, grouts/ adhesives with ten years minimum experience.

H. Qualifications of Installer: Company specializing in installation of ceramic tile, mosaics, pavers, trim units and thresholds with five years experience with installations of similar scope, materials, and design.

I. Pre-Construction Meetings: Prior to start of Work of this section and after approval of submittals, schedule an on-site meeting between Contractor, Community Development Director or Designee, Project Inspector, and representatives of the material manufacturer and tile installer to review construction conditions and Drawings for conformance with the requirements of this Specification for each substrate.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver tile and other materials in sealed containers, with manufacturer's labels intact.

B. Keep all materials clean and dry.

1.05 MAINTENANCE

A. Extra Materials: Provide a minimum of five percent of each type and color as the installed tile, in manufacturers' cartons and labeled.

1.06 WARRANTY

A. Manufacturer shall provide a five year material warranty.

B. Installer shall provide a five year fabrication and installation warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Tile: To establish quality, Specification is based on ANSI A137.1 Standard Grade. Equivalent tile products from the following manufacturers may be provided:

1. Dal-Tile Corporation.

2. American Olean Company.

3. Equal.

B. Installation Materials: To establish quality for setting and waterproofing materials, Specification is based on ANSI A137.1. Products and methods of the following manufacturers may be provided:

1. Laticrete International, Inc.

2. Custom Building Products.

3. Mapei.

4. Equal.

2.02 MATERIALS

A. Colors, Textures, and Patterns: Tile shall be from manufacturer's standard product line. 90 percent shall be from "price group 2", and "10 percent from price group 3", unless indicated otherwise. Tile trim and accessories shall match adjoining tile. Grout color shall match tile unless otherwise indicated.

B. Tile sizes: Tile sizes specified are modular dimensions unless otherwise indicated.

C. Mortar Sand: ASTM C144.

D. Portland Cement: ASTM C 50, Type I or II.

E. Hydrated Lime: ASTM C207, Type S; or ASTM C206 Type S

F. Portland Cement Mortar: ANSI 118.1

G. Portland Cement Mortar Bed: Sand-cement mortar mix gauged with Laticrete Acrylic Admix or Custom Building Products Thin-Set Mortar Admix.

H. Portland Cement Mortar Bed for Shower Areas: Laticrete 226 Thick Bed Mortar Mix Gauged with Laticrete 3701 Mortar and Grout Admix or on site mix per ANSI A108.1A with Custom Building Products Thin-Set Mortar Admix.

I. Latex Portland Cement Bond Mortar: Laticrete 317 Floor & Wall Thinset gauged with Laticrete 3701 Admix, or Custom Building Products Master Blend mixed with Thin-Set Mortar Admix.

J. Waterproof Membrane: Cold-applied, single component liquid with embedded reinforcing fabric where recommended by manufacturer: Laticrete Hydro Ban Waterproof Membrane or Custom Building Products Red Guard Waterproof Membrane.

K. Reinforcing Wire Fabric: 2-inch by 2-inch, 16 by 16 gage, galvanized electrically welded wire reinforcing, per ASTM A 185.

L. Latex Portland Cement Grout: Laticrete Sanded Grout (1500 Series), Custom Polyblend Sanded Grout or Laticrete Unsanded Grout 1600 Series (for joints smaller than 1/8”), Custom Polyblend Unsanded Grout.

M. Epoxy Grout for Quarry Tile: Laticrete Spectralock Pro Epoxy Grout for Floors and Walls or Custom 100 percent Solids Epoxy Grout.

N. Cleavage Membrane and Wall Backing Paper: Cleavage membrane shall be 15-pound asphalt-saturated felt manufactured according to ASTM D226 Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

O. Separation Material (for all sealed joints including perimeters and quarry-tile fields of floor mortar beds): Quality Foam, QF 200 white, 3/8 inch wide by 5-inch high.

P. Backer Rod for sealants (for ceramic mosaic fields): Polyethylene foam, closed-cell, flexible and compressible, 3/16 inch diameter.

Q. Cleaner and Sealer:

1. Cleaner and sealer shall be from one manufacturer, acceptable to tile and grout manufacturers. To establish quality, the Specification is based on Aqua Mix Inc. Equivalent products from Miracle Sealants Co., Watco Tile and Brick, or equal may be provided.

2. Cleaner: Aqua Mix Concentrated Tile Cleaner, neutral phosphate-free cleaner, or Custom Building Products Tile Lab Concentrated Tile and Stone Cleaner.

3. Sealer: Aqua Mix Penetrating Sealer, fungus- and bacteria-resistant, stain-resistant, and slip-resistant as specified for tile, Custom Building Products Tile Lab Surface Gard, or equal.

R. Sealants:

1. Sealant and primer shall be from one manufacturer, acceptable to tile and grout manufacturers. See Section 07 9200 - Joint Sealants.

2. Ceramic Mosaic Tile: One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints

and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

2.03 TILE – See Drawings

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Examine substrates and conditions for compliance with installation requirements. Verify that all penetrations through substrate have been installed. Proceed with Work only after all conditions are in compliance.

B. Substrates shall be firm; dry; clean and within flatness tolerances required by relevant ANSI A108 tile installation standards. Prepare surfaces as follows:

1. Concrete Floors: Allow concrete floors to cure for 28 days minimum before beginning tile and grout installation. Remove laitance, sand, dust, and loose particles.

C. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical items of Work, and similar items located in or behind tile has been completed before installing tile.

E. Verify that joints and cracks in tile substrates are coordinated with caulked-joint locations; if not coordinated, adjust as required by the Architect.

F. Do not install tile until construction in spaces is completed and ambient temperature and humidity conditions are maintained in compliance with referenced standards and manufacturer's written instructions.

G. Protect adjacent surfaces during progress of Work of this section.

3.02 TILE INSTALLATION, GENERAL

A. Install tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Center the tile fields in both directions for each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

B. For tile mounted in sheets: Joints between tile sheets shall be the same width as joints within tile sheets.

C. Extend Work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, unless otherwise indicated. Terminate Work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without damaging tile. Carefully grind the cut edges of tile abutting trim, finish, or built-in items. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Locate joints, directly above joints in concrete substrates, at horizontal and vertical changes in plane, or where indicated during installation of mortar beds. In quarry tile floors, provide at 12 feet on center maximum. Provide 3/8-inch wide foam at joints. Do not saw-cut joints after installing tiles.

F. Prepare and clean joints to be sealed. Apply sealants to comply with requirements of Section 07 9200 - Joint Sealants.

G. Conform to manufacturers printed instructions, and applicable requirements of ANSI and TCNA Standards.

3.03 TILE INSTALLATION, FLOOR

A. Install reinforcing and latex Portland-cement mortar setting bed over cured concrete slab or cleavage membrane on plywood floor. Lap reinforcing at least one full mesh, and support or lift so that it is approximately in the middle of mortar bed. Do not abut against vertical surfaces. Install foam separation material at perimeters and expansion joint locations for caulked joints.

B. Mix setting mortar in accordance with ANSI recommendations.

C. Once begun, mortar installation must continue until room is completed. Discard any batch not floated and finished within ½ hour of mixing. Firmly compact before screeding. Screed to true plane and pitch as indicated. Slope mortar bed sufficiently that water flows to drain and no puddling will occur. Slope mortar down to floor drains for proper installation of waterproof membrane. After screeding, firmly rub down with steel or wood float.

D. Cure mortar bed with a light fog spray of water and cover with 6-mil Visqueen for 72 hours.

E. Thin Set Method: Confirm substrate is completely clean and free of dust. Cut foam at floor perimeters flush with top of mortar bed. Insure that bond coats do not intrude into joints to be sealed. Install tile over properly cured setting bed or waterproof membrane utilizing "thin-set" method with latex portland cement bond mortar, in accordance with manufacturer's printed instructions and ANSI A108.5.

F. Minimum coverage of bond mortar shall be 80 percent except 95 percent in shower areas, for quarry tile, and exterior installations. Place tile into fresh mortar press tile to insure full contact. Before setting proceeds, set and remove three tiles or sheets of tiles to confirm specified coverage of bond mortar. If coverage is insufficient, utilize a larger toothed trowel or back butter tiles until proper coverage is provided.

G. Install tile on floors with the following joint widths:

1. Ceramic Mosaic Tile: 1/16 to 1/8 inch.
2. Quarry Tile: 1/4 to 3/8 inch.
3. Paver Tile: 3/16 to 3/8 inch.

3.04 TILE INSTALLATION, WALLS

A. Lay out Work so tiles will be centered on each wall or section of wall in order to minimize tile cuts. Lay out tile wainscots to next full tile beyond dimensions indicated. Spot setting bed with mortared tile, set plumb and true, accurately indicate plane of finished tile surfaces.

B. Install tile on walls with following joint widths:

1. Glazed Wall Tile: 1/16 inch.
2. Ceramic Mosaic Tile: 1/16 to 1/8 inch.
3. Quarry Tile: 1/4 to 3/8 inch.
4. Special Large Tile: 3/16 to 3/8 inch.

C. Horizontal joints shall be level, vertical joints plumb with surfaces true and plumb, edges of tiles flushed.

D. Rub exposed cuts smooth with a fine stone; no cut edge shall be set against a fixture or adjoining surface without a 1/16 inch joint to be caulked.

E. Install access doors where required, furnished under another section, in correct location, plumb or level, flush with adjacent construction, and securely fastened to framing.

3.05 GROUTING

A. Prior to starting, ensure that all tile surfaces are clean and excessive bond mortar is scraped and vacuumed from joints (approximately 2/3 depth of tile should be open for grouting). Follow manufacturer's instructions for mixing grout. Once grout Work commences, proceed until complete wall or floor area is finished utilizing one batch of grout.

B. Latex portland cement grouting: Dampen tile surface and joints with water using sponge, but leaving no puddles in joints. Force grout into joints using sufficient pressure on rubber float so as to fill joints completely, and scrape excess grout off tile surface with rubber float. Smooth or tool grout to uniform joint finish. Do not over water.

C. Curing latex Portland cement grout: Remove final grout haze with clean soft cloth, and cover with 40-weight Kraft paper to cure. Leave paper in place for protection. Cover wall surfaces with 40-weight Kraft paper for 72 hours.

D. Epoxy grouting: Do not dampen tile. Follow manufacturer's instructions for mixing grout. Force grout into joints with sufficient pressure on rubber float so as to fill joints completely, and scrape excess grout off tile surface with rubber float. Smooth or tool grout to uniform joint finish. Do not allow grout to harden on face of tile.

E. Curing epoxy grout: Do not cover floor, but do not allow foot traffic for 72 hours. Then, if grout is not tacky, cover with 40-weight Kraft paper for protection.

3.06 CLEANING AND SEALING

A. If grout scum is not visible on tile surface after curing, clean tile surface with clear water. Remove and replace cracked, broken or defective Work with proper material.

B. If, when curing membrane is removed, grout scum is visible on tile surface, use the following cleaning method:

1. Immediately recover floor with paper or felt and allow to continue curing for a minimum of 14 days; uncover floor and maintain entire tile surface saturated with clean cool water for not less than two hours.

2. Utilize a neutral cleaner acceptable to manufacturers of tile and grout, and follow manufacturer's instruction. Do not provide generic acid cleaners.

3. Wet tile floors and apply cleaning solution to floor surface, then scrub with a brush. Rinse area several times with clean water to flush solution off floor surface.

C. Apply penetrating sealer in accordance with manufacturer's instructions utilizing a dense sponge applicator, paint pad, sprayer or brush. Avoid overlapping, puddling, and rundown. Completely wipe surface dry within 3 to 5 minutes using cotton or paper towels; do not allow sealer to dry on tile. After two hours, test surface by applying water droplets to surface. If water is absorbed, apply a second coat. Avoid surface traffic for 24 hours.

3.06 SEALANTS

A. Insure joints to be sealed are free of setting and grouting materials and construction debris. Do not permit any foot traffic on installed sealants for a minimum of 48 hours or protect with hardboard strips.

B. Install in accordance with Section 07 9200 - Joint Sealants.

3.07 PROTECTION

A. Admit no traffic where tile is installed until mortar and grout has set for a minimum of 72 hours.

B. Protect Work of this section until Substantial Completion.

3.08 CLEAN UP

A. Remove rubbish, debris, and waste material and legally dispose of off the Project site.

END OF SECTION

SECTION 09 9100

PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Surface preparation and field application of paints and finishes for interior and exterior surfaces.
   2. Schedule of Items to be painted.
   3. Interior painting and finishing schedule.

B. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Section 01 3300 - Submittals: Procedures for submittals.
   1. Product Data: Submit product data for each type of paint specified.
      a. Technical data sheets indicating manufacturer's catalog number, paint type description, and VOC content.
      b. Painting Schedule listing surfaces to be painted with cross reference to the specific painting and finishing system and application. Identify each paint material by manufacturer's catalog number and general classification.
   2. Samples: Submit color brush-out sample for each paint color and sheen specified.
      a. Three samples on 8 1/2 inch x 11 inch card stock for color and sheen verification.
      b. Identify each sample by paint manufacturer, paint type, color, and sheen.
   3. Assurance/Control Submittals:
      a. Test Reports: Submit manufacturer's Material Safety Data Sheets (MSDS) for each paint type proposed.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing Work of this Section with minimum five years documented experience.

B. Regulatory Requirements:
   1. Surface Burning Characteristics in Accordance with ASTM E-84 for Class I or A finish:
      a. Flame Spread (Non-Combustible Surfaces): Less than 25.
      b. Smoke Density (Non-Combustible Surfaces): Less than 450.
   2. Provide paint and coating materials that conform to Federal, State, and Local restrictions for Volatile Organic Compounds (VOC) content.

1.5 DELIVERY, STORAGE AND HANDLING

A. Section 01 6000 - Product Requirements: Transport, handle, store, and protect products.

B. Deliver paint materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time , cleanup requirements, color designation, and instructions for mixing and/or reducing.

C. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's published instructions.

D. Prevent fire hazards and spontaneous combustion.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Environmental Requirements:
   1. Apply paint finishes only when moisture content of surfaces is within manufacturer's acceptable ranges for type of finish being applied.
   2. Surface temperatures or surrounding air temperature to be above 40 degrees F before applying alkyd finishes; above 45 degrees F for interior latex, and 50 degrees F for exterior latex work. Minimum for varnish and transparent finishes is 65 degrees F.
   3. Provide continuous ventilation and heating facilities to maintain temperatures above 45 degrees F for 24 hours prior to, during and 48 hours after application of finishes.
   4. Do not apply paint in areas where dust is being generated.
   5. Provide lighting level in areas being painted of 80 foot candles measured mid-height at substrate surface.

1.7 MAINTENANCE

A. Section 01 7704 - Closeout Procedures and Training: Procedures for closeout submittals.

B. Extra Materials:
   1. Provide one gallon of each color, type and sheen to Community Development Director or Designee.
   2. Label each container with color, type, texture, room locations, in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the work include the following:
   1. Benjamin Moore and Company, Montvale, NJ (201) 573-9600.
   2. Duron Paints and Wall Coverings, Beltsville, MD (800) 723-8766.
   3. Devoe (ICI), Cleveland, OH (888) 681-6353.
   4. Glidden (ICI), Cleveland, OH (888) 681-6353.
   5. Frazee Paint Company, Los Angeles, CA (800) 826-9048.
   6. Pittsburgh Paints, Pittsburgh, PA (800) 441-9695.
   7. Sherwin-Williams Company, Cleveland, OH (800) 321-8194.

B. Section 01 6000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 MATERIALS

A. Paints:
1. Manufacturer's "Best Grade" for each type specified.
2. Ready-mixed; pigments fully ground maintaining a soft paste consistency, capable of readily and uniformly dispersing to a complete homogeneous mixture.
3. Providing good flowing and brushing properties and be capable of drying or curing free of streaks or sags.
4. VOC limits (g/L) for exterior and interior paint applications:

a. Exterior- Steel-Shop Primed
1) Top Coat – Non-Flat: 150
2) Top Coat - Gloss: 250
b. Exterior- Steel - Galvanized
1) Primer Coat: 200
2) Top Coat - Non-Flat: 150
3) Top Coat - Gloss: 250
c. Interior Wood – Transparent
1) Stain: 250
2) Varnish: 350
d. Interior Concrete, Concrete Block
1) Block filler: 300
2) Top Coat – Flat: 100
3) Top Coat – Non-Flat: 150
4) Top Coat – Gloss: 250
e. Interior Steel – Unprimed
1) Rust Prime Coat: 400
2) Top Coat – Non-Flat: 150
3) Top Coat – Gloss: 250
f. Interior Steel – Primed
1) Top Coat – Flat: 100
2) Top Coat – Non-Flat: 150
3) Top Coat – Gloss: 250
g. Interior Steel – Galvanized
1) Top Coat – Non-Flat: 150
2) Top Coat – Gloss: 250
h. Interior Plaster, Gypsum Board
1) Undercoater: 200
2) Top Coat - Flat: 100
3) Top Coat – Non-Flat: 150
4) Top Coat – Gloss: 250

B. Primers and Undercoaters: Manufactured by same manufacturer as finish coat materials.

C. Paint Accessory Materials: Linseed oil, shellac, turpentine and other materials not specifically indicated herein but required to achieve the finishes specified of high quality and approved manufacturer.

2.3 INTERIOR PAINT SYSTEMS

A. Benjamin Moore:
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.

a. Primer: 284 Moorecraft Superhide Interior Latex Primer/Undercoater; MDF 1.5 mils.
b. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.

2. Masonry: Eggshell, Water Base, Acrylic Latex.
   a. Primer: Moorecraft Super Hide Interior/Exterior Latex Blockfiller 285; MDF 11.0 mils.
   b. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
3. Metal: Satin, Water Base, Acrylic Latex.
   a. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
4. Wood: Satin, Water Base, Acrylic Latex.
   a. Primer: 253 Moorecraft Latex Enamel Undercoater and Primer Sealer; 2.0 mils.
   b. Each Finish Coat: Moorecraft Super-Hide Eggshell 286.
5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
   a. Primer: Moorecraft Super Hide Interior/Exterior Latex Blockfiller 285; MDF 11.0 mils.
   b. Each Finish Coat: 276 Moorecraft Acrylic Latex; MDF 1.5 mils.
6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
   a. Primer: M04 Acrylic Metal Primer; MDF 2.0 mils.
   b. Each Finish Coat: 276 Moorecraft Acrylic Latex; MDF 1.5 mils.
7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
   a. Enamel Undercoater: Moorecraft Acrylic Latex Underbody 269.
   b. Each Finish Coat: 276 Moorecraft Acrylic Latex; MDF 1.5 mils.

B. Duron:
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
   a. Primer: Interior Latex Drywall Primer 04-124: Applied at a dry film thickness of not less than 1.6 mils (0.041 mm). (MPI 50, Approved)
   b. Each Finish Coat: Acrylic Latex Eggshell (Low Sheen) Enamel 36 Series; MDF 1.4 mils.(MPI 44, Approved)
2. Masonry: Eggshell, Water Base, Acrylic Latex.
   a. Primer: Block Kote Interior/Exterior Latex Block Filler 08-128; MDF 10.2 mils.
   b. Each Finish Coat: Acrylic Latex Eggshell (Low Sheen) Enamel 36Series; MDF 1.4 mils. (MPI 44, Approved)
3. Metal: Satin, Water Base, Acrylic Latex.
   a. Each Finish Coat: Ultra Deluxe Interior Acrylic Latex Eggshell (Low Sheen) Enamel 36 Series; MDF 1.4 mils.
4. Wood: Satin, Water Base, Acrylic Latex.
   a. Primer: Interior Acrylic Enamel Undercoater 04-123; MDF 1.6mils. (MPI 50, Approved)
   b. Each Finish Coat: Ultra Deluxe Interior Acrylic Latex Eggshell (Low Sheen) Enamel 36 Series; MDF 1.4 mils.
5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
   a. Primer: Block Kote Interior/Exterior Latex Block Filler 08-128; MDF 10.2 mils.
   b. Each Finish Coat: Genesis Odor-Free Interior Latex Semi-Gloss Enamel, 83-Series, MDF 1.5 mils.
6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
   a. Primer: Dura Clad Universal Acrylic Metal Primer, White 33-015; MDF x.x mils. (MPI 76, Approved)
   b. Each Finish Coat: Genesis Odor-Free Interior Latex Semi-Gloss Enamel, 83-Series, MDF 1.5 mils.
7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
   a. Primer/Sealer: Interior Acrylic Enamel Undercoater 04-123; MDF 1.6 mils.(MPI 50, Approved)
   b. Each Finish Coat: Genesis Odor-Free Interior Latex Semi-Gloss Enamel, 83-Series, MDF 1.5 mils.

C. Devoe (ICI):
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
   a. Primer: Wonder-Tones Primer DR50801; MDF 1.5 mil.
   b. Each Finish Coat: Wonder-Tone Eggshell Enamel DR34XX, MDF 1.5 mil.
2. Masonry: Eggshell, Water Base, Acrylic Latex.

a. Primer: Bloxfil 4000 Interior/Exterior Heavy Duty Acrylic Block Filler 4000-1000; 7.0-14.5 MDF.
b. Each Finish Coat: Wonder-Tone Eggshell Latex Enamel DR34XX; MDF 1.5 mil.

3. Metal: Satin, Water Base, Acrylic Latex.
   a. Each Finish Coat: Mirrolac W/B Semi-Gloss Enamel DP83XX; MDF 1.5 mil.
4. Wood: Satin, Water Base, Acrylic Latex.
   a. Primer: Wonder-Prime DR51701.
   b. Each Finish Coat: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.
5. Concrete: Semi-Gloss, Water Base, Acrylic Latex; MDF 1.5 mil.
   a. Primer: Bloxfil 4000 Interior/Exterior Heavy Duty Acrylic Block Filler 4000-1000; 7.0-14.5 MDF.
   b. Each Finish Coat: Mirrolac W/B Semi-Gloss Latex Enamel DP83XX; MDF 1.5 mil.
6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex; MDF 1.5 mil.
   a. Primer: Mirrolac W/B DTM Primer DP85XX; MDF 1.5 mil.
   b. Each Finish Coat: Mirrolac W/B Semi-Gloss DP83XX; MDF 1.5 mil.
7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex; MDF 1.5 mil.
   a. Primer/Sealer: Wonder-Prime DR51701.
   b. Each Finish Coat: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.

D. Frazee:
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
   a. Primer :063 PVA Aqua Seal Drywall Vinyl Primer Sealer; MDF 1.4 mils.
   b. Each Finish Coat: 026 Speed Sheen Interior Acrylic Eggshell Enamel; MDF 1.6 mils.
2. Masonry: Eggshell, Water Base, Acrylic Latex.
   a. Primer: 262 Block Filler Latex Block Filler; MDF 10.2 mils.
   b. Each Finish Coat: 026 Speed Sheen Interior Acrylic Eggshell Enamel; MDF 1.6 mils.
3. Metal: Satin, Water Base, Acrylic Latex.
   a. Each Finish Coat: 126 Mirro Glide Interior Low Sheen Acrylic Enamel; MDF 1.4 mils.
4. Wood: Satin, Water Base, Acrylic Latex.
   a. Primer: 172 Grip N Seal Enamel Undercoater; MDF 2.2 mils.
   b. Each Finish Coat: 126 Mirro Glide Interior Low Sheen Acrylic Enamel; MDF 1.4 mils.
5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
   a. Primer: 262 Block Filler Latex Block Filler; MDF 10.2 mils.
   b. Each Finish Coat: 024 Speed Sheen Semi-Gloss Enamel; MDF 1.7 mils.
6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
   a. Primer: 661F774 Metal Prime Alkyd Metal Primer; MDF 1.7 mils.
   b. Each Finish Coat: 123 Satin Glide Semi-Gloss Enamel; MDF 1.7 mils.
7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
   a. Primer/Sealer: 172 Grip N Seal Enamel Undercoater MDF 2.2 mils.
   b. Each Finish Coat: 024 Speed Sheen Semi-Gloss Enamel; MDF 1.7 mils.

E. Glidden(ICI):
1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
   a. Primer: ProMaster Interior Latex Primer-Sealer MP-5111; MDF 1.5 mil.
   b. Each Finish Coat: ProMaster Interior Latex Eggshell MP-6800; MDF 1.5 mil.
2. Masonry: Eggshell, Water Base, Acrylic Latex.
   a. Primer: Bloxfil 4000 Interior/Exterior Heavy Duty Acrylic Block Filler 4000-1000; MDF 11 mil.
   b. Each Finish Coat: ProMaster Interior Latex Eggshell MP-6800; MDF 1.5 mil.
3. Metal: Satin, Water Base, Acrylic Latex.
   a. Each Finish Coat: Devflex 4214HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.
4. Wood: Satin, Water Base, Acrylic Latex; MDF 1.5 mil.

a. Primer: Prime Interior 100% Acrylic Multi-Purpose Latex Stain Killer, PC 1000; MDF 1.5 mil.
b. Each Finish Coat: Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.

5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: Bloxfil 4000 Interior/Exterior Heavy Duty Acrylic Block Filler 4000-1000; MDF11 mil.
b. Each Finish Coat: Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.

6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: Devflex 4020 PF Direct to Metal Primer & Flat Finish; MDF 1.5 mil.
b. Each Finish Coat: Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel.

7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer/Sealer: Prime Interior 100% Acrylic Multi-Purpose Latex Stain Killer, PC 1000; MDF 1.5 mil.
b. Each Finish Coat: Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel; MDF 1.5 mil.

F. Pittsburgh:

1. Gypsum Board: Eggshell, Water Base, Acrylic Latex.
a. Primer: 6-2 Speedhide Latex Sealer; MDF 1.0 mils.
b. Each Finish Coat: 6-411 Speedhide Eggshell Latex; MDF 1.5 mils.

2. Masonry: Eggshell, Water Base, Acrylic Latex.
a. Primer: 6-7 Speedhide Block Filler; MDF 10.2 mils.
b. Each Finish Coat: 6-411 Speedhide Eggshell Latex; MDF 1.5 mils.

3. Metal: Satin, Water Base, Acrylic Latex.
a. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.

4. Wood: Satin, Water Base, Acrylic Latex.
a. Primer: 6-855 Interior Water Base Undercoater; MDF 1.5 mils.
b. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.

5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: 6-7 Speedhide Block Filler; MDF 10.2 mils.
b. Each Finish Coat: 6-500 Speedhide Semi-Gloss Latex; MDF 1.2 mils.

6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.
a. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.

7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer/Sealer: 6-855 Interior Water Base Undercoater; MDF 1.5 mils.
b. Each Finish Coat: 90-474 DTM Acrylic Satin; MDF 1.5 mils.

G. Sherwin Williams:

1. Gypsum Board: Low VOC, Eg-shell, Water Base, Acrylic Latex.
a. Primer: Harmony Latex Primer, MDF 1.6 mils.
b. Each Finish Coat: Harmony Latex Eg-Shel, MDF 1.6 mils.

2. Masonry: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: ProMar Interior/Exterior Block Filler, B25W25; MDF 10.0 mils.
b. Two Finish Coats: ProMar 200 Interior Latex Egg Shell: MDF 1.5 mils.

3. Metal: Semi-Gloss, Water Base, Acrylic Latex.
a. Each Finish Coat: DTM Acrylic S-G, B66W200; MDF 3.0 mils.

4. Wood: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: PrepRite Classic Primer, B28W101, MDF 1.6 mils.
b. Each Finish Coat: ProClassic Waterborne S-G, MDF 1.4 mils.

5. Concrete: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer: ProMar Interior/Exterior Block Filler, B25W25; MDF 10.0 mils.
b. Each Finish Coat: ProClassic Waterborne S-G, MDF 1.4 mils.

6. Ferrous Metal: Semi-Gloss, Water Base, Acrylic Latex.

a. Primer: Pro-Cryl Universal Water Based Primer, B66-310, MDF 3.0 mils.
b. Each Finish Coat: DTM Acrylic S-G, B66W200; MDF 3.0 mils.

7. Wood Cabinets and Wood Shelves: Semi-Gloss, Water Base, Acrylic Latex.
a. Primer/Sealer: PrepRite Classic Latex Primer, B28W300, MDF 1.6 mils.
b. Each Finish Coat: ProClassic Waterborne S-G, MDF 1.4 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 7300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Community Development Director or Designee prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City of Torrance.

3.2 PREPARATION

A. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, and conditions otherwise detrimental to formation of a durable paint film.

B. Perform preparation and cleaning procedures in accordance with paint manufacturer's published instructions for each particular substrate condition.
1. Provide barrier coats over incompatible primers or remove and reprime as required.
2. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be painted or provide surface applied protection prior to surface preparation and painting operations. Reinstall all removed items after completion of paint work.
3. Clean surfaces to be painted before applying paint of surface treatment. Remove oil and grease prior to mechanical cleaning.

C. Ferrous Metals: Clean ferrous surface that are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
1. Touch-up shop-applied prime coats, where damaged or bare. Clean and touch-up with same type shop primer.

D. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent. Apply coat of etching primer if required by paint manufacturer.

E. Cementitious Materials: Prepare cementitious surfaces to be painted by removing efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.
1. Determine alkalinity and moisture content of surfaces to be painted by performing appropriate tests.
a. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct condition before application of paint.
2. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's printed instructions.

3. Clean floor surfaces scheduled to be painted with a commercial solution of muriatic acid, or other etching cleaner. Flush floor with clean water to neutralize acid, and allow to dry before painting.

F. Wood: Clean wood surfaces to be painted of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes, and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.
1. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends faces, undersides, and backsides of such wood, including cabinets and counters.
2. Seal tops, bottoms, and cut-outs with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

G. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

3.3 APPLICATION

A. Apply paint products in accordance with manufacturer's published instructions using application procedures approved for the particular application and substrate to the specified Minimum Dry Film Thickness (MDF). Apply each coat to uniform finish.

B. Apply each coat slightly darker than preceding coat unless otherwise approved by Community Development Director or Designee. Sand lightly between coats to achieve specified finish.

C. Do not apply finishes on surfaces that are not dry.

D. Number of coats and film thickness required is same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer.

E. Apply additional coats when undercoats, stains, or other conditions show through final coat until paint film is of uniform finish, color, and appearance. Surfaces, including edges, corners, crevices, welds, and exposed fasteners to receive minimum dry film thickness equivalent to that of flat surfaces.

F. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate. Provide minimum dry film thickness (MDF) of the entire coating system as indicated in Painting and Finishing Schedule at end of this Section.

G. Block Fillers: Apply block fillers to concrete masonry units at rate to provide complete coverage with pores filled.

H. Prime Coats: Before application of finish coats, apply a prime coat of material as recommended by manufacturer to material scheduled to be painted or finished that has not been shop primed. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealing.

I. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, laps, brush marks, runs, sags, or other surface imperfections will not be acceptable.

J. Hollow Metal Doors: Paint each door edge.

K. Completed Work: Match Community Development Director or Designee approved field samples for color and sheen.

3.4 FIELD QUALITY CONTROL

A. Section 01 4000 - Quality Requirements: Field testing and inspection.

B. Inspect painting and coating application for scheduled material, color, sheen, specified thickness (MDF), and coverage.

3.5 CLEANING

A. As work proceeds and upon completion, promptly remove paint where spilled, splashed, or spattered.

B. During progress of work keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.

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

D. Upon completion of work leave premises neat and clean.

3.6 PROTECTION

A. Protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.

3.7 COLOR SCHEDULE

A. See Drawings for color schedule.

3.8 SCHEDULE OF ITEMS TO BE PAINTED

A. Painted finishes shall be provided for, but not limited to, the following items. Refer to Drawings and Paint Color Schedule above for designated finishes and colors of areas.
   1. Interior: All interior surfaces as scheduled on Drawings including, but not limited to:
      a. Hollow metal doors and frames.
      b. Hollow metal window frames.
      c. Metal opening frames and trim.
      d. Gypsum wallboard.
      e. Exposed concrete unit masonry.
      f. Pipe Bollards.
      g. Metal railings.
      h. Exposed structure columns.
      i. Exposed wood trim.

B. Do not paint the following items:

   1. Pre-finished items:
      a. Aluminum, brass, bronze, stainless steel, and chrome plated steel.
      b. Pre-finished items, such as toilet compartments, acoustical ceiling materials, mechanical, and electrical equipment.
      c. UL, FM, and other code-required labels.
      d. Equipment identification, performance rating, and name plates.

e. Finish hardware.
f. Factory finished metal wall panels, metal wall panel trim, and metal gravel stops.

2. Exposed items:
   a. Exposed mechanical ductwork, hangers, and supports.
   b. Exposed piping and conduit, hangers and supports.
   c. Exposed fire protection piping, hangers and supports.
   d. Exposed roof structure.
   e. Exposed roof deck.

3.9 PAINTING AND FINISHING SCHEDULE

A. Interior Paint Systems:
   1. Interior Gypsum Wallboard:
      a. 1 coat Latex Wall Primer.
      b. 1 coat Latex Eggshell Enamel
   2. Interior Masonry:
      a. 1 coat Latex Block Filler
      b. 1 coat Latex Eggshell Enamel
   3. Interior Metal:
      a. 2 coats Latex Satin
   4. Interior Wood (painted):
      a. 1 coat Enamel Undercoat
      b. 2 coats Alkyd Semi-Satin Enamel
   5. Cast-In-Place Concrete:
      a. One coat of Latex Masonry Block Filler.
      b. Two tinted coats of Acrylic Latex Semi-Gloss Enamel.
   6. Wood Doors - Painted.
      a. One coat Enamel Undercoat.
      b. Two tinted coats of Latex Semi-Gloss Enamel.
   7. Ferrous Metals
      a. Touch up Prime Coat.
      b. Two tinted coats of Alkyd Enamel Semi-Gloss.
   8. Wood Cabinets, Shelves, etc. - exposed surfaces.
      a. One coat Primer-Sealer.
      b. One coat Enamel Undercoat.
      c. One coat Alkyd Enamel Semi-Gloss Enamel.

END OF SECTION

SECTION 101414

MISCELLANEOUS SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Miscellaneous building signage.

B. Related Documents: The Contract Documents, as defined in Section 01 1000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

1.2 SUBMITTALS

A. Section 01 3300 - Submittal Procedures: Procedures for submittals.
   1. Shop Drawings:
      a. Indicate sign styles, lettering font, foreground and background colors, locations, and overall dimensions of each sign.
      b. Setting details for installation in concrete footings.
   2. Samples: Submit two sample signs 12 inches (30 cm) x 12 inches (30 cm) in size illustrating type, style, letter font, and colors specified; method of attachment.
   3. Assurance/Control Submittals:
      a. Certificates: Manufacturer's certificate that Products meet or exceed specified requirements.
      b. Qualification Documentation: Submit documentation of experience indicating compliance with specified qualification requirements.
      c. Manufacturer's Instructions: Include installation template, attachment devices, and procedures for care of finished surfaces.

1.3 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer: Company specializing in manufacturing Products specified with minimum 5 years documented experience.
   2. Installer: Company specializing in performing the Work of this Section with minimum 5 years documented experience.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Section 01 6000 - Product Requirements: Transport, handle, store, and protect Products.

B. Deliver materials to project site in manufacturer's original unopened protective packaging.

C. Identify contents, manufacturer, brand name, thermal values, and applicable standards.

D. Store in original packaging, off the ground and under protective covers.

E. Handle so as to prevent damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
   1. APCO, Atlanta, GA (404) 688-9000.
   2. ASI Sign Systems, Incorporated, Dallas, TX (800) 274 7732.
   3. Gable Signs, Eric Crowe, Director of Sales & Account Management, 7440 Fort Smallwood Road, Baltimore, MD 21226, Phone (443) 817-0303, eric.crowe@gablesigns.com
   4. Neokraft Signs, Incorporated, Lewiston, ME (800) 339-2258.
   5. Vomar Products, Incorporated, Van Nuys, CA (800) 521-2737.
   6. 2/90 Sign Systems, Grand Rapids, MI (800) 777-4310.

B. Section 01 6000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 SIGNAGE

A. Pictographs:
   1. AIGA Symbol Signs reproducible art developed for the U.S. Department of Transportation is to be used whenever possible. Room signs shall have 1/32 inch raised one inch high Helvetica Medium (upper and lower case) lettering and Braille.
   2. Size: As indicated on drawings.
   3. Material: Plastic.
   4. Color: Use colors below, unless designated by AIGA.
      a. Foreground (Characters and/or Graphics): White
      b. Background: Blue

B. Room and Directional Signage
   1. Room signs shall have 1/32 inch raised one inch high Helvetica Medium (upper and lower case) lettering and Braille.
   2. Size: 16 inches (40 cm).
   3. Material: Plastic.
   4. Color:
      a. Foreground (Characters and/or Graphics): White
      b. Background: Blue

2.3 FASTENERS AND OTHER MATERIALS

A. Provide non-corrosive fasteners, hangers, and mounting devices which are compatible with sign material and finish.

B. Other materials, not specifically described, but required for a complete and proper installation of signs, shall be as selected and subject to approval of the Community Development Director or Designee.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 7300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
   1. Examine foundations, walls, doors, ceilings and other areas scheduled to receive signs for conditions that would affect quality and execution of work.

C. Report in writing to Community Development Director or Designee prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City of Torrance.

3.2 INSTALLATION

A. Install signage in accordance with manufacturer's published instructions.

B. Install sign units and components at the locations shown or scheduled, securely mount with concealed theft-resistant fasteners. Attach signs to substrates in accordance with the manufacturer's instructions.

C. Install level, plumb, and at the proper height. Cooperate with other trades for installation of sign units to finish surfaces.

D. Sign manufacturer to provide template for spacing of letters.

3.3 CONSTRUCTION

A. Interface with Other Work:
   1. Furnish full-size spacing templates for individually bundled letters and numbers for coordination with work of other trades.

3.4 FIELD QUALITY CONTROL

A. Section 01 4000 - Quality Requirements: Field testing and inspection.

B. Inspect signage locations, attachments, and messages to verify installation conforms to Drawings.

END OF SECTION

SECTION 102115

TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Includes:
   1. Solid phenolic core toilet compartments
   2. Attachment hardware.

B. Related Documents: Additional requirements and information necessary to complete the Work of this Section may be found in other Documents.

C. Related Sections:
   1. Section 061000 - Rough Carpentry: Framing and plates within walls for partition attachment.
   2. Section 102813 - Toilet Accessories: Coordinate compartment installation with subsequent accessory installation.

1.2 REFERENCES

A. American National Standards Institute (ANSI):
   1. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible To and Usable by Physically Handicapped People.

B. American Society for Testing and Materials (ASTM):
   1. ASTM A 167 - Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
   2. ASTM E-84 – Standard Test Method for Surface Burning Characteristics of Building Matrials.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Procedures for submittals.
   1. Product Data: Panel construction, hardware, and accessories.
   2. Shop Drawings: Partition plan, elevation views, dimensions, door swings, details of wall and floor supports and connections.
   3. Samples: Two 2 inch x 3 inch samples of partition indicating finish and color.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Conform to ANSI A117.1 code for access for the handicapped operation of toilet compartment door and hardware.
   2. IBC 2006 for Flame Spread/Smoke Development requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Transport, handle, store, and protect products.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
   1. Bradley Corporation, Menomoee Falls, WI (1-800-272-3539)
   2. General Partitions MFG. Erie, PA (814-833-1154)
   3. Metpar, Corporation, Westbury, NY (516) 333-2600.
   4. Scranton Products, Scranton, PA (800) 445-5148

B. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

2.2 MATERIALS

A. Solid phenolic core compartments and screens: water resistant; graffiti resistant; non-absorbent; with plastic laminate face sheets permanently fused to plastic core.
   1. Panels: 1 inch thickness, 58 inches in height.
   2. Doors: 1 inch thickness, 58 inches in height.
   3. Pilasters: 1 inch thickness.
   4. Urinal screens: 1 inch thickness, 24 inches in depth, 42 inches in height, wall mounted.

B. Pilaster Shoes: 3 inches high and one of the following:
   1. One piece molded polypropylene or high density polyethylene (HDPE).
   2. 20 gage stainless steel.

C. Attachments:
   1. Screws, and Bolts: Stainless steel; tamper proof type.
   2. Wall Mounting Brackets: Continuous, full height heavy duty plastic or bight anodized aluminum brackets in accordance with toilet compartment manufacturer's instructions.

D. Hardware: Chrome plated non-ferrous cast pivot hinges, gravity type, adjustable for door close positioning; nylon bearings; black anodized aluminum door latch; door strike and keeper with rubber bumper; cast alloy chrome plated coat hook and bumper.

2.3 FABRICATION

A. Solid Phenolic Core: 1/4 inch radius beveled edges.

B. Hardware and Attachments: Pre-drilled by manufacturer; provide for protection of dissimilar metals.
   1. Floor Mounted Anchorage: Corrosion-resistant anchoring assemblies with threaded rods, lock washers, and leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.

2.4 FINISHES

A. Compartments and Screens: Plastic Laminate per Drawings

B. Plastic Pilaster Shoes: Color to match core of solid plastic compartments and screens.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
   1. Verify correct spacing of plumbing fixtures.
   2. Verify correct location or built-in framing, anchorage, and bracing.

C. Report in writing to Community Development Director or Designee prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City.

3.2 INSTALLATION

A. Install partitions secure, rigid, plumb, level, and square in accordance with published manufacturer's instructions.
   1. Provide for adjustment due to minor floor variations.
   2. Install adjacent components for consistency of line and plane.

B. Maintain 1/2 inch space between wall and panels, and between wall and pilasters. Attach panel brackets securely to walls using anchor devices.

C. Attach panels and pilasters to bracket with through sleeve tamperproof bolts and nuts. Locate head rail joints at pilaster center lines.

D. Anchor urinal screen panels to walls and anchored to floor in accordance with manufacturer's instructions to suit supporting wall construction.

E. Conceal floor fastenings with pilaster shoes.

F. Equip each door with hinges, one door latch, and one coat hook and bumper. Align hardware to uniform clearance at vertical edges of doors, not exceeding 1/4 inch.
   1. Provide hardware at handicapped toilet with operating hardware complying with ANSI A117.1.

3.3 CONSTRUCTION

A. Interface with Other Work:
   1. Coordinate placement of support framing and anchors in walls.

B. Site Tolerances:
   1. Maximum Variation From True Position: 1/4 inch.
   2. Maximum Variation From Plumb: 1/8 inch.

3.4 ADJUSTING

A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.

B. In Swinging Doors: Adjust hinges to locate doors in partial open position when unlatched.

C. Out Swinging Doors: Adjust hinges to gently return doors to closed position.

D. Adjust adjacent components for consistency of line or plane.

3.5 ENVIRONMENTAL PROCEDURES

A. Indoor Air Quality:
   1. Clean Surfaces: Use non-toxic materials and procedures.
   2. Remove protective masking.

END OF SECTION

SECTION 10 2813

TOILET ACCESSORIES

PART 1 – GENERAL

1.1 SUMMARY

A. Toilet accessories.

1.2 SUBMITTALS

A. Product Data: Required.

B. Shop Drawings: Required.

PART 2 – PRODUCTS

2.1 MANUFACTURERS
A. Sources: Bobrick, ASI, or Bradley
1.. Stainless Steel: AISI Type 302/304 with polished No. 4 finish.

2.2 SCHEDULE: See Drawings for Toilet Accessories Schedule and Locations

PART 3 – EXECUTION

3.1 Install all products in accordance with manufacturer’s guidelines and printed instructions.

END OF SECTION

SECTION 22 0500

COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Piping materials and installation instructions common to most piping systems.
   2. Dielectric fittings.
   3. Mechanical sleeve seals.
   4. Sleeves.
   5. Escutcheons.
   6. Grout.
   7. Equipment installation requirements common to equipment sections.
   8. Concrete bases.
   9. Supports and anchorages.

1.2 DEFINITIONS

A. Finished Spaces: Spaces other than plumbing and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and plumbing equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

PART 2 - PRODUCTS

2.1 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 22 piping Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.2 JOINING MATERIALS

A. Refer to individual Division 22 piping Sections for special joining materials not listed below.

B. Pipe-Flange Gasket Materials: ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.

2.3 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.

B. Insulating Material: Suitable for system fluid, pressure, and temperature.

C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.

D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.

E. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.

F. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.

2.4 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.

B. Sealing Elements: **NBR** interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.

C. Pressure Plates: **Stainless steel**. Include two for each sealing element.

D. Connecting Bolts and Nuts: **Stainless steel** of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.5 SLEEVES

A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
   1. Underdeck Clamp: Clamping ring with set screws.

2.6 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
   1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
   2. Design Mix: 5000-psi, 28-day compressive strength.
   3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 PLUMBING DEMOLITION

A. Refer to Division 01 Section "Cutting and Patching" and Division 02 Section "Selective Structure Demolition" for general demolition requirements and procedures.

B. Disconnect, demolish, and remove plumbing systems, equipment, and components indicated to be removed.
   1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
   2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
   3. Equipment to Be Removed: Disconnect and cap services and remove equipment.
   4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
   5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping to permit valve servicing.

G. Install piping at indicated slopes.

H. Install piping free of sags and bends.

I. Install fittings for changes in direction and branch connections.

J. Install piping to allow application of insulation.

K. Select system components with pressure rating equal to or greater than system operating pressure.

L. Install escutcheons for penetrations of walls, ceilings, and floors.

M. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.

N. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
   1. Install steel pipe for sleeves smaller than 6 inches in diameter.
   2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.
   3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

O. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
   1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

P. Verify final equipment locations for roughing-in.

Q. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

3.4 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:
   1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
   2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
   3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
   4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install plumbing equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

D. Install equipment to allow right of way for piping installed at required slope.

3.6 CONCRETE BASES

A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
   1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
   2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
   3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
   4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   5. Install anchor bolts to elevations required for proper attachment to supported equipment.
   6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
   7. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 03 Section "Cast-in-Place Concrete."

3.7 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Division 05 Section "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor plumbing materials and equipment.

C. Field Welding: Comply with AWS D1.1.

3.8 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor plumbing materials and equipment.

B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.

C. Attach to substrates as required to support applied loads.

3.9 GROUTING

A. Mix and install grout for plumbing equipment base bearing surfaces, pump and other equipment base plates, and anchors.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placement of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases and provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout.

END OF SECTION

SECTION 22 1316

SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following soil and waste, sanitary drainage and vent piping inside the building:
   1. Pipe, tube, and fittings.
   2. Special pipe fittings.

1.2 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure, unless otherwise indicated:
   1. Soil, Waste, and Vent Piping: 10-foot head of water.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control inspection and test reports.

1.4 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping; and "NSF-drain" for plastic drain piping.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Hub-and-Spigot, Cast-Iron Pipe and Fittings: ASTM A 74, Service class.
   1. Gaskets: ASTM C 564, rubber.

B. Hubless Cast-Iron Pipe and Fittings: ASTM A 888 or CISPI 301.
   1. Sovent Stack Fittings: ASME B16.45 or ASSE 1043, hubless, cast-iron aerator and deaerator drainage fittings.
   2. Shielded Couplings: ASTM C 1277 assembly of metal shield or housing, corrosion-resistant fasteners, and rubber sleeve with integral, center pipe stop.
      a. Standard, Shielded, Stainless-Steel Couplings: CISPI 310, with stainless-steel corrugated shield; stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve.
      b. Heavy-Duty, Shielded, Stainless-Steel Couplings: With stainless-steel shield, stainless-steel bands and tightening devices, and ASTM C 564, rubber sleeve.

C. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade A or B, Schedule 40, galvanized. Include ends matching joining method.
   1. Drainage Fittings: ASME B16.12, galvanized, threaded, cast-iron drainage pattern.
   2. Pressure Fittings:
      a. Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106, Schedule 40, galvanized, seamless steel pipe. Include ends matching joining method.
      b. Malleable-Iron Unions: ASME B16.39; Class 150; hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface; and female threaded ends.
      c. Gray-Iron, Threaded Fittings: ASME B16.4, Class 125, galvanized, standard pattern.
      d. Cast-Iron Flanges: ASME B16.1, Class 125.
      e. Cast-Iron, Flanged Fittings: ASME B16.1, Class 125, galvanized.

D. Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.
   1. Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought-copper, solder-joint fittings.

E. Solid-Wall ABS Pipe: ASTM D 2661, Schedule 40, solid wall.
   1. ABS Socket Fittings: ASTM D 2661, made to ASTM D 3311, drain, waste, and vent patterns.
   2. Solvent Cement and Adhesive Primer:
      a. Use ABS solvent cement that has a VOC content of 325 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
      b. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

F. Solid-Wall PVC Pipe: ASTM D 2665, solid-wall drain, waste, and vent.
   1. PVC Socket Fittings: ASTM D 2665, socket type, made to ASTM D 3311, drain, waste, and vent patterns.
   2. Solvent Cement and Adhesive Primer:
      a. Use PVC solvent cement that has a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
      b. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

A. Special pipe fittings with pressure ratings at least equal to piping pressure ratings may be used in applications below, unless otherwise indicated.

B. Flanges and unions may be used on aboveground pressure piping, unless otherwise indicated.

C. Aboveground, soil, waste, and vent piping NPS 4 and smaller shall be any of the following:
   1. Hubless cast-iron soil pipe and fittings and heavy-duty shielded, stainless-steel couplings; and hubless-coupling joints.
   2. Copper DWV tube, copper drainage fittings, and soldered joints.
   3. Solid-wall ABS pipe, ABS socket fittings, and solvent-cemented joints. Not to be used in plenum spaces.
   4. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints. Not to be used in plenum spaces.

D. Above ground, soil, waste, and vent piping NPS 5 and larger shall be any of the following:
   1. Hubless cast-iron soil pipe and fittings and heavy-duty shielded, stainless-steel couplings; and hubless-coupling joints.

2. Copper DWV tube, copper drainage fittings, and soldered joints.
3. Solid-wall ABS pipe, ABS socket fittings, and solvent-cemented joints.
4. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.

E. Underground in building (to 5 feet outside building), soil, waste, and vent piping NPS 4 and smaller shall be any of the following:
1. Service class, hub-and-spigot, cast-iron soil pipe and fittings; gaskets; and compression joints.

F. Underground in building (to 5 feet outside building), soil and waste Piping NPS 5 and larger shall be any of the following:
1. Service class, cast-iron soil pipe and fittings; gaskets; and compression joints.

3.2 PIPING INSTALLATION

A. Sanitary sewer piping outside the building is specified in Division 22 Section "Facility Sanitary Sewers."

B. Basic piping installation requirements are specified in Division 22 Section "Common Work Results for Plumbing."

C. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers.

D. Install cast-iron sleeve with water stop and mechanical sleeve seal at each service pipe penetration through foundation wall. Select number of interlocking rubber links required to make installation watertight. Sleeves and mechanical sleeve seals are specified in Division 22 Section "Common Work Results for Plumbing."

E. Install wall penetration system at each service pipe penetration through foundation wall. Make installation watertight. Wall penetration systems are specified in Division 22 Section "Common Work Results for Plumbing."

F. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

G. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

H. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

I. Install soil and waste drainage and vent piping at the following minimum slopes, unless otherwise indicated:
1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.
2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

J. Sleeves are not required for cast-iron soil piping passing through concrete slabs-on-grade if slab is without membrane waterproofing.

K. Install ABS soil and waste drainage and vent piping according to ASTM D 2661.

L. Install PVC soil and waste drainage and vent piping according to ASTM D 2665.

M. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

3.3 JOINT CONSTRUCTION

A. Basic piping joint construction requirements are specified in Division 22 Section "Common Work Results for Plumbing."

B. Cast-Iron, Soil-Piping Joints: Make joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
   1. Gasketed Joints: Make with rubber gasket matching class of pipe and fittings.
   2. Hubless Joints: Make with rubber gasket and sleeve or clamp.

C. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

D. PVC Nonpressure Piping Joints: Join piping according to ASTM D 2665.

3.4 VALVE INSTALLATION

A. General-duty valves are specified in Division 22 Section "General-Duty Valves for Plumbing Piping."

B. Shutoff Valves: Install shutoff valve on each sewage pump discharge.
   1. Use gate or full-port ball valve for piping NPS 2 and smaller.
   2. Use gate valve for piping NPS 2-1/2 and larger.

C. Check Valves: Install swing check valve, downstream from shutoff valve, on each sewage pump discharge.

D. Backwater Valves: Install backwater valves in piping subject to sewage backflow.
   1. Horizontal Piping: Horizontal backwater valves. Use normally closed type, unless otherwise indicated.
   2. Floor Drains: Drain outlet backwater valves, unless drain has integral backwater valve.
   3. Install backwater valves in accessible locations.
   4. Backwater valves are specified in Division 22 Section "Sanitary Waste Piping Specialties."

3.5 HANGER AND SUPPORT INSTALLATION

A. Seismic-restraint devices are specified in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Pipe hangers and supports are specified in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment." Install the following:
   1. Vertical Piping: MSS Type 8 or Type 42, clamps.
   2. Individual, Straight, Horizontal Piping Runs: According to the following:
      a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
      b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
      c. Longer Than 100 Feet, if Indicated: MSS Type 49, spring cushion rolls.
   3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.

4. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Install supports according to Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment."

D. Support vertical piping and tubing at base and at each floor.

E. Rod diameter may be reduced 1 size for double-rod hangers, with 3/8-inch minimum rods.

F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
2. NPS 3: 60 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.
4. NPS 6: 60 inches with 3/4-inch rod.
5. Spacing for 10-foot lengths may be increased to 10 feet. Spacing for fittings is limited to 60 inches.

G. Install supports for vertical cast-iron soil piping every 15 feet.

H. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 1-1/4: 84 inches with 3/8-inch rod.
2. NPS 1-1/2: 108 inches with 3/8-inch rod.
3. NPS 2: 10 feet with 3/8-inch rod.
4. NPS 2-1/2: 11 feet with 1/2-inch rod.
5. NPS 3: 12 feet with 1/2-inch rod.
6. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.
7. NPS 6: 12 feet with 3/4-inch rod.

I. Install supports for vertical steel piping every 15 feet.

J. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 1-1/4: 72 inches with 3/8-inch rod.
2. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.
3. NPS 2-1/2: 108 inches with 1/2-inch rod.
4. NPS 3 to NPS 5: 10 feet with 1/2-inch rod.
5. NPS 6: 10 feet with 5/8-inch rod.

K. Install supports for vertical copper tubing every 10 feet.

L. Install hangers for ABS and PVC piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 1-1/2 and NPS 2: 48 inches with 3/8-inch rod.
2. NPS 3: 48 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 48 inches with 5/8-inch rod.
4. NPS 6: 48 inches with 3/4-inch rod.

M. Install supports for vertical ABS and PVC piping every 48 inches.

N. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.6 CONNECTIONS

A. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

B. Connect drainage and vent piping to the following:
   1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
   2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
   3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
   4. Equipment: Connect drainage piping as indicated. Provide shutoff valve, if indicated, and union for each connection. Use flanges instead of unions for connections NPS 2-1/2 and larger.

3.7 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
   1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
   2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction.
   1. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
   2. Prepare reports for tests and required corrective action.

3.8 CLEANING

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.9 PROTECTION

A. Exposed ABS and PVC Piping: Protect plumbing vents exposed to sunlight with two coats of water-based latex paint.

END OF SECTION

SECTION 22 4000

PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Faucets for lavatories and sinks.
   2. Toilet seats.
   3. Protective shielding guards.
   4. Fixture supports.
   5. Water closets.
   6. Lavatories.

1.2 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. Accessible Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities.

C. FRP: Fiberglass-reinforced plastic.

D. PMMA: Polymethyl methacrylate (acrylic) plastic.

E. PVC: Polyvinyl chloride plastic.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Documentation indicating flow and water consumption requirements.

B. Shop Drawings: Diagram power, signal, and control wiring.

C. Operation and maintenance data.

1.4 QUALITY ASSURANCE

A. General: Water closets, urinals, flush valves and faucets must bear WaterSense label and be a WaterSense partner with US EPA.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities and ADA/USPS Handbook RE-4 for plumbing fixtures for people with disabilities.

D. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.

E. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.

F. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.

G. Comply with the following applicable standards and other requirements specified for plumbing fixtures:
   1. Enameled, Cast-Iron Fixtures: ASME A112.19.1M.
   2. Vitreous-China Fixtures: ASME A112.19.2M.
   3. Water-Closet, Flush Valve, Tank Trim: ASME A112.19.5.

H. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:
   1. Backflow Protection Devices for Faucets with Side Spray: ASME A112.18.3M.
   2. Backflow Protection Devices for Faucets with Hose-Thread Outlet: ASME A112.18.3M.
   3. Diverter Valves for Faucets with Hose Spray: ASSE 1025.
   4. Faucets: ASME A112.18.1.
   5. Hose-Connection Vacuum Breakers: ASSE 1011.
   6. Hose-Coupling Threads: ASME B1.20.7.
   7. NSF Potable-Water Materials: NSF 61.
   8. Pipe Threads: ASME B1.20.1.
   9. Sensor-Actuated Faucets and Electrical Devices: UL 1951.
   10. Supply Fittings: ASME A112.18.1.
   11. Brass Waste Fittings: ASME A112.18.2.

I. Comply with the following applicable standards and other requirements specified for miscellaneous fittings:
   1. Atmospheric Vacuum Breakers: ASSE 1001.
   2. Brass and Copper Supplies: ASME A112.18.1.
   3. Manual-Operation Flushometers: ASSE 1037.
   4. Plastic Tubular Fittings: ASTM F 409.
   5. Brass Waste Fittings: ASME A112.18.2.

J. Comply with the following applicable standards and other requirements specified for miscellaneous components:
   1. Disposers: ASSE 1008 and UL 430.
   2. Flexible Water Connectors: ASME A112.18.6.
   3. Grab Bars: ASTM F 446.
   4. Hose-Coupling Threads: ASME B1.20.7.
   5. Off-Floor Fixture Supports: ASME A112.6.1M.
   6. Pipe Threads: ASME B1.20.1.
   7. Plastic Toilet Seats: ANSI Z124.5.
   8. Supply and Drain Protective Shielding Guards: ICC A117.1.

PART 2 - PRODUCTS

2.1 LAVATORY FAUCETS

A. Lavatory Faucets:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. American Standard Companies, Inc.
      b. Bradley Corporation.
      c. Chicago Faucets.
      d. Delta Faucet Company.
      e. Elkay Manufacturing Co.

f. Just Manufacturing Company.
g. Kohler Co.
h. Royal Brass Mfg. Co.
i. Speakman Company.
j. T & S Brass and Bronze Works, Inc.
k. Zurn Plumbing Products Group; Commercial Brass Operation.

2. Description: Single-handle-control mixing valve. Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
a. Body Material: Commercial, solid brass.
b. Finish: Polished chrome plate.
c. Maximum Flow Rate: 0.5 gpm.
d. Centers: 4 inches or Single hole as required.
e. Mounting: Deck, exposed.
f. Inlet(s): NPS 3/8 tubing, with NPS 1/2 male adaptor.
g. Spout: Rigid type.
h. Spout Outlet: Aerator, 0.5 gpm.
i. Drain: Grid.

2.2 SINK FAUCETS

A. Sink Faucets:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. American Standard Companies, Inc.
b. Bradley Corporation.
c. Broadway Collection.
d. Chicago Faucets.
e. Delta Faucet Company.
f. Elkay Manufacturing Co.
g. Just Manufacturing Company.
h. Kohler Co.
i. Royal Brass Mfg. Co.
j. Sayco; a Briggs Plumbing Products, Inc. Company.
k. Speakman Company.
l. T & S Brass and Bronze Works, Inc.
m. Zurn Plumbing Products Group; Commercial Brass Operation.

2. Description: Kitchen faucet without spray. Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
a. Body Material: Commercial, solid brass.
b. Finish: Polished chrome plate.
c. Maximum Flow Rate: 1.5 gpm.
d. Mixing Valve: Single control.
e. Centers: 4 inches or 8 inches, as required.
f. Mounting: Deck], exposed.
g. Handle(s): Lever.
h. Inlet(s): NPS 3/8 tubing with NPS 1/2 male adapter.
i. Spout Type: Swing, solid brass.
j. Spout Outlet: Aerator].

2.3 TOILET SEATS

A. Toilet Seats:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Bemis Manufacturing Company.
   b. Centoco Manufacturing Corp.
   c. Church Seats.
   d. Olsonite Corp.

2. Description: Toilet seat for water-closet-type fixture.
   a. Material: Molded, solid plastic with antimicrobial agent.
   b. Configuration: Open front without cover.
   c. Size: Elongated.
   d. Hinge Type: SS, self-sustaining.
   e. Class: Standard commercial.
   f. Color: White.

2.4 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers,:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Engineered Brass Co.
      b. Insul-Tect Products Co.; a Subsidiary of MVG Molded Products.
      c. McGuire Manufacturing Co., Inc.
      d. Plumberex Specialty Products Inc.
      e. TCI Products.
      f. TRUEBRO, Inc.
      g. Zurn Plumbing Products Group; Tubular Brass Plumbing Products Operation.

   2. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

2.5 FIXTURE SUPPORTS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Josam Company.
   2. MIFAB Manufacturing Inc.
   3. Smith, Jay R. Mfg. Co.
   4. Tyler Pipe; Wade Div.
   5. Watts Drainage Products Inc.; a div. of Watts Industries, Inc.
   6. Zurn Plumbing Products Group; Specification Drainage Operation.

B. Water-Closet Supports:
   1. Description: Combination carrier designed for accessible mounting height of wall-mounting, water-closet-type fixture. Include single or double, vertical or horizontal, hub-and-spigot or hubless waste fitting as required for piping arrangement; faceplates; couplings with gaskets; feet; and fixture bolts and hardware matching fixture. Include additional extension coupling, faceplate, and feet for installation in wide pipe space.

C. Lavatory Supports:
   1. Description: Type [I, lavatory carrier with exposed arms and tie rods] [II, lavatory carrier with concealed arms and tie rod] [III, lavatory carrier with hanger plate and tie rod] for wall-mounting, lavatory-type fixture. Include steel uprights with feet.
   2. Accessible-Fixture Support: Include rectangular steel uprights.

2.6 WATER CLOSETS

A. Water Closets:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. American Standard Companies, Inc.
      b. Briggs Plumbing Products, Inc.
      c. Crane Plumbing, L.L.C./Fiat Products.
      d. Eljer.
      e. Gerber Plumbing Fixtures LLC.
      f. Kohler Co.
      g. TOTO USA, Inc.

   2. Description: Accessible, floor-mounting, floor-outlet, vitreous-china fixture.
   3. Supply: NPS 1 chrome-plated brass or copper with screwdriver stop.
   4. Style: Tank type.
      a. Bowl Type: Elongated, siphon-jet design. Include bolt caps matching fixture.
      b. Height: Standard or Accessible as indicated on drawings.
      c. Design Consumption: 1.28 gal./flush.
      d. Color: White.
   5. Toilet Seat: Solid plastic

2.7 LAVATORIES

A. Lavatories:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. American Standard Companies, Inc.
      b. Eljer.
      c. Kohler Co.
      d. Briggs Plumbing Products, Inc.
      e. Crane Plumbing, L.L.C./Fiat Products.
      f. Eljer.
      g. Gerber Plumbing Fixtures LLC.
      h. TOTO USA, Inc.

   2. Description: See Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Assemble plumbing fixtures, trim, fittings, and other components according to manufacturers' written instructions.

B. Install off-floor supports, affixed to building substrate, for wall-mounting fixtures.
   1. Use carrier supports with waste fitting and seal for back-outlet fixtures.
   2. Use carrier supports without waste fitting for fixtures with tubular waste piping.
   3. Use chair-type carrier supports with rectangular steel uprights for accessible fixtures.

C. Install back-outlet, wall-mounting fixtures onto waste fitting seals and attach to supports.

D. Install floor-mounting fixtures on closet flanges or other attachments to piping or building substrate.

E. Install wall-mounting fixtures with tubular waste piping attached to supports.

F. Install fixtures level and plumb according to roughing-in drawings.

G. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.

H. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.

I. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.

J. Install tanks for accessible, tank-type water closets with lever handle mounted on wide side of compartment.

K. Install toilet seats on water closets.

L. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

M. Install water-supply flow-control fittings with specified flow rates in fixture supplies at stop valves.

N. Install faucet flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

O. Install traps on fixture outlets.
   1. Exception: Omit trap on fixtures with integral traps.
   2. Exception: Omit trap on indirect wastes, unless otherwise indicated.

P. Install escutcheons at piping wall and ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding fittings. Escutcheons are specified in Division 22 Section "Common Work Results for Plumbing."

Q. Seal joints between fixtures and walls, floors, and countertops using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Sealants are specified in Division 07 Section "Joint Sealants."

3.2 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

C. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

3.3 FIELD QUALITY CONTROL

A. Verify that installed plumbing fixtures are categories and types specified for locations where installed.

B. Check that plumbing fixtures are complete with trim, faucets, fittings, and other specified components.

C. Inspect installed plumbing fixtures for damage. Replace damaged fixtures and components.

D. Test installed fixtures after water systems are pressurized for proper operation. Replace malfunctioning fixtures and components, then retest. Repeat procedure until units operate properly.

E. Install fresh batteries in sensor-operated mechanisms.

3.4 PROTECTION

A. Provide protective covering for installed fixtures and fittings.

B. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION

SECTION 26 0500

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Basic electrical methods.
   2. Grounding and bonding.
   3. Hangers and supports.
   4. Electrical identification.
   5. Electrical system testing and inspection.

B. Related Documents: The Contract Documents, as defined in Section 01 1000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
   1. Section 22 0500 - Common Work Results for Plumbing
   2. Section 26 2726 - Wiring Devices

1.2 REFERENCES

A. National Electrical Contractors Association (NECA):
   1. NECA SI - Standard of Installation.

B. National Electrical Manufacturers Association (NEMA):
   1. NEMA KS 1 - Enclosed Switches.

C. National Electrical Testing Association (NETA):
   1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

D. National Fire Protection Association (NFPA):
   1. NFPA 70 - National Electrical Code.

1.3 SUBMITTALS

A. Section 01 3300 - Submittal Procedures: Procedures for submittals.
   1. Product Data:
      a. Grounding electrodes and connections.
      b. Starter electrical characteristics and connection requirements.
   2. Assurance/Control Submittals:
      a. Electrical System Test Reports: Submit report including the following directly to Community Development Director or Designee from Testing Laboratory, with copy to Contractor. Prepare reports in conformance with Section 01 4000 - Quality Requirements.
         1) Summary of project.
         2) Description of equipment tested.
         3) Description of test.
         4) Test results.

5) Conclusions and recommendations.
6) Appendix, including appropriate test forms.
7) List of test equipment used and calibration date.
8) Signature of responsible Testing Laboratory Officer.

b. Certificates: Manufacturer's certificate that each Product specified meet or exceed specified requirements.

c. Qualification Documentation: Submit documentation of experience indication compliance with specified qualification requirements.

B. Section 01 7704 - Closeout Procedures and Training: Procedures for closeout submittals.
1. Project Record Documents: Accurately record the following.
a. Locations of components and grounding electrodes.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing Work of this Section with minimum 5 years documented experience.

B. Regulatory Requirements:
1. Products: Listed and classified by Underwriters Laboratories, Incorporated as suitable for the purpose specified and indicated.
2. Work herein shall conform to all applicable laws, ordinances and regulations in accordance with the latest applicable requirements of:
a. National Electrical Manufacturer’s Associates.
b. Standards of National Fire Protection Association (NFPA 72, 90A and 101).
c. Underwriter’s Laboratories.
d. Occupational Safety and Health Agency Standards.
e. Illuminating Engineering Society Handbook.
f. The International Existing Building Code.
g. The International Electrical Code.
h. ASHRAE Standard 90.1 – 2007.
i. The International Energy Conservation Code.

1.5 BASIC ELECTRICAL METHODS

A. Drawings are schematic and diagrammatic. Use judgment and care to install electrical Work to function properly and fit within building construction and finishes. Electrical conductors, conduit, components, not shown or specified, which are required for any device or system to produce a complete and operative system are required to be furnished and installed.

B. Exact location of outlets are determined from dimension on Drawings, manufacturer's shop drawings, or as may be determined at Project Site. Do not scale Drawings for exact location of any item. Verify item mounting heights as required by project conditions prior to rough-in.

C. Route conduits and wiring associated with new equipment and systems above ceilings, in existing chases, and concealed within building structure.

D. Surface mounted raceways or conduit permitted only at locations indicated on Drawings.

E. Circuit grouping, conduit or cable runs and home runs are indicated with number of conductors shown in each raceway to clarify operation and function of various systems. Provide proper number of conductors and conduits or cables to provide operative system as indicated on Contract Documents. Do not regroup any feeder circuits, branch circuits, home runs, and zone alarms at any point, from that shown on Contract Documents. Each conduit run shall contain no more than (6) current carrying conductors.

F. Branch and home run circuits are indicated as 2, 3, or 4 wire circuits unless otherwise noted. Do not connect two ungrounded conductors to same circuit breaker/fused switch in any panel. Circuit runs consist of a maximum of five conductors; 3 phase conductors, 1 neutral conductor, and 1 equipment ground conductor, unless otherwise noted. Do not splice branch circuit conductors in any panels, safety switches, or circuit breakers in separate enclosures.

G. The sharing of neutral conductors for multiwire branch circuits is prohibited. All branch circuits shall contain individual neutrals.

H. Proposed equipment, switches or devices, shown mounted on and/or adjacent to equipment, which if installed, would impair proper operation of existing or new equipment, shall be removed and relocated by Contractor as required so equipment will function properly. Notify Community Development Director or Designee immediately if any such condition exists.

I. Seal and make permanently watertight penetrations by electrical raceways or equipment through ceilings, walls or floors.
   1. Seal penetrations in non-fire rated ceilings, walls or floors material specified in Section 07 9200 – Joint Sealants.
   2. Seal penetrations in fire rated walls with material specified in Section 07 8400 - Firestopping.

J. Tighten electrical connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL 486A, and NFPA 70.

K. Install equipment and materials to provide required maintenance and code working clearance for servicing and maintenance. Coordinate final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow required space for removal of parts that require replacement or servicing.

L. Remove existing equipment, lighting fixtures, switches, and receptacles as required to facilitate proposed installation and as specified in Section 02 4119 - Selective Structure Demolition. Remove existing wiring and conduit serving items to be removed. Conduit in inaccessible areas shall be cut off below finished surfaces and existing surface patched to match existing. Provide blank plates on existing flush mounted outlet boxes that will be abandoned. Remove all abandoned conductors from raceways.

PART 2 - PRODUCTS

2.1 GROUNDING AND BONDING

A. Grounding System Resistance: Five ohm.

B. Rod Electrodes:
   1. Material: Copper.
   2. Diameter: 3/4 inch.
   3. Length: 10 feet .

C. Mechanical Connectors: Bronze.

D. Electrode Conductor:
   1. Material: Bare stranded copper.

2.2 HANGERS AND SUPPORTS

A. Product Requirements: Furnish and install approved materials, sizes, and types of anchors, fasteners, and supports to carry loads of equipment and conduit, including weight of wire in conduit plus 300 pounds.

B. Materials and Finishes: Corrosion resistive.

C. Anchors and Fasteners:
   1. Steel Structural Elements: Beam clamps and welded fasteners.
   2. Concrete Surfaces: Self-drilling anchors and expansion anchors.
   3. Hollow Masonry, Plaster, and Gypsum Board Partitions: Toggle bolts and hollow wall fasteners.
   4. Solid Masonry Walls: Expansion anchors.
   5. Sheet Metal: Sheet metal screws.
   6. Wood: Wood screws.

2.3 ELECTRICAL IDENTIFICATION

A. Nameplates:
   1. Engraved three-layer laminated phenolic plastic, white letters on black background.
   2. Locations:
      a. Each electrical distribution and control equipment enclosure.
      b. Communication cabinets.
      c. Terminal Cabinets.
      d. Individual motor starter.
      e. Separately enclosed circuit breakers.
      f. Panelboards
      g. Transformers.
      h. Pull boxes.
      i. Lighting contactor/control panel enclosure.
      j. Relays.
      k. Switches and disconnects.
   3. Letter Size:
      a. Use 1/8 inch letters for identifying individual equipment and loads.
      b. Use 1/4 inch letters for identifying grouped equipment and loads.

B. Wire and Cable Markers:
   1. Description: Cloth tape or tubing type wire markers.
   2. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
   3. Identification:
      a. Power and Lighting Circuits: Branch circuit or feeder number indicated on Drawings.
      b. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 7300 - Execution: Verification of existing conditions before starting work.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.

C. Report in writing to Community Development Director or Designee prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the City of Torrance.

3.2 INSTALLATION - HANGERS AND SUPPORTS

A. Install products in accordance with manufacturer's published instructions.

B. Furnish and install anchors, fasteners, and supports in accordance with NECA SI.

C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.

D. Do not use spring steel clips and clamps.

E. Do not use powder-actuated anchors.

F. Obtain permission from Community Development Director or Designee before drilling or cutting structural members.

G. Fabricate supports from structural steel angle or structural steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.

3.3 FIELD QUALITY CONTROL - ELECTRICAL TESTING AND INSPECTION

A. Section 01 4000 - Quality Requirements: Field testing and inspection.

B. Conduct testing to Determine that Electrical Equipment and Systems:
   1. Are in conformance with Contract Documents and applicable reference standards.
   2. Is properly installed without damage due either to installation or shipment.
   3. Operate correctly, meet design intent, and are performing at optimum level, in safe manner.

C. Provide a complete written record of operational values to be used as a baseline for future operational testing.

D. Regulatory Requirements:
   1. Safety Practices: Include, but not limited to, the following requirements:
      a. Occupational Safety and Health Act of 1970 - OSHA.
      b. Accident Prevention Manual for Industrial Operations, Seventh Edition, National Safety Council, Chapter 4.
      c. Applicable State and Local Safety Operating Procedures.
      d. NETA Safety/Accident Prevention Program.
      e. City of Torrance Safety Practices.
      f. NFPA 70E - Electrical Safety Requirements for Employee Workplace.
      g. American National Standards for Personnel Protection, ANSI Z244.1.
   2. Perform tests with apparatus de-energized except where otherwise specifically required herein.
   3. Testing Laboratory: Provide a designated safety representative present at Project Site and supervise safety operations.
   4. Power Circuits: Conductors shorted to ground by a hot line grounded device approved for the purpose.
   5. Do not proceed until safety representative has determined that it is safe to do so.

6. Testing Laboratory: Provide sufficient protective barriers and warning signs to conduct specified tests safely.

E. Tests and inspections include, but are not limited to the following:
   1. Proper operation of lights and equipment.
   2. Insulation leakage and impedances.
   3. Ground system resistance.
   4. Sub-system tests indicated in other Sections.

F. Load balance all electrical phases, at device, panels, and switchboards.

G. Perform electrical system testing and inspection as specified in each related Section and as specified in this Section.

END OF SECTION

SECTION 26 2726

WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Wall switches.
   2. Receptacles.
   3. Device plates and box covers.

B. Related Documents: The Contract Documents, as defined in Section 01 1000 - Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.

C. Related Sections:
   1. As specified in Section 26 0500 - Common Work Results for Electrical.

1.2 REFERENCES

A. As specified in Section 26 0500 - Common Work Results for Electrical.

B. National Electrical Manufacturers Association (NEMA):
   1. NEMA WD 1 - General Requirements for Wiring Devices.
   2. NEMA WD 6 - Wiring Device -- Dimensional Requirements.

1.3 SUBMITTALS

A. As specified in Section 26 0500 - Common Work Results for Electrical.

1.4 QUALITY ASSURANCE

A. As specified in Section 26 0500 - Common Work Results for Electrical.

B. Qualifications:
   1. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum 5 years documented experience.

PART 2 - PRODUCTS

2.1 WALL SWITCHES

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
   1. Hubbell, Inc, Milford, CT (203) 882-4800.
   2. Leviton Manufacturing, Company, Inc., Little Neck, NY (800) 824-3005.

3. Pass & Seymour, Syracuse, NY (800) 776-4035.
4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Provide 20 Amp, 120/277V, specification grade, flush, single pole toggle switches with side and back wired screw terminals. All switches shall be equipped with grounding screws.

C. Single Pole Switch:
1. Leviton Cat. No.1221-2.
2. P&S Cat. No. PS20AC1I.
3. Hubbell Cat. No. HBL1221.

D. Double Pole Switch:
1. Leviton Cat. No. 1222-2.
2. P&S Cat. No. PS20AC2.
3. Hubbell, Cat. No. HBL1222.

E. Color: White unless indicated otherwise.

2.2 RECEPTACLES

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
1. Leviton Manufacturing, Company, Inc., Little Neck, NY (800) 824-3005.
2. Pass & Seymour, Syracuse, NY (800) 776-4035.
3. Hubbell, Inc, Milford, CT (203) 882-4800.
4. Section 016000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Provide duplex, specification grade, 20 Amp, 120 Volt, 2 pole, 3 wire receptacles with grounding screw.

C. GFCI Receptacle (Side Wired Feed-Thru):
1. Leviton Cat. No. 6599.
2. P&S Cat. No. 2091-SHG.
3. Hubbell Cat. No. HBLGF5362.

D. Color: White unless indicated otherwise.

2.3 WALL PLATES

A. Manufacturers: Subject to compliance with project requirements, manufacturers offering specified items which may be incorporated in the Work include the following:
1. P&S Sierra.
2. Hubbell.
3. Leviton.
4. Section 01 6000 - Product Requirements: Product options and substitutions. Substitutions: Permitted.

B. Cover Plate: White smooth thermoplastic.
1. Sierra TP8-W.

PART 3 - EXECUTION

3.1 EXAMINATION

A. As specified in Section 26 0500 - Common Work Results for Electrical.

B. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
   1. Verify that outlet boxes are installed at proper height.
   2. Verify that wall openings are neatly cut and will be completely covered by wall plates.
   3. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean debris from outlet boxes.

3.3 INSTALLATION

A. Install in accordance with NECA "Standard of Installation."

B. Install devices plumb and level.

C. Install switches with OFF position down.

D. Install receptacles with grounding pole on bottom.

E. Connect wiring device grounding terminal to branch circuit equipment grounding conductor.

F. Connect wiring devices by wrapping conductor 2/3 of screw diameter in clockwise direction around screw terminal. Tighten screw to 12 pound-inches. Do not use spring pressure devices for wire connections.

G. Install coverplates on switch, receptacle, and blank outlets.

3.4 CONSTRUCTION

A. Interface with other work:
   1. Coordinate locations of outlet boxes provided under Section 260533 to obtain mounting heights indicated on Drawings.

3.5 FIELD QUALITY CONTROL

A. As specified in Section 26 0500 – Common Work Results for Electrical.

B. Inspect each wiring device for defects.

C. Operate each wall switch with circuit energized and verify proper operation.

D. Verify that each receptacle device is energized.

E. Test each receptacle device for proper polarity.

F. Test each GFCI receptacle device for proper operation.

3.6 ADJUSTING

A. Adjust devices and wall plates to be flush, level and plumb with wall.

3.7 CLEANING

A. Section 01 7300 Execution: Cleaning installed work.

B. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION