



Public Works and Government Services Canada

R.080020.001

Requisition Number: EZ899-180576/A

MERX I.D. Number: _____

SPECIFICATIONS for:

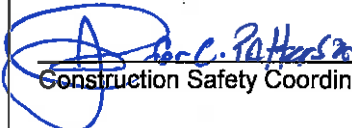
Douglas Port of Entry
220 Highway 99, Surrey BC
Douglas Port of Entry

Project Number: **R.080020.001**

APPROVED BY:


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Regional Manager, AES

2017-06-21
Date


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2017-06-20
Date

TENDER:


[Signature]
Project Manager

2017-06-21
Date



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Appendix A - Structural As-Record Drawings



LIST OF DRAWINGS (Bound Separately)

Drawing No.	Title	Issued For	Issue Date (MM-DD-YR)
Architectural:			
A000	Consultants, Drawing List, Legend (Symbols), Project Statistics, Abbreviations and General Notes	Tender	6/16/2017
A200	Site Plan	Tender	6/16/2017
A300	PIL Canopy Plan & Reflected Ceiling Plan	Tender	6/16/2017
A301	PIL Canopy South Elevation	Tender	6/16/2017
A302	PIL Canopy Sections	Tender	6/16/2017
A303	SIA & TIA Canopy Reflected Ceiling Plan	Tender	6/16/2017
A304	SIA Canopy Elevations	Tender	6/16/2017
A305	SIA Canopy Sections	Tender	6/16/2017
A306	TIA Canopy Elevations	Tender	6/16/2017
A307	Details	Tender	6/16/2017

END OF SECTION



1 GENERAL

1.01 WORK DESCRIBED BY CONTRACT DOCUMENTS

- .1 The work of this contract comprises of the coating remediation of the structural steel, glulam beams and associated components of the Primary Inspection Line (PIL) Canopy and Secondary/Tertiary Inspection Area (SIA/TIA) Canopy at the Douglas Port of Entry, located at 220 Highway 99, Surrey, British Columbia.
- .2 Contractor may perform steel surface preparation and coating remediation by either utilizing the specified encapsulation method or Alternative Option #01. **Contractor to confirm in bid submission which method is included in tender.**
 - .1 Steel Remediation Coating Encapsulation:
 - .1 SSPC-SP-3 Power Tool Cleaning (including SSPC-SP-1 Solvent Cleaning before and after).
 - .2 Sealant application between steel and glulam beams and between steel interfaces where surface faces not accessible for remediation.
 - .3 Application of 2 coat polyurethane coating system (2 applications each coat - refer to Section 09 96 00):
 - .1 One-part polyurethane, metallic-pigmented, moisture cured.
 - .2 Two-part solvent based polyurethane enamel.
 - .2 Steel Remediation Coating - Alternative Option #01 – Bare Substrate:
 - .1 SSPC-SP-6/NACE No.3 Commercial Blast Cleaning (including SSPC-SP-1 Solvent Cleaning preparation).
 - .2 Sealant application between steel and glulam beams and between steel interfaces where surface faces not accessible for remediation.
 - .3 Application of 3 coat epoxy coating system (refer to Section 09 96 00.01):
 - .1 Organic Zinc Rich Epoxy Primer.
 - .2 Polyamide or Phenalkamine Hig, Build Immersion Grade Epoxy.
 - .3 Polyamide or Phenalkamine Hig, Build Immersion Grade Epoxy.
- .3 Work to be performed under this Contract includes, but is not limited to, the following items covered further in the Contract documents.
 - .1 Temporary removal and reinstallation of components as indicated and as required to complete work. Refer to Section 01 14 00 – Work Restrictions.
 - .2 Fully enclosed acoustical hoarding with climatic control for phased work.
 - .1 Contractor to provide third party Acoustical Engineer consultant to prepare noise mitigation plan and monitoring during work.
 - .3 Phased work as indicated.
 - .4 Protection of existing adjacent finishes.
 - .5 PIL Canopy (10 lanes, including 2 Nexus lanes):
 - .1 Structural steel coating remediation of all exposed faces (except for items not indicated to be temporarily removed) including columns, purlins, beams, members, braces, rods and plates.
 - .2 Glulam Beam Remediation:
 - .1 Cleaning and full-depth sanding of all faces.
 - .2 Application of 2 coat stain/polyurethane system.
 - .3 Replacement of corroded bolts.
 - .3 Miscellaneous Remediation:
 - .1 Replacement of perforated sign panel supports.
 - .6 SIA/TIA Canopy (15 SIA lanes, SIA entry and TIA canopy):
 - .1 Structural steel coating remediation of all exposed faces including

columns, purlins, beams, members, plates, bench supports, fire suppression piping & connections and pedestrian screen frame (entire frame for specified system and top rail only if Alternative Option 1):

- .1 Temporary removal of existing outdoor furniture/structures at TIA east canopy and later reinstalled.

- .4 Canada Border Services Agency (CBSA) will occupy premises for normal operations during entire period. Cooperate with Departmental Representative in scheduling operations to minimize conflict and to facilitate usage.

1.02 TIME OF COMPLETION

- .1 Commence work upon notification of acceptance and complete work within the following phasing schedule - based on concurrent phasing of both P/L and SIA/TIA canopies:
 - .1 Phases 1 and 2:
 - .1 15 weeks – commencing September 5, 2017 – December 15th.
 - .2 Blackout Break:
 - .1 No work will take place during December 16, 2016 to January 1, 2018.
 - .3 Phases 3 and 4:
 - .1 12 weeks – commencing January 2, 2018.
- .2 Work, including deficiencies must be completed no later than March 27, 2018.

1.03 MINIMUM STANDARDS

- .1 Work to conform to the minimum applicable standards of the Canadian General Standards Board, the Canadian Standards Association, the National Building Code of Canada 2015 (NBC) and applicable Provincial and Municipal codes. In the case of conflict or discrepancy, the most stringent requirement applies.
- .2 Meet or exceed requirements of Contract documents, specified standards, codes and referenced documents.

1.04 CONTRACT DOCUMENTS

- .1 The Contract documents, drawings and specifications are intended to complement each other, and to provide for and include everything necessary for the completion of the work.
- .2 Drawings are, in general, diagrammatic and are intended to indicate the scope and general arrangement of the work. **Drawings have been prepared in colour for clarity purposes and are intended to be printed in colour.** Contractor is responsible for any misinterpretations caused as a result of printing in black and white.

1.05 DIVISION OF SPECIFICATIONS

- .1 The specifications are subdivided in accordance with the 6-digit National Master Specifications System.
- .2 A division may consist of the work of more than one subcontractor. Responsibility for determining which subcontractor provides the labour, material, equipment and services required to complete the work rests solely with the Contractor.
- .3 In the event of discrepancies or conflicts when interpreting the drawings and specifications, the specifications govern.

1.06 TAXES

- .1 Pay all taxes properly levied by law (including Federal, Provincial and Municipal).

1.07 REGULATORY REQUIREMENTS

- .1 Obtain and pay for - Building Permit, Certificates, Licenses and other permits required by regulatory municipal, provincial or federal authorities to complete the work.
- .2 Provide inspection authorities with plans and information required for issue of acceptance certificates.
- .3 Furnish inspection certificates in evidence that the work installed conforms with the requirements of the authority having jurisdiction.

1.08 PROJECT MEETINGS

- .1 In accordance with Section 01 31 19 – Project Meetings, Departmental Representative will schedule a project start-up meeting following notice of acceptance.
- .2 Agenda to include lines of communication, contact information, scheduling and coordination.
- .3 Subsequent meetings will be called as required. Contractor should allow for project meeting every 2 weeks.

1.09 CONTRACTOR'S USE OF SITE

- .1 Use of site:
 - .1 The Douglas Port of Entry will remain operational. Canada Border Services Agency (CBSA) has control over the entire site. All border activities and security controls must remain operational at all times unless otherwise indicated. Coordinate with the Departmental Representative for all activities that impact on-going operations.
 - .2 Work restrictions and security provisions will be enforced.
 - .3 Assume responsibility for assigned premises for laydown and storage areas and for performance of this work.
 - .4 Be responsible for coordination of all work activities on site, including the work of other contractors engaged by the Departmental Representative.
- .2 Perform work in accordance with Contract documents. Ensure work is carried out in accordance with indicated phasing.
- .3 Do not unreasonably encumber site with material or equipment.
- .4 Maintain scaffolding and hoarding throughout duration of work. Do not exceed areas indicated unless written approval by Departmental Representative is provided.
- .5 Execute work with least possible interference or disturbance to normal use. Make arrangements with Departmental Representative to facilitate work as stated.
- .6 Maintain existing services and provide for personnel, visitor and vehicle access.
- .7 Where security is reduced by work, provide temporary means to maintain security. Review measures with Departmental Representative before proceeding.

1.10 HOURS OF WORK

- .1 In accordance with Section 01 14 00 – Work Restrictions, the Douglas Port of Entry is operational 24 hours per day, 7 days a week.
- .2 Carry out noise generating Work during low volume hours.
 - .1 Monday to Friday 08:00 - 14:00 and 18:00 to 07:00.
 - .2 Refer to Section 01 56 00 – Temporary Barriers & Enclosures for allowable decibel levels and noise mitigation requirements.
- .3 Notify Departmental Representative of all after hours work, including weekends and holidays. Work may not be permitted during holidays and weekends due to heavier border traffic and must be approved by Departmental Representative.

1.11 NON-SMOKING ENVIRONMENT

- .1 Smoking is not permitted on site.

1.12 WORK SCHEDULE

- .1 Provide detailed project schedule (Gantt Chart) within 5 working days of Award of Contract date showing phasing activity sequencing, interdependencies, inspections and duration estimates. Include listed activities as follows:
 - .1 Shop drawings.
 - .2 Samples.
 - .3 Approvals.
 - .4 Procurement.
 - .5 Construction (Phased).
 - .6 Surface preparation.
 - .7 Application.
 - .8 Inspections.
 - .9 Turnover and Acceptance.
- .2 Do not change approved schedule without notifying Departmental Representative.
- .3 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of Departmental Representative.
- .4 Schedule Work in consultation with Departmental Representative to minimize impact on public use of facility during operating hours.

1.13 SUBMITTALS

- .1 In accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data: Manufacturers catalogue sheets, brochures, literature, performance charts and diagrams.
 - .1 Submit electronic copies of documentation.
 - .2 Delete information not applicable to project.
 - .3 Cross-reference product data information to applicable portion of Contract Documents.
- .3 Samples: examples of materials, equipment, quality, finishes and workmanship.
 - .1 Provide two samples of each coating system as indicated in technical sections.
 - .2 Where colour, pattern or texture is criterion, submit full range of samples.

- .3 Reviewed and accepted samples will become standard of workmanship and material against which installed work will be verified.
- 4 Shop Drawings:
 - .1 Submit electronic copies of all shop drawings to include:
 - .1 Date.
 - .2 Project Title and number.
 - .3 Name and address of Subcontractor, Supplier and Manufacturer.
 - .4 Fabrication.
 - .5 Key plan and layout, showing dimensions, including identified field dimensions and clearances.
 - .6 Setting or erection details.
 - .7 Relationship to adjacent work.
 - .8 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .9 Revised shop drawing submissions to be clearly bubbled where revised.
 - .2 Submit drawings stamped and signed by professional engineer registered and licensed in the Province of British Columbia as indicated required in Technical Sections.

1.14 COST BREAKDOWN

- .1 Before submitting the first progress claim, submit a breakdown of the Contract lump sum prices in detail as directed by the Departmental Representative and aggregating Contract price.

1.15 DOCUMENTS REQUIRED

- 1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Contract Specifications.
 - .3 Addenda to Contract Documents.
 - .4 Copy of approved work schedule.
 - .5 Reviewed and approved Shop Drawings and Submittals.
 - .6 List of Outstanding Shop Drawings.
 - .7 Change Orders.
 - .8 Other Modifications to Contract.
 - .9 Field Reports.
 - .10 Reviewed and approved samples.
 - .11 National Building Code, 2015.
 - .12 Health and Safety Plan and Other Safety Related Documents.
 - .13 Other documents as specified.

1.16 HEALTH, SAFETY AND HAZARDOUS MATERIALS

- .1 In accordance with Section 01 35 33 – Health and Safety Requirements, comply with Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials; and regarding labeling and the provision of Safety Data Sheets (SDS).
- .3 Comply with British Columbia Workers Compensation Act.

- .4 Perform duties in accordance with the British Columbia Occupational Health and Safety Regulation.
- .5 Submit copies of WCB Clearance Letter and WCB Contractor Rating. Submit copy of Final WCB Clearance Letter at completion of project.
- .6 Submit letter stating that Contractor assumes the role of Prime Contractor for the purposes of site safety responsibility and the Workers Compensation Act.
- .7 Submit 2 copies of the Contractor's generic Health and Safety Plan and 2 copies of the site-specific Health and Safety Plan within 5 days after date of Notice to Proceed and prior to commencement of Work. Site-specific Plan must include the results of the site specific safety hazard assessment, and the results of the safety, health and hazard analysis for the site tasks as described in the Work plan, and proposed mitigations for the identified hazards.
- .8 Submit copies of work site health and safety meeting minutes, inspection reports, reports or directions issued by Federal, Provincial or Municipal health and safety inspectors, incident and accident reports, and follow-up reports.
- .9 Be responsible for the health and safety of persons on site, safety or property on site and the environment to extend that they may be affected by conduct of Work.

1.17 EXAMINATION

- .1 Examine site and be familiar and conversant with existing conditions likely to affect work.
- .2 Prior to beginning work, provide a photographic report of surrounding areas, including existing conditions of items included within scope of work and items to be protected (which may be liable to damage or be the subject of subsequent claims). Digital documentation to include (indicate on plan where image taken):
 - .1 PIL:
 - .1 Steel: beam, column, purlin and member.
 - .2 Glulam beam and bolts.
 - .3 PV panels.
 - .4 Booths (including roof).
 - .5 Digital signage supports.
 - .6 Lighting.
 - .7 Rainwater leaders.
 - .2 SIA:
 - .1 Bench supports and slats.
 - .2 Pedestrian screen.
 - .3 SIA/TIA:
 - .1 Steel: beam, column, purlin and member.
 - .2 Fire suppression piping.
 - .3 Galvanized roof (underside) and flashing.
 - .4 Lighting.
 - .5 Rainwater leaders.
 - .4 TIA:
 - .1 Clerestory roof area.
 - .2 Outdoor furniture to be temporarily relocated.
- .3 Photographs not to include uniformed staff on duty, vehicles or the public.

1.18 SETTING OUT OF WORK

- .1 Review existing conditions with contract documents and identify in writing to Departmental Representative of any discrepancies.

1.19 ACCEPTANCE OF SUBSTRATES

- .1 Each trade shall examine surfaces prepared by others and job conditions which may affect his work, and shall report defects to the Contractor. Commencement of work shall imply acceptance of prepared work or substrate surfaces.

1.20 QUALITY OF WORK

- .1 Ensure that quality workmanship is performed through use of skilled tradesmen, under supervision of qualified journeyman, with required years of experience as indicated within Technical Sections.
- .2 The workmanship, erection methods and procedures to meet minimum standards set out in the National Building Code Construction Standards.
- .3 In cases of dispute, decisions as to standard or quality of work rest solely with the Departmental Representative, whose decision is final.

1.21 WORKS COORDINATION

- .1 Coordinate work of subtrades:
 - .1 Designate one person to be responsible for review of contract documents and shop drawings and managing coordination of Work.
- .2 Convene meetings between subcontractors whose work interfaces and ensure awareness of areas and extent of interface required.
 - .1 Provide each subcontractor with complete plans and specifications for Contract, to assist them in planning and carrying out their respective work.
 - .2 Coordinate work illustrating potential interference between work of various trades and distribute to affected parties.
 - .3 Facilitate meetings and review coordination drawings. Ensure subcontractors agree and sign off on drawings.
 - .4 Prepare and publish minutes of each meeting.
 - .5 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes.
- .3 Submit shop drawings only after coordination meeting for such items has taken place.
- .4 Work cooperation:
 - .1 Ensure cooperation between trades in order to facilitate general progress of Work and avoid situations of interference.
 - .2 Ensure that each trade provides all other trades reasonable opportunity for completion of Work and in such a way as to prevent unnecessary delays, patching and removal or replacement of completed work.
 - .3 Ensure disputes between subcontractors are resolved.
- .5 Departmental Representative is not responsible for, or accountable for extra costs incurred as a result of Contractor's failure to coordinate Work.
- .6 Maintain efficient and continuous supervision. Full-time site superintendent required throughout project.

1.22 APPROVAL OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- .1 In accordance with Section 01 33 00 - Submittal Procedures, submit the requested shop drawings, product data, SDS sheets and samples indicated in each of the technical Sections.
- .2 Allow sufficient time for the following:
 - .1 Review of product data.
 - .2 Approval of shop drawings.
 - .3 Review of re-submission.
 - .4 Ordering of approved material and/or products - refer to technical sections.

1.23 TESTING AND INSPECTIONS

- .1 Particular requirements for inspection and testing to be carried out by testing agency as retained by the Departmental Representative:
 - .1 Surface Preparation and Coating Application: refer to Section 01 45 00 - Quality Control.
- .2 The Contractor will appoint and pay for the services of testing agency or testing laboratory as specified, and where required for the following:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Where tests or inspections by designated testing laboratory reveal work is not in accordance with the Contract requirements, Contractor shall pay costs for additional tests or inspections as the Departmental Representative may require to verify acceptability of corrected work.
- .3 Contractor shall furnish labour and facilities to:
 - .1 Notify Departmental Representative in advance of planned testing.
- .4 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Departmental Representative.
- .5 The Departmental Representative may require, and pay for, additional inspection and testing services not included in above.
- .6 Provide Departmental Representative with copies of inspection and test reports as soon as available.

1.24 AS-BUILT DOCUMENTS

- .1 The Departmental Representative will provide 2 sets of drawings, 2 sets of specifications, for "as-built" purposes.
- .2 As work progresses, maintain accurate records to show all deviations from the Contract documents including where remediation work could not be performed. Note on as-built specifications, drawings and shop drawings as changes occur.
- .3 Submit for review copies of red-marked as-built drawings completed to date with each progress claim submission.

1.25 CLEANING

- .1 In accordance with Section 01 74 11 – Cleaning, conduct daily cleaning and disposal operations. Comply with local ordinances and anti-pollution laws.
- .2 Ensure cleanup of the work areas each day after completion of work.
- .3 Use cleaning materials and methods in accordance with instructions of the manufacturer of the surface to be cleaned.

1.26 ACCESS

- .1 In preparation for inspections and reviews:
 - .1 Have man lift with qualified operator available for Departmental Representative use during field reviews and inspections.

1.27 CONTROL

- .1 In accordance with 01 56 00 – Temporary Barriers and Enclosures, design, erect and maintain hoarding to support all loads (including windloads) and provide protection, complete with signage and electrical lighting as required by authority having jurisdiction and Departmental Representative.
- .2 Maintain and relocate protection until work is complete.

1.28 ENVIRONMENTAL PROTECTION

- .1 In accordance with Section 01 35 43 – Environmental Procedures, prevent extraneous materials from contaminating air beyond construction area, by providing temporary enclosures or extension to Mechanical intake louvres during work.
- .2 Do not dispose of waste or volatile materials into water courses, storm or sanitary sewers.
- .3 Ensure proper disposal procedures in accordance with all applicable federal, provincial and municipal regulations.

1.29 ADDITIONAL DRAWINGS

- .1 The Departmental Representative may furnish additional drawings for clarification. These additional drawings have the same meaning and intent as if they were included with plans referred to in the Contract documents.
- .2 Electronic copies of the drawings will be available for Contractor use and printing.

1.30 SYSTEM OF MEASUREMENT

- .1 The metric system of measurement (SI) will be employed on this Contract.

1.31 FAMILIARITY WITH SITE

- .1 Before submitting tender, visit site as indicated in tender documents and become familiar with all conditions likely to affect the cost of the work.

1.32 SUBMISSION OF TENDER

- .1 Submission of a tender is deemed to be confirmation of the fact that the Tenderer has examined the Contract documents and inspected the site, and is fully conversant with all conditions.

2 PRODUCTS

2.01 NOT USED

- .1 Not used.

3 EXECUTION

3.01 NOT USED

- .1 Not used.

END OF SECTION

1 GENERAL

1.01 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including scaffolding independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.
- .2 Coordinate construction, staff and delivery vehicles accessing contractor's lay-down area with CBSA Facility Personnel to minimize disturbance to ongoing CBSA operations.
- .3 All deliveries and construction vehicle access which require escort services against PIL and SIA/TIA traffic will require a minimum of 24 hours notice to Departmental Representative so that an escort may be arranged.

1.02 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security as approved by Departmental Representative.
- .4 Refer to Section 01 52 00 – Construction Facilities for sanitary facility requirements.
- .5 Protection: protect work temporarily until re-coating work is completed.

1.03 HOURS OF WORK

- .1 The Port of Entry is operational 24 hours per day, 7 days a week. Contractor to submit proposed hours-of-work to Departmental Representative for review and approval.
- .2 Disruptive construction noise and operations may require work to be executed during low Port of Entry volume periods. Low volume hours are typically Sundays to Fridays between 08:00 - 14:00 and 18:00 to 07:00.
- .3 Contractor shall give 72 hours notice to Departmental Representative for request of work to be completed outside of normal working hours (subject to CBSA approval).

1.04 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations occupants, public and normal use of premises.
- .2 Protect existing finishes as follows:
 - .1 PIL Canopy: PIL Booths (roofs and cladding/glazing) and all adjacent surfaces during SSPC/NACE surface preparation and completion of Work. Repair or make good to better condition any damage to existing finishes.
 - .2 SIA/TIA Canopy: the underside SIA/TIA galvanized metal roof deck, TIA lower roof levels and all adjacent surfaces during SSPC/NACE surface preparation and completion of Work. Repair or make good to better condition any damage to existing finishes.

- .3 Any work which impacts the operations onsite (traffic, commercial, support staff, etc.) must have one (1) week notice and must be approved by CBSA. CBSA maintains the right to have work completed after hours (20:00 – 07:00 on weekdays).

1.05 EXISTING SERVICES

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Provide for personnel, pedestrian and vehicular traffic.
- .3 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .4 Contractor will not be allowed to connect to existing data and communication services for his own use.

1.06 SPECIAL REQUIREMENTS

- .1 Traffic lane closures:
 - .1 Request for phased lane closure requires a minimum of two (2) weeks notice and must be approved by Departmental Representative. During lane closure, provide wayfinding signage for pedestrian and vehicular traffic.
 - .2 PIL Canopy: Two (2) Nexus lanes must remain operational daily from 07:00 to 24:00 hours. Lanes 9 and 10 are existing Nexus Lanes. Lanes 7 and 8 are Nexus capable and will be utilized during Phase 4 and closure of Lanes 9 and 10.
- .2 Noise Generation: Refer to Section 01 56 00 – Temporary Barriers and Enclosures for Contractor retained Acoustical Engineer, Noise Mitigation Plan and monitoring requirements.
- .3 PIL Canopy - Pedestrian and Bicycle Walkways:
 - .1 Pedestrian and Bicycle Walkways must remain operational (including during Phase 1 work). Provide protection and lighting as required in accordance with Section 01 56 00 – Temporary Barriers & Enclosures.
- .4 PIL Canopy – Glulam Beam Bolt Replacement:
 - .1 Contractor to retain Structural Engineering Consultant to review bolt conditions for replacement with new structural bolt and temporary support requirements during bolt replacement.
 - .1 Submit signed and sealed shop drawings by a professional engineer registered or licensed in Province of British Columbia.
- .5 PIL Canopy – Digital Signage:
 - .1 Contractor to retain Pattison Sign Group for digital signage work (temporary removal, reinstallation and reconnection) at PIL Lanes 1 – 10.
 - .1 Digital signage to be removed and reinstalled in accordance with phasing as work progresses.
 - .2 Contractor to protect and store digital signage panels on-site as directed by Departmental Representative.
 - .3 Contractor is responsible for providing temporary non-electrical signage as required by CBSA Facility Personnel.
- .6 PIL Canopy – Photovoltaic Roof Panels:

- .1 Contractor to utilize personnel with documented experience with the removal and reinstallation and handling of photovoltaic roof panels.
 - .1 Type: Glaswerke Arnold – Voltarlux Asiopak-30-SG.
- .2 Panels to be removed and reinstalled in accordance with phasing as work progresses.
- .3 Contractor to number each panel prior to removal and provide corresponding roof plan with numbering sequence, with each panel later re-installed at original location. Protect panels and provide secured storage on-site where directed by Departmental Representative.
- .4 Contractor to note on Roof Plan which panel numbers were not operational at time of removal and advise Departmental Representative prior to reinstallation. Departmental Representative will supply new panels for installation where existing panels non-operational.
 - .1 Breakage: Contractor to take all necessary precautions to avoid breakage of panels. If photovoltaic panels are broken due to construction works, they are to be replaced at Contractor's cost with matching PV panels.
 - .2 Where matching panels no longer available, replace at Contractor's cost, with new laminated safety glass panels, same size, thickness and colour finish.
- .5 Panels will be tested by Contractor to confirm working operation once reinstalled. Contractor to provide written report to confirm operational status.
- .7 Security Cameras:
 - .1 Security cameras are to remain operational. Cameras requiring temporary relocation are the responsibility of CBSA. Contractor to provide one (1) week notice to Departmental Representative for cameras requiring relocation.
- .8 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .9 Keep within limits of work and avenues of ingress and egress.
- .10 Deliver materials outside of peak traffic hours, typically 18:00 to 07:00 and 08:00 to 14:00 and to be confirmed by Departmental Representative.

1.07 SECURITY

- .1 Obey the following CBSA Security Directives:
 - .1 Contractor's Site Superintendent is responsible to sign in and out all crew members at the beginning and end of each shift.
- .2 Contractor's personnel shall be in possession of Government issued picture identification at all times while on CBSA property.
- .3 Remain within the designated work areas. Movement within CBSA restricted areas must be approved and require CBSA escort.
- .4 Do not interfere with Port of Entry inspection processes. Move away from CBSA officials interacting with the travelling public to avoid overhearing potentially sensitive and personal conversations.
- .5 Be accountable for tools/equipment at all times. Do not leave tools unattended.
- .6 Act professionally at all times. No foul language or rude behavior.

- .7 Do not interact with the travelling public.
- .8 Obey uniformed CBSA officers when given operational directives (these may include being instructed to move off site during a dangerous situation or to stop work because of operational requirements. Report to the Departmental Representative when such instructions have been given (as early as is convenient).
 - .1 Do not take directions from uniformed officers or PWGSC building maintenance regarding remediation work.
- .9 No music permitted.

1.08 BUILDING SMOKING ENVIRONMENT

- .1 Smoking is not permitted.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Particular requirements for independent inspection and testing to be carried out by third party inspectors and testing retained by Departmental Representative are specified under sections as follows:
 - .1 Section 09 91 13 – Exterior Re-Painting.
 - .2 Section 09 96 00 – High Performance Coatings / Section 09 96 00.01 – High Performance Coatings – Alternative Option #01.

1.02 APPOINTMENT AND PAYMENT

- .1 Departmental Representative will appoint and pay for services of third party inspection and testing laboratory except follows:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Testing and adjustment of electrical equipment and systems.
 - .4 Tests specified to be carried out by Contractor under supervision of Departmental Representative.
 - .5 Acoustical Engineer (for noise mitigation plan and monitoring).
 - .6 Digital signage reinstallation commissioning.
 - .7 PV Panel commissioning.
- .2 Where inspections or tests reveal Work not in accordance with contract requirements, pay costs for additional inspections and tests as required by Departmental Representative to verify acceptability of corrected work.

1.03 CONTRACTOR'S RESPONSIBILITIES

- .1 Provide labour, equipment and facilities to:
 - .1 Provide access to Work for inspection and testing.
 - .2 Facilitate inspections and tests.
 - .3 Make good Work disturbed by inspection and test.
 - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Departmental Representative 72 hours minimum sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 ADMINISTRATIVE

- .1 Departmental Representative will arrange pre-construction project meeting.
- .2 Contractor to assume responsibility for setting meeting times and recording and distributing meeting minutes.
 - .1 Reproduce and distribute copies of minutes within three (3) days after meetings and transmit to Departmental Representative, meeting participants and affected parties not in attendance.
 - .2 Include significant proceedings and decisions. Identify actions by parties.
- .3 Contractor to provide physical space and make arrangements for progress meetings.
- .4 Contractor to attend project meetings throughout the progress of the work and at the call of Departmental Representative.

1.02 PRECONSTRUCTION MEETING

- .1 Departmental Representative will:
 - .1 Within ten (10) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
 - .2 Departmental Representative, Contractor, major Subcontractors, field reviewers and supervisors will be in attendance.
 - .3 Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
 - .4 Provide Agenda. Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 11 55 – General Instructions and Bar (Gantt) Chart.
 - .3 Schedule of shop drawings submissions and samples. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities and hoarding and scaffolding in accordance with Section 01 56 00 Temporary Barriers & Enclosures.
 - .5 Delivery schedule of specified equipment.
 - .6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
 - .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .8 Record drawings in accordance with Section 01 78 30 - Closeout Submittals.
 - .9 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
 - .10 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .11 Appointment of inspection firms.

.12 Insurances, transcript of policies.

1.03 PROGRESS MEETINGS

- 1 Contractor will:
 - .2 During course of Work and up to project completion, schedule progress meetings every two weeks. Additional meetings will be scheduled to resolve extraordinary issues as required.
 - .3 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
 - .4 Notify parties minimum one week (7) days prior to meetings.
 - .5 Contractor will record minutes of progress meetings and circulate to attending parties and affected parties not in attendance.
 - .6 Provide Agenda. Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for affect on construction schedule and on completion date.
 - .12 Other business.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide a five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Milestone: significant event in project, usually completion of major deliverable.
- .7 Phasing: as indicated on drawings.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.02 REQUIREMENTS

- .1 Ensure Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress and Final Certificate as defined times of completion are of essence of this contract.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Project Schedule to Departmental Representative within five (5) working days of

receipt of Contract Award.

1.04 PROJECT SCHEDULE

- .1 Ensure detailed Project Schedule is prepared and printed in colour and includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Blackout Period.
 - .3 Hoarding/Scaffolding.
 - .4 Shop Drawings, Samples.
 - .5 Permits.
 - .6 Mobilization.
 - .7 Preparation.
 - .8 Phased Remediation.
 - .9 Substantial Completion.
 - .10 Total Completion.

1.05 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule monthly with progress claim submission reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current two week forecast, defining problem areas, anticipated delays and impact with possible mitigation.

1.06 PROJECT MEETINGS

- .1 Discuss Project Schedule at site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

2 PRODUCTS

2.01 NOT USED

- .1 Not used.

3 EXECUTION

3.01 NOT USED

- .1 Not used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 05 50 00 – Metal Fabrications.
- .2 Section 07 92 00 – Joint Sealants.
- .3 Section 09 91 13 – Exterior Re-Painting.
- .4 Section 09 96 00 – High Performance Coatings / 09 96 00.01 – High Performance Coatings, Alternative Option #01.

1.02 ADMINISTRATIVE

- .1 Submit for review electronic copies of Independent Surface and Coating Inspection Services results same day to Departmental Representative.
- .2 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative verifying field measurements and compliance with contract documents. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. **Submittals not reviewed, marked up for on-site coordination, stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.**
 - .1 Verify field measurements and affected adjacent Work are coordinated.
 - .2 Project schedule will not be extended due to Departmental Representative re-review of resubmitted shop drawing submittals.
 - .3 Keep one reviewed copy of each reviewed submittal on site.
- .6 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .7 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .8 Do not proceed with work or order construction materials or products until relevant submissions are reviewed and approved by the Departmental Representative.

1.03 SUBMISSION REQUIREMENTS

- .1 Coordinate each submission with the requirements of the work and the Contract documents. Individual submissions will not be reviewed until all related information is available.

- .2 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .3 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative, certifying approval of submissions, verification of field measurements and compliance with Contract documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
 - .5 Details of appropriate portions of work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions (including identified field dimensions) and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Relationship to adjacent work.
- .4 After Departmental Representative's review, distribute copies. Keep one reviewed copy of each submission on site.

1.04 SHOP DRAWINGS

- .1 Shop drawings: original drawings or modified standard drawings, diagrams, illustrations, schedules, performance charts, brochures or other data provided by Contractor to illustrate details of portions of work which are specific to project requirements.
 - .1 Indicate materials, methods of construction and attachment or anchorage erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Provide cross references to drawings and specifications.
- .2 Submit electronic drawings for each requirement requested in technical specification sections and as requested by Departmental Representative. Where indicated, provide stamped and signed shop drawings by professional engineer registered or licensed in the Province of British Columbia.
- .3 Cross- reference shop drawing information to applicable portions of the Contract documents.
- .4 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

- .5 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .6 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .7 Delete information not applicable to project.
- .8 Supplement standard information to provide details applicable to project.

1.05 SHOP DRAWING REVIEW

- .1 Review of shop drawings by the Departmental Representative is for the sole purpose of ascertaining conformance with the general concept.
 - .1 Allow five (5) business days for Departmental Representative's review of each submission.
- .2 This review shall not mean that the Departmental Representative approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same.
- .3 This review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and Contract documents.
- .4 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with ordering materials or Work.
- .5 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested. All revisions to be clearly clouded.
- .6 Without restricting the generality of the foregoing, the Contractor is responsible for:
 - .1 Dimensions to be confirmed and correlated at the job site.
 - .2 Information that pertains solely to fabrication processes or to techniques of construction and installation.
 - .3 Coordination of the work and all sub-trades.
- .7 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, electronic copy will be returned and ordering, fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .8 Shop drawings to incorporate applicable key plan, plan, elevations and details for all work submitted. No materials to be ordered and no work to be fabricated shall be undertaken until shop drawings and other related submittals are reviewed.

1.06 PRODUCT DATA

- .1 Product data: manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products or any other specified information.
 - .1 Submit electronic copies of product data.

- .2 Delete information not applicable to project.
- .3 Supplement standard information to provide details applicable to project.
- .2 Cross-reference product data information to applicable portions of Contract documents.

1.07 SAMPLES

- .1 Submit for review samples in duplicate as requested in individual technical specification sections. Label samples with origin and intended use. One sample will be returned with Shop Drawing Review.
- .2 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .3 Where colour, pattern or texture is criterion, submit full range of samples.
- .4 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to ordering materials or proceeding with Work.
- .5 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

1.08 MOCK-UPS

- .1 Erect mock-ups where directed by Departmental Representative and in accordance with Section 01 45 00 - Quality Control.

1.09 PROGRESS SCHEDULE

- .1 Submit work schedule and cost breakdown in accordance with Section 01 11 55 – General Instructions and Section 01 32 16.07 – Construction Progress Schedule – Gantt Bar Chart.

1.10 INSPECTION REPORTS

- .1 Submit electronic test results and inspection reports as received and where indicated.

1.11 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic copy of colour digital photographic report in accordance with Section 01 11 55 – General Instructions.
 - .1 Submit photos of each condition at end of project and include updated consolidated report in Operating and Maintenance Manual in accordance with Section 01 78 00 – Closeout Submittals.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

1 Not Used.

END OF SECTION

1 GENERAL

1.01 REFERENCES

- .1 Manual of Uniform Traffic Control Devices for Streets and Highways (UTCD), 2002.

1.02 PROTECTION OF TRAFFIC

- .1 Contractor to provide two (2) weeks notice to Departmental Representative before proceeding to next phase for coordination of closing of PIL and SIA lanes. Before re-routing traffic, erect suitable signs and devices in accordance with instructions contained in Part D of UTCD. Refer to Section 01 14 00 - Work Restrictions.
- .2 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .3 When working on travelled way:
 - .1 Place equipment in position to minimize interference and hazard to travelling public.
 - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
 - .3 Do not leave equipment on travelled way overnight.
- .4 Two Nexus lanes must remain operational daily from 07:00 to 24:00 hours. Refer to 01 14 00 – Work Restrictions.

1.03 INFORMATIONAL AND WARNING DEVICES

- .1 Provide and maintain signs and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
 - .1 As directed by CBSA Facility Personnel and Departmental Representative, provide lane detours to facilitate passage of traffic around restricted construction area.
- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices as specified in Part D, Temporary Conditions Signs and Devices of UTCD manual.
- .3 Place signs and other devices in locations recommended in UTCD Manual.
- .4 Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Departmental Representative.
- .5 Continually maintain traffic control devices in use:
 - .1 Check daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
 - .2 Remove devices which do not apply to conditions existing from day to day.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 05 50 00 – Metal Fabrications.
- .2 Section 07 92 00 – Joint Sealants.
- .3 Section 09 91 13 – Exterior Re-Painting.
- .4 Section 09 96 00 – High Performance Coatings / 09 96 00.01 – High Performance Coatings, Alternative Option #01.

1.02 REFERENCES

- .1 Government of Canada
 - .1 Canada Labour Code, Part 2 Canada Occupational Safety and Health Regulations.
 - .2 Canada Occupational Health and Safety Regulations.
- .2 National Building Code of Canada (NBC) 2015
 - .1 Part 8 – Safety Measures at Construction and Demolition Sites.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Safety Data Sheets (SDS).
- .4 Province of British Columbia
 - .1 Workers Compensation Act Part 3 – Occupational Health and Safety, RSBC 1996 - Updated 2006.
- .5 Canadian Standards Association (CSA) as amended:
 - .1 CSA Z797-2009(R2014), Code of Practice for Access Scaffold.

1.03 WORKER'S COMPENSATION BOARD COVERAGE

- .1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.
- .2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.04 COMPLIANCE WITH REGULATIONS

- .1 PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.
- .2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

1.05 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit to Departmental Representative, submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Work affected by submittal shall not proceed until review is complete.
- .3 Submit the following:
 - .1 Health and Safety Plan.
 - .2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
 - .3 Copies of incident and accident reports.
 - .4 Complete set of Safety Data Sheets (SDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .5 Emergency Procedures.
- .4 The Departmental Representative will review Contractor's site-specific Health and Safety Plan and emergency procedures and provide comments to Contractor within seven (7) business days after receipt of plan. Revise plan as appropriate and resubmit to Departmental Representative.
- .5 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .6 Submission and resubmission of the Health and Safety Plan to the Departmental Representative is for information and reference purposes only. It shall not:
 - .1 Be construed to imply approval by the Departmental Representative.
 - .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
 - .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.06 RESPONSIBILITY

- .1 Assume responsibility as the Prime Contractor for work under the contract.
- .2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.07 HEALTH AND SAFETY COORDINATOR

- .1 The Health and Safety Coordinator/Registered Occupational Hygienist/Certified Industrial Specified Hygienist must:
 - .1 Be responsible for completing all health and safety training sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .2 Be responsible for implementing, enforcing daily and monitoring site-specific Health and Safety Plan.
 - .3 Be on site during execution of Work.

1.08 GENERAL CONDITIONS

- .1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for CBSA staff and public pedestrian and vehicular traffic.
- .2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.

1.09 REGULATORY REQUIREMENTS

- .1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.
- .2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.10 WORK PERMITS

- .1 Obtain and pay for specialty permits related to project before start of work.

1.11 FILING OF NOTICE

- .1 The Contractor is to complete and submit a Notice of Project as required by provincial authorities.
- .2 Provide copies of all notices to the Departmental Representative.

1.12 HEALTH AND SAFETY PLAN

- .1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.
- .2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including but not limited to, the following:
 - .1 Primary requirements:
 - .1 Contractor's safety policy.
 - .2 Identification of applicable compliance obligations.
 - .3 Definition of responsibilities for project safety/organization chart for project.
 - .4 General safety rules for project.
 - .5 Job-specific safe work, procedures.
 - .6 Inspection policy and procedures.
 - .7 Incident reporting and investigation policy and procedures.
 - .8 Occupational Health and Safety Committee/Representative procedures.
 - .9 Occupational Health and Safety meetings.
 - .10 Occupational Health and Safety communications and record keeping procedures.
 - .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.
 - .3 List hazardous materials to be brought on site as required by work.

- .4 Indicate engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.
 - .5 Identify personal protective equipment (PPE) to be used by workers.
 - .6 Identify personnel and alternates responsible for site safety and health.
 - .7 Identify personnel training requirements and training plan, including site orientation for new works.
- .3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.
 - .4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.
 - .5 Departmental Representative's review: the review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

1.13 EMERGENCY PROCEDURES

- .1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:
 - .1 Designated personnel from own company.
 - .2 Regulatory agencies applicable to work and as per legislated regulations.
 - .3 Local emergency resources.
 - .4 Departmental Representative site staff.
- .2 Include the following provisions in the emergency procedures:
 - .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.
 - .2 Evacuate all workers safely.
 - .3 Check and confirm the safe evacuation of all workers.
 - .4 Notify the fire department or other emergency responders.
 - .5 Notify adjacent workplaces which may be affected if the risk extends beyond the workplace.
 - .6 Notify Departmental Representative site staff.
- .3 Provide written rescue/evacuation procedures as required for, but not limited to:
 - .1 Work at heights.
 - .2 Work with hazardous substances.
 - .3 Workplaces where there are persons who require physical assistance to be moved.
- .4 Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

1.14 HAZARDOUS PRODUCTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous regarding labelling and provision of Safety Data Sheets (SDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.
- .2 Where use of hazardous and toxic products cannot be avoided:

- .1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable SDS and WHMIS documents as per Section 01 33 00 - Submittal Procedures.

1.15 ELECTRICAL SAFETY REQUIREMENTS

- .1 Comply with authorities and ensure that, when disconnecting and reconnecting existing and new electrical circuits and equipment and their operation.
 - .1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.
 - .2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

1.16 OVERLOADING

- .1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation or damage to existing structure and finishes.

1.17 SCAFFOLDING

- .1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797 and B.C. Occupational Health and Safety Regulations.

1.18 POWDER-ACTUATED DEVICES

- .1 Use powder-actuated devices in accordance with ANSI A10.3 only after receipt of written permission from the Departmental Representative.

1.19 FIRE SAFETY AND HOT WORK

- .1 Obtain Departmental Representative's authorization before any hot work operations can be carried out on site.
- .2 Hot work includes cutting/melting with use of torch, or other open flame devices and grinding with equipment which produces sparks.

1.20 FIRE SAFETY REQUIREMENTS

- .1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code.

1.21 FIRE PROTECTION AND ALARM SYSTEM

- .1 Fire protection and alarm systems shall not be:
 - .1 Obstructed.
 - .2 Shut off.
 - .3 Left inactive at the end of a working day or shift.
- .2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

- .3 Be responsible / liable for costs incurred from the fire department, Departmental Representative resulting from false alarms.

1.22 UNFORESEEN HAZARDS

- .1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

1.23 POSTED DOCUMENTS

- .1 Post legible versions of the following documents on site:
 - .1 Health and Safety Plan.
 - .2 Sequence of work.
 - .3 Emergency procedures.
 - .4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
 - .5 Notice of Project.
 - .6 Site plans.
 - .7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
 - .8 Workplace Hazardous Materials Information System (WHMIS) documents.
 - .9 Safety Data Sheets (SDS).
 - .10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
- .2 Post all Safety Data Sheets (SDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.
- .3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

1.24 MEETINGS

- .1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

1.25 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.
- .3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

2 PRODUCTS

2.01 NOT USED

.1 Not used.

3 EXECUTION

3.01 NOT USED

.1 Not used.

END OF SECTION

1 GENERAL

1.01 REFERENCES

.1 Definitions:

- .1 Environmental Pollution and Damage:** presence of chemical, Physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection:** prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.02 FIRES

- .1 Fires and burning of rubbish on site not permitted.**

1.03 DRAINAGE

- .1 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.**
- .2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.**
- .3 Contractor to provide temporary re-routing of rain water leaders to surface drainage systems during remediation work in accordance with Section 01 51 00 – Temporary Utilities.**

1.04 POLLUTION CONTROL

- .1 Control emissions from equipment and plant to local authorities' emission requirements.**
- .2 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.**
 - .1 Provide temporary enclosures where indicated and as directed by Departmental Representative.**

1.05 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations.**
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.**
 - .1 Do not take action until after receipt of written approval by Departmental Representative.**
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.**

- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Waste Management: separate waste materials for recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 05 50 00 – Metal Fabrications.
- .2 Section 07 92 00 – Joint Sealants.
- .3 Section 09 91 13 – Exterior Re-Painting.
- .4 Section 09 96 00 – High Performance Coatings / 09 96 00.01 – High Performance Coatings; Alternative Option #01.

1.02 RECORD OF EXISTING CONDITIONS

- .1 Before project start, photograph project site and existing conditions in accordance with Section 01 11 55 – General Instructions and Section 01 33 00 – Submittal Procedures.

1.03 RECORD OF CONDITIONS DURING CONSTRUCTION

- .1 Before start of work each day, record environmental conditions including temperature, humidity, precipitation and wind.
 - .1 Where environmental conditions outside of acceptable conditions, Contractor to condition area to allow for continuation of work.
 - .2 Contractor to submit weekly reports of conditions and remediation measures to Departmental Representative.

1.04 INSPECTION

- .1 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .2 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .3 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.05 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies for surface preparation and coating application will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Allow inspection/testing agencies access to Work. Cooperate to provide reasonable facilities including man lifts for such access.
- .3 Provide equipment (including man lift with qualified operator) as required for executing inspection and testing by appointed agencies.

- .4 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .5 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

1.06 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.07 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.08 REPORTS

- .1 Submit electronic copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested.

1.09 MOCK-UPS

- .1 Prepare mock-ups as specifically requested in technical Sections for on-site review by applicable parties including Departmental Representative, Contractor, Sub-Contractor, and Independent Inspector for acceptable SSPC-SP surface preparation and coating application.
 - .1 Construct in locations acceptable to Departmental Representative as specified in technical Sections.
 - .2 Allow 2 business days for review of mock-up by all applicable parties.
- .2 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

- .3 Mock-ups may remain as part of Work upon acceptance by the Departmental Representative.
- .4 Mock-ups which have not been accepted are to be removed at Contractor's expense, regardless if mock-up exceeds specified mock-up size.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 REFERENCES

- .1 Canadian Standards Association (CSA) as amended:
 - .1 CAN/CSA Z321-96(R2006), Signs and Symbols for the Occupational Environment.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.03 STORAGE FACILITIES

- .1 Contractor to provide storage space, located where directed by Departmental Representative.

1.04 WATER SUPPLY

- .1 Water supply is available at existing building and may be used for construction purposes at no cost.
 - .1 Hose bib locations to be confirmed by Departmental Representative.

1.05 TEMPORARY DRAINAGE

- .1 Contractor to provide temporary re-routing of existing rain water leaders to surface drainage systems which have been temporarily removed during remediation work.

1.06 HEATING AND VENTILATION OF HOARDED BAYS

- .1 Provide temporary heat and ventilation in enclosed hoarded areas as required to:
 - .1 Facilitate progress of Work in accordance with acceptable environmental conditions as noted in Specifications, inspection reports and coating manufacturer's instructions.
 - .2 Protect Work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .2 Maintain minimum temperatures in remediation areas in accordance with coating manufacturer's written instructions.
- .3 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
 - .4 Ventilate storage spaces containing hazardous or volatile materials.
 - .5 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

- .4 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .5 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.07 POWER AND LIGHT

- .1 Departmental Representative will pay for power during construction for temporary lighting and operating of power tools. Contractor is to provide for connection to existing power to serve requirements. Do not overload existing power supply.
- .2 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Contractor.
- .3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

1.08 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for temporary telephone, fax, data hook up, lines and equipment necessary for own use.

1.09 SANITARY FACILITIES

- .1 Refer to Section 01 52 00 – Construction Facilities.

1.10 SCAFFOLDING

- .1 Construct and maintain scaffolding in rigid, secure and safe manner in accordance with Section 01 52 00 – Construction Facilities.
- .2 Erect scaffolding independent of walls. Remove promptly when no longer required.

1.11 REMOVAL OF TEMPORARY FACILITIES

- .1 Remove temporary facilities from site when directed by the Departmental Representative and as needed to continue remediation work.

1.12 SIGNS AND NOTICES

- .1 Signs and notices for safety and instruction are permitted and shall be in both official languages or graphic symbols conforming to CAN/CSA-Z321.
- .2 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or when directed by Departmental Representative.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED.

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-Z797-09 (R2014), Code of Practice for Access Scaffold.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.03 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Prepare phased hoarding plan indicating proposed dimensions, materials and interface with existing structures and maintained walkways and egress.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use. Reinstate area to same state or better than before start of project.

1.04 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-Z797.
- .2 Provide and maintain scaffolding, ladders, platforms and temporary stairs/ladders.

1.05 HOARDING AND ENCLOSURES

- .1 In accordance with Section 01 56 00 – Temporary Barriers and Enclosures.

1.06 HOISTING

- .1 As required, provide, operate and maintain hoists for construction and cranes for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Lifts, hoists and cranes to be operated by qualified operator.

1.07 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.08 CONSTRUCTION PARKING

- .1 Parking is not permitted on-site.

1.09 SECURITY

- .1 PWGSC not responsible security of Contractor equipment and construction facilities.

1.10 OFFICES

- .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate 14 people for site meetings and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.

1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.12 SANITARY FACILITIES

- .1 Contractor may use public washrooms located north of the SIATIA Canopy area.

1.13 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Refer to Section 01 14 00 – Work Restrictions and Section 01 35 00 – Special Procedures for Traffic Control.

1.14 CLEAN-UP

- .1 In accordance with Section 01 74 11 – Cleaning, remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED.

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-O121-08(R2013), Douglas Fir Plywood.

1.02 INSTALLATION AND REMOVAL

- .1 Prepare and submit hoarding plan indicating proposed dimensions, materials and interface with existing structures and maintained walkways and egress.
- .2 Provide temporary controls in order to execute Work expeditiously.
- .3 Remove from site all such work after use and phased work is completed.

1.03 PEDESTRIAN AND BICYCLE WALKWAYS

- .1 Provide temporary hoarding and lighting to allow for on-going operation of existing pedestrian and bicycle walkways at both PIL and SIA areas as indicated on drawings.
 - .1 Hoarding must include hard surface roof and walls to protect pedestrians from falling tools and work above.

1.04 HOARDING (LANES AND BAYS)

- .1 Erect weather tight enclosure in accordance with phasing over area where photovoltaic panels have been removed to grade level on all four elevations each phased work to protect adjacent bays and areas including PIL booths and vehicular and pedestrian border traffic from elements during Work. Hoarding design to withstand wind pressure.
 - .1 Surround enclosed area with self-supporting 1.8m metal fence at grade level beyond hoarded area.
 - .2 Provide heating, temporary lighting and ventilation as required in accordance with Section 01 51 00 – Temporary Utilities.
 - .3 Protect all fixtures (cameras, mirrors, conduits, and light fixtures) which are not removed during remediation work.
 - .4 Protect all connections for lighting and other fixtures temporarily removed.
 - .5 PIL Lane #8 (Phases 3 & 4) to include overhead suspended hoarding as indicated in order to allow for continued use during closure of adjacent lane.
 - .6 Protect roofs and envelope enclosures to SIA/TIA canopy and PIL booths.
 - .7 SIA Canopy pedestrian screen glazing must be infilled temporarily if glazing removed during remediation work.

1.05 NOISE MITIGATION

- .1 Contractor to retain Acoustical Engineer, licensed to practice in the Province of British Columbia and with five (5) years similar experience to submit Noise Mitigation Plan prior to start of work and provide intermittent monitoring during scheduled noise generating work to ensure compliance.
- .2 Carry out noise generating Work during low volume hours.
 - .1 Low volume hours are typically Monday to Friday 08:00 - 14:00 and 18:00 to 07:00 and to be confirmed by Departmental Representative.
- .3 Decibel levels during work:

1. Not to exceed 85 dBA outside of hoarded areas.
 2. Not to exceed 55 dBA at nearest active PIL booth.
 - .1 Upon review and acceptance by CBSA Personnel and Acoustical Engineer, this may be increased up to 70 dBA if allows for continued safe operational working conditions.
 - .4 Maintain and relocate protection until such work is complete.
 - .5 Protect site from damage by equipment and construction procedures.
- 1.06 GUARD RAILS AND BARRICADES**
- .1 Provide as required by governing authorities.
- 1.07 ACCESS TO SITE**
- .1 Provide and maintain access roads, sidewalk crossings and ramps as may be required for access to Work.
- 1.08 PUBLIC TRAFFIC FLOW**
- .1 Provide and maintain barricades as required to perform Work and protect public.
- 1.09 FIRE ROUTES**
- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.
- 1.10 PROTECTION**
- .1 Protect surrounding areas and finishes from damage during performance of Work.
 - .2 Be responsible for damage incurred.
- 1.11 TURN OVER**
- .1 Contractor to provide two (2) weeks notice to Departmental Representative before proceeding to next phase for closure coordination.
 - .2 Remove and relocate hoarding in accordance with phased project.
 - .3 Be responsible for damage incurred due to lack of or improper protection.
 - .4 Conduct final cleaning in accordance with Section 01 74 11 – Cleaning.
- 2 PRODUCTS**
- 2.01 NOT USED**
- .1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
 - .1 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.02 PRODUCTS, MATERIALS AND EQUIPMENT

- .1 Products, materials, equipment and articles incorporated in Work shall be NEW, not damaged or defective, and of best quality for purpose intended and compatible with the specifications. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Use products of one (1) manufacturer for material and equipment of the same type or classification unless otherwise specified.
- .3 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .4 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions. Departmental Representative will designate which document is to be followed.

1.03 AVAILABILITY

- .1 Review product delivery requirements and identify in Tender Bid of foreseeable supply delays for items. If delays in supply of products are foreseeable, identify in Tender Bid such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 Immediately upon signing Contract, re-review product delivery requirements and confirm foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .3 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, the Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.04 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store and mix coatings in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

1.05 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.

1.06 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, apply, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, for Departmental Representative to establish course of action.
- .3 Improper application, installation or erection of products due to failure in complying with these requirements, authorizes the Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.07 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.08 COORDINATION

- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination.

1.09 REMEDIAL WORK

- .1 Perform remedial work required to correct Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as original materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized (minimum Z275) steel fasteners and washers for securing exterior work, unless stainless steel or other material is specifically requested in affected Specification Section.
 - .1 After fasteners have been installed, protect with weather resistant coating.

1.11 PROTECTION OF EXISTING BUILDING AND WORK IN PROGRESS

- .1 Protect existing building components and finishes from damage. Repair damaged components and finishes according to Departmental Representative's specifications, to better condition.
- .2 Do not alter load bearing structural members without written approval of Departmental Representative.

1.12 CONTRACTOR'S OPTIONS FOR SELECTION OF PRODUCTS FOR TENDERING

- .1 Products are specified by 'Prescriptive' specifications: select any product meeting or exceeding specifications.
- .2 Products specified under "Acceptable Products": select any one of the indicated manufacturers or any other manufacturer meeting or exceeding the Prescriptive specifications and indicated Products.
- .3 Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.
- .4 Products specified to meet particular design requirements or to match existing materials: use only material specified Acceptable Product.
- .5 When products are specified by a referenced standard or by or performance specifications, upon request of Departmental Representative obtain from manufacturer an independent laboratory report showing that the product meets or exceeds the specified requirements at no cost to Departmental Representative.
- .6 Provide cost in bid form for material and system included in bid.

1.13 SUBSTITUTION AFTER CONTRACT AWARD

- .1 No substitutions are permitted without prior written approval of the Departmental Representative.

- .2 Proposals for substitution may only be submitted after Contract award. Such request must include statements of respective costs of items originally specified and the proposed substitution, including cut sheets and technical data.
- .3 Proposals will be considered by the Departmental Representative if:
 - .1 Products selected by tenderer from those specified are not available;
 - .2 Delivery date of products selected from those specified would unduly delay completion of Contract, or
 - .3 Alternative product to that specified, which is brought to the attention of and considered by Departmental Representative as equivalent to the product specified, and will result in a credit to the Contract amount.
- .4 Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as result of substitution.
- .5 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative and the Contract price will be reduced accordingly.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work to on-going operations.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.02 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.03 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during remediation work.
- .2 After uncovering, inspect conditions affecting performance of Work and review existing conditions with Departmental Representative.
- .3 Beginning of work means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work.

1.04 EXECUTION

- .1 Temporarily remove and protect items required to complete Work.
- .2 Prepare mock-ups as indicated in technical specifications.
- .3 Remove and replace defective and non-conforming Work.
- .4 Execute Work by methods to avoid damage to other Work and finishes.

.5 Restore work with new products in accordance with requirements of Contract Documents.

.6 Reinstall temporarily removed items to original locations and fit tight.

1.05 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by CBSA or other Contractors.
- .2 Provide on-site containers for collection of waste materials and debris.
 - .1 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative.
 - .2 Do not burn waste materials on site.
 - .3 Dispose of waste materials and recyclables at authorized facilities off site.
 - .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .3 Broom clean walkways daily. Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .4 Provide adequate ventilation where required during use of volatile or noxious substances.
- .5 Use only cleaning materials as recommended by product manufacturer.
- .6 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly remediated or coated surfaces nor contaminate building systems.

1.02 FINAL CLEANING

- .1 When Work is Substantially Performed and prior to final review, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Clean reinstalled and previously protected items including photovoltaic panels, light fixtures, security mirrors, pedestrian glazing (if removed), digital signage and rainwater leaders, PIL booths and decks. Confirm with Departmental Representative cleaning products to be used.
- .4 Inspect finishes and reinstalled equipment and ensure specified workmanship and operation.
- .5 Remove dirt and other disfiguration from exterior surfaces.
- .6 Ensure PIL booth roofs and vertical surfaces are free from construction debris. Repair damage to as good or better condition.
- .7 Broom clean and wash lanes after each Phase is remediated.

1.03 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 WASTE MANAGEMENT GOALS

- .1 Prior to start of Work, conduct meeting with Departmental Representative to review and discuss PWGSC's Waste Management Plan and Goals.

1.02 DEFINITIONS

- .1 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .2 Recycling: process of sorting, cleaning, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .3 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Returning reusable items including pallets or unused products to vendors.
- .4 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

1.03 MATERIALS SOURCE SEPARATION

- .1 Where local recycling facilities readily available: before project start-up, prepare area and provide separate containers for re-usable and recyclable materials.
 - .1 Locate containers in locations to facilitate deposit of materials without hindering daily operations as directed by Departmental Representative.

1.04 STORAGE, HANDLING AND PROTECTION

- .1 Store materials to be reused in secured location where directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue items to be reused.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect existing structural components from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.

1.05 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, paint thinner, coatings into waterways, storm, or sanitary sewers.
- .3 Remove materials from surface remediation work as Work progresses.

- .4 Use of Owners waste and recycling bins is not permitted.

1.06 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures as approved by Departmental Representative.

1.07 SCHEDULING

- .1 Coordinate Work with other activities at site to ensure timely and orderly progress of Work.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 CLEANING

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work daily as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 07 92 00 – Joint Sealants.
- .2 Section 09 91 13 – Exterior Re-Painting.
- .3 Section 09 96 00 – High Performance Coatings / 09 96 00.01 – High Performance Coatings, Alternative Option #01.

1.02 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor to conduct inspection of Work at completion of each Phase and identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative review.
 - .2 Departmental Representative's review:
 - .1 Departmental Representative and Contractor to review Work at completion of each Phase and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates that tasks have been performed as follows:
 - .1 Work: completed and reviewed for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Work: complete and ready for final review.
 - .4 Final Review:
 - .1 When completion tasks are done, request final review of Work by Departmental Representative.
 - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-review.

1.03 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment in accordance with phased construction.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 ADMINISTRATIVE REQUIREMENTS

- .1 Contractor to turnover lanes and bays to Owner as each phased work is completed with Substantial completion granted at end of project upon completion of all phases.
- .2 Pre-warranty Meeting (End of Project):
 - .1 Convene meeting one week prior to contract completion with contractor's representative and Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Review manufacturer's installation instructions and warranty requirements.
 - .2 Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Three (3) weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, two (2) final hard copies and one electronic copy of operating and maintenance manuals. Substantial completion will not be considered until this submission is completed.
- .3 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.03 OPERATING AND MAINTENANCE MANUALS

- .1 Total performance will not be considered until this submission is complete.
- .2 Binder Format:
 - .1 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
 - .2 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
 - .3 Arrange content by Section numbers and sequence of the Table of Contents according to the contract documents Table of Contents.
 - .1 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment. For each product or system:
 - .2 Text: manufacturer's printed data, or typewritten data.
 - .4 As-Built Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages with drawing number and description visible.

- .3 Contents:
 - .1 Table of Contents (for each volume), provide the following.
 - .1 Title of project.
 - .2 Date of submission
 - .3 Certificate of Substantial Completion.
 - .4 Contractor's 1 year Warranty.
 - .5 Names, addresses, telephone numbers and email addresses of Consultant, Contractor and Sub-Contractors with name of responsible parties.
 - .6 Schedule of products and systems, indexed to content of volume.
 - .1 For each product or system: List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
 - .2 Photographic Report: of before and after conditions in accordance with Section 01 11 55 – General Instructions and Section 01 33 00 – Submittal Procedures.
 - .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
 - .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
 - .5 Typewritten Text: as required to supplement product data.
 - .6 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .4 Documents:
 - .1 Third Party Inspections and Manufacturers' Reports: copies of all inspection and manufacturers' reports where specified in technical sections.
 - .2 As-built contract drawings and shop drawings: record changes in red ink as work progresses legibly mark each item to record actual remediation work, including:
 - .1 Changes made by change orders.
 - .2 Change Orders and other modifications to Contract.
 - .3 Details not on original Contract drawings.
 - .4 References to related shop drawings and modifications.
 - .3 As-built contract specifications: legibly mark each item to record actual 'workmanship of construction', including:
 - .1 Manufacturer, trade name, and catalogue number of each 'Product/Material' actually installed, particularly optional items and substitute items.
 - .2 Changes made by addenda and change orders.
 - .4 Provide daily records of environmental conditions in accordance with Section 01 45 00 – Quality Control.
 - .5 Provide digital photos, if requested, for site records.
 - .6 Total performance will not be considered until this submission is completed.
- .5 Operating and Maintenance Data:
 - .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
 - .2 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - .3 Additional requirements: as specified in individual specifications sections.
- .6 Warranties:

- .1 Provide General Contractor's original signed 1 year warranty and Subcontractor's original warranties with an effective date as of Substantial Completion (upon completion of Phases 1 to 4).
- .2 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each original warranty with index tab sheets keyed in accordance with Specification Table of Contents.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, are notarized and contain full information:
 - .1 Warranty Addressee Name.
 - .2 Project name.
 - .3 Project address.
 - .4 Warranty start date.
 - .5 Warranty period.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties until time specified for submittal.
 - .7 Where project specific warranties are not available from manufacturers (with only generic warranties available), attach a copy of purchase invoice of materials.
- .3 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .4 Conduct joint 9 month warranty inspection, measured from time of acceptance, by Departmental Representative.
- .5 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .6 Written verification to follow oral instructions.
 - .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 REFERENCES

- .1 ASTM International
 - .1 ASTM A 307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .2 ASTM B 209-14, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .3 ASTM F 2329/F2329M-15, Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.
- .2 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Safety Data Sheets (SDS).

1.02 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for fasteners and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details of digital signage support and accessories.
 - .2 Submit signed and sealed shop drawings by a professional engineer registered or licensed in Province of British Columbia for:
 - .1 PIL perforated panel replacement fastening.
 - .2 PIL glulam beam bolt replacement.

1.03 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.04 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, in dry location.
 - .2 Replace defective or damaged materials with new.

2 PRODUCTS

2.01 ALUMINUM DECORATIVE PERFORATED PANELS

- .1 Aluminum sheet: 5005-H14 to ASTM B209.
 - .1 Pattern: perforated, round pattern, perforation size and open area to match existing.
 - .2 Thickness: 3.0mm minimum thickness.
 - .3 Finish: clear anodized aluminum.

2.02 METAL FASTENERS

- .1 Aluminum panel: stainless steel.
- .2 Other Fasteners (bolts, anchor bolts, nuts, washers): galvanized minimum Z275 hot dipped with zinc coating to ASTM F 2329/F2329M.
- .3 Fasteners for dissimilar metals.

2.03 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

2.04 ISOLATION COATING

- .1 Isolate aluminum from following components, by means of bituminous paint.
 - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

3 EXECUTION

3.01 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates remediated under other Sections or Contracts are acceptable for metal fabrications installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.02 ALUMINUM DECORATIVE PERFORATED PANELS

- .1 After steel remediation work complete and inspected, erect panels square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .2 Provide suitable means of anchorage to supporting steel members acceptable to Departmental Representative.
 - .1 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .3 Supply components for work by other trades in accordance with shop drawings and schedule.

3.03 FASTENERS

- .1 Touch-up galvanized surfaces with zinc rich primer and final coating.

3.04 CLEANING

- .1 Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Progress Cleaning: leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

3.05 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION

1 GENERAL

1.01 DESCRIPTION

- .1 PIL Canopy:
 - .1 Glulam Beams and Structural Steel: new sealant application between structural steel and glulam beams and steel interface as indicated.
 - .2 Photovoltaic Panels: new sealant for the reinstallation of removed photovoltaic panels to the PIL canopy to the supporting steel structure.
- .2 SIATIA Canopy:
 - .1 Flashing: new sealant for reinstalled flashing.
 - .2 Pedestrian Screen Glazing: where glazing temporarily removed, new sealant for the reinstallation the pedestrian screen panels to the supporting steel structure.

1.02 RELATED SECTIONS

- .1 Section 09 91 13 – Exterior Re-Painting.
- .2 Section 09 96 00 – High Performance Coatings / 09 96 00.01 – High Performance Coatings, Alternative Option #01.

1.03 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C 920-14a, Standard Specification for Elastomeric Joint Sealants.
 - .2 ASTM C 1184-14, Standard Specification for Structural Silicone Sealants.
 - .3 ASTM C 1248-08(2012), Standard Test Method for Staining of Porous Substrate by Joint Sealants.
 - .4 ASTM E84-15b, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Safety Data Sheets (SDS).
- .4 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.04 SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Provide electronic copies of Workplace Hazardous Materials Information System (WHMIS) - Safety Data Sheets (SDS).
- .4 Closeout Submittals: in accordance with Section 01 78 00 - Closeout Submittals.
 - .1 Warranty:

- .1 Provide manufacturers' standard year warranties as follows:
 - .1 20 year warranty for silicone sealants.
 - .2 10 year warranty for multi-component urethane sealants.
- .2 Provide Installer's warranty as follows:
 - .1 5 year warranty for installation of sealants.
- .3 Warranty is in addition to, and not a limitation of, other rights under Contract Documents.
- .2 Operating & Maintenance Manuals:
 - .1 Submit operating and maintenance data for incorporation into manual and include Manufacturer's product number, product name, colour, type and use.

1.05 QUALITY ASSURANCE/MOCK-UPS

- .1 Installer Qualifications: Installer to have minimum 5 years' experience of joint sealant installation experience on similar type projects.
- .2 Construct mock-up in accordance with Section 01 45 00 - Quality Control after coating Work completed.
 - .1 Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant.
 - .2 Mock-up will be used:
 - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
 - .3 Locate where directed. Allow 2 business days for inspection of mock-up by Departmental Representative before proceeding with sealant work.
 - .4 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work if destructive testing not completed.

1.06 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.07 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate for disposal packaging material in appropriate on-site bins. Place materials defined as hazardous or toxic in designated containers.
 - .1 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.
 - .2 Divert unused joint sealing material from landfill to municipal hazardous material collections facility.
 - .3 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .2 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

1.08 SITE CONDITIONS

- .1 Environmental Limitations:
 - .1 Do not proceed with installation of joint sealants under following conditions:
 - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
 - .2 When joint substrates are wet or dusty.
 - .2 Joint-Width Conditions:
 - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
 - .3 Joint-Substrate Conditions:
 - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.09 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Safety Data Sheets (SDS) acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

2 PRODUCTS

2.01 SEALANT MATERIALS

- .1 Do not use sealants which are not certified as mould resistant.
- .2 Where sealants are qualified with primers use only these primers.
- .3 Use only non-staining sealants.

2.02 SEALANT MATERIAL DESIGNATIONS

- .1 Glulam Beams and Steel:
 - .1 Polysulfide: two part, chemically-cured, elastomeric to ASTM C920, Type M (multi-component), Grade NS (non-sag), Class 25, use NT (non-traffic) and O (other), colour to match steel.
 - .1 Acceptable product:
 - .1 Simpson Strong-Tie.
 - .2 Thiokol.
 - .3 Or pre-approved alternative.
- .2 Flashing:
 - .1 Silicone: one part, high performance, ultra low-modulus, non-sag, moisture cure to ASTM C920, Type S (single component), Grade NS (non-sag), Class 100/50, Use NT (non-traffic) and A (aluminum), ASTM C1248, ASTM E84 and to CAN/CGSB-19.13.

- .1 Acceptable product:
 - .1 Dow Corning.
 - .2 Tremco.
 - .3 Sika Group.
 - .4 Or pre-approved alternative.

- .3 Photovoltaic Panels:
 - .1 Silicone: two part, high performance, high-modulus, non-sag, to ASTM C920, Type M (multi-component), Grade NS (non-sag), Class 25, Grade NT (non-traffic), and G (glass) & A (aluminum) - unless otherwise recommended by photovoltaic panel manufacturer, colour to match existing.
 - .1 Acceptable product:
 - .1 Dow Corning.
 - .2 Tremco.
 - .3 Sika Group.
 - .4 Or pre-approved alternative.

 - .4 Preformed Compressible and Non-Compressible back-up materials.
 - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
 - .1 Extruded closed cell foam backer rod.
 - .2 Size: oversize 30 to 50 %.
 - .2 Bond Breaker Tape.
 - .1 Polyethylene cross-linked butyl, preformed bond breaker tape which will not bond to sealant.

2.03 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

- .2 Primer: as recommended by manufacturer.

3 EXECUTION

3.01 PROTECTION

- .1 Protect installed Work of other trades from staining or contamination.

3.02 SURFACE PREPARATION

- .1 Commence joint sealant installation after final coat of epoxy and polyurethane has cured.

- .2 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

- .3 Clean bonding joint surfaces of harmful matter substances including previous sealants, dust, rust, oil grease, and other matter which may impair Work.

- .4 Ensure joint surfaces are dry and frost free.

- .5 Prepare surfaces in accordance with manufacturer's directions.

3.03 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Where required by manufacturer's instructions, prime sides of joints immediately prior to sealant application.

3.04 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.05 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.06 APPLICATION

- .1 Sealant.
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.
 - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing.
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.
- .3 Cleanup.
 - .1 Clean adjacent surfaces immediately and leave Work neat and clean.
 - .2 Remove excess and droppings, using recommended cleaners as work progresses.
 - .3 Remove masking tape after initial set of sealant.

END OF SECTION

1 GENERAL

1.01 DESCRIPTION

- .1 PIL Canopy: work in this section consists of sanding, staining and polyurethane refinishing of the existing glulam beams.
- .2 SIA Canopy: work in this section consists of polyurethane finish to new wood bench slats.

1.02 RELATED SECTIONS

- .1 Section 07 92 00 – Joint Sealants.

1.03 REFERENCES

- .1 American Society for Testing and Materials International (ASTM):
 - .1 ASTM D522/D522M-13, Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
 - .2 ASTM D3359-09e2, Standard Test Methods for Measuring Adhesion by Tape Test.
 - .3 ASTM G154-12a, Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Safety Data Sheets (SDS).
- .3 The Master Painters Institute (MPI)
 - .1 Maintenance Repainting Manual 2012, Master Painters Institute (MPI), including Identifiers, Evaluation, Systems, Preparation and Approved Product List.
 - .2 Architectural Painting Specification Manual, 2014.
- .4 National Fire Code of Canada.
- .5 Society for Protective Coatings (SSPC):
 - .1 SSPC-PA 2, 2015 – Procedure for Determining Conformance to Dry Coating Thickness Requirements.

1.04 SCHEDULING

- .1 Scheduling of glulam beam recoating to coincide in accordance with phased lanes remediation work schedule so that each bay can be turned over for occupant use after completion as each phase is completed.
- .2 Obtain written authorization from Departmental Representative for changes in work schedule.
- .3 Schedule repainting operations to prevent disruption by other trades and occupants.

1.05 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: submit manufacturer's installation instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.

- .3 Provide electronic copies of Workplace Hazardous Materials Information System (WHMIS) - Safety Data Sheets (SDS).
- .4 Submit details of their proposed work procedures. These details shall clearly describe the equipment and methods used for surface preparation work, masking and hoarding, and coating material application. At least 8 days prior to commencement of production work, the Contractor shall submit details outlining procedures for, product handling, spill contingency plans, and response procedures in the event solvent, paint, or other material spills on property.
 - .1 Submit Noise Mitigation Plan as prepared by Acoustical Engineer. Refer to Section 01 56 00 – Temporary Barriers and Enclosures.
- .5 Closeout Submittals: in accordance with Section 01 78 00 - Closeout Submittals.
 - .1 Warranty:
 - .1 Provide three (3) year coating warranty including labour and materials.
 - .1 Warranty is in addition to, and not a limitation of, other rights under Contract Documents.
 - .2 Operating and Maintenance:
 - .1 Submit operating and maintenance data for incorporation into manual and include following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.
 - .3 Colour numbers.
 - .3 Maintenance Materials:
 - .1 Provide: one (1) leftover unopened can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish system for maintenance use.
 - .2 Package products with protective covering and identify with descriptive labels.
 - .3 Deliver to Departmental Representative, upon completion of the work of this section and store where directed.

1.06 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Contractor & Applicator: to have a minimum of five (5) years proven satisfactory experience. When requested, provide list of last three (3) comparable jobs at least three (3) years old including, job name and location, specifying authority, and project manager.
 - .2 Qualified journeypersons as defined by local jurisdiction to be engaged in painting work
 - .3 Apprentices: may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.
- .2 Conform to latest MPI requirements for exterior repainting work including cleaning, preparation and priming.
- .3 Materials (primers, coatings, varnishes, thinners, and solvents) to be in accordance with the latest edition of the MPI Approved Product List and to be from a single manufacturer for each system used.
- .4 Paint materials such as linseed oil, shellac, and turpentine, to be the highest quality product of an approved manufacturer listed in MPI Painting and Maintenance Repainting Manuals and shall be compatible with other coating materials as required.

- .5 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.
- .6 Mock-up: construct mock-up in accordance with Section 01 45 00 - Quality Control and where directed by Departmental Representative.
 - .1 Prepare mock-up at PIL Lane #01 of first glulam beam adjacent to the Main Facility indicating:
 - .1 Sequential surface preparation (to remove existing coating).
 - .2 Stain application (coats as required to match existing main facility)
 - .3 Two applications of polyurethane coating to MPI Re-Painting Manual standards for review and acceptance.
 - .2 Mock-up will be used to judge workmanship, substrate preparation and material application.
 - .3 Allow 48 hours for review of mock-up by Departmental Representative.
 - .4 Mock-up may remain as part of Work once reviewed and accepted by Departmental Representative. At end of glulam remediation work, finish work at mock-up area.

1.07 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions, supplemented as follows:
 - .1 Deliver and store materials in original containers, sealed, with labels intact.
 - .2 Labels: to indicate:
 - .1 Manufacturer's name and address.
 - .2 Type of paint or coating.
 - .3 Compliance with applicable standard.
 - .4 Colour number in accordance with established colour schedule.
 - .3 Remove damaged, opened and rejected materials from site.
 - .4 Provide and maintain dry, temperature controlled, secure storage.
 - .5 Observe manufacturer's recommendations for storage and handling.
 - .6 Store materials and supplies away from heat generating devices.
 - .7 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.
 - .8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
 - .9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Departmental Representative.
 - .10 Remove paint materials from storage only in quantities required for same day use.
 - .11 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
 - .12 Fire Safety Requirements:
 - .1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.
- .2 Waste Management and Disposal:

- .1 Separate waste materials for reuse, recycling and disposal in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Paint and stain finishes and related materials are hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
- .3 Materials that cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
- .4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground the following procedures shall be strictly adhered to:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
 - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
 - .6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
- .6 Collect waste paint by type and provide for delivery to recycling or collection facility.

1.08 PROJECT/SITE CONDITIONS

- .1 Heating and Ventilation:
 - .1 Ventilate enclosed exterior spaces (where hoarded):
 - .1 Do not perform painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
 - .2 Where required, provide continuous ventilation for seven days after completion of application of paint.
 - .3 Provide temporary ventilating and heating equipment.
- .2 Lighting: perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities to be provided by Contractor.
- .3 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Unless specifically pre-approved by specifying body, Independent Inspector and, applied product manufacturer.
 - .2 Do not perform repainting work where area is not hoarded, climatically uncontrolled and where:
 - .1 Ambient air and substrate temperatures are below 10 degrees C.
 - .2 Substrate temperature is over 32 degrees C unless paint is specifically formulated for application at high temperatures.

- .3 Substrate and ambient air temperatures are expected to fall outside MPI and paint manufacturer's prescribed limits.
- .4 Relative humidity is above 85% or when dew point is less than 3 degrees C variance between air/surface temperature.
- .5 Rain or snow is forecast to occur before paint has thoroughly cured.
- .6 It is foggy, misty, raining or snowing at site.
- .3 Conduct moisture tests using properly calibrated electronic Moisture Meter.
- .4 Do not perform repainting work when maximum moisture content of substrate exceeds 12% for glue laminated beams and wood bench slats.

- .4 Surface and Environmental Conditions:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind conditions are such that airborne particles will affect quality of finished surface.
 - .2 Provide and maintain hoarding and climatic control during curing process.
 - .3 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

2 PRODUCTS

2.01 MATERIALS

- .1 Paint materials listed in latest edition of MPI Approved Product List (APL) are acceptable for use on this project.
- .2 Stain and Coating materials: products of single manufacturer.
- .3 Paints and coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).
- .4 Paints and coatings must not be formulated or manufactured with formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.

2.02 MIXING AND TINTING

- .1 Perform mixing/tinting operations prior to delivery of paint to site unless matching to existing finishes.
- .2 Where thinner is used, addition not to exceed paint manufacturer's recommendations. Do not use kerosene or such organic solvents to thin water-based paints.
- .3 Thin paint for spraying in accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Departmental Representative.
- .4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.03 GLOSS/SHEEN RATINGS

- .1 Paint gloss: defined as sheen rating of applied paint, in accordance with following MPI gloss/sheen standard values:

Gloss Level Category	Unit at 60 Degrees	Units at 85 Degrees
G1 – Matte finish	0 to 5	Maximum 10
G2 – Velvet finish	0 to 10	10 to 35
G3 – Eggshell finish	10 to 25	10 to 35
G4 – Satin finish	20 to 35	Minimum 35
G5 – Semi-gloss finish	35 to 70	
G6 – Gloss finish	70 to 85	
G7 – High Gloss finish	More than 85	

- .2 Gloss level ratings of repainted surfaces as specified.

2.04 EXTERIOR PAINTING SYSTEMS

- .1 REX 6.1J - Glue Laminated Beams:
- .1 Acrylic semi-transparent stain, conforming to MPI 156, tinted to match existing glulam beams on main facility.
 - .2 Two component aliphatic polyurethane, clear, GL-5, conforming to MPI 78.
 - .3 Coating System:
 - .1 Stain: coats as required to match colour of existing exterior glulam beams at main facility.
 - .1 Thickness: 22 - 25 microns dft per coat (total 22 - 50 dft).
 - .2 Polyurethane: 2 coats.
 - .1 Thickness: 50 - 100 microns dft per coat (total 100 – 150 dft).
- .2 EXT 6.2H – Bench Wood Slats:
- .1 Two component aliphatic polyurethane, clear, GL-5, conforming to MPI 78.
 - .2 Polyurethane Coating System: 2 coats
 - .1 Thickness: 50 - 100 microns dft per coat (total 100 – 150 dft).

3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.02 EXAMINATION

- .1 Glulam beam remediation work: inspected by Third Party Inspector acceptable to Departmental Representative. Painting contractor to notify Third Party Inspector and Departmental Representative a minimum of one week prior to commencement of work and provide copy of project documents.
 - .1 Third Party Inspector will notify Departmental Representative in writing of substrate defects or problems, prior to Contractor commencing repainting work (after surface preparation).
- .2 Where an assessed degree of surface degradation exceeds DSD-3 before surface preparation for repainting, Contractor is to notify Departmental Representative for repair direction before further work undertaken.

3.03 PREPARATION

- .1 Perform preparation and operations for exterior painting in accordance with MPI Maintenance Repainting requirements except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.
- .3 Clean and prepare exterior surfaces to be repainted in accordance with MPI Maintenance Repainting Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
 - .1 Sand all surface faces in the direction of the wood grain to completely remove existing coatings in preparation for stain application.
 - .2 Remove dust, dirt, and surface debris by brushing, wiping with dry, clean cloths
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, corrosive chemicals, and solvents before between applications of remaining coats. Touch-up as soon as possible after cleaning and before deterioration occurs.
- .5 Do not apply paint until prepared surfaces have been accepted by Departmental Representative and Third Party Inspector.
- .6 Sand and dust between coats to provide adequate adhesion for next coat and to remove defects from previously painting (e.g. runs, and sags) that are visible from distance up to 1000 mm.

3.04 EXISTING CONDITIONS

- .1 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter and report findings to Departmental Representative. Maximum moisture content not to exceed specified limits. Take photograph of moisture test results.
- .2 No repainting work to commence until such adverse conditions and defects have been corrected and surfaces and conditions are acceptable to painting manufacturer and Inspection Agency.
- .3 Degree of surface deterioration (DSD) to be assessed using MPI Identifiers and Assessment criteria indicated in the MPI Maintenance Repainting Manual. MPI DSD ratings and descriptions are as follows:

Condition	Description	
DSD-0	Sound Surface:	Includes visual aesthetic defects that do not affect film's protective properties.
DSD-1	Slightly Deteriorated Surface:	Indicating fading; gloss reduction, slight surface contamination, minor pin holes and scratches.
DSD-2	Moderately Deteriorated Surface:	Small areas of peeling, flaking, slight cracking and staining.
DSD-3	Severely Deteriorated Surface:	Heavy peeling, flaking, cracking, checking, scratches, scuffs, abrasion, small holes and gouges.
DSD-4	Substrate Damage:	Repair or replacement of surface required.

3.05 PROTECTION

- .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Departmental Representative.

- .2 Protect items that are permanently attached.
- .3 Protect factory finished products and equipment.
- .4 Protect general public and occupants.
- .5 Removal of surface mounted equipment, fittings and fastenings to be done prior to undertaking remediation preparation operations. Store items and re-install after painting is completed.

3.06 APPLICATION

- .1 Apply paint by method that is best suited for substrate being repainted using brush, roller, air sprayer and/or airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
 - .1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
 - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces to be free of roller tracking.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Spray Application:
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Keep paint ingredients properly mixed in containers during paint application either by agitation as frequently necessary and as recommended by manufacturer.
 - .3 Apply paint in uniform layer, with overlapping at edges of spray pattern.
 - .4 Back roll spray applications and brush out runs and sags immediately.
 - .5 Use brushes to work paint into cracks, crevices and places that are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers when no other method is practical in places of difficult access and when specifically authorized by Departmental Representative.
- .5 Apply paint coats in a continuous manner and allow surfaces to dry and cure between coats for minimum time period as recommended by manufacturer. Minimum dry film thickness of coats not less than that recommended by manufacturer and as specified. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Sand and dust between coats to remove visible defects.
- .7 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as projecting ledges.

3.07 FIELD QUALITY CONTROL

- .1 Unless otherwise notified by the Departmental Representative in writing, Independent Inspector shall be responsible for inspection and quality control coating work, in

compliance with standards and procedures established in this specification.

- .2 Advise Departmental Representative and Independent Inspector after surface preparation, and before and after each coating. Do not proceed with subsequent coats until previous coat has been reviewed and accepted.
- .3 Cooperate with Independent Inspector and provide access to areas of work and equipment to allow for inspection.
- .4 Inspect all clean surfaces prior to application of coating in accordance with the following tests and procedures:
 - .1 Pre-surface preparation inspection.
 - .2 Measurement of Environmental Conditions such as Surface Temperature, Relative Humidity, Dew Points.
 - .3 Evaluation of Surface Preparation Equipment.
 - .4 Determination of Surface Preparation Cleanliness.
 - .5 Inspection of Application Equipment.
 - .6 Witnessing Coating Mixing.
 - .7 Record batch numbers and solvents used.
 - .8 Measure Wet Film Thickness.
 - .9 Measure Dry Film Thickness to SSPC PA2 Standard Method.
 - .10 Evaluating Cleanliness between Coats.
 - .11 Photos records of surface preparation and individual coats should accompany written reports.

3.08 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.
- .3 Keep work area free from unnecessary accumulation of tools, equipment, surplus materials and debris.
- .4 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.
- .5 Clean equipment and dispose of wash water used for water borne materials, solvents used for oil based materials as well as cleaning and protective materials (e.g. rags, drop cloths, and masking papers), paints, thinners, paint removers/strippers in accordance with the safety requirements of authorities having jurisdiction and as specified.
- .6 Clean painting equipment in leak-proof containers that will permit particulate matter to settle out and be collected. Sediment remaining from cleaning operations to be disposed of in manner acceptable to authorities having jurisdiction.

3.10 PROTECTION

- .1 Take necessary precautions and provide protection to prevent damage to other property at the site or adjacent thereto, including underside of canopies, walkways, pavements, fixtures, PIL booths and roof membranes, etc.
- .2 Erect and maintain all necessary safeguards for protection of surrounding environment until such time as all the Work is completed and approved by Departmental Representative.

- .3 Protect newly painted surfaces from rain, condensation, contamination, snow and freezing temperatures until the paint is thoroughly dry. Curing periods shall exceed the manufacturer's recommendations.
- .4 Provide a level of containment to ensure there is no overspray damage to adjacent property, structures, vehicles, or pedestrians. All overspray damage shall be corrected at the Contractor's expense to the satisfaction of the Departmental Representative.

3.09 RESTORATION

- .1 Clean and re-fasten conduit and other items temporarily removed to allow work to be completed.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on affected exposed surfaces. Remove smears and spatter immediately as operations progress, using compatible cleaner.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative.
- .5 Install wood slats onto bench supports using galvanized fasteners.
- .6 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

END OF SECTION

1 GENERAL

1.01 DESCRIPTION

- .1 High-performance coating remediation to steel includes for SP-3 power tool surface preparation, 1 coat polyurethane primer encapsulation (2 applications) and 1 coat aliphatic polyurethane enamel (2 applications) of steel:
 - .1 PIL Canopy: existing structural steel members including columns, purlins, beams, members, braces, rods, plates.
 - .2 SIA/TIA Canopy: existing structural steel members including columns, purlins, beams, members, braces, rods, plates, bench supports, SIA pedestrian screen frame (all frame components), SIA fire suppression piping and connections.

1.02 RELATED SECTIONS

- .1 Section 07 92 00 – Joint Sealants.

1.03 REFERENCES

- .1 American Society for Testing and Materials International (ASTM):
 - .1 ASTM B 117-11, Standard Practice for Operating Salt Spray (Fog) Apparatus.
 - .2 ASTM C 411-11, Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
 - .3 ASTM D 522/D522M-13- Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
 - .4 ASTM D 610-08(2012), Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces.
 - .5 ASTM D 714-02(2009) - Standard Test Method for Evaluating Degree of Blistering of Paints.
 - .6 ASTM D 1475-13, Standard Test Method For Density of Liquid Coatings, Inks, and Related Products.
 - .7 ASTM D 1653-13, Standard Test Methods for Water Vapor Transmission of Organic Coating Films.
 - .8 ASTM D 2369-10(2015)e1, Standard Test Method for Volatile Content of Coatings.
 - .9 ASTM D 2486-06(2016), Standard Test Methods for Scrub Resistance of Wall Paints.
 - .10 ASTM D 2794-93(2010) - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
 - .11 ASTM D 3273-16, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
 - .12 ASTM D 3274-09(2013), Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Fungal or Algal Growth, or Soil and Dirt Accumulation.
 - .13 ASTM D 3359-09e2, Standard Test Methods for Measuring Adhesion by Tape Test.
 - .14 ASTM D 3960-05(2013), Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
 - .15 ASTM D 4017-02(2015), Standard Test Method for Water in Paints and Paint Materials by Karl Fischer Method.
 - .16 ASTM D 4060-14 - Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.

- .17 ASTM D 4414-95(2013), Standard Practice for Measurement of Wet Film Thickness by Notch Gages.
- .18 ASTM D 4541-09e1, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
- .19 ASTM D 5894-10, Standard Practice for Cyclic Salt Fog/UV Exposure of Painted Metal, (Alternating Exposures in a Fog/Dry Cabinet and a UV/Condensation Cabinet).
- .20 ASTM D6904-03(2013), Standard Practice for Resistance to Wind-Driven Rain for Exterior Coatings Applied on Masonry.
- .21 ASTM D7088-08, Standard Practice for Resistance to Hydrostatic Pressure for Coatings Used in Below Grade Applications Applied to Masonry.
- .22 ASTM D 7091-13, Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals (SSPC-PA 2).
- .23 ASTM E 84-16, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .24 ASTM E 96 / E96M-16, Standard Test Methods for Water Vapor Transmission of Materials.
- .25 ASTM E 108-17, Standard Test Methods for Fire Tests of Roof Coverings.
- .26 ASTM E 903-12, Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
- .27 ASTM G 85-11, Standard Practice for Modified Salt Spray (Fog) Testing.
- .2 Occupational Safety and Health Administration (OSHA):
 - .1 OSHA 29 CFR, Part 1910 – Occupational Safety and Health Standards.
 - .2 OSHA 29 CFR 1926 – Safety and Health Regulations for Construction.
- .3 Society for Protective Coatings (SSPC):
 - .1 SP-1, 2015 - Solvent Cleaning.
 - .2 SP-3, 2004 – Power Tool Cleaning.
 - .3 VIS 3, 2002 - Visual Standard for Power and Hand Tool Cleaned Steel.
 - .4 SSPC-PA 1, 2004, Shop, Field and Maintenance Painting of Steel.
 - .5 SSPC-PA 2, 2015 – Procedure for Determining Conformance to Dry Coating Thickness Requirements.
 - .6 SSPC-Guide 6, 2015 – Guide for Containing Surface Preparation Debris Generated during Paint Removal Operations.
 - .7 SSPC-Guide 6, 2015 – Guide for Containing Debris Generated during Paint Removal Operations.

1.04 SCHEDULING

- .1 Scheduling of recoating to coincide in accordance with phased bay remediation work schedule so that each PIL and SIA/TIA phase can be turned over for occupant use as each phase is completed.
- .2 Obtain written authorization from Departmental Representative for changes in work schedule.
- .3 Schedule recoating operations to prevent disruption by other trades and occupants.

1.05 DEFINITIONS

- .1 The following definitions shall apply in this standard:

- .1 Coatings: Liquid, powder, or mastic composition that has been converted to a solid, durable, and functional adherent film after application as a thin layer.
- .2 Contractor: The party that furnishes the work and materials for application.
- .3 Manufacturer: The party that manufactures, fabricates, or produces materials or products.

1.06 SUBMITTALS

- .1 Submit details of their proposed work procedures. These details shall clearly describe the equipment and methods used for surface preparation work, masking and hoarding, and coating material application. At least 8 days prior to commencement of production work, the Contractor shall submit details outlining procedures for, product handling, spill contingency plans, and response procedures in the event solvent, paint, or other material spills on property.
 - .1 Submit Noise Mitigation Plan as prepared by Acoustical Engineer. Refer to Section 01 56 00 – Temporary Barriers and Enclosures.
- .2 Provide all necessary documentation as requested by Departmental Representative to meet performance requirements of this specification. Information shall include, but not limited to the following:
 - .1 Samples: duplicate samples of colour and sheen.
 - .1 Submit samples on rigid backing, 200 mm square.
 - .2 Step coats on samples to show each coat required for system.
 - .3 Label each coat of each sample.
 - .4 Label each sample for location and application area.
 - .2 Product Data:
 - .1 Materials list of items proposed to be provided.
 - .2 Manufacturer's Product Data Sheet.
 - .3 Safety Data Sheets (SDS).
- .3 Closeout Submittals: in accordance with Section 01 78 00 - Closeout Submittals.
 - .1 Warranty:
 - .1 Provide applicators five (5) year complete warranty for replacement of materials and application.
 - .1 Warranty is in addition to, and not a limitation of, other rights under Contract Documents.
 - .2 Operating and Maintenance:
 - .1 Submit operating and maintenance data for incorporation into manual and include following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.
 - .3 Colour numbers and applied locations.
 - .3 Maintenance Materials:
 - .1 Package unopened extra products with protective covering and identify with descriptive labels.
 - .2 Deliver to Departmental Representative, upon completion of the work of this section and store where directed.

1.07 QUALITY ASSURANCE

- .1 Quality assurance inspections will be completed by Independent Inspector as appointed by the Departmental Representative to verify that coatings have been applied in accordance with the manufacturer's instructions and applicable standards.

- .2 Be responsible for quality control for all aspects of surface preparation and coatings application. Manufacturer to provide quality assurance inspections to verify that coatings have been applied in accordance with the manufacturer's instructions and applicable standards.
- .3 Qualifications:
 - .1 Manufacturer: to have a minimum of five (5) years' experience in the manufacturing of and providing technical service for protective coating systems equivalent to those specified herein.
 - .1 Single source supply: all products shall be manufactured or approved by use by manufacturer of the system specified herein.
 - .2 Contractor and Applicators: certified applicator by manufacturer and to have minimum of five (5) years' proven satisfactory experience. Provide list of last three (3) comparable jobs including, job name and location, specifying authority, and project manager.
- .4 Mock-up: prepare mock-up at PIL Lane #01 adjacent to the Main Facility as a representative sample of all substrates to be prepared according to the standards set forth in this specification to cover a minimum of 1.5 linear metres of steel indicating:
 - .1 Sequential surface preparation
 - .2 Prime coat (first application).
 - .3 Prime coat (second application).
 - .4 Final coat (first application).
 - .5 Final coat (second application).
 - .2 The standard will remain readily available for reference should there be any disagreement during the entire job.
 - .3 The specified coating system shall be applied to the representative substrates that have been cleaned in accordance with specified standard of surface preparation.
 - .4 The final appearance and thickness of the applied coating should be agreed to by all parties prior to commencement of Work.
 - .5 Mock-up will be used to judge workmanship, substrate preparation and material application.
 - .6 Allow 24 hours for review of mock-up by Departmental Representative.
 - .7 Mock-up may remain as part of Work once reviewed and accepted by Departmental Representative. At end of steel remediation work, finish work at mock-up area.

1.08 DELIVERY, STORAGE AND HANDLING

- .1 Materials and equipment shall be properly containerized, packaged, boxed, and protected to prevent damage during transportation and handling.
 - .1 Transportation/Delivery
 - .1 Delivery shall be pre-arranged by Contractor with coating manufacturer, allowing a minimum of two weeks before application of coating is to begin.
 - .2 Material shall be delivered in the original, factory sealed and unopened containers that include all identifying markings, including labels and batch numbers and date, colour number, affixed to all packaging.
 - .3 Examination and unloading of delivered materials is the sole responsibility of the Contractor.
 - .2 Storage and Protection

- .1 Provide suitable temporary weather tight storage facilities as may be required for materials that will otherwise be damaged by storage in the open.
- .2 Store materials in dry, shaded conditions away from sources of heat and ignitions in accordance with minimum and maximum temperatures required by manufacturer's written instructions. Protect from freezing.
- .3 Maintain SDS reports on all stored materials at project site, make accessible to employees.
- .4 Keep materials sealed until ready for use.
- .5 Do not use materials that exceed manufacturer's stated shelf life.
- .3 Handling
 - .1 Protect materials during handling and application to prevent damage or contamination.
 - .2 Refer to manufacturers SDS sheet for proper safety equipment.
- 4 Waste Management and Disposal
 - .1 The Contractor shall be responsible for clean-up, testing and documentation of all spent abrasives, blasting and general debris generated at project site.
 - .2 Submit to Departmental Representative advanced notification of their proposed plan for storing, handling, and disposal of waste materials at the project site.
 - .3 Job site shall be maintained in a reasonably neat and orderly condition and kept free from accumulations of waste materials and rubbish during the entire construction period.
 - .4 Remove crates, cartons, and other flammable waste materials or trash from the work areas at the end of each working day.
 - .5 All hazardous materials must be disposed of in an approved manner as stated in the "Workers' Compensation Board" reference manual "WHMIS Core Material" and as laid out in the "Occupational Health and Safety Regulations".

1.09 PROJECT/SITE CONDITIONS

- .1 This section is directed toward the environmental control of the coating application area.
- .2 Heating and Ventilation:
 - .1 Ventilate enclosed hoarded spaces:
 - .1 Provide temporary ventilating and heating equipment.
 - .2 Do not perform painting work unless adequate and continuous climatic control and ventilation facilities are in place to maintain ambient air and substrate temperatures in accordance with manufacturer's written instructions before, during and after paint application until coating has cured sufficiently.
 - .3 Where required, provide continuous ventilation for seven days after completion of application of coating.
- .3 Lighting: perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities to be provided by Contractor.
- 4 Environmental Conditions:
 - .1 Do not apply coatings when relative humidity exceeds 85%.
 - .2 The surface temperatures for steel shall be at a minimum of 5 degrees C above the dew point during all phases of surface preparation and coating applications.
 - .3 Do not apply coatings to damp or wet surfaces or in snow, rain, fog or mist.

- .5 Protection of Work
 - .1 Work shall be scheduled as to avoid excessive dust and other airborne deleterious contaminants, during both application and curing of coatings.
 - .2 Work area shall be protected from deleterious contaminants.
 - .3 Care shall be taken by workmen not to mark, soil, or otherwise deface finished surfaces. In the event finished surfaces become defaced, clean and restore such surface to their original conditions at no additional cost to the Departmental Representative.
 - .4 The Contractor shall provide a level of containment to ensure there is no overspray damage to adjacent elements including but not limited to glazing, roof membranes, aluminum panels, etc.

2 PRODUCTS

2.01 DESCRIPTION

- .1 The protective coating system shall consist of one or more products for corrosion protection. The protective coating system shall consist of a penetrating polyurethane primer and aliphatic polyurethane enamel for the steel substrates.
- .2 Coating system shall be supplied by one manufacturer.

2.02 MATERIALS

- .1 Materials for Steel Coating Remediation:
 - .1 Primer: one-part metallic filled moisture-cured, penetrating polyurethane.
 - .1 Performance characteristics:
 - .1 Salt fog resistance: 15,000 hours to ASTM B 117, D 714 and D 610.
 - .2 High temperature surface performance: no warping, cracking, delaminating or colour change to ASTM C 411.
 - .3 Flexibility: to ASTM D 522.
 - .4 Water vapour transmission: to ASTM D 1653.
 - .5 Weathering: 100 hours to ASTM D 2369, D 4017, D 3960 and D 1475.
 - .6 Scrub resistance: to ASTM D 2486.
 - .7 Impact Resistance: to ASTM D 2794.
 - .8 Mildew resistance: to ASTM D 3273 / D 3274.
 - .9 Adhesion and penetration: 18 layers to ASTM D 3359.
 - .10 Abrasion resistance: .06g loss to ASTM D 4060 (encapsulating primer).
 - .11 Pull-off adhesion: 1467 psi to ASTM D 4541.
 - .12 Cyclic salt fog/UV exposure: to ASTM D 5894.
 - .13 Resistance to wind driven rain for exterior coatings: to ASTM D 6904.
 - .14 Resistance to hydrostatic pressure for coatings: to ASTM D 7088.
 - .15 Surface burning characteristics: to ASTM E 84.
 - .16 Flame Spread: to ASTM E 108.
 - .17 Solar reflectance: 44.6% to ASTM E 903.
 - .18 Solar absorption: 55.5% to ASTM E 903.
 - .19 Prohesion over rusted metal: to ASTM G 85.
 - .20 Thickness: as indicated on Schedule of High Performance

- Coating System
- .21 Colour: metallic grey.
- .2 Acceptable product: Rust Grip by Superior Products International or pre-approved alternative.
- .2 Finish Coat: two-part aliphatic polyurethane enamel.
- .1 Performance characteristics:
 - .1 Salt fog resistance: 2000 hours to ASTM B 117.
 - .2 Gloss Retention: to ASTM D 523.
 - .3 Abrasion resistance: .11.8mg loss to ASTM D 4060.
 - .4 Cyclic salt fog/UV exposure: 5000 hours to ASTM D 5894.
 - .5 Resistance to wind driven rain for exterior coatings: to ASTM D6904.
 - .6 Resistance to hydrostatic pressure for coatings: to ASTM D 7088.
 - .7 Surface burning characteristics: to ASTM E 84.
 - .8 Water vapour transmission: -0.6809 to ASTM E 96.
 - .9 Thickness: as indicated on Schedule of High Performance Coating System
- .10 Colour: to match existing.
- .2 Acceptable product: Enamo Grip by Superior Products International or pre-approved alternative

2.03 MIXES

- .1 Mix complete unit in proportions supplied. Once a unit has been mixed it must be used within the pot life as specified by the manufacturer. Mixing and thinning of materials shall be in accordance with manufacturers written instructions.

3 EXECUTION

3.01 EXAMINATION

- .1 Substrates to receive coatings must be sound, proper, and free of defects.
- .2 All surface preparation and coating applications shall be inspected by Independent Inspector and meet performance requirements of specification prior to proceeding to next step in operation.
- .3 Submit to Departmental Representative and manufacturer, on a weekly basis, quality control records detailing the work completed, surface preparation methods, ambient air temperature, relative humidity, structure surface temperature and dew point, coatings used with batch numbers, coating thickness, application method, etc. on inspection sheets as provided by Departmental Representative.
- .4 All conditions that would interfere with performance of coating system, must be reported to Departmental Representative and manufacturer's representative in writing and corrected before continuing with specified Work.

3.02 PREPARATION

- .1 Prepare surfaces in accordance with the criteria below in order to achieve the life expectancy of the specified coating system:

- .1 All surface preparation and cleaning procedures utilized shall be in strict accordance with the paint manufacturer's recommendations as approved by manufacturer and manufacturer's representative.
 - .2 Supply all necessary air compressors, and all other tools required to carry out the accepted work efficiently.
 - .3 Remove existing items not scheduled to receive paint; or provide surface applied protection prior to surface preparation and painting operations.
 - .4 Clean each surface to be painted prior to applying paint or surface treatment.
 - .5 Remove oil and grease with clean cloths and cleaning solvent of low toxicity and flash point in excess of 93 degrees C, prior to start of mechanical cleaning. The use of an emulsifying degreaser is acceptable. Paint only clean dry, properly prepared surfaces.
 - .6 Schedule the cleaning and painting so that dust, paint overspray, and other contaminants from the cleaning process will not fall onto wet newly painted surfaces.
 - .7 Cover or plug all piping and appurtenances to prevent grit, sand or other sand blasting debris, paint and overspray from entering.
 - .8 Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.
- .2 Prepare surfaces by:
- .1 Removing all forms of surface contamination, especially oil and moisture.
 - .2 Removing weld spatter and slivers.
 - .3 Repairing all holes or pits greater than 3mm. Contractor to notify Departmental Representative for repair procedures.
 - .4 Remove or grind down all sharp burrs, edges, and weld spatter from all steel that is to be coated
 - .5 The maximum allowable residual salt contamination, as measured with a KTA Scat Kit or equivalent field test method, immediately prior to the application of the first coat is as follows:
 - .1 Eight (8) micrograms per square centimeter (80mg/m²) for atmospheric conditions.
 - .6 Following all applicable safety standards.
 - .7 Call for independent and manufacturer's representative inspection of surface prior to coating application.
- .3 Prepare surfaces in accordance with the following method sequence:
- .1 SSPC-SP1 Solvent Cleaning:
 - .1 Removal of all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants from steel surfaces with solvent, vapor, cleaning compound, alkali, emulsifying agent, or steam.
 - .2 SSPC-SP3 Power Tool Cleaning:
 - .1 Power tool cleaning removes all loose mill scale, loose rust, loose paint, and other loose detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife.
 - .3 SSPC-SP1 Solvent Cleaning:
 - .1 After Power Tool Cleaning, perform SSPC-SP1 Solvent Cleaning to remove any remaining visible contaminants before applying the prime coat.

3.03 APPLICATION

- .1 Apply high-performance coatings according to manufacturer's written instructions (cross-hatch method) and in accordance with SSPC PA 1.
 - .1 Before painting:
 - .1 Surfaces must be free of chlorides. Assess and treat in accordance with manufacturer's written instructions.
 - .2 Surfaces must be completely dry before applying coating product.
 - .2 Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections.
 - .3 Adhere to the following recommendations when applying paint:
 - .1 A coating is not to be pushed beyond its limitations, or be substituted for what is available over what is recommended.
 - .2 Guidelines for product storage and usage must be adhered to. Failure to do so could result in surface anomalies, dry spray, poor film formation, poor adhesion, and premature coating failure.
 - .3 Film thickness is to be uniform, applied at the recommended film thickness per coat, and free of surface imperfections, such as run, sags, holidays, or overspray.
 - .4 Coatings must be allowed to cure before being recoated or placed into service. Drying time requirements recommended by the manufacturer must be followed exactly.
 - .4 After each coating, measure coating thickness with calibrated Nordson Microtest Dry Film Thickness Gauge or equivalent. The contractor shall provide additional coats at no extra cost to meet required dft thickness.

3.04 REPAIR AND RESTORATION

- .1 Check locations for paint which has peeled, bubbled, or cracked and undertake testing for adhesion generally in accordance with ASTM D-3359 Method A or B (ISO 2409) Adhesion by Cross-Cut Tape Test and Cross Hatch respectively. Visible (rust grade 10 per ASTM D610, ISO 4628 Part 3), will be considered a failure of the paint system.
- .2 Repairs where failure observed by preparing the area back to clean substrate, and re-coating with the specified coating system to meet the minimum levels of performance set forth for this project.
- .3 Repairs shall be conducted at no cost.

3.05 REAPPLICATION

- .1 Repair damage to shop applied coatings occurring in storage, erection or installation to standards equal to the project specifications and in accordance with the following:
 - .1 Immediately prior to repairing damaged or unpainted surfaces, and before the specified surface preparation is carried out remove, all grease, oil, dirt, and foreign matter as per SSPC-SP1.
 - .2 Edges of sound remaining coating on the surface shall be feathered by sanding/grinding prior to painting.
 - .3 Gloss paint surfaces shall be sanded or abraded to provide a bond for successive coats.
- .2 The minimum coating requirements for spot coating repairs shall be as follows:
 - .1 Exposed Primer (no corrosion): apply one or more finish coats to restore specified film thickness.

- .2 Primer Damage (no corrosion): clean area to substrate and reapply the specified system.
- .3 Corroded Areas: after cleaning to the original standard of surface cleanliness, reapply specified system.
- .4 Areas to be repaired to be inspected by the coating inspector before, during and after such repairs to confirm compliance with the foregoing and /or the project specifications.

3.06 FIELD QUALITY CONTROL

- .1 Unless otherwise notified by the Departmental Representative in writing, Independent Inspector shall be responsible for inspection and quality control coating work, in compliance with standards and procedures established in this specification.
- .2 Work specified under this contract is subject to inspection at any time by Independent Inspector implementing the Departmental Representative's quality assurance program.
- .3 Allow Independent Inspector to continuously inspect the work and prepare daily inspection and progress reports. All reports shall be submitted weekly to Departmental Representative.
- .4 Inspector shall clearly define on the inspection reports the areas inspected. The inspection reports shall be written so that they clearly relate to identifiable surfaces (i.e., structural steel member locations).
- .5 If test results indicate noncompliance with the specification, the following corrective action will be required of the Contractor:
 - .1 Removal of non-compliant systems or components.
 - .2 Replacing system or components.
 - .3 Responsible for re-testing/inspection costs.
- .6 Inspect all clean surfaces prior to application of coating in accordance with the following tests and procedures:
 - .1 Pre-surface preparation inspection.
 - .2 Measurement of Environmental Conditions such as Surface Temperature, Relative Humidity, Dew Points.
 - .3 Evaluation of Compressor and Surface Preparation Equipment.
 - .4 Determination of Surface Preparation Cleanliness and Surface Profile.
 - .5 Inspection of Application Equipment.
 - .6 Witnessing Coating Mixing.
 - .7 Record batch numbers and solvents used.
 - .8 Measure Wet Film Thickness.
 - .9 Measure Dry Film Thickness to SSPC PA2 Standard Method.
 - .10 Evaluating Cleanliness between Coats.
 - .11 Photos records of surface preparation and individual coats should accompany written reports.
- .7 Manufacturer's representative will also inspect project during work, at completion and within 6 months of completion for coating failures and deficiencies. Contractor to complete all deficiencies as soon as possible and within first year warranty period.

3.07 ADJUSTING

- .1 Adjustments may be made to equipment and operating environment to assure that it is suitable for optimum conditions pertaining to surface preparation and application of coating systems specified herein.

3.08 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

3.09 PROTECTION

- .1 Take necessary precautions and provide necessary protection to prevent damage to other property at the site or adjacent thereto, including underside of canopies (SIA/TIA galvanized metal deck), walkways, pavements, fixtures, glazing (pedestrian screen and PIL booths), roof membranes (PIL booths and TIA lower roofs), etc. Coating cannot be cleaned with water.
- .2 Erect and maintain all necessary safeguards for protection of surrounding environment until such time as all the Work is completed and approved by Departmental Representative.
- .3 Protect newly painted surfaces from rain, condensation, contamination, snow and freezing temperatures until the paint is thoroughly dry. Curing periods shall exceed the manufacturer's recommendations.
- .4 Provide a level of containment to ensure there is no overspray damage to adjacent property, structures, vehicles, or pedestrians. All overspray damage shall be corrected at the Contractor's expense to the satisfaction of the Departmental Representative.

3.10 SCHEDULE OF HIGH PERFORMANCE COATING SYSTEM

- .1 PIL and SIA/TIA Structural Steel (members, beams, braces, purlins, rods, columns, plates, angles, screens) and SIA/TIA Fire Suppression Piping:
 - .1 Surface preparation and sequence.
 - .1 All surfaces to be assessed and treated in accordance with SSPC-SP-1 Solvent Cleaning followed by SSPC-SP-3 Power Tool Cleaning, followed by final SSPC-SP-1 Solvent Cleaning.
 - .2 A sharp, angular surface profile of 2-3 mils (50-75 microns) is recommended.
 - .3 Stripe coat to be applied to all welds, lap joints, plate edges, corners, sharp edges and any other areas where spray application of the overall coating system may prove difficult resulting in low dry film thickness.

#	Coat Type	Product	DFT (microns)
1	Full Coat – 1st	One-part polyurethane, metallic-pigmented, moisture cured.	51
	Stripe Coat	One-part polyurethane, metallic-pigmented, moisture cured.	51
	Full Coat – 2nd	One-part polyurethane, metallic-pigmented, moisture cured.	51
2	Full Coat – 1st	Two-part solvent based polyurethane enamel.	49
	Full Coat – 2nd	Two-part solvent based polyurethane enamel.	49
Total			251

3.11 RESTORATION

- .1 Clean and reinstall items temporarily removed to allow work to be completed.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on affected exposed surfaces. Remove smears and spatter immediately as operations progress, using compatible cleaner. Do not damage adjacent finished surfaces.
- .4 Protect freshly completed surfaces from coat droppings and dust to approval of Departmental Representative.
- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.
- .6 Reinstall all components to original details where temporarily removed during work.

END OF SECTION

1 GENERAL

1.01 DESCRIPTION

- .1 High-performance coating remediation of steel **ALTERNATIVE OPTION #01** includes abrasion blasting SP-6 surface preparation and three coat epoxy coating system as follows:
 - .1 PIL Canopy: existing structural steel members including columns, purlins, beams, members, braces, rods, plates.
 - .2 SIA/TIA Canopy: existing structural steel members including columns, purlins, beams, members, braces, rods, plates, bench supports, SIA pedestrian screen frame (all frame components), SIA fire suppression piping and connections.

1.02 RELATED SECTIONS

- .1 Section 07 92 00 – Joint Sealants.

1.03 REFERENCES

- .1 American Society for Testing and Materials International (ASTM):
 - .1 ASTM A 325-14, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - .2 ASTM B 117-11, Standard Practice for Operating Salt Spray (Fog) Apparatus.
 - .3 ASTM D 522/D522M-13- Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
 - .4 ASTM D 610-08(2012), Standard Practice for Evaluating Degree of Rusting on Painted Steel Surfaces.
 - .5 ASTM D 660-93(2011) - Standard Test Method for Evaluating Degree of Checking of Exterior Paints.
 - .6 ASTM D 661-93(2011) - Standard Test Method for Evaluating Degree of Cracking of Exterior Paints.
 - .7 ASTM D 714-02(2009) - Standard Test Method for Evaluating Degree of Blistering of Paints.
 - .8 ASTM D 1653-13, Standard Test Methods for Water Vapor Transmission of Organic Coating Films.
 - .9 ASTM D 1654-08, Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
 - .10 ASTM D 2485-91(2013), Standard Test Methods for Evaluating Coatings For High Temperature Service.
 - .11 ASTM D 2794-93(2010) - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
 - .12 ASTM D 3359-09e2, Standard Test Methods for Measuring Adhesion by Tape Test.
 - .13 ASTM D 3363-05(2011)e2 - Standard Test Method for Film Hardness by Pencil.
 - .14 ASTM D 4060-14 - Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
 - .15 ASTM D 4417-14- Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel.
 - .16 ASTM D 4541-09e1, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
 - .17 ASTM D 4585/D4585M-13, Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation.

- .18 ASTM D 4587-11, Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings.
- .19 ASTM D 5894-10, Standard Practice for Cyclic Salt Fog/UV Exposure of Painted Metal, (Alternating Exposures in a Fog/Dry Cabinet and a UV/Condensation Cabinet).
- .20 ASTM D 7091-13, Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals (SSPC-PA 2).
- .2 Master Painters Institute (MPI).
 - .1 Architectural Painting Specification Manual – September 2014.
- .3 National Association of Corrosion Engineers (NACE Commercial):
 - .1 NACE 3 Commercial Blast Cleaning.
- .4 Society for Protective Coatings (SSPC):
 - .1 SP-1, 2015 - Solvent Cleaning.
 - .2 SP-6, 2007 - Commercial Blast Cleaning.
 - .3 VIS 1, 2002 - Visual Standard for Abrasive Blast Cleaned Steel.
 - .4 SSPC-PA 1, 2004, Shop, Field and Maintenance Painting of Steel.
 - .5 SSPC-PA 2, 2015 – Procedure for Determining Conformance to Dry Coating Thickness Requirements.
 - .6 SSPC-Guide 6, 2015 – Guide for Containing Surface Preparation Debris Generated during Paint Removal Operations.
 - .7 SSPC-Guide 12.00, 2007 – Guide to Zinc-Rich Coating Systems.

1.04 SCHEDULING

- .1 Scheduling of recoating to coincide in accordance with phased bay remediation work schedule so that each PIL and SIA/TIA phase can be turned over for occupant use as each phase is completed.
- .2 Obtain written authorization from Departmental Representative for changes in work schedule.
- .3 Schedule recoating operations to prevent disruption by other trades and occupants.

1.05 DEFINITIONS

- .1 The following definitions shall apply in this standard:
 - .1 Coatings: Liquid, powder, or mastic composition that has been converted to a solid, durable, and functional adherent film after application as a thin layer.
 - .2 Contractor: The party that furnishes the work and materials for application.
 - .3 Manufacturer: The party that manufactures, fabricates, or produces materials or products.

1.06 SUBMITTALS

- .1 Submit details of their proposed work procedures. These details shall clearly describe the equipment and methods used for surface preparation work, masking and hoarding, and coating material application. At least 8 days prior to commencement of production work, the Contractor shall submit details outlining procedures for, product handling, spill contingency plans, and response procedures in the event solvent, paint, or other material spills on property.
 - .1 Submit Noise Mitigation Plan as prepared by Acoustical Engineer. Refer to Section 01 56 00 – Temporary Barriers and Enclosures.
- .2 Provide all necessary documentation as requested by Departmental Representative to meet performance requirements of this specification. Information shall include, but not limited to the following:
 - .1 Samples: duplicate samples of colour and sheen.
 - .1 Submit samples on rigid backing, 200 mm square.
 - .2 Step coats on samples to show each coat required for system.
 - .3 Label each coat of each sample.
 - .4 Label each sample for location and application area.
 - .2 Product Data:
 - .1 Materials list of items proposed to be provided.
 - .2 Manufacturer's Product Data Sheet.
 - .3 Safety Data Sheets (SDS).
- .3 Closeout Submittals: in accordance with Section 01 78 00 - Closeout Submittals.
 - .1 Warranty:
 - .1 Provide five (5) year complete warranty for replacement of materials and application.
 - .1 Warranty is in addition to, and not a limitation of, other rights under Contract Documents.
 - .2 Operating and Maintenance:
 - .1 Submit operating and maintenance data for incorporation into manual and include following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.
 - .3 Colour numbers and applied locations.
 - .3 Maintenance Materials:
 - .1 Package unopened extra products with protective covering and identify with descriptive labels.
 - .2 Deliver to Departmental Representative, upon completion of the work of this section and store where directed.

1.07 QUALITY ASSURANCE

- .1 Quality assurance inspections will be completed by Independent Inspector as appointed by the Departmental Representative to verify that coatings have been applied in accordance with the manufacturer's instructions and applicable standards.
- .2 Be responsible for quality control for all aspects of surface preparation and coatings application. Manufacturer to provide quality assurance inspections to verify that coatings have been applied in accordance with the manufacturer's instructions and applicable standards.
- .3 Qualifications:

- .1 Manufacturer: to have a minimum of five (5) years' experience in the manufacturing of and providing technical service for protective coating systems equivalent to those specified herein.
 - .1 Single source supply: all products shall be manufactured or approved by use by manufacturer of the system specified herein.
- .2 Contractor and Applicators: to have a minimum of five (5) years' proven satisfactory experience. Provide list of last three (3) comparable jobs including, job name and location, specifying authority, and project manager.
- .4 Mock-up: prepare mock-up at PIL Lane #01 adjacent to the Main Facility as a representative sample of all substrates to be prepared according to the standards set forth in this specification to cover a minimum of 1.5 linear metres of steel indicating:
 - .1 Sequential surface preparation
 - .2 Prime coat.
 - .3 Intermediate coat.
 - .4 Final coat.
- .2 The standard will remain readily available for reference should there be any disagreement during the entire job.
- .3 The specified coating system shall be applied to the representative substrates that have been cleaned in accordance with specified standard of surface preparation.
- .4 The final appearance and thickness of the applied coating should be agreed to by all parties prior to commencement of Work.
- .5 Mock-up will be used to judge workmanship, substrate preparation and material application.
- .6 Allow 24 hours for review of mock-up by Departmental Representative.
- .7 Mock-up may remain as part of Work once reviewed and accepted by Departmental Representative. At end of steel remediation work, finish work at mock-up area.

1.08 DELIVERY, STORAGE AND HANDLING

- .1 Materials and equipment shall be properly containerized, packaged, boxed, and protected to prevent damage during transportation and handling.
 - .1 Transportation/Delivery
 - .1 Delivery shall be pre-arranged by Contractor with coating manufacturer, allowing a minimum of two weeks before application of coating is to begin.
 - .2 Material shall be delivered in the original, factory sealed and unopened containers that include all identifying markings, including labels and batch numbers and date, colour number, affixed to all packaging.
 - .3 Examination and unloading of delivered materials is the sole responsibility of the Contractor.
 - .2 Storage and Protection
 - .1 Provide suitable temporary weather tight storage facilities as may be required for materials that will otherwise be damaged by storage in the open.
 - .2 Store materials in dry, shaded conditions away from sources of heat and ignitions in accordance with minimum and maximum temperatures required by manufacturer's written instructions. Protect from freezing.
 - .3 Maintain SDS reports on all stored materials at project site, make accessible to employees.
 - .4 Keep materials sealed until ready for use.

- .5 Do not use materials that exceed manufacturer's stated shelf life.
- .3 Handling
 - .1 Protect materials during handling and application to prevent damage or contamination.
 - .2 Refer to manufacturers SDS sheet for proper safety equipment.
- .4 Waste Management and Disposal
 - .1 The Contractor shall be responsible for clean-up, testing and documentation of all spent abrasives, blasting and general debris generated at project site.
 - .2 Submit to Departmental Representative advanced notification of their proposed plan for storing, handling, and disposal of waste materials at the project site.
 - .3 Job site shall be maintained in a reasonably neat and orderly condition and kept free from accumulations of waste materials and rubbish during the entire construction period.
 - .4 Remove crates, cartons, and other flammable waste materials or trash from the work areas at the end of each working day.
 - .5 All hazardous materials must be disposed of in an approved manner as stated in the "Workers' Compensation Board" reference manual "WHMIS Core Material" and as laid out in the "Occupational Health and Safety Regulations".

1.09 PROJECT/SITE CONDITIONS

- .1 This section is directed toward the environmental control of the coating application area.
- .2 Heating and Ventilation:
 - .1 Ventilate enclosed hoarded spaces:
 - .1 Provide temporary ventilating and heating equipment.
 - .2 Do not perform painting work unless adequate and continuous climatic control and ventilation facilities are in place to maintain ambient air and substrate temperatures in accordance with manufacturer's written instructions before, during and after paint application until coating has cured sufficiently.
 - .3 Where required, provide continuous ventilation for seven days after completion of application of coating.
- .3 Lighting: perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities to be provided by Contractor.
- .4 Environmental Conditions:
 - .1 Do not apply coatings when relative humidity exceeds 85%.
 - .2 The surface temperatures for steel shall be at a minimum of 3 degrees C above the dew point during all phases of surface preparation and coating applications.
 - .3 Do not apply coatings to damp or wet surfaces or in snow, rain, fog or mist.
- .5 Protection of Work
 - .1 Work shall be scheduled as to avoid excessive dust and other airborne deleterious contaminants, during both application and curing of coatings.
 - .2 Work area shall be protected from deleterious contaminants.
 - .3 Care shall be taken by workmen not to mark, soil, or otherwise deface finished surfaces. In the event finished surfaces become defaced, clean and restore such surface to their original conditions at no additional cost to the Departmental Representative.

- 4 The Contractor shall provide a level of containment to ensure there is no overspray damage to adjacent elements including but not limited to glazing, roof membranes, aluminum panels, etc.

2 PRODUCTS

2.01 DESCRIPTION

- .1 The protective coating system shall consist of one or more products for corrosion protection. The protective coating system shall consist of an organic zinc rich epoxy primer and a phenalkyimine or polyamide epoxy for the steel substrates.
- .2 Coating system shall be supplied by one manufacturer.

2.02 MATERIALS

- .1 Materials for Steel Remediation:
 - .1 Primer: organic zinc epoxy primer in accordance with SSPC Paint 20, Type II (organic) and a minimum zinc dust level by weight in the dry film of 80% to ASTM D520.
 - .1 Performance characteristics:
 - .1 Abrasion resistance: 300 mg loss to ASTM D4060.
 - .2 Adhesion: 1000 psi to ASTM D4541.
 - .3 Dry heat resistance: 149°C to ASTM D2485.
 - .4 Flexibility: 180° bend, 25mm mandrel to ASTM D522.
 - .5 Moisture condensation resistance: 38°C 1500 hours to ASTM D4585.
 - .6 Pencil hardness: 2H to ASTM D3363.
 - .7 Salt fog resistance: 1500 hours to ASTM B117.
 - .8 Slip coefficient: Class A, 0.49 to ASTM A325.
 - .2 Thickness: as indicated on Schedule of High Performance Coating System, colour to match existing.
 - .2 Intermediate and Finish Coat: polyamide or phenalkamine epoxy coating conforming to MPI 120.
 - .1 Performance characteristics:
 - .1 Abrasion resistance: 84 mg loss to ASTM D4060.
 - .2 Accelerated weathering-QUV: QUVA, 12,000 hours to ASTM D4060.
 - .3 Adhesion: 1037 psi to ASTM D4541.
 - .4 Corrosion weathering: ASTM D5894; Rating 10 to D714 (blistering) and Rating 9 to ASTM D610 (rusting).
 - .5 Direct impact resistance: 120 in./lb to ASTM D2794.
 - .6 Dry heat resistance: 121°C to ASTM D2485.
 - .7 Flexibility: 180° bend, 19mm mandrel to ASTM D522.
 - .8 Pencil hardness: 3H to ASTM D3363.
 - .9 Salt fog resistance: 6500 hours to ASTM B117; Rating 10 to D610 (rusting) and Rating 9 to ASTM D1654 (corrosion).
 - .10 Water vapour permeance: 1.16 grains/day to ASTM D1653, Method B.
 - .2 Thickness: as indicated on Schedule of High Performance Coating System, colour to match existing.

2.03 MIXES

- .1 Mix complete unit in proportions supplied. Once a unit has been mixed it must be used within the pot life as specified by the manufacturer. Mixing and thinning of materials shall be in accordance with manufacturers written instructions.

3 EXECUTION

3.01 EXAMINATION

- .1 Substrates to receive coatings must be sound, proper, and free of defects.
- .2 All surface preparation and coating applications shall be inspected by Independent Inspector and meet performance requirements of specification prior to proceeding to next step in operation.
- .3 Submit to Departmental Representative and manufacturer, on a weekly basis, quality control records detailing the work completed, surface preparation methods, ambient air temperature, relative humidity, structure surface temperature and dew point, coatings used with batch numbers, coating thickness, application method, etc. on inspection sheets as provided by Departmental Representative.
- .4 All conditions that would interfere with performance of coating system, must be reported to Departmental Representative and manufacturer in writing and corrected before continuing with specified Work.

3.02 PREPARATION

- .1 Prepare surfaces in accordance with the criteria below in order to achieve the life expectancy of the specified coating system:
 - .1 All surface preparation and cleaning procedures utilized shall be in strict accordance with the paint manufacturer's recommendations as approved by manufacturer.
 - .2 Supply all necessary abrasive blasting equipment, air compressors, and all other tools required to carry out the accepted work efficiently.
 - .3 The compressed, oil free air used for abrasive blasting to be cooled after compression and must not have a higher temperature or humidity than the ambient conditions. A "Blotter Test" to be performed as recommended to confirm that the air is free from oil and excessive moisture.
 - .4 Remove existing items not scheduled to receive paint; or provide surface applied protection prior to surface preparation and painting operations.
 - .5 Clean each surface to be painted prior to applying paint or surface treatment.
 - .6 Remove oil and grease with clean cloths and cleaning solvent of low toxicity and flash point in excess of 93 degrees C, prior to start of mechanical cleaning. The use of an emulsifying degreaser is acceptable. Paint only clean dry, properly prepared surfaces.
 - .7 Schedule the cleaning and painting so that dust, paint overspray, and other contaminants from the cleaning process will not fall onto wet newly painted surfaces.
 - .8 Cover or plug all piping and appurtenances to prevent grit, sand or other sand blasting debris, paint and overspray from entering.
 - .9 Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.
- .2 Prepare surfaces by:

- .1 Removing all forms of surface contamination, especially oil and moisture.
 - .2 Removing spent abrasive by sweeping or vacuuming down surfaces.
 - .3 Removing weld spatter and slivers.
 - .4 Keeping abrasive clean.
 - .5 Applying coatings prior to flash rusting of steel (usually 8 hours or less) after blasting.
 - .6 Selecting sharp angular abrasive of the proper size and hardness in relation to existing steel type and surface profile indicated in Schedule of High Performance Coating System.
 - .7 Repairing all holes or pits greater than 3mm. Contractor to notify Departmental Representative for repair procedures.
 - .8 Remove or grind down all sharp burrs, edges, and weld spatter from all steel that is to be coated. Corners and edges shall be chamfered 1.5mm at a 45° angle minimum or rounded to a 1.5mm radius (3mm diameter) minimum. Abrasive blasting prior to the application of the coating materials shall restore the anchor profile.
 - .9 All substrates are to be vacuumed, swept and blown down with clean, dry air to remove spent abrasive, dust and other foreign material that might interfere with the adhesion of the primer or basecoat.
 - .10 The maximum allowable residual salt contamination, as measured with a KTA Scat Kit or equivalent field test method, immediately prior to the application of the first coat is as follows:
 - .1 Eight (8) micrograms per square centimeter (80mg/m²) for atmospheric conditions.
 - .11 Following all applicable safety standards.
 - .12 Call for independent and manufacturer's representative inspection of surface prior to coating application.
- .3 Prepare surfaces in accordance with the following method sequence:
- .1 SSPC-SP1 Solvent Cleaning:
 - .1 Removal of all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants from steel surfaces with solvent, vapor, cleaning compound, alkali, emulsifying agent, or steam.
 - .2 SSPC-SP6 / NACE 3 Commercial Blast Cleaning:
 - .1 When viewed without magnification, the surface shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products and other foreign matter of at least 66-2/3% of unit area, which shall be a square 3 in. x 3 in. (9 sq. in.). Light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied coating in less than 33-1/3% of the unit area is acceptable.
 - .3 SSPC-SP1 Solvent Cleaning:
 - .1 After Commercial Blast Cleaning, perform SSPC-SP1 Solvent Cleaning to remove any remaining visible contaminants before applying the prime coat.

3.03 APPLICATION

- .1 Apply high-performance coatings according to manufacturer's written instructions and in accordance with SSPC PA 1 Shop, Field, and Maintenance Painting of Steel.
- .2 Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections.

- .3 Adhere to the following recommendations when applying paint:
 - .1 A coating is not to be pushed beyond its limitations, or be substituted for what is available over what is recommended.
 - .2 Guidelines for product storage and usage must be adhered to. Failure to do so could result in surface anomalies, dry spray, poor film formation, poor adhesion, and premature coating failure.
 - .3 Use of brush and roller application typically gives reduced dry film thickness and can require multiple coats to achieve the specified dry film thickness.
 - .4 Film thickness is to be uniform, applied at the recommended film thickness per coat, and free of surface imperfections, such as run, sags, holidays, or overspray.
 - .5 Coatings must be allowed to cure before being recoated or placed into service. Drying time requirements recommended by the manufacturer must be followed exactly.

3.04 REPAIR AND RESTORATION

- .1 Check locations for paint which has peeled, bubbled, or cracked and undertake testing for adhesion generally in accordance with ASTM D-3359 Method A Adhesion by Cross-Cut Tape Test and Cross Hatch respectively. Visible (rust grade 10 per ASTM D610, ISO 4628 Part 3), will be considered a failure of the paint system.
- .2 Repairs where failure observed by preparing the area back to bare clean substrate, and re-coating with the specified coating system to meet the minimum levels of performance set forth for this project.
- .3 Repairs shall be conducted at no cost.

3.05 REAPPLICATION

- .1 Check, both surface cleanliness and coatings application. Areas of coating film defects such as uncured material, inadequate thickness, pinholes, blisters, runs, curtains, gassing, dry spray delamination and foreign or unspecified matter to be corrected immediately by reinstallation of coating system in accordance with manufacturer's instructions.

3.06 FIELD QUALITY CONTROL

- .1 Unless otherwise notified by the Departmental Representative in writing, Independent Inspector shall be responsible for inspection and quality control coating work, in compliance with standards and procedures established in this specification.
- .2 Work specified under this contract is subject to inspection at any time by independent inspectors implementing the Departmental Representative's quality assurance program.
- .3 Allow NACE certified coating inspector to continuously inspect the work and prepare daily inspection and progress reports. All reports shall be submitted weekly to Departmental Representative.
- .4 Inspectors shall clearly define on the inspection reports the areas inspected. The inspection reports shall be written so that they clearly relate to identifiable surfaces (i.e., structural steel member locations).

- .5 If test results indicate noncompliance with the specification, the following corrective action will be required of the Contractor:
 - .1 Removal of non-compliant systems or components.
 - .2 Replacing system or components.
 - .3 Responsible for re-testing costs.

- .6 Inspect all clean surfaces prior to application of coating in accordance with the following tests and procedures:
 - .1 Pre-surface preparation inspection.
 - .2 Measurement of Environmental Conditions such as Surface Temperature, Relative Humidity, Dew Points.
 - .3 Evaluation of Compressor and Surface Preparation Equipment.
 - .4 Determination of Surface Preparation Cleanliness and Surface Profile.
 - .5 Inspection of Application Equipment.
 - .6 Witnessing Coating Mixing.
 - .7 Record batch numbers and solvents used.
 - .8 Measure Wet Film Thickness.
 - .9 Measure Dry Film Thickness to SSPC PA2 Standard Method.
 - .10 Evaluating Cleanliness between Coats.
 - .11 Photos records of surface preparation and individual coats should accompany written reports.

- .7 Manufacturer's representative will also inspect project during work, at completion and within 6 months of completion for coating failures and deficiencies. Contractor to complete all deficiencies as soon as possible and within first year warranty period.

3.07 ADJUSTING

- .1 Adjustments may be made to equipment and operating environment to assure that it is suitable for optimum conditions pertaining to surface preparation and application of coating systems specified herein.

3.08 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

3.09 PROTECTION

- .1 Take necessary precautions and provide necessary protection to prevent damage to other property at the site or adjacent thereto, including underside of canopies (SIA/TIA galvanized metal deck), walkways, pavements, fixtures, glazing (pedestrian screen and PIL booths), roof membranes (PIL booths and TIA lower roofs), etc.
- .2 Erect and maintain all necessary safeguards for protection of surrounding environment until such time as all the Work is completed and approved by Departmental Representative.
- .3 Protect newly painted surfaces from rain, condensation, contamination, snow and freezing temperatures until the paint is thoroughly dry. Curing periods shall exceed the manufacturer's recommendations.

- .4 Provide a level of containment to ensure there is no overspray damage to adjacent property, structures, vehicles, or pedestrians. All overspray damage shall be corrected at the Contractor's expense to the satisfaction of the Departmental Representative.

3.10 SCHEDULE OF HIGH PERFORMANCE COATING SYSTEM

- .1 PIL and SIAT/IA Structural Steel (members, beams, braces, purlins, rods, columns, plates, angles, screens) and SIAT/IA Fire Suppression Piping:
 - .1 Surface preparation and sequence.
 - .1 All surfaces to be assessed and treated in accordance with SSPC-SP-1 Solvent Cleaning followed by abrasive blast clean to SSPC-SP-6 Commercial Blast Cleaning, followed by final SSPC-SP-1 Solvent Cleaning.
 - .1 If oxidation has occurred between blasting and application, the surface should be reblasted to the specified visual standard. Surface defects revealed by the blast cleaning process, should be ground, filled, or treated in the appropriate manner.
 - .2 A sharp, angular surface profile of 40 - 60 microns is required.
 - .2 Stripe coat to be applied to all welds, lap joints, plate edges, corners, sharp edges and any other areas where spray application of the overall coating system may prove difficult resulting in low dry film thickness.

#	Coat Type	Product	DFT (microns)
1	Full Coat	Organic Zinc Rich Epoxy Primer – conforming to SSPC Paint 20 with minimum 80% zinc by weight in the dry film.	75 - 125
2	Full Coat	Polyamide or Phenalkamine High, Build Immersion Grade Epoxy – conforming to MPI 120 High Build Self-Prime Epoxy	100 - 150
	Stripe Coat	Polyamide or Phenalkamine High, Build Immersion Grade Epoxy – conforming to MPI 120 High Build Self-Prime Epoxy	
3	Full Coat	Polyamide or Phenalkamine High, Build Immersion Grade Epoxy – conforming to MPI 120 High Build Self-Prime Epoxy	100 - 150
Total			275 - 425

3.11 RESTORATION

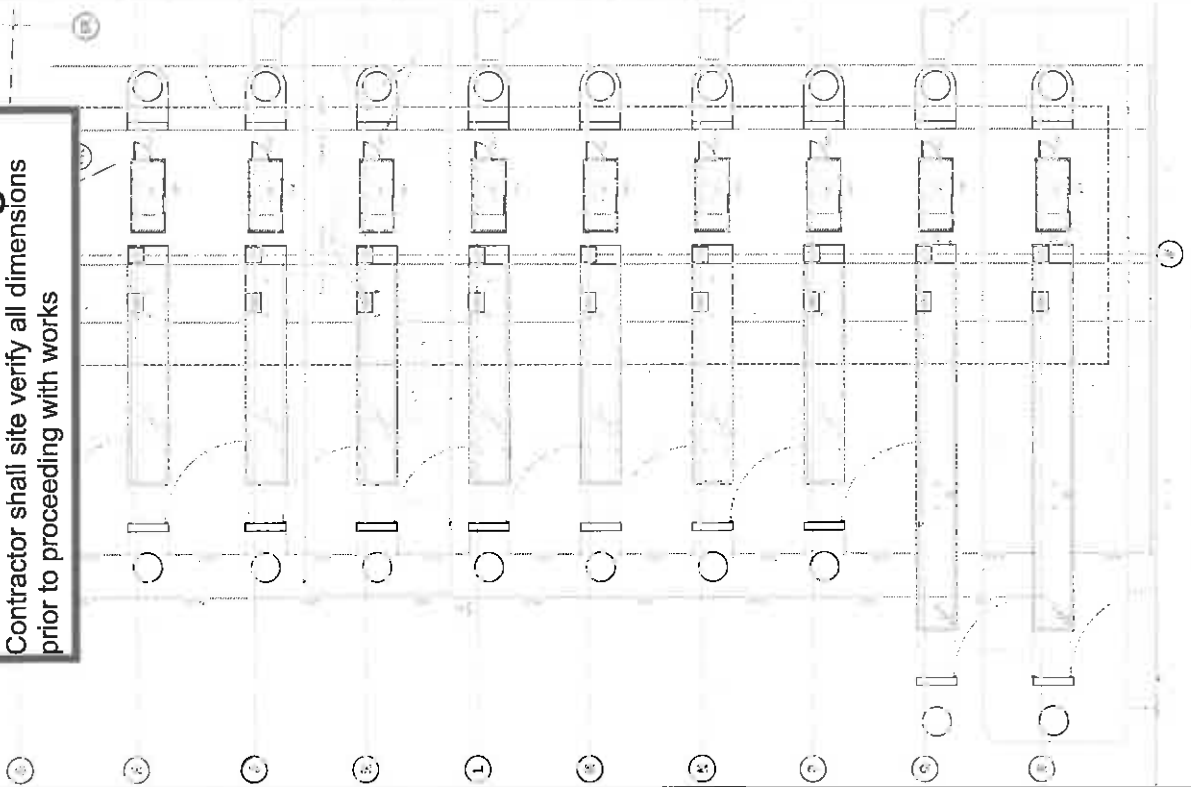
- .1 Clean and reinstall items temporarily removed to allow work to be completed.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on affected exposed surfaces. Remove smears and spatter immediately as operations progress, using compatible cleaner. Do not damage adjacent finished surfaces.

- .4 Protect freshly completed surfaces from coat droppings and dust to approval of Departmental Representative.
- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.
- .6 Reinstall all components to original details where temporarily removed during work.

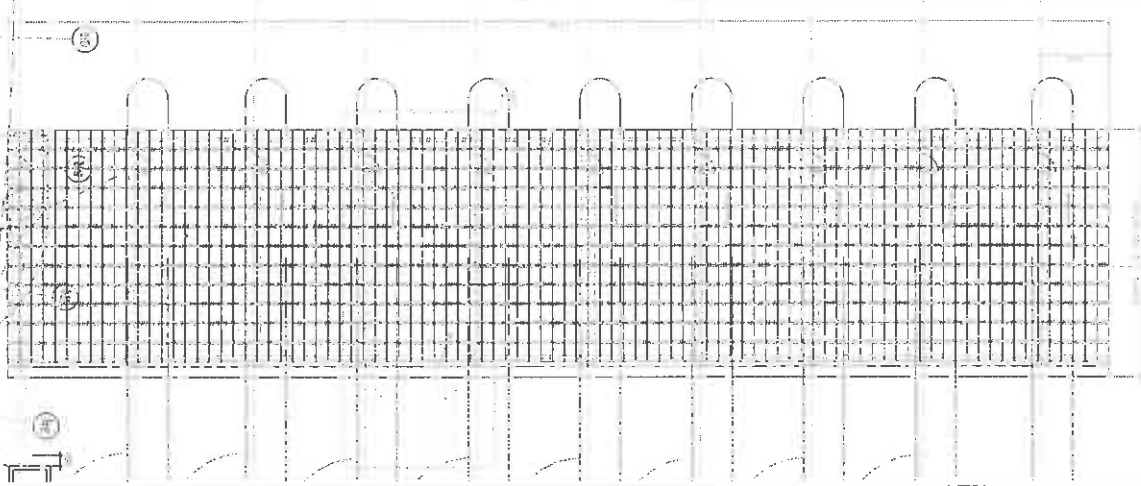
END OF SECTION

APPENDIX A

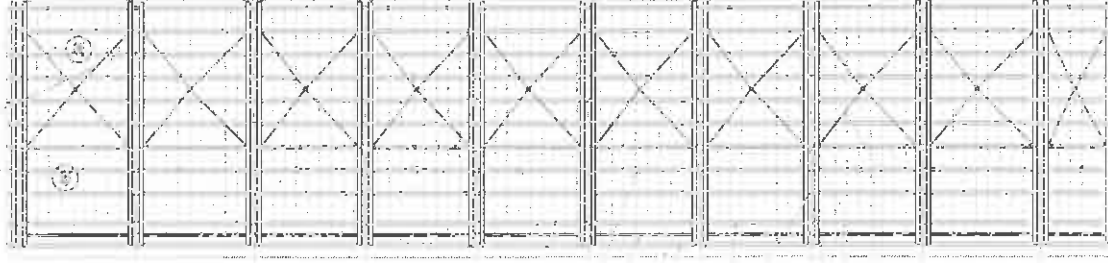
Reference Drawings
 Contractor shall verify all dimensions
 prior to proceeding with works





PRIMARY INSPECTION LINE MAIN PLAN



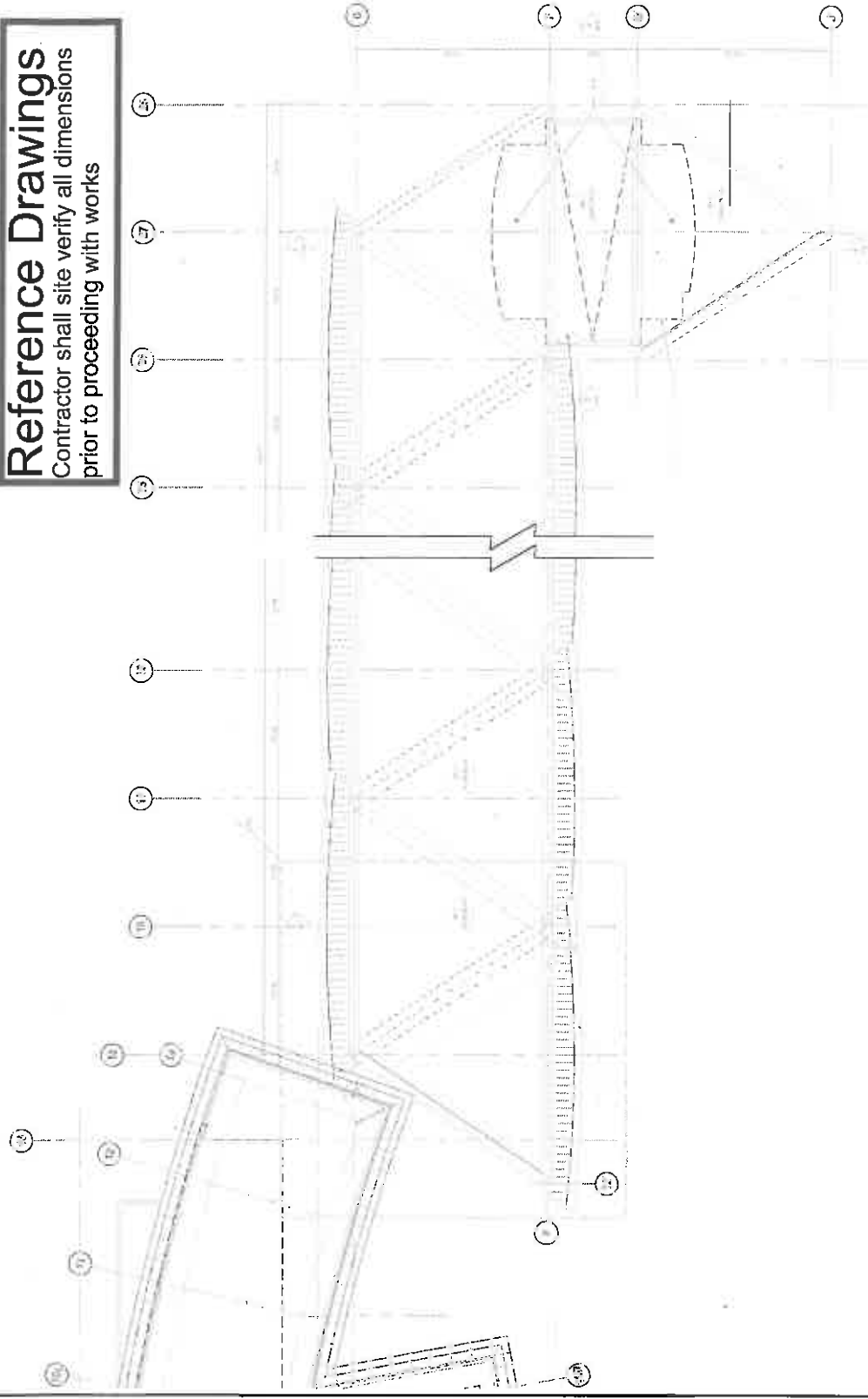
PRIMARY INSPECTION LINE ROOF PLAN



PRIMARY INSPECTION LINE RCP

 <p>ARCHITECTS 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000</p>		<p>BCA PROJECT NO.: 0282</p>	<p>PROJECT: DOUGLAS BORDER CROSSING</p>	<p>PHASE: PHASE 3</p>	<p>CLIENT: PERMANENT FACILITY</p>	<p>DATE: 10/20/2018</p>	<p>SCALE: 1/8" = 1'-0"</p>	<p>PROJECT NUMBER: 847926</p>	<p>DATE: 10/20/2018</p>	<p>BY: [Signature]</p>	<p>PROJECT NO.: A211</p>
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Reference Drawings
 Contractor shall site verify all dimensions
 prior to proceeding with works



1 SECONDARY INSPECTION ROOF PLAN
 SCALE 1:100

2 TERTIARY INSPECTION ROOF PLAN
 SCALE 1:100



ARCHITECTS
 BEA PROJECT NO. 1221



ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
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NO.	DESCRIPTION	DATE
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5	REVISION	
6	REVISION	
7	REVISION	
8	REVISION	
9	REVISION	
10	REVISION	
11	REVISION	
12	REVISION	



DOUGLAS BORDER
 CROSSING
 JAMES HENDERSON
 ENGINEER

PHASE 3
 PERMANENT FACILITY
 SECONDARY
 TERTIARY
 INSPECTION ROOF PLAN

PROJECT NO. B47926
 SHEET NO. A222

BCA PROJECT NO: 0672



ARCHITECTS
 1000 WEST 10TH AVENUE
 SUITE 200
 DENVER, CO 80202
 TEL: (303) 733-8800
 FAX: (303) 733-8801
 WWW: WWW.ABCARCHITECTS.COM



PERMITS: PERMIT NO. 1100101
ISSUE DATE: 03/10/2011
PROJECT: PERMITS FOR THE PERMANENT FACILITY
CLIENT: T. RAYSON
DATE: 03/10/2011
SCALE: AS SHOWN
PROJECT NO.: 0672

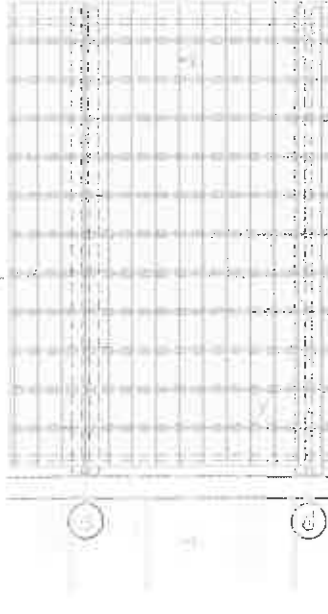
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2	REVISED PERMIT
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DOUGLAS BORDER CROSSING
 1000 WEST 10TH AVENUE
 SUITE 200
 DENVER, CO 80202
 TEL: (303) 733-8800
 FAX: (303) 733-8801
 WWW: WWW.ABCARCHITECTS.COM

PHASE 3
 PERMANENT FACILITY
 PRIMARY
 INSPECTION CAMPIRY
 DETAILS

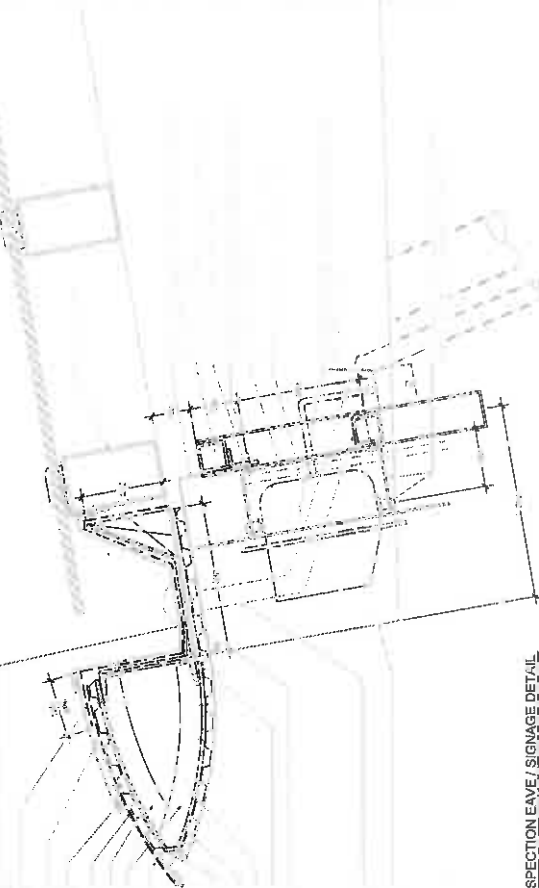
T. RAYSON
 PROJECT NO. 847926
 SHEET NO. 1741



1 TYPICAL PRIMARY INSPECTION LINE ROOF PLAN
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2 PRIMARY INSPECTION GLULAM BEAM (TYP)
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3 PRIMARY INSPECTION EAVE / SIGNAGE DETAIL
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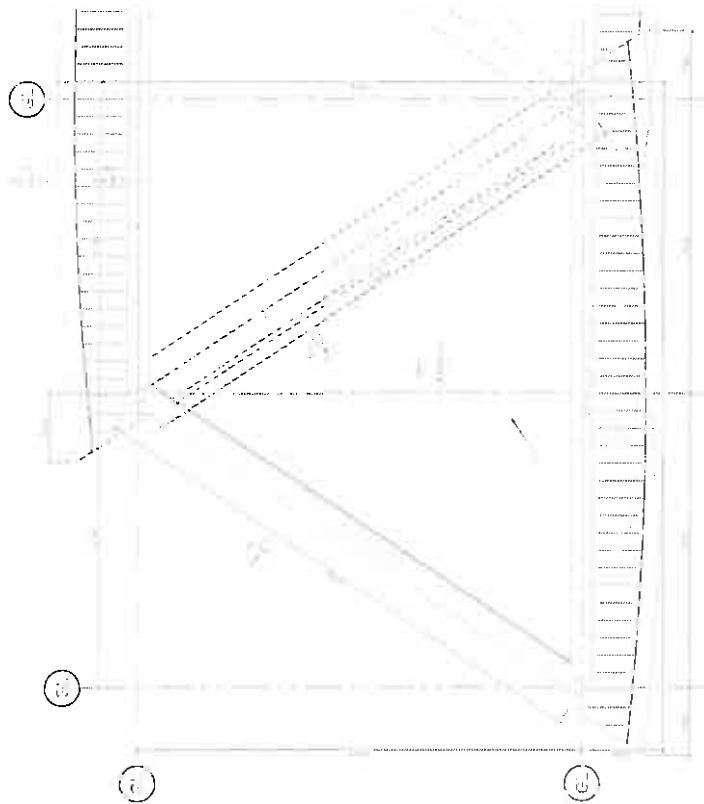
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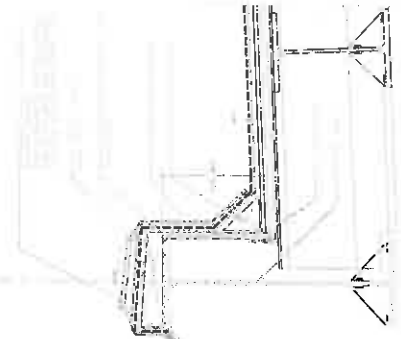
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Reference Drawings
 Contractor shall site verify all dimensions
 prior to proceeding with works

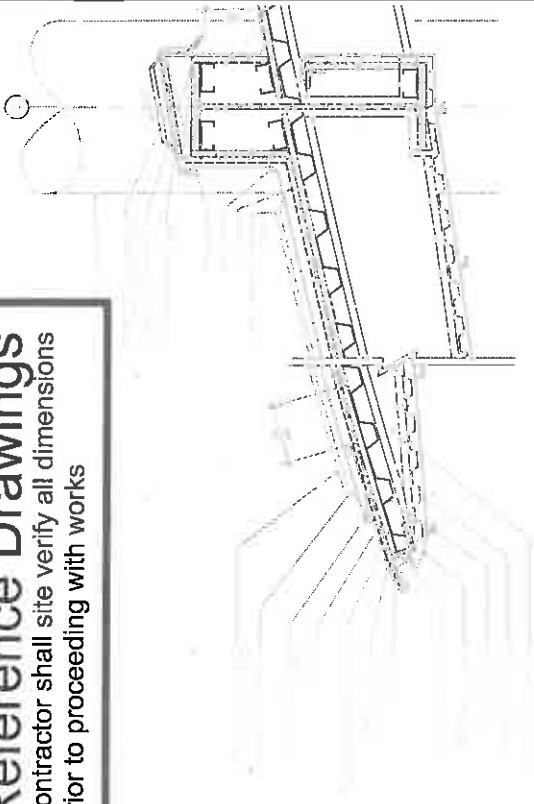
Reference Drawings
 Contractor shall verify all dimensions
 prior to proceeding with works



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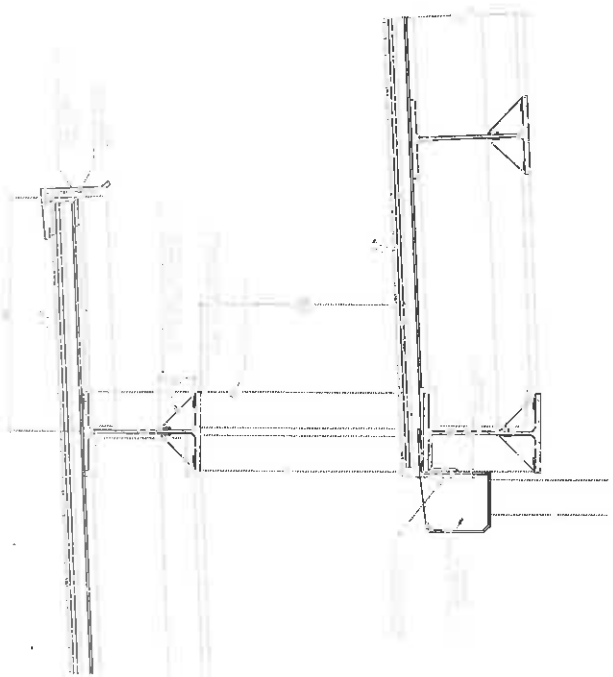


5 SECTION DETAIL-CANOPY PARAPET

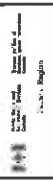


2 LEAF DETAIL

3 PARAPET DETAIL



4 EDGE & GUTTER DETAIL



ARCHITECTS
 H&M ARCHITECTS
 1000 WEST 10TH AVENUE
 SUITE 1000
 DENVER, CO 80202
 TEL: 303.733.1111
 WWW.HMARCHITECTS.COM



BCA PROJECT NO.: 0322

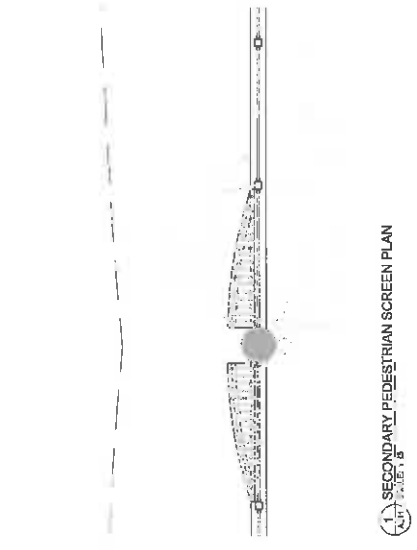
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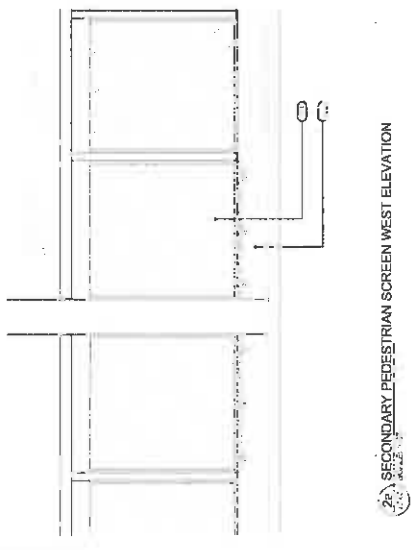
DOUGLAS BORDER CROSSING
 LAND BOUNDARY FACILITY
 DENVER, CO, USA

PHASE 3
 PERMANENT FACILITY
 SECURITY INSPECTION CANOPY
 DETAIL

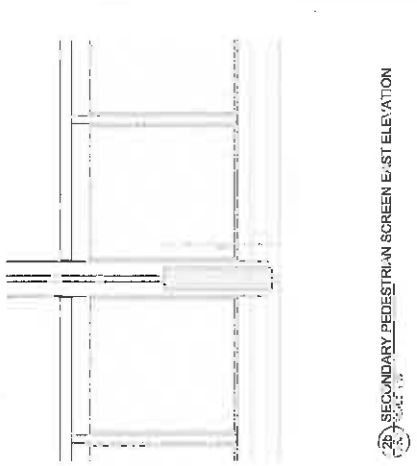
DATE: 10/10/10
 DRAWN BY: J. CHAN
 CHECKED BY: J. CHAN
 PROJECT NO.: 847926
 SHEET NO.: A74



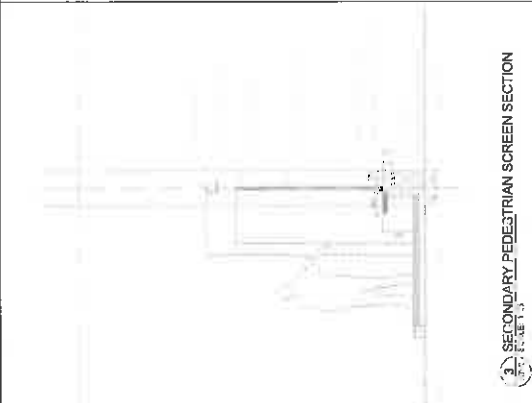
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SCALE: 1/8" = 1'-0"



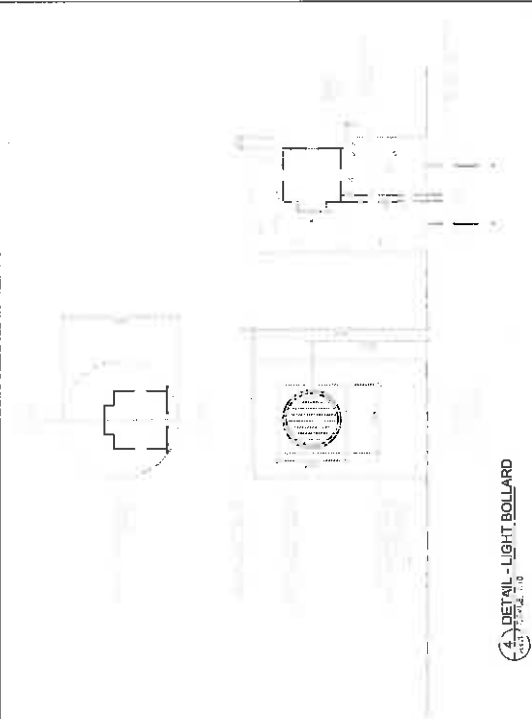
2. SECONDARY PEDESTRIAN SCREEN WEST ELEVATION
SCALE: 1/8" = 1'-0"



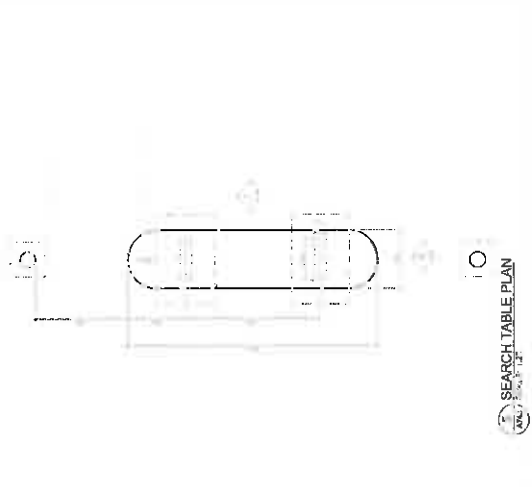
2. SECONDARY PEDESTRIAN SCREEN EAST ELEVATION
SCALE: 1/8" = 1'-0"



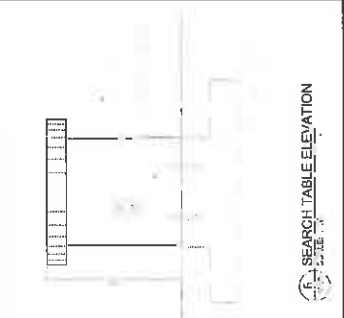
3. SECONDARY PEDESTRIAN SCREEN SECTION
SCALE: 1/8" = 1'-0"



4. DETAIL - LIGHT BOLLARD
SCALE: 1/4" = 1'-0"



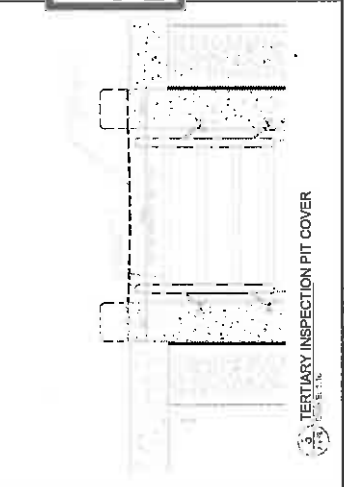
5. SEARCH TABLE PLAN
SCALE: 1/8" = 1'-0"



6. SEARCH TABLE ELEVATION
SCALE: 1/8" = 1'-0"



7. SEARCH TABLE SECTION DETAIL
SCALE: 1/8" = 1'-0"



8. TERTIARY INSPECTION PIT COVER
SCALE: 1/8" = 1'-0"

Reference Drawings
Contractor shall site verify all dimensions prior to proceeding with works

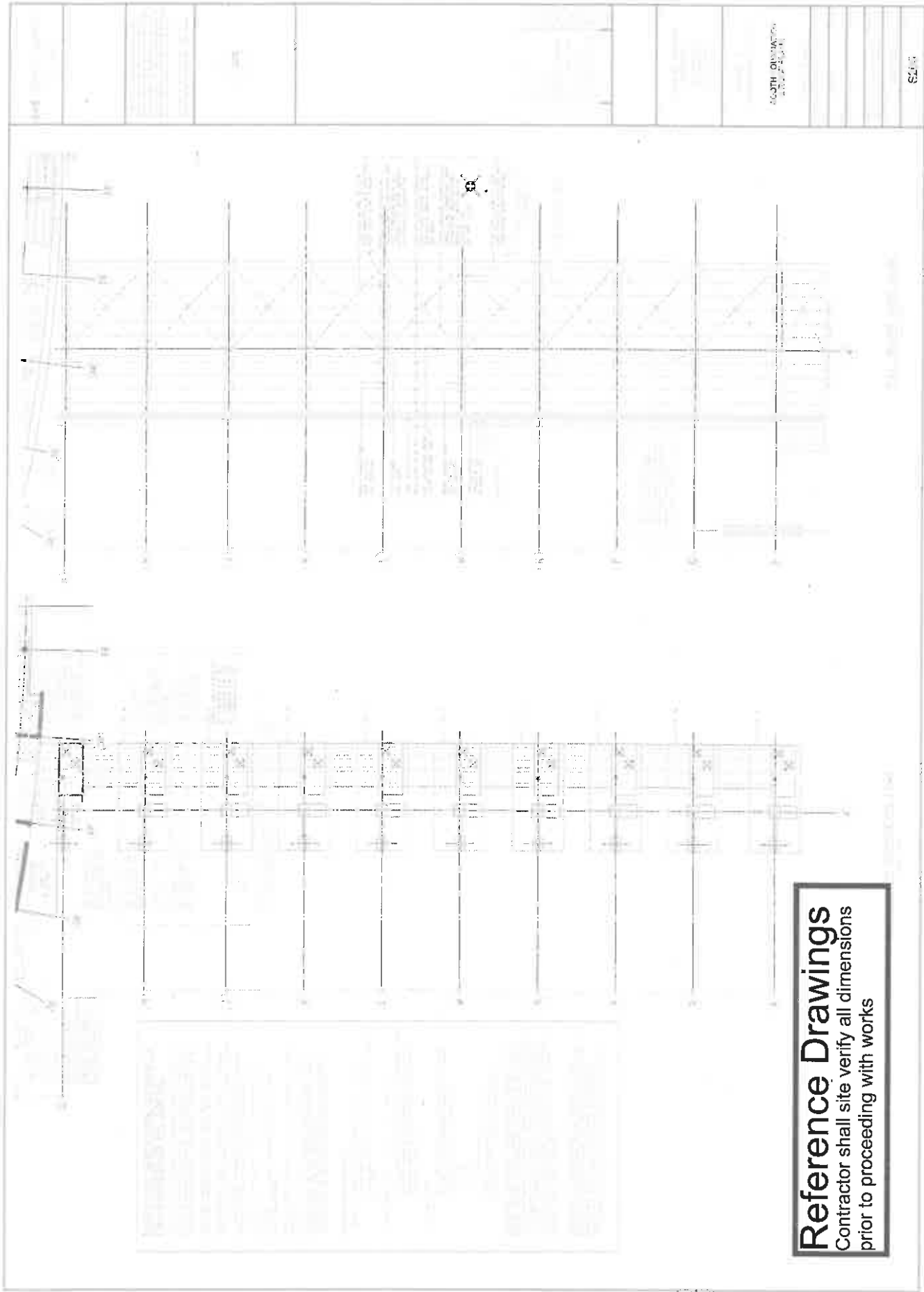
ARCHITECTS
BCA PROJECT NO. 1632

DO NOT SCALE DRAWINGS
ALL DIMENSIONS TO BE AS SHOWN UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS TO BE IN METERS UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS TO BE IN METERS UNLESS OTHERWISE SPECIFIED

NO.	DESCRIPTION	DATE
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2	ISSUE FOR TENDER	10/10/11
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9	ISSUE FOR TENDER	10/10/11
10	ISSUE FOR TENDER	10/10/11

DOUGLAS BORDER CROSSING
PHASE 3
PENALTY FACILITY
SECONDARY & TERTIARY INSPECTION DETAILS

PHASE 3
PENALTY FACILITY
SECONDARY & TERTIARY INSPECTION DETAILS

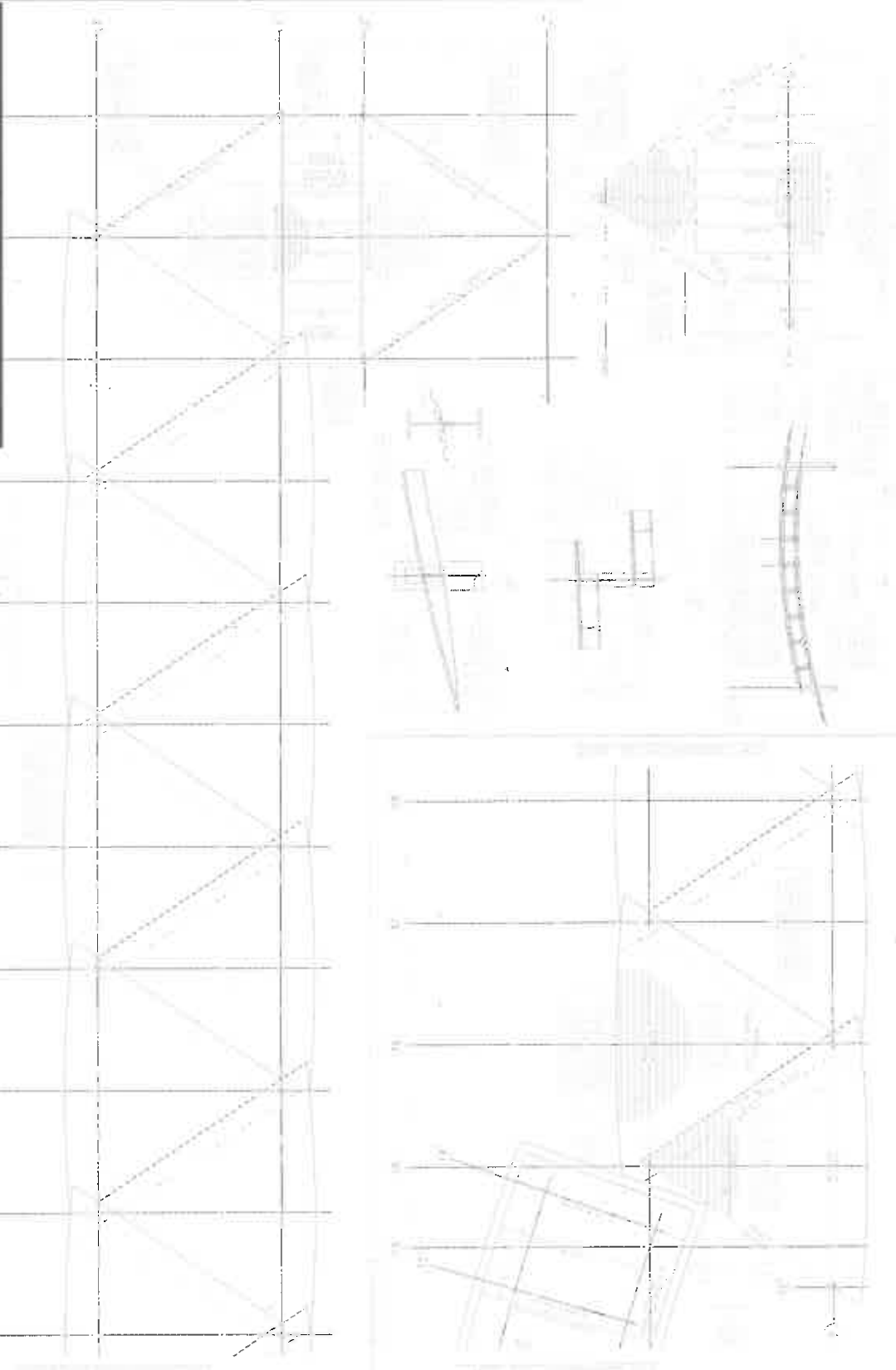


Reference Drawings
 Contractor shall site verify all dimensions
 prior to proceeding with works

ADDITIONAL INFORMATION
 SEE DRAWING

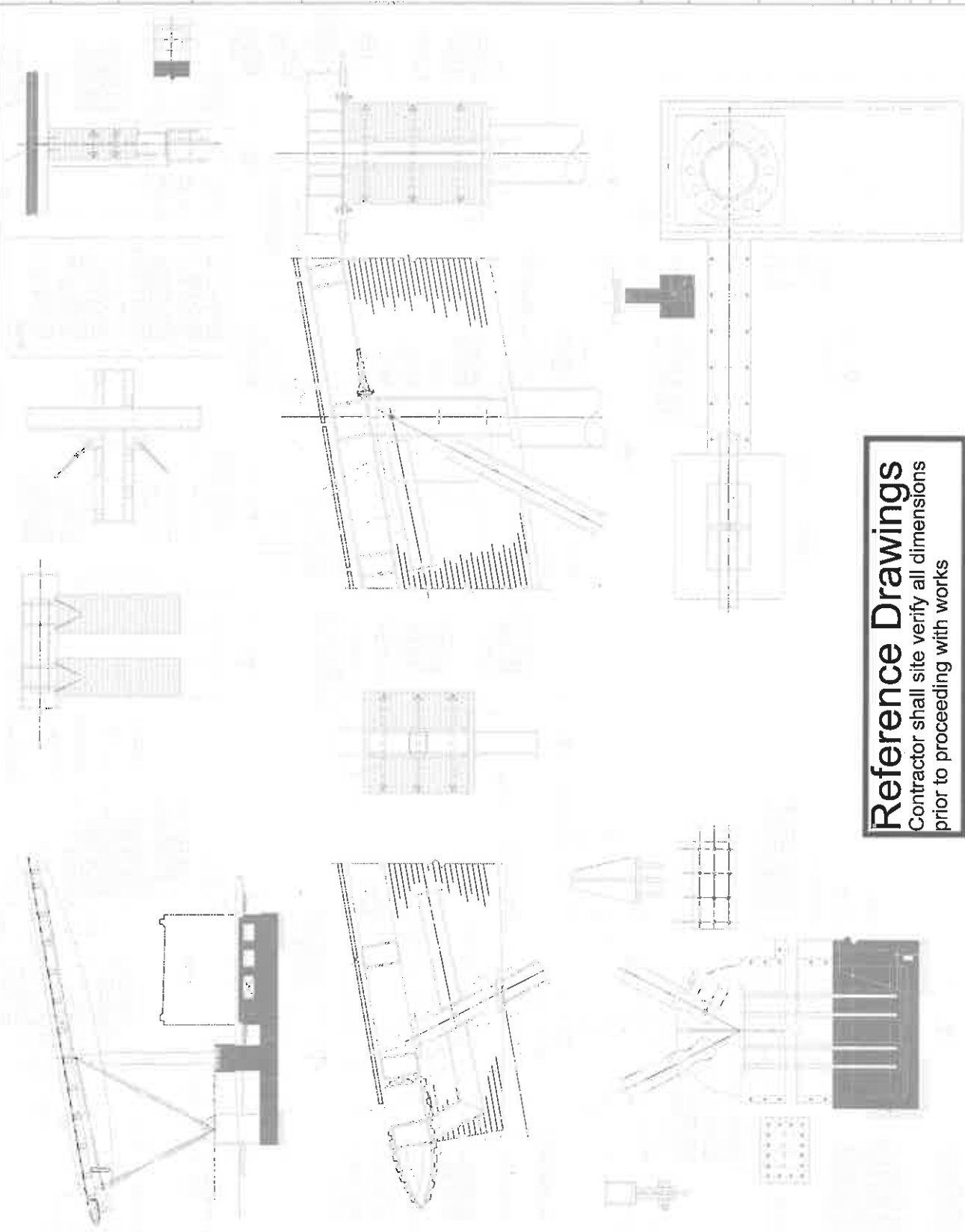
Reference Drawings

Contractor shall site verify all dimensions prior to proceeding with works



SECC SURVIVALS LTD.
TELEPHONE: 01273 811111
WWW.SSECC.CO.UK

Reference Drawings
Contractor shall site verify all dimensions
prior to proceeding with works



SECTION 4.01
BRIDGE

9317