

03-Sac-5501
03-2C8434

Project Plan Sheet 207 is revised as follows:

Notes title "FIRE/SMOKE DAMPER NOTES" is revised to: "FIRE DAMPER NOTES."

Note 4 is revised to: "Fire damper details are for reference only."

Note 5, first paragraph is revised to "Fire dampers shall have an approved label or listing mark indicating the fire-protection rating, which is permanently affixed at the factory where fabrication and assembly are done."

Note 5 second paragraph is revised to "Fire dampers shall be State Fire Marshal approved and installed strictly per the manufacturer's printed instructions."

In the Special Provisions, Division 0 "BIDDING AND CONTRACT REQUIREMENTS," Section 0.4, "BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES," the fourth paragraph is revised as follows:

"A working day is everyday except holidays. Sunday is excluded as a holiday and included as a working day."

In the Special Provisions, Division 1 "GENERAL REQUIREMENTS," Section 1.22, "UTILITY CONNECTION," Section 1.23, "TEMPORARY UTILITIES," Section 1.24, "SANITARY FACILITIES," and Section 1.25, "REFERENCES" are added after Section 1.21, "SUBSTITUTION OF NON-METRIC MATERIALS AND PRODUCTS" as attached.

In the Special Provisions, Division 2, "SITEWORK," Section 2.04, "BUILDING DEMOLITION," is deleted.

In the Special Provisions, Division 2, "SITEWORK," Section 2.05, "ASBESTOS ABATEMENT," subsection "GENERAL," subheading, "Existing site conditions," the second sentence of the second paragraph is deleted.

In the Special Provisions, Division 2, "SITEWORK," Section 2.08, "EARTHWORK FOR BUILDING WORK," Section 2.09, "ASPHALT CONCRETE," and Section 2.10, "GUARD POSTS," are added after Section 2.07 "TEMPORARY CHAIN LINK FENCING" as attached.

In the Special Provisions, Division 5, "METALS" Section 5.01, "STRUCTURAL STEEL FOR BUILDINGS," subsection "PART 2 – PRODUCTS," subheading "MATERIALS.--," subheading "Steel bars, plates and shapes.--" is revised as follows:

Steel bars, plates and shapes.--

Steel bars, plates and shapes shall conform to ASTM Designation: A 572/A 572M, Grade 50 [345].

W-shapes shall conform to ASTM Designation: A 992.

In the Special Provisions, Division 5, "METALS" Section 5.01, "STRUCTURAL STEEL FOR BUILDINGS," subsection "PART 2 – PRODUCTS," subheading "MATERIALS.--," subheading "Anchor bolts, nuts, and washers.--" is revised as follows:

Anchor bolts, nuts and washers.—

Nonheaded anchor bolts shall conform to ASTM Designation: F 1554, Grade 36.

Headed anchor bolts shall conform to ASTM Designation: F 1554, Grade 36 or ASTM Designation: A 307.

Threaded rods shall conform to ASTM Designation: F 1554, Grade 36.

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Nuts shall conform to ASTM Designation: A 563, Grade A.

Washers shall conform to ASTM Designation: F 844.

In the Special Provisions, Division 5, "METALS" Section 5.01, "STRUCTURAL STEEL FOR BUILDINGS," subsection "PART 2 – PRODUCTS," subheading "SHOP PAINTING.–," is replaced as follows:

General.--Structural steel, except where sprayed-fireproofing is to be applied, shall be painted.

Painting.--Cleaning and coating shall be in accordance with the requirements specified for the particular type of substrate material under "Painting" in Division 9, "Finishes," of these special provisions.

Bolted Connections.--Contact surfaces of high strength bolted connections and ungalvanized anchor bolt assemblies shall be primed before assembly. The total thickness of primer on each surface shall be between 1 mil to 3 mils and may be applied in one application.

In the Special Provisions, Division 7, "THERMAL AND MOISTURE PROTECTION," Section 7.04, "SINGLE PLY ROOFING," is replaced with Section 7.04, "SINGLE PLY THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING SYSTEM" as attached.

In the Special Provisions, Division 9, "FINISHES," Section 9.05, "PAINTING," is replaced as attached.

To Proposal and Contract book holders:

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the proposal.

Submit bids in the Proposal and Contract book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

This office is sending this addendum by GSO overnight mail to all book holders to ensure that each receives it. A copy of this addendum is available for the contractor's use on the Internet Site:

http://www.dot.ca.gov/hq/esc/oe/weekly_ads/addendum_page.html

If you are not a Proposal and Contract book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY

REBECCA D. HARNAGEL, Chief
Office of Plans, Specifications & Estimates
Office Engineer

Attachments

1.22 UTILITY CONNECTION

The Contractor shall make all arrangements and obtain all permits and licenses required for the extension of and connection to each utility service applicable to this project, shall furnish all labor and materials necessary for such extensions which are not performed or provided by the utility, and shall furnish and install any intermediate equipment required by the serving utilities.

Upon written request by the Contractor, the State will pay all utility permits, licenses, connection charges, and excess length charges directly to the utility. Such request shall be submitted not less than 45 days before service connections are required.

The costs incurred by the Contractor for the extension of utilities beyond the limits shown on the plans, and in furnishing and installing any intermediate equipment required by the serving utilities, will be paid for as an ordered change as provided in Section 3, "Changes in the Work," of the General Conditions.

Full compensation for any costs incurred by the Contractor to obtain the permits and licenses shall be considered as included in the contract lump sum price paid for building work and no additional compensation will be allowed therefor.

1.23 TEMPORARY UTILITIES

The Contractor may obtain electrical power and water from existing State outlets within the contract limits free of charge for contract operations where such utilities exist, provided that such utility services are in service and are not required by the State for other purposes and subject to the provisions in "Cooperation" of these special provisions.

The Contractor, at his own expense, shall obtain any additional electrical power and water or other utilities required for his operations and shall make and maintain the necessary service connections.

The Contractor shall provide and pay for telephone service he may require. State telephone facilities shall not be used.

The Contractor shall provide adequate temporary lighting to perform the work and allow the Engineer to inspect the project as each portion is completed.

1.24 SANITARY FACILITIES

When operational, State sanitary facilities will be available for use by the Contractor's employees. Tools shall not be cleaned nor shall cleaning liquids be disposed of in State sanitary facilities or sewers.

During toilet room renovation or other periods when State-owned sanitary facilities are not operational, the Contractor shall provide and pay for wash facilities, drinking water fixtures and a minimum of two temporary toilet units for State forces. Separate toilet facilities shall be provided for Contractor personnel. Facilities shall include the periodic flushing, waste removal and cleaning of such facilities. Units shall be maintained in a clean and sanitary condition, including a supply of toilet tissue, toilet seat covers, paper towels and paper cups. Waste material shall be disposed of off site in a lawful manner. Temporary toilet units shall be single occupant units of the chemical, aerated recirculation or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.

1.25 REFERENCES

Attention is directed to Section 1-1.26, "Abbreviations," of the General Conditions.

2.08 EARTHWORK FOR BUILDING WORK

PART 1.- GENERAL

SUMMARY.—

Scope.-This work shall consist of performing earthwork for building work in accordance with the details shown on the plans and these special provisions.

Earthwork for building work shall consist of structure excavation and structure backfill. Structure excavation shall include excavation for pipes, conduits, and trenches. Structure backfill shall include backfilling for pipes and conduits. In addition to structure excavation and structure backfill, earthwork for building work shall include any other earthwork, not mentioned, but necessary to complete the building work.

QUALITY ASSURANCE.--

Samples.-Samples of sand, pea gravel, or crushed stone, weighing not less than 11 kg, shall be submitted to the Engineer at the jobsite for approval.

SITE CONDITIONS.-

Existing underground piping and conduit.-The location of existing underground piping and conduit is based on the best records available. Before beginning work, the Contractor shall accurately locate the piping and conduit involved in the work as approved by the Engineer. If the location of the existing piping or conduit deviates from the location shown on the plans by more than 1.5 meters, or, if no elevations are indicated and the piping or conduit is more than 0.9 meter below grade, the cost of the additional excavation, backfill, piping or conduit, and removal and replacement of concrete, if any, will be paid for as an ordered change in accordance with the requirements specified in Section 3, "Changes in the Work," of the General Conditions.

PART 2.- PRODUCTS

BACKFILL MATERIALS.-

Structure backfill.-Structure and trench backfill shall be free of organic and other deleterious material and shall be suitable for the required compaction. Gravel without sand matrix shall not be used except as free draining granular material beneath slabs and footings.

Sand.-Sand shall be clean, washed sand, free from clay or organic material graded such that 100 percent passes the 6 mm sieve, 90 percent to 100 percent passes the 4.75 mm sieve and not more than 5 percent passes the 75 μ m sieve size.

Pea gravel (naturally rounded).-Pea gravel (naturally rounded) shall be clean, washed, dry density of not less than 1522 kg/m³, free from clay or organic material and shall conform to the following grading as determined by California Test 202:

Sieve or Screen Size	Percentage Passing
19 mm	100
13 mm	90-100
9.5 mm	40-70
4.75 mm	0-15
2.36 mm	0-3

Pea gravel shall conform to the following requirements:

Test	California Test No.	Test Requirements
Durability Index	229	35 Min.

Crushed stone.- Crushed stone shall be clean, washed, dry density of not less than 1522 kg/m³, crushed stone or crushed gravel with an angular particle size not less than 3 mm or more than 13 mm.

Sieve or Screen Size	Percentage Passing
13 mm	100
9.5 mm	85-100
4.75 mm	10-30
2.36 mm	0-3

Crushed stone shall conform to the following requirements:

Test	California Test No.	Test Requirements
Durability Index	229	35 Min.

PART 3.- EXECUTION

PREPARATION & RESTORATION.—

Sawcutting.--Prior to excavation or trenching, existing surfacing shall be removed to saw cut lines, or to existing wood dividers or expansion joints, if any. The saw cut shall be to a neat line and have a depth not less than 25 mm.

Restoration.--Surfacing shall be replaced to match the thickness, grades and finish of the adjacent surrounding surfaces as specified elsewhere in these special provisions.

STRUCTURE EXCAVATION.—

General.--Unless otherwise noted, all excavation for building work shall be classified as structure excavation.

Excavation for pipes and conduits.--Pipes or conduits in the same trench shall have a minimum clear distance between pipes or conduits of 150 mm. Pipes or conduits shall have not less than 0.75 meter of cover from top of pipes or conduits to finished grade unless otherwise shown on the plans or specified.

Trenching shall be of sufficient depth to permit placing a minimum depth of 100 mm of compacted sand under all pipes and conduits.

Excavation adjacent to trees shall be performed by hand methods where necessary to avoid injury to trees and roots. Roots 50 mm in diameter and larger shall be protected with heavy burlap. Roots smaller than 50 mm in diameter adjacent to trees shall be hand trimmed. Cuts through roots 13 mm in diameter and larger shall be sealed with tree trimmers' asphaltic emulsion. If trenches remain open more than 24 hours, the side of the trench adjacent to the tree shall be shaded with burlap and kept damp. Materials shall not be stockpiled within the drip line of trees.

Dewatering.--Excavations shall be kept clear of standing water. Water shall be removed by pumping if necessary. Water removed from excavation shall be carried away from the building site and disposed of in a manner that will not harm State or adjacent property.

STRUCTURE BACKFILLING.—

General.--Unless otherwise noted, all backfill for building work shall be classified as structure backfill. Backfill shall be placed and compacted in horizontal layers, not more than 150 mm thick prior to compaction, and to the lines and grades shown on the plans or to original ground.

Backfilling pipes and conduits.--Backfill placed under pipe and conduits shall be compacted sand, 100 mm minimum depth. Backfill material placed to a level 150 mm above tops of pipes and conduits shall be sand or fine earth and particles shall not exceed 13 mm in greatest dimension. For wrapped, coated, or plastic pipe or conduits, sand shall be used for backfill. Backfill material placed higher than 150 mm above tops of pipes or conduits shall consist of material free of stones or lumps exceeding 100 mm in greatest dimension except:

- (a) The top 300 mm of backfill under roads, walks or paving shall consist of aggregate base material.
- (b) The top 150 mm of backfill in planted areas shall consist of topsoil.

Unless otherwise shown on the plans, pipe under roads, with less than 0.75 m of cover over the top of pipe, shall be backfilled with concrete to a level 100 mm above the top of pipe. Concrete for backfill shall be commercial quality concrete containing not less than 350 kg/m³ of cement.

COMPACTION.-

General.-

Compact original ground.--Original ground surface under fill with surfacing of concrete and asphalt concrete shall be compacted to a relative compaction of not less than 95 percent for a minimum depth of 150 mm.

Trench backfill.--Trench backfill placed beneath slabs or paved areas shall be compacted to a relative compaction of not less than 95 percent.

DISPOSAL.—

Surplus material.--Surplus material from the excavation shall be disposed of away from the premises.

FIELD QUALITY CONTROL.—

Inspection.--When the excavation is substantially completed to grade, the Contractor shall notify the Engineer. No concrete shall be placed until the foundation has been approved by the Engineer.

Testing.--The State will conduct compaction tests during the backfilling and compacting operations.

2.09 ASPHALT CONCRETE

PART 1.- GENERAL

Scope.-This work shall consist of furnishing and placing asphalt concrete, and applying a paint binder, in accordance with the details shown on the plans and these special provisions.

Areas to be surfaced with asphalt concrete shall be as shown on the plans, and/or where existing bituminous surfacing has been removed to facilitate the required work.

PART 2.- PRODUCTS

Asphalt concrete.--Asphalt concrete shall be commercial quality, 13 mm maximum grading, produced at a central mixing plant.

PART 3.- EXECUTION

Mixing.-The aggregate and asphalt binder for asphalt concrete shall be heated and mixed thoroughly.

Placement.—A paint binder of asphaltic emulsion or paving asphalt shall be applied to all existing surfacing upon which asphalt concrete is to be placed, vertical surfaces against which asphalt concrete material is to be placed, and other surfaces designated by the Engineer.

Asphalt concrete shall be spread by methods that will produce an asphalt concrete surfacing of uniform smoothness and texture, and shall be thoroughly compacted by hand rollers, impactors or other methods approved by the Engineer.

2.10 GUARD POSTS

PART 1.- GENERAL

Scope.—This work shall consist of constructing guard posts in accordance with the details shown on the plans and these special provisions.

PART 2.- PRODUCTS

Steel posts.--Steel posts for guard posts shall be standard weight, galvanized steel pipe conforming to the details shown on the plans.

Concrete.--Concrete for guard posts shall be commercial quality concrete, proportioned to provide a workable mix suitable for the intended use, with not less than 300 kilograms of cement per cubic meter.

PART 3.- EXECUTION

Installation.--The length and diameter of the guard posts shall conform to the details shown on the plans.

Guard posts shall be placed in holes excavated to the depth and cross section shown on the plans, and shall be installed plumb. Guard posts shall be backfilled with concrete as shown on the plans.

Painting.--Guard posts shall be prepared and painted in accordance with the requirements specified under "Painting" in Division 9, "Finishes," of these special provisions.

7.04 SINGLE PLY THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING SYSTEM

PART 1 - GENERAL

SUMMARY

Scope: This work shall consist of furnishing and installing a complete fully adhered, single ply thermoplastic polyolefin (TPO) membrane roofing system in accordance with the details shown on the plans and these special provisions.

The membrane roofing system shall include roof board, single-ply thermoplastic membrane, bonding adhesive, flashing, fasteners and other materials required, but not necessarily mentioned, which provide a complete and waterproof assembly meeting the performance requirements specified herein.

SUBMITTALS

Product Data: Manufacturer's literature, warranty, specifications and installation instructions describing the general properties of each material and accessory to be used in the work.

Working Drawings: Provide detailed drawings for the fabrication and installation of the work. Provide detailing of single ply sheet layout including seam layout and details; roof perimeter details; interface with contiguous materials; penetrations, curbs, drains, scuppers, and projections; flashing details, including inside and outside corner reinforcements and terminations; details of expansion joints; and edge terminations including parapet flashing termination. Provide working drawings and installation drawings for the roof board, showing slopes and components and required fastening procedures including requirements for drains.

SYSTEM DESCRIPTION

Design Requirements:

General: Single ply TPO sheet membrane roofing and base flashing that when installed remain watertight; withstands wind loads, building movement, thermally induced movement, and exposure to weather without failure.

Material Compatibility: Roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by the roofing system manufacturer based on testing and field experience.

Performance Requirements:

Provide a total roofing system that has been tested and is equal to FM Standard 4450, FM Standard 4470 Wind Uplift Test performance requirements and is listed in FM's "Approval Guide" for a Class 1A-90 wind uplift rating.

Fire Rating: Provide a total roofing system that has been successfully tested in accordance with ASTM Designation: E 108 Class A(UL 790).

Fasteners: Fasteners shall be capable of resisting a minimum pull-out force of 800 lbs. when tested in accordance with ANSI/SPRI FX-1 for metal deck.

QUALITY ASSURANCE

Codes and standards: Single ply TPO roofing shall comply with all rules and regulations of the State of California as well as the following reference standards:

National Roofing Contractor's Association (NRCA): "Roofing and Waterproofing Manual".

Factory Mutual (FM): "FM 4450: Approval Standard for Class 1 Insulated Steel Deck Roofs," "FM 4470: Approval Standard Class 1 Roof Covers," "Approval Guide".

Single Ply Roofing Institute (SPRI): "Wind Load Design Guide For Low Sloped Flexible Membrane Roofing Systems," "Fastener Selection Guide".

ANSI/SPRI FX-1 "Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners," and ANSI/SPRI ES-1 "Wind Design Guide For Edge Systems Used With Low Slope Roofing Systems".

Qualified Installer: The single ply TPO roofing system work shall be performed by an installer having a minimum of 5 years experience in the installation of fully adhered, single ply TPO membrane roofing system on comparable projects. The installer shall have the approval of the single ply TPO roofing system materials manufacturer. The installer shall provide evidence of successful completion of work of similar scope to this project.

Single Source Responsibility: Obtain single ply TPO roofing system from one source of a single manufacturer. Obtain accessory products used in conjunction with the roofing system from the single ply TPO roofing system manufacturer or from sources acceptable to the roofing system manufacturer. The manufacturer shall furnish evidence that the specified materials have been manufactured by the same source and successfully utilized on a yearly basis for a minimum of 5 years on projects of a similar scope to this project.

Pre-roofing conference: After approval of submittals and prior to installation of any roofing materials or performing any associated work, the Contractor shall convene a pre-roofing conference with the installer, membrane roofing manufacturer, and Engineer. Discussions and agreements shall be recorded and copies furnished to each participant. Advance notice of meeting shall be given in writing to each participant at least 72 hour prior to the meeting.

WARRANTIES

Warranty for Single Ply TPO Roofing System: Upon completion of the work, provide manufacturer's standard warranty for single ply TPO membrane roof assembly for a period of ten (10) years. Warranty shall commence from the date on which the total roof assembly is completed and shall state that the roof, including integral flashings, shall remain in a watertight condition. Upon notification of defects, within the warranty period, make the necessary repairs or replacements, including cost of materials and labor, at the convenience of the Department.

PART 2 – PRODUCTS

GENERAL

Performance: Roofing materials shall be provided which are recognized to be of generic type indicated and tested to show compliance with indicated performance.

Compatibility: Products which are recommended by the manufacturer shall be fully compatible with the substrates used.

Roofing System: Provide single ply TPO sheet roofing system, including but not limited to thermoplastic polyolefin sheet, flashing, edge lap sealant, substrate membrane adhesive, mastics, thinners, sealers, release agents, sheet activators, sheet primers and solvents; roof board, membrane termination bars, clamping rings, fasteners and other accessories recommended by roof membrane manufacturer for a complete system.

SINGLE PLY TPO MEMBRANE MATERIALS

Thermoplastic polyolefin sheet roofing shall conform to the requirements of ASTM Designation: D 6878, and have fabric backing. Membrane shall be 60 mils nominal thickness and white in color. Width and length of membrane sheets shall be as recommended by the manufacturer.

Flashing Membrane: Manufacturer's standard unreinforced TPO sheet flashing, 55 mils minimum thickness and white in color, shall be supplied for field-fabricated flashings for vent stacks, pipes, drains and corners.

Edge Lap Sealant: Use the type as recommended by the manufacturer of single-ply membrane.

Roof board: Roof board shall be panels 1.2 m by 2.4 m or greater long, 38 mm in thickness. Long edges of panels shall be interlocking and panels shall have guide markings clearly printed on the top surface of each board to facilitate the proper location and spacing of the screw fasteners. Roof board shall be Loadmaster, Mineral Board; Georgia Pacific, DensDeck; or equal.

Walkway pad: Walkway pad shall be a thermoplastic polyolefin compound of ethylene and propylene not less than 3.0 mm thickness.

Substrate Membrane Adhesive: Use the type as recommended by the manufacturer of single-ply membrane and compatible with the substrate. Substrate membrane adhesive type shall be designed and tested so as to comply with FM Class 1-90 wind uplift rating.

Mastics, Thinners, Sealers, Release Agents, Sheet Activators, Sheet Primers and Solvents: Use the type as recommended by the manufacturer of single ply TPO roofing system materials for cold applied installations.

FASTENERS

Fasteners: Stainless steel, factory coated galvanized steel or other corrosion resistant type; size, configuration, components and accessories as recommended and supplied by the single ply membrane manufacturer and approved by the roof board manufacturers. Provide fastener system equal to FM Class 1A-90 wind uplift rating and compatible with substrate, roofing membrane, adhesives and other products in contact with fastener.

Membrane Termination Bar: Roof membrane manufacturer approved, pre-drilled, stainless steel with splayed top to receive sealant bead; longest lengths available.

PART 3 - EXECUTION

Manufacturer's Instructions: Prepare substrates, apply primers and install single ply TPO membrane roofing system, including accessories, in accordance with the manufacturer's instructions, except where more stringent requirements are specified in these special provisions.

PREPARATION

Cleaning of Substrate: Clean substrate of debris and deleterious materials which would impair the installation of the roofing system, or otherwise cause damage to the system or any of its components.

Penetrations: All penetrations or projections through the roof deck shall be installed prior to beginning roof system installation. Holes, cavities and joints greater than 1/4 in. shall be filled and finished flush in utilizing recommended materials.

INSTALLATION

General: Install and complete the system to assure that no water leakage through the system occurs. Provide overnight seals to prevent moisture penetration at the end of each workday and when weather threatens using materials and methods.

Metal Items Installation: Anchor metal items to wood nailers utilizing materials and methods shown in the working drawings. Terminate single ply membrane in areas contiguous with metal items.

Treatment at Joints: Provide treatment at joints in substrate, cracks and penetrations as required and with such materials and designs. Fill non-moving cracks and joints with sealant or other compounds compatible with the single ply TPO roofing system.

Priming: Prime metal substrates using recommended products and methods.

Roof board installation:

The roof board shall be mechanically fastened as shown on the approved working drawings. Panels that are cracked or broken by the installation of the mechanical fasteners shall be replaced.

The completed layer of roof board shall be smooth and level, and suitable for the proper bedding of succeeding layers of roofing material.

Roof boards with broken or crushed corners or edges shall be trimmed free of such defects or shall be discarded. Replacement boards less than 305 mm wide shall not be used.

Damaged roof board in the completed work shall be removed and replaced. Roof board that has been wet or is wet shall be considered damaged.

Walkway pad installation:

Walkway pad shall be installed in accordance with the membrane roofing system manufacturer's written instructions.

Single Ply Membrane Installation:

Apply single ply TPO roofing, as a complete, water-tight system.

Apply the single ply membrane in the longest lengths possible. Adhere membrane to the protection board in a continuous bed of adhesive. Install membrane free from bubbles, wrinkles, folds or other surface defects. In addition to the full bed of adhesive, provide mechanical fasteners at terminations and perimeter to assure compliance with wind uplift requirements.

Lap seams in the direction of drainage: Wash seams with recommended solvent prior to heat welding. Hot air weld seams and joints using an automatic hot air welder with accurate calibrated temperature gauge at nozzle to provide smooth flat seams free from bubbles, wrinkles, folds or other surface defects. Apply a continuous bead of edge lap sealant to seams and joints which have had the factory edge cut or abraded.

Install flashing membrane using recommended products and systems:

Set metal flanges in adhesive mastic. Strip metal flanges with flashing membrane set-in adhesive. Seal selvages, seams and joints. Where membrane or flashings terminate against parapet walls, curbs, pipe and vent penetrations and other such obstructions, provide termination bars and pipe clamping rings. Provide continuous sealant bead at top of termination bars and clamping rings.

Install membrane at terminations, penetrations and other interruptions of the roofing membrane. Provide mechanical fasteners, flashings counterflashings and accessories at recommended locations. Provide temporary seals and night seals to protect the insulation and the building interior.

FIELD QUALITY CONTROL

At the start of the installation and throughout the installation period, as often as deemed necessary by the Engineer, the TPO membrane roofing manufacturer's technical representative shall be present at the jobsite to advise on the installation of the roofing system.

The representative shall also provide inspection and testing of the field seams to assure manufacturer's quality requirements are maintaining throughout the installation period. Each field seam including expansion joints, shall be 100% inspected and a written report prepared by the single ply TPO membrane manufacturer shall be submitted for review prior to final acceptance.

9.05 PAINTING

PART 1 - GENERAL

Scope: This work shall consist of preparing surfaces to receive coatings, and furnishing and applying coatings, in conformance with the schedules and details shown on the plans and these special provisions.

The coatings specified in this section are in addition to any factory finishes, shop priming, or surface treatment specified elsewhere in these special provisions.

DEFINITIONS

Detergent Wash: Removal of dirt and water-soluble chemicals by scrubbing with a solution of detergent and water, and removal of all solution and residues with clean water.

Hand Cleaning: Removal of dirt, loose rust, mill scale, excess base material, filler, aluminum oxide, chalking paint, peeling paint, or paint that is not firmly bonded to the surfaces by using hand or powered wire brushes, hand scraping tools, power grinders, or sandpaper and removal of all loose particles and dust prior to coating.

Mildew Wash: Removal of mildew by scrubbing with a solution of detergent, hypochlorite-type household bleach, and warm water, and removal of all solution and residues with clean water.

Abrasive Blasting:

Removal of loosely adhering paint, dirt, rust, mill scale, efflorescence, weak concrete, or laitance, shall be by the use of airborne abrasives. Loose particles, dust, and abrasives shall be removed by blasting with clean, oil-free air.

Abrasives shall be limited to mineral grit, steel grit, or steel shot, and shall be graded to produce the surface profile recommended in the manufacturer's data sheet.

Steam Cleaning: Removal of oil, grease, dirt, or other foreign matter by using steam generated by commercial steam cleaning equipment, from a solution of water and steam cleaning compounds, and removal of all residues and cleaning compounds with clean water.

TSP Wash: Removal of oil, grease, dirt, paint gloss, and other foreign matter by scrubbing with a solution of trisodium phosphate and warm water, and removal of all solution and residues with clean water.

Water Blasting: Removal of dirt, loose scale, chalking, or peeling paint by low-pressure water cleaning. Water blasting shall be performed in conformance with the requirements in SSPC-SP12 and shall produce a surface cleanliness meeting the requirements of SSPC-SP12-WJ4. Equipment used shall have a minimum flow rate of 6.8 liters per minute. If a detergent solution is used, it shall be biodegradable and shall be removed from all surfaces with clean water.

Protection:

The Contractor shall provide protective devices, such as tarps, screens or covers, as necessary to prevent damage to the work and to other property or persons from all cleaning and painting operations.

Paint or paint stains on surfaces not designated to be painted shall be removed by the Contractor at the Contractor's expense and the original surface shall be restored.

SUBMITTALS

Manufacturer's descriptive data, a materials list, and color samples shall be submitted for approval.

Product descriptive data shall include product description, manufacturer's recommendations for product mixing, thinning, tinting, handling, site environmental requirements, product application, and drying time.

Materials list shall include manufacturer's name, trade name, and product numbers for each type coating to be applied.

Color samples shall be manufacturer's color cards, approximately 50 mm x 75 mm, for each color of coating shown on the plans. Color samples for stains shall be submitted on wood of the same species, color, and texture as the wood to receive the stain.

QUALITY ASSURANCE

Certificates of Compliance: Certificates of Compliance shall be furnished when products are required to conform with the requirements of The Society for Protective Coatings (SSPC) in conformance with the requirements specified in Section 4-1.04, "Certificates of Compliance," of the General Conditions.

REGULATORY REQUIREMENTS

Coatings and applications shall conform to the rules for control of Volatile Organic Compound (VOC) emissions adopted by the air quality control district in the air basin in which the coatings are applied.

SITE ENVIRONMENTAL REQUIREMENTS

Coatings shall be applied in conformance with the environmental constraints specified in the manufacturer's printed instructions. These conditions shall be maintained until the coating has cured and is ready for recoat.

Continuous ventilation shall be provided during application of the coatings.

Adequate lighting, as determined by the Engineer, shall be provided while surfaces are being prepared for coatings and during coating applications.

DELIVERY, STORAGE, AND HANDLING

Products shall be delivered to the site in sealed, labeled containers and stored in a well-ventilated area at an ambient air temperature of not less than 7°C. Container labeling shall include manufacturer's name, type of coating, trade name, color designation, drying time, and instructions for tinting, mixing, and thinning.

MAINTENANCE STOCK

Upon completion of coating work, a full 3.8-liter container of each type and color of finish coat and stain used shall be delivered to the location at the project site designated by the Engineer. Containers shall be tightly sealed and labeled with color, texture, and room locations where used, in addition to the manufacturer's standard product label.

PART 2 – PRODUCTS

Products for each coating system shall be from a single manufacturer and shall conform to the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI). Each product shall be shown on the MPI.

Approved Products List unless otherwise specified in these special provisions.

PART 3 - EXECUTION

INSPECTION

Coatings shall not be applied until surface preparation has been approved by the Engineer. The Contractor shall notify the Engineer at least 3 working days prior to the application of coatings.

SURFACE PREPARATION

Surfaces scheduled to be coated shall be prepared in conformance with the coating manufacturer's printed instructions unless otherwise specified in these special provisions.

Hardware, cover plates, light fixture trim, and similar items shall be removed prior to preparing surfaces for coating.

Following the application of the finish coating, the removed items shall be reinstalled in their original locations.

Wood:

Coatings for exterior applications shall have the surface lightly sanded no more than 24 hours prior to the coating application.

A sealer recommended by the coating manufacturer shall be spot applied to knots, sap, pitch, tar, creosote, and other bleeding substances.

After the application of the prime coat, all nail holes, cracks, open joints, dents, scars, and surface irregularities shall be filled, hand cleaned, and spot primed to provide smooth surfaces for the application of finish coats.

Irregularities in wood surfaces to receive a transparent stain finish shall be filled and hand cleaned after the first coat of stain has been applied. The color of the filler shall match the color of the stained wood.

Irregularities in wood surfaces to receive a clear finish shall be filled and hand cleaned before the application of coatings. The color of the filler shall match the color of the coated wood.

Galvanized Metal:

New surfaces shall be roughened by hand sanding or light abrasive blasting. Galvanizing shall not be removed during cleaning or roughening.

Damaged or corroded areas shall be cleaned and given 2 spot applications of a coating that conforms to the requirements in the Detailed Performance Standards of the MPI, and listed on MPI List "Number 18, Primer, Zinc Rich, Organic."

Steel and Other Ferrous Metals: Surface shall be cleaned in conformance with the requirements in SSPC-SP 1. Surface profile shall be as required for the coating system specified.

Gypsum Board: Holes, cracks, and other surface imperfections shall be filled with joint compound or suitable filler prior to application of coatings. Taped joints and filled areas shall be hand sanded to remove excess joint compound and filler.

Cement Plaster: New plaster shall be cured a minimum of 14 days before coating. Cracks, holes, and surface imperfections shall be filled with patching plaster and hand textured to match adjacent surfaces.

Concrete and Concrete Masonry Unit: New material shall be cleaned and prepared in conformance with the requirements in SSPC-SP 13. Cracks and voids shall be filled with cement mortar patching material. Concrete shall be cured until the surface moisture is below the level specified in the coating manufacturer's printed instructions.

Previously Coated Surfaces:

Dirt, oil, grease, or other surface contaminants shall be removed by water blasting, steam cleaning, or TSP wash. Minor surface imperfections shall be filled as required for new work. Mildew shall be removed by mildew wash. Chalking paint shall be removed by hand cleaning. The surfaces of existing hard or glossy coatings shall be abraded to dull the finish by hand cleaning or light abrasive blasting. Abrasive blasting shall not be used on wood or non-ferrous metal surfaces.

Chipped, peeling, blistered, or loose coatings shall be removed by hand cleaning, water blasting, or abrasive blasting. Bare areas shall be pretreated and primed as required for new work.

APPLICATION

Coatings shall be applied in conformance with the printed instructions and at the application rates recommended by the manufacturer to achieve the dry film thickness stated in the coating technical data sheet.

Mixing, thinning and tinting shall conform to the manufacturer's printed instructions. After thinning, the coating shall conform to the regulatory requirements in these special provisions.

Coatings shall be applied only when surfaces are dry and properly prepared.

Cleaning and painting shall be scheduled so that dust and other contaminants from the cleaning process will not fall on wet, newly coated surfaces.

Materials required to be coated shall have coatings applied to all exposed surfaces, including the tops and bottoms of wood and metal doors, the insides of cabinets, and other surfaces not normally visible from eye level.

Surface Finish Application:

Each coat shall be applied to a uniform finish. Finished surfaces shall be free of surface deviations and imperfections such as skips, cloudiness, spotting, holidays, laps, brush marks, runs, sags, curtains, ropiness, improper cutting in, overspray, drips, ridges, waves, and variations in color and texture.

Each application of a multiple application finish system shall closely resemble the final color coat, except each application shall provide enough contrast in shade to distinguish the separate applications.

Work Required Between Applications:

Each application of material shall be cured in conformance with the coating manufacturer's printed instructions before applying the succeeding coating.

Enamels and clear finishes shall be lightly sanded, dusted, and wiped clean between applications.

Stain blocking primer shall be spot applied whenever bleeding substances are visible through the previous application of a coating.

Timing of Applications: The first application of the coating system shall be during the same work shift that the final surface preparation was performed. Additional coats shall be applied as soon as the required drying time of the preceding coat, specified in the coating manufacturer's printed instructions, has been met.

Application Methods:

Coatings shall be applied by brush, roller or spray. Rollers shall be of a type which do not leave a stippled texture in the paint film. Extension handles for rollers shall not be greater than 1.8 meters in length.

If spray methods are used, surface deviations and imperfections such as overspray, thickness deviations, lap marks, and orange peel shall be considered as evidence the work is unsatisfactory and the Contractor shall apply the remainder of the coating by brush or roller, as approved by the Engineer.

Back Priming:

The first application of the coating system shall be applied to all wood surfaces (face, back, edges, and ends) of wood materials that are not factory coated, immediately upon delivery to the project site. Surfaces of interior finish woodwork that adjoin concrete or masonry shall be coated with one application of exterior wood primer before installation.

Patches in Previously Coated Surfaces: Where patches are made on surfaces of previously coated walls or ceilings, the entire surface to corners on every side of the patch shall be coated with a minimum of one application of the finish coat.

Finishing Mechanical and Electrical Components:

Shop primed mechanical and electrical components shall be finish coated in conformance with the coating system specified for the substrate material. Louvers, grilles, covers, and access panels on mechanical and electrical components shall be removed and coated separately.

Interior surfaces of air ducts which are visible through grilles or louvers shall be coated with one application of flat black enamel, to limit of the sight line.

Exposed conduit, piping, and other mechanical and electrical components shall be painted.

Both sides and all surfaces, including edges and back of wood mounting panels for electrical and telephone equipment shall be finish coated before installing equipment.

CLEANING

Upon completion of all operations, the coated surfaces shall be thoroughly cleaned of dust, dirt, grease, or other unsightly materials or substances.

Surfaces marred or damaged as a result of the Contractor's operations shall be repaired, at his expense, to match the condition of the surfaces prior to the beginning of the Contractor's operations.

COATING SYSTEM

The surfaces to be coated shall be as shown on the plans and as specified in these special provisions. When a coating system is not shown or specified for a surface to be finish coated, the coating system to be used shall be as specified for the substrate material. The number of applications specified for each coating system listed herein is a minimum.

Additional coats shall be applied if necessary to obtain a uniform color, texture, appearance, or required dry film thickness.

SYSTEM 1 - CEMENT PLASTER AND CONCRETE

2 Finish Coats:

Flat: Latex, Exterior, MPI Gloss Level 1, MPI List Number 10

Semi-Gloss: Latex, Exterior, MPI Gloss Level 5, MPI List Number 11

SYSTEM 2 - CONCRETE MASONRY UNIT

One Prime Coat:

Block Filler: Latex, Interior/Exterior MPI List Number 4

2 Finish Coats:

Flat: Latex, Exterior, MPI Gloss Level 1, MPI List Number 10

Semi-Gloss: Latex, Exterior, MPI Gloss Level 5, MPI List Number 11

SYSTEM 3 - GALVANIZED METAL

2 Finish Coats:

Flat: Latex, Exterior, MPI Gloss Level 1, MPI List Number 10

Eggshell-like: Light Industrial coating, Water Based, Exterior, MPI Gloss Level 3, MPI List Number 161

Semi-Gloss: Light Industrial coating, Water Based, Exterior, MPI Gloss Level 5, MPI List Number 163

Gloss: Light Industrial coating, Water Based, Exterior, MPI Gloss Level 6, MPI List Number 164

SYSTEM 4 - GYPSUM BOARD

One Prime Coat:

Primer Sealer: Latex, Interior, MPI List Number 50

2 Finish Coats:

Flat: Latex, Interior, MPI Gloss Level 1, MPI List Number 53

Velvet-like: Latex, Interior, MPI Gloss Level 2, MPI List Number 44

Semi-Gloss: Latex, Interior, MPI Gloss Level 5, MPI List Number 54

Gloss: Latex, Interior, MPI Gloss Level 6, MPI List Number 114

SYSTEM 5 - PREVIOUSLY COATED EXTERIOR SURFACES

2 Finish Coats:

Flat: Latex, Exterior, MPI Gloss Level 1, MPI List Number 10

Low Sheen: Latex, Exterior, MPI Gloss Level 3/4, MPI List Number 15

Semi-Gloss: Latex, Exterior, MPI Gloss Level 5, MPI List Number 11

Gloss: Latex, Exterior, MPI Gloss Level 6, MPI List Number 119

SYSTEM 6 - PREVIOUSLY COATED INTERIOR SURFACES

2 Finish Coats:

Flat: Latex, Interior, MPI Gloss Level 1, MPI List Number 53
Eggshell-like: Latex, Interior, MPI Gloss Level 3, MPI List Number 52
Semi-Gloss: Latex, Interior, MPI Gloss Level 5, MPI List Number 54
Gloss: Latex, Interior, MPI Gloss Level 6, MPI List Number 114

SYSTEM 7 - STEEL AND OTHER FERROUS METALS

2 Prime Coats:

Primer: Rust Inhibitive, Water Based, MPI List Number 107

2 Finish Coats:

Flat: Latex, Exterior, MPI Gloss Level 1, MPI List Number 10
Eggshell-like: Light Industrial coating, Water Based, Exterior, MPI Gloss Level 3, MPI List Number 161
Semi-Gloss: Light Industrial coating, Water Based, Exterior, MPI Gloss Level 5, MPI List Number 163
Gloss: Light Industrial coating, Water Based, Exterior, MPI Gloss Level 6, MPI List Number 164

SYSTEM 8 - WOOD, PAINTED

1 Prime Coat:

Primer: Latex for Exterior Wood, MPI List Number 6

2 Finish Coats:

Flat: Latex, Exterior, MPI Gloss Level 1, MPI List Number 10
Low Sheen: Latex, Exterior, MPI Gloss Level 3/4, MPI List Number 15
Semi-Gloss: Latex, Exterior, MPI Gloss Level 5, MPI List Number 11
Gloss: Latex, Exterior, MPI Gloss Level 6, MPI List Number 119

COLOR SCHEDULE

Colors shall be as shown on the plans.