


SPECIFICATION

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

PREPARED FOR
Parks Canada

DATE
May 1, 2016
Revision 2

	PROVINCE OF NEWFOUNDLAND PERMIT HOLDER This Permit Allows AFN ENGINEERING INC.
To practice Professional Engineering in Newfoundland and Labrador. Permit No. as issued by APEGNL <u>F0292</u> which is valid for the year <u>2016</u>	


REGISTERED PROFESSIONAL ENGINEER NEIL C. HUNT <i>Neil C. Hunt</i>
SIGNATURE 05/01/16 DATE
NEWFOUNDLAND & LABRADOR

LIST OF DRAWINGS

Page 1

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

DRAWING NO

TITLE

C1 of 6	Site Plan
C2 of 6	Work Plan - Retail Shop
C3 of 6	Work Plan - Retail Store
C4 of 6	Work Plan - Fish Store
C5 of 6	Work Plan - Salt Store
C6 of 6	Work Plan - Proprietors House

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

<u>Section</u>	<u>Title</u>	<u>Pages</u>
01 10 10	GENERAL INSTRUCTIONS	11
01 33 00	SUBMITTAL PROCEDURES	5
01 35 24	SPECIAL PROCEDURES ON FIRE SAFETY REQUIREMENTS	5
01 35 29	HEALTH AND SAFETY REQUIREMENTS	12
01 35 43	ENVIRONMENTAL PROCEDURES	4
01 50 00	TEMPORARY FACILITIES	1
01 56 00	TEMPORARY BARRIERS AND ENCLOSURES	1
01 74 11	CLEANING	1
01 78 00	CLOSEOUT SUBMITTALS	1
02 41 16	SITWORK, DEMOLITION AND REMOVAL	3
02 83 12	LEAD PAINT ABATEMENT MAXIMUM PRECAUTIONS	8
07 46 23	WOOD SIDING	3
09 91 13	EXTERIOR PAINTING	15

Appendix A: Analytical Data of Paint Samples

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

1.1 SCOPE

- .1 The work consists of the furnishing of all plant, labour, equipment and material for exterior painting of five (5) buildings at the Ryan Premises in Bonavista, NL, in strict accordance with specifications and accompanying drawings and subject to all terms and conditions of the Contract.
- .2 The Contractor must be knowledgeable of understanding historic building restoration and how to conserve the heritage characteristics at the site.
- .3 Buildings are fully operational and Contractor must coordinate construction schedule/painting sequence with Departmental Representative as to minimize disruptions to visitors and impacts to Parks Canada Agency operations.
4. Building repainting to be completed one building at a time, one building face at a time, within an enclosed scaffolding system.
5. Each building face set-up entails preparatory work, repairs, removal/collection of flaking/peeling paint from the existing wood surfaces in accordance with lead abatement guidelines, and repainting of the surface. Execution of works must be within an enclosed scaffolding system.
- .6 Scaffolding system to be under the seal of a professional engineer licensed by PEG-NL.

1.2 DESCRIPTION OF WORK

- .1 In general, work under this contract consists of, but will not necessarily be limited to, the following:
 - .1 Re-painting of the exterior wooden

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

siding, trims, fascia, railings, window/door frames and doors for the Retail Shop, Retail Store, Fish Store, Salt Store and Proprietors House.

.2 Miscellaneous replacement of rotted trims and pillars, as noted on the drawings.

.3 Removal of the siding from the Salt Store and replacement using siding supplied by the Owner. Contractor responsible for painting the Owner supplied siding once it has been installed (by the Contractor).

Do not proceed with any portion of the work until the Departmental Representative has approved the Contractor's written work plan. Note that lead paint is present on the structure and measures will have to be implemented in the Contractor's work plan to limit occupational exposure to lead. Scaffolding used in the work is to bear the stamp of a professional engineer licensed by PEG-NL. Aerial lifts will not be permitted on site (all work to be completed in an enclosed scaffolding system under the seal of a professional engineer, licensed by PEG-NL).

- 1.3 SITE OF WORK .1 Work will be carried out at the Ryan Premises National Historic Site in Bonavista, NL.
- 1.4 DATUM .1 If requested by the Contractor, the Departmental Representative will establish a benchmark prior to the start of work activities.
- 1.5 FAMILIARIZATION WITH SITE .1 Before submitting a bid, it is recommended that bidders visit the site and its

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

surroundings to review and verify the form, nature and extent of the work, materials needed for the completion of the work, the means of access to the site, limitations due to the historic nature of the site, severity, exposure and uncertainty of weather, any accommodations they may require, and in general shall obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid or costs to do the work. No allowance shall be made subsequently in this connection on account of error or negligence to properly observe and determine the conditions that will apply.

.2 Contractors, bidders or those they invite to site are to review specification Section 01 35 29 - Health and Safety Requirements before visiting site. Take all appropriate safety measures for any visit to site, either before or after acceptance of bid.

.3 Obtain prior permission from the Departmental Representative before carrying out such site inspection.

1.6 CODES AND STANDARDS

.1 Perform work in accordance with the latest edition of the National Building Code of Canada, and any other code of provincial or local application including all amendments up to project bid closing date provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

.2 Materials and workmanship must meet or exceed requirements of specified standards, codes and referenced documents.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

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- 1.7 TERM ENGINEER .1 Unless specifically stated otherwise, the term Engineer where used in the Specifications and on the Drawings shall mean the Departmental Representative.
- 1.8 SETTING OUT WORK .1 Set grades and layout work in detail from control points and grades established by Departmental Representative.
- .2 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated or as directed by Departmental Representative.
- .3 Provide devices needed to layout and construct work.
- .4 Supply such devices required to facilitate Departmental Representative's inspection of work.
- .5 Supply stakes and other survey markers required for laying out work.
- 1.9 COST BREAKDOWN .1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price.
- .2 Provide cost breakdown in same format as the numerical and subject title system used in this specification project manual and thereafter sub-divided into major work components as directed by Departmental Representative.
- .3 Upon approval by Departmental Representative, cost breakdown will be used as basis for progress payment.
- .4 This will be a lump sum project. Individual work items will not be measured

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

separately for payment. Prior to initiating work, submit breakdown of lump sum prices for review by the Departmental Representative (include as one of the line items, the unit costs for supply and installation of new siding on the buildings, excluding the Salt Store, where rot may be discovered - see Section 07 46 23).

1.10 WORK SCHEDULE

- .1 Submit within 7 work days of notification of acceptance of bid, a construction schedule showing commencement and completion of all work within the time stated on the Bid and Acceptance Form and the date stated in the bid acceptance letter.
- .2 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .3 As a minimum, work schedule to be prepared and submitted in the form of Bar (GANTT) Charts, indicating work activities, tasks and other project elements, their anticipated durations and planned dates for achieving key activities and major project milestones provided in sufficient details and supported by narratives to demonstrate a reasonable plan for completion of project within designated time. Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
- .4 Submit schedule updates on a minimum bi-weekly basis and more often, when

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

requested by Departmental Representative, due to frequent changing project conditions. Provide a narrative explanation of necessary changes and schedule revisions at each update.

- .5 The schedule, including all updates, shall be to Departmental Representative's approval. Take necessary measures to complete work within approved time. Do not change schedule without Departmental Representative's approval.
- .6 All work on the project will be completed within the time indicated on the Bid and Acceptance Form.

1.11 ABBREVIATIONS

- .1 Following abbreviations of standard specifications have been used in this specification and on the drawings:

CGSB - Canadian Government Specifications Board

CSA - Canadian Standards Association

NLGA - National Lumber Grades Authority

ASTM - American Society for Testing and Materials

- .2 Where these abbreviations and standards are used in this project, latest edition in effect on date of bid call will be considered applicable.

1.12 SITE OPERATIONS

- .1 Arrange for sufficient space adjacent to project site for conduct of operations, storage of materials and so on. Exercise care so as not to obstruct or damage public or private property in area. All arrangements for space and access will be made by Contractor. Consult with the Ryan Premises Historic Site Operator to define specific site requirements related to the historic nature of the property.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

1.13 PROJECT
MEETINGS

- .1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording minutes.
- .2 Project meetings will take place on site of work unless so directed by the Departmental Representative.
- .3 Departmental Representative will assume responsibility for recording minutes of meetings and forwarding copies to all parties present at the meetings.
- .4 Have a responsible member of firm present at all project meetings.

1.14 PROTECTION

- .1 Store all materials and equipment to be incorporated into work to prevent damage by any means.
- .2 Repair or replace all materials damaged in transit or storage to the satisfaction of Departmental Representative and at no cost to Canada.

1.15 EXISTING
SERVICES

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to site operations, and tenant operations.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.
- .3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility.
- .4 Provide temporary services when directed by Departmental Representative to maintain

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

critical facility systems.

1.16 DOCUMENTS
REQUIRED

- .1 Maintain at job site, one copy each of the following:
 - .1 Contract Drawings
 - .2 Specifications
 - .3 Addenda
 - .4 Contract and any resulting amendments signed by contracting authority.
 - .5 Test Reports
 - .6 Copy of Approved Work Schedule
 - .7 Site specific Health and Safety Plan and other safety related documents.

1.17 PERMITS

- .1 Obtain and pay for all permits, certificates and licenses as required by Municipal, Provincial, Federal and other Authorities.
- .2 Provide appropriate notifications of project to municipal and provincial inspection authorities.
- .3 Obtain compliance certificates as prescribed by legislative and regulatory provisions of municipal, provincial and federal authorities as applicable to the performance of work.
- .4 Submit to Departmental Representative, copy of application submissions and approval documents received for above referenced authorities.
- .5 Comply with all requirements, recommendations and advice by all regulatory authorities unless otherwise agreed in writing by Departmental Representative. Make requests for such deviations to these requirements sufficiently in advance of related work.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

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- 1.18 CUTTING,
FITTING AND
PATCHING
- .1 Execute cutting, fitting and patching required to make work fit properly.
- 1.19 ACCEPTANCE
- .1 Prior to the issuance of the Certificate of Substantial Performance, in company with Departmental Representative, make a check of all work. Correct all discrepancies before final inspection and acceptance.
- 1.20 WORKS
COORDINATION
- .1 Responsible for coordinating the work of the various trades, where the work of such trades interfaces with each other.
- .2 Convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required. Provide each trade with the plans and specifications of the interfacing trade, as required, to assist them in planning and carrying out their respective work.
- .3 Canada will not be responsible for or held accountable for any extra costs incurred as a result of the failure to carry out coordination work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor and shall be resolved at no extra cost to Canada.
- 1.21 CONTRACTOR'S
USE OF SITE
- .1 Responsible for arranging the storage of materials on or off site, and any materials stored at the site which interfere with any of the day to day activities at or near the site will be moved promptly at the Contractor's expense, upon request by Departmental

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

Representative.

- .2 Exercise care so as not to obstruct or damage public or private property in the area.
- .3 At completion of work, restore area to its original condition. Damage to ground and property will be repaired by Contractor. Remove all construction materials, residue, excess, etc., and leave site in a condition acceptable to Departmental Representative.

1.22 WORK
COMMENCEMENT

- .1 Mobilization to project site is to commence immediately after acceptance of bid and submission of Site Specific Safety Plan and insurance and bonding documentation, unless otherwise agreed by Departmental Representative.
- .2 Project work on site is to commence as soon as possible, with a continuous reasonable work force, unless otherwise agreed by Departmental Representative.
- .3 Weather conditions, short construction season, delivery challenges and the location of the work site may require the use of longer working days and additional work force to complete the project within the specified completion time.
- .4 Make every effort to ensure that sufficient material and equipment is delivered to site at the earliest possible date after acceptance of bid and replenished as required.

1.23 Endangered
Species

- .1 The site is a potential home to the Little Brown Myotis and Northern Myotis, which are a species of bats classified as Endangered under the Species at Risk Act.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

The Contractor is to note that if they encounter bats in the building infrastructure during work activities, the following is required:

1. Immediately notify the Departmental Representative for directives to be followed.
2. Stop work activities and do not disturb the roost.
3. Do not initiate work activities until the bat vacates the premises. The expected time frame for a male bat to vacate the premises would be in the order of 1-3 days. In the event a maternity roost is discovered (females with pups), the expected time frame for the bats to vacate the premises would be in the order of 1-3 weeks.
4. Departmental Representative will make final decision regarding shut-down times and work return times, as it relates to the discovery of bats in the infrastructure. Note that there will be no additional cost to Canada for downtime associated with the discovery of endangered bats at the site and the subsequent no-work periods established by the Departmental Representative.

1.24 HISTORICAL
SIGNIFICANCE

- .1 The colors are considered character defining elements worthy of preservation; the intention is to use identical historical colors at the origin, or depending on situation, colors that mark the major historical development of the cultural resource's evolution. The colour analysis is appended to these specifications. Departmental Representative will make final decision on colour selections for this project.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

PART 1 - GENERAL

1.1 SECTION
INCLUDES

- .1 Product data.
- .2 Samples.
- .3 Certificates.

1.2 SUBMITTAL
GENERAL REQUIREMENTS

- .1 Submit to Departmental Representative for review submittals listed, including samples, certificates and other data, as specified in other sections of the Specifications. Note that any and all changes to the contract will have to be approved in writing by the Contracting Authority.
- .2 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.
- .3 Do not proceed with work until relevant submissions are reviewed by Departmental Representative.
- .4 Present product data, samples and mock-ups in SI Metric units.
- .5 Where items or information is not produced in SI Metric units, provide soft converted values.
- .6 Review submittals prior to submission to Departmental Representative. Ensure during review that necessary requirements have been determined and verified, required field measurements or data have been taken, and that

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.

.1 Submittals not stamped, signed, dated and identified as to specific project will be returned unexamined by Departmental Representative and considered rejected.

.7 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.8 Verify field measurements and affected adjacent work and coordinate.

.9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.

.11 Submittal format: paper originals, or alternatively clear and fully legible photocopies of originals. Facsimiles are not acceptable, except in special circumstances pre-approved by Departmental Representative. Poorly printed non-legible photocopies or facsimiles will not be accepted and be returned for resubmission.

.12 Make changes or revision to submissions which Departmental Representative may require, consistent with Contract Documents and resubmit as directed by Departmental Representative. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .13 Keep one reviewed copy of each submittal document on site for duration of Work.

1.3 PRODUCT DATA

- .1 Product data includes drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit sufficient copies of product data which are required by the General Contractor and sub-contractors plus 2 copies which will be retained by Departmental Representative. Ensure sufficient numbers are submitted to enable one complete set to be included in each of the maintenance manuals specified, if applicable.
- .3 Allow 10 calendar days for Departmental Representative's review of each submission.
- .4 Adjustments or corrections made on product data by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, advise Departmental Representative in writing prior to proceeding with Work.
- .5 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections and comments are made, fabrication and installation may proceed upon receipt of shop drawings. If product data are rejected and noted to be Resubmitted, do not proceed with that portion of work until resubmission and review of corrected product data, through same submission procedures indicated above.
- .6 Accompany each submission with transmittal letter, containing:

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .1 Date.
- .2 Project title and project number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each product data and sample.
- .5 Other pertinent data.
- .7 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and project 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.
 - .5 Cross references to particular details of contract drawings and specifications section number for which product data submission addresses.
 - .6 Details of appropriate portions of Work.
- .8 After Departmental Representative's review, distribute copies.
- .9 The review of samples and product data by the Departmental Representative or their delegated representative is for sole purpose of ascertaining conformance with general concept. This review shall not mean that the Departmental Representative approves the detail design inherent in the product data, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in product data or of responsibility for meeting all requirements of the construction and Contract Documents. Without restricting generality of foregoing, Contractor is

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.4 SCHEDULES,
PERMITS AND
CERTIFICATES

- .1 Upon acceptance of bid, submit to Departmental Representative copy of Work Schedule and various other schedules, permits, certification documents and project management plans as specified in other sections of the Specifications.
- .2 Submit copy of permits, notices, compliance Certificates received by Regulatory Agencies having jurisdiction and as applicable to the Work.
- .3 Submission of above documents to be in accordance with Submittal General Requirements procedures specified in this section.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- 1.1 SECTION INCLUDES .1 Fire Safety Requirements.
.2 Hot Work Permit.
- 1.2 RELATED WORK .1 Section 01 35 29 - Health and Safety Requirements.
- 1.3 REFERENCES .1 Fire Protection Standards issued by Fire Protection Services of Human Resources Development Canada as follows:
.1 National Fire Code, latest edition.
.2 National Building Code, latest edition.
- 1.4 DEFINITIONS .1 Hot Work defined as:
.1 Welding work.
.2 Cutting of materials by use of torch or other open flame devices.
.3 Grinding with equipment which produces sparks.
- 1.5 SUBMITTALS .1 Submit copy of Hot Work Procedures and sample of Hot Work permit to Departmental Representative for review, within five (5) calendar days after notification of acceptance of bid.
.2 Submit in accordance with the Submittal General Requirements specified in Section 01 33 00.
- 1.6 FIRE SAFETY REQUIREMENTS .1 Implement and follow fire safety measures during Work. Comply with following:
.1 National Fire Code, latest edition.
.2 Fire Protection Standards FCC 301 and FCC 302 - latest edition.
.3 Federal and Provincial Occupational

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

Health and Safety Acts and Regulations as specified in Section 01 35 29 - Health and Safety Requirements.

- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

1.7 HOT WORK
AUTHORIZATION

- .1 Obtain Departmental Representative's written "Authorization to Proceed" before conducting any form of Hot work on site.
- .2 To obtain authorization submit to Departmental Representative:
 - .1 Contractor's typewritten Hot Work Procedures to be followed on site as specified below.
 - .2 Description of the type and frequency of Hot Work required.
 - .3 Sample Hot Work Permit to be used.
- .3 Upon review and confirmation that effective fire safety measures will be implemented during performance of hot work, Departmental Representative will provide authorization to proceed as follows:
 - .1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
 - .2 Separate work, or segregate certain parts of work, into individual entities. Each entity requiring a separately written "Authorization to Proceed" from Departmental Representative. Follow Departmental Representative's directives in this regard.
- .4 Requirement for individual authorization

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

based on:

- .1 Nature or phasing of work;
- .2 Risk to Facility operations;
- .3 Quantity of various trades needing to perform hot work on project or;
- .4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.

- .5 Do not perform any Hot Work until receipt of Departmental Representative's written "Authorization to Proceed" for that portion of work.

1.8 HOT WORK
PROCEDURES

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
- .2 Procedures to include:
 - .1 Requirement to perform hazard assessment of site and immediate hot work area for each hot work event in accordance with Hazard Assessment and Safety Plan requirements of Section 01 35 29.
 - .2 Use of a Hot Work Permit system for each hot work event.
 - .3 The step by step process of how to prepare and issue permit.
 - .4 Permit shall be issued by Contractor's site Superintendent, or other authorized person designated by Contractor, granting permission to worker or subcontractor to proceed with hot work.
 - .5 Provision of a designated person to carryout a Fire Safety Watch for a minimum of 60 minutes immediately upon completion of the hot work.
 - .6 Compliance with fire safety codes and standards specified herein and occupational health and safety regulations specified in Section 01 35 29.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Clearly label as being the Hot Work Procedures applicable to this contract.
- .4 Hot Work Procedures shall clearly establish worker instructions and allocate responsibilities of:
 - .1 Worker(s),
 - .2 Authorized person issuing the Hot Work Permit,
 - .3 Fire Safety Watcher,
 - .4 Subcontractors and Contractor.
- .5 Brief all workers and subcontractors on Hot Work Procedures and Permit system established for project. Stringently enforce compliance.
 - .1 Failure to comply with the established procedures may result in the issuance of a Non-Compliance Notification at Departmental Representative's discretion with possible disciplinary measures imposed as specified in Section 01 35 29.

1.9 HOT WORK
PERMIT

- .1 Hot Work Permit to include, as a minimum, the following data:
 - .1 Project name and project number.
 - .2 Building name, address and specific room or area where hot work will be performed.
 - .3 Date when permit issued.
 - .4 Description of hot work type to be performed.
 - .5 Special precautions required, including type of fire extinguisher needed.
 - .6 Name and signature of person authorized to issue the permit.
 - .7 Name of worker (clearly printed) to which the permit is being issued.
 - .8 Time Duration that permit is valid (not

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

to exceed 8 hours). Indicate start time and date, and completion time and date.

.9 Worker signature with date and time upon hot work termination.

.10 Specified time period requiring safety watch.

.11 Name and signature of designated Fire Safety Watcher, complete with time and date when safety watch terminated, certifying that surrounding area was under continual surveillance and inspection during the full watch time period specified in Permit and commenced immediately upon completion of Hot Work.

.2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.

.3 Each Hot Work Permit to be completed in full and signed as follows:

.1 Authorized person issuing Permit before hot work commences.

.2 Worker upon completion of Hot Work.

.3 Fire Safety Watcher upon termination of safety watch.

.4 Returned to Contractor's Site Superintendent for safe keeping.

1.10 DOCUMENTS
ON SITE

.1 Keep Hot Work Permits and Hazard assessment documentation on site for duration of Work.

.2 Upon request, make available to Departmental Representative or to authorized safety representative for inspection.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- 1.1 RELATED WORK .1 Section 01 35 24 - Special Procedures on Fire Safety Requirements.
- 1.2 DEFINITIONS .1 COSH: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- .2 Competent Person: means a person who is:
- .1 Qualified by virtue of personal knowledge, training and experience to perform assigned work in a manner that will ensure the health and safety of persons in the workplace, and;
 - .2 Knowledgeable about the provisions of occupational health and safety statutes and regulations that apply to the Work and;
 - .3 Knowledgeable about potential or actual danger to health or safety associated with the Work.
- .3 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.
- .4 PPE: personal protective equipment.
- .5 Work Site: where used in this section shall mean areas, located at the premises where Work is undertaken, used by Contractor to perform all of the activities associated with the performance of the Work.
- 1.3 SUBMITTALS .1 Make submittals in accordance with Section 01 33 00.
- .2 Submit to Departmental Representative, copies of the following documents

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- including updates.
- .1 Site specific Health and Safety Plan.
 - .2 Building permit, compliance certification and other permits obtained.
 - .3 Reports or directives issued by Federal and Provincial Inspectors and other Authorities having jurisdiction.
 - .4 Accident or incident reports.
 - .5 WHMIS - MSDS data sheets.
 - .6 Name of Contractor's Representative designated to perform health and safety supervision in site.
 - .7 Certificate of clearance from Workplace Health Safety and Compensation Commission (Assessment Services Department) of Newfoundland and Labrador.
-
- .3 Submit within five (5) work days of notification of Bid Acceptance. Provide one (1) copy.
 - .4 Departmental Representative will review Health and Safety Plan and provide comments.
 - .5 The Contractor will revise the Plan as appropriate and resubmit within five (5) work days after receipt of comments.
 - .6 Departmental Representative's review and comments made of the Plan shall not be construed as an endorsement, approval or implied warranty of any kind by Canada and does not reduce Contractor's overall responsibility for Occupational Health and Safety of the Work.
 - .7 Submit revisions and updates made to the Plan during the course of Work.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

1.4 COMPLIANCE
REQUIREMENTS

- .1 Comply with the Occupational Health and Safety Act for the Province of Newfoundland and Labrador, and the Occupational Health and Safety Regulations made pursuant to the Act.
- .2 Comply with Canada Labour Code Part II, (entitled Occupational Health and Safety) and the Canada Occupational Health and Safety Regulations (COSH) as well as any other regulations made pursuant to the Act.
 - .1 The Canada Labour Code can be viewed at:
[www.http://laws.justice.gc.ca/en/L-2/](http://laws.justice.gc.ca/en/L-2/)
 - .2 COSH can be viewed at:
[www.http://laws.justice.gc.ca/eng/SOR-86-304/ne.html](http://laws.justice.gc.ca/eng/SOR-86-304/ne.html).
 - .3 A copy may be obtained at: Canadian Government Publishing Public Works & Government Services Canada Ottawa, Ontario, K1A 0S9 Tel: (819) 956-4800 (1-800-635-7943) Publication No. L31-85/2000 E or F).
- .3 Observe construction safety measures of:
 - .1 Part 8 of National Building Code.
 - .2 Municipal by-laws and ordinances.
- .4 In case of conflict or discrepancy between any specified requirements, the more stringent shall apply.
- .6 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof through submission of Certificate of Clearance from Workplace Health, Safety and Compensation Commission (Assessment Services Department) of Newfoundland and Labrador.
- .7 Obtain and maintain worker medical

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

surveillance documentation where prescribed by legislation or regulation.

- 1.5 RESPONSIBILITY .1 Be responsible for health and safety of persons on site, safety of property and for protection of persons and environment adjacent to the site to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by all workers, sub-contractors and other persons granted access to work site with safety requirements of Contract Documents, applicable Federal, Provincial, and local by-laws, regulations, and ordinances, and with site specific Health and Safety Plan.
- 1.6 SITE CONTROL AND ACCESS .1 Control the Work and entry points to Work Site. Approve and grant access only to workers and authorized persons. Immediately stop and remove non-authorized persons.
- .1 Departmental Representative will provide names of those persons authorized by Departmental Representative to enter onto Work Site and will ensure that such authorized persons have the required knowledge and training on Health and Safety pertinent to their reason for being at the site, however, Contractor remains responsible for the health and safety of authorized persons while at the Work Site.
- .2 Isolate Work Site from other areas of the premises by use of appropriate means.
- .1 Erect fences, hoarding, barricades and temporary lighting as required to effectively delineate the Work Site, stop non-authorized entry, and to protect pedestrians and vehicular

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

traffic around and adjacent to the
Work and create a safe environment.

.2 Post signage at entry points and other
strategic locations indicating
restricted access and conditions for
access.

.3 Provide safety orientation session to
persons granted access to Work Site.
Advise of hazards and safety rules to be
observed while on site.

.4 Ensure persons granted site access wear
appropriate PPE. Supply PPE to inspection
authorities who require access to conduct
tests or perform inspections.

.5 Secure Work Site against entry when
inactive or unoccupied and to protect
persons against harm. Provide security
guard where adequate protection cannot be
achieved by other means.

1.7 PROTECTION

.1 Give precedence to safety and health of
persons and protection of environment over
cost and schedule considerations for Work.

.2 Should unforeseen or peculiar safety
related hazard or condition become evident
during performance of Work, immediately
take measures to rectify situation and
prevent damage or harm. Advise
Departmental Representative verbally and
in writing.

1.8 FILING OF NOTICE

.1 File Notice of Project with pertinent
provincial health and safety authorities
prior to beginning of Work.

1.9 PERMITS

.1 Post permits, licenses and compliance
Certificates at Work Site.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .2 Where a particular permit or compliance certificate cannot be obtained, notify Departmental Representative in writing and obtain approval to proceed before carrying out applicable portion of work.

1.10 HAZARD
ASSESSMENTS

- .1 Perform site specific health and safety hazard assessment of the Work and its site.
- .2 Carryout initial assessment prior to commencement of Work with further assessments as needed during progress of work, including when new trades and subcontractors arrive on site.
- .3 Record results and address in Health and Safety Plan.
- .4 Keep documentation on site for entire duration of the Work.

1.11 PROJECT/SITE
CONDITIONS

- .1 The following are known or potential project related safety hazards at site:
 - .1 Working in close proximity of roadways and water.
 - .2 Remote site location.
 - .3 Wet and slippery conditions.
 - .4 Inclement weather conditions.
 - .5 Heavy lifting.
 - .6 Working at heights.
 - .7 Cutting tools and other construction power tools.
 - .8 Hazardous materials, including lead paint.
 - .9 Sharp objects (construction debris).
 - .10 Surrounding steep terrain/risk of falling.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .2 Above items shall not be construed as being complete and inclusive of potential health, and safety hazards encountered during work.
- .3 Include above items into hazard assessment process.

1.12 MEETINGS

- .1 Contractor to hold pre-construction health and safety meeting prior to commencement of Work. Ensure attendance of:
 - .1 Superintendent of Work.
 - .2 Contractor's designated Health & Safety Site Representative.
 - .3 Subcontractor's Health and Safety Site Representative.
 - .4 Health and Safety Site Coordinator.
- .2 Conduct regularly scheduled tool box and safety meetings during the Work in conformance with Occupational Health and Safety regulations.
- .3 Keep documents on site.

1.13 HEALTH AND SAFETY PLAN

- .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.
- .2 Health and Safety Plan shall include the following components:
 - .1 List of health risks and safety hazards identified by hazard assessment.
 - .2 Control measures used to mitigate risks and hazards identified.
 - .3 On-site Contingency and Emergency Response Plan as specified below.
 - .4 On-site Communication Plan as specified below.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .5 Name of Contractor's designated Health & Safety Site Representative and information showing proof of his/her competence and reporting relationship in Contractor's company.
- .6 Names, competence and reporting relationship of other supervisory personnel used in the Work for occupational health and safety purposes.
- .3 On-site Contingency and Emergency Response Plan shall include:
 - .1 Operational procedures, evacuation measures and communication process to be implemented in the event of an emergency.
 - .2 Evacuation Plan: site and floor plan layouts showing escape routes, marshaling areas. Details on alarm notification methods, fire drills, location of fire fighting equipment and other related data.
 - .3 Name, duties and responsibilities of persons designated as Emergency Warden(s) and deputies.
 - .4 Emergency Contacts: name and telephone number of officials from:
 - .1 General Contractor and subcontractors.
 - .2 Pertinent Federal and Provincial Departments and Authorities having jurisdiction.
 - .3 Local emergency resource organizations.
- .4 On-site Communication Plan:
 - .1 Procedures for sharing of work related safety information to workers and subcontractors, including emergency and evacuation measures.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .5 Address all activities of the Work including those of subcontractors.
- .6 Review Health and Safety Plan regularly during the Work. Update as conditions warrant to address emerging risks and hazards, such as whenever new trade or subcontractor arrive at Work Site.
- .7 Departmental Representative will respond in writing, where deficiencies or concerns are noted and may request re-submission of the Plan with correction of deficiencies or concerns.
- .8 Post copy of the Plan, and updates, prominently on Work Site.

1.14 SAFETY
SUPERVISION

- .1 Employ Health & Safety Site Representative responsible for daily supervision of health and safety of the Work.
- .2 Health & Safety Site Representative may be the Superintendent of the Work or other person designated by Contractor and shall be assigned the responsibility and authority to:
 - .1 Implement, monitor and enforce daily compliance with health and safety requirements of the Work
 - .2 Monitor and enforce Contractor's site-specific Health and Safety Plan.
 - .3 Conduct site safety orientation session to persons granted access to Work Site.
 - .4 Ensure that persons allowed site access are knowledgeable and trained in health and safety pertinent to their activities at the site or are escorted by a competent person while on the Work Site.
 - .5 Stop the Work as deemed necessary for

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

reasons of health and safety.

- .3 Health & Safety Site Representative must:
 - .1 Be qualified and competent person in occupational health and safety.
 - .2 Have site-related working experience specific to activities of the Work.
 - .3 Be on Work Site at all times during execution of the Work.
 - .4 All supervisory personnel assigned to the Work shall also be competent persons.
 - .5 Inspections:
 - .1 Conduct regularly scheduled safety inspections of the Work on a minimum daily basis. Record deficiencies and remedial action taken.
 - .2 Conduct Formal Inspections on a minimum monthly basis. Use standardized safety inspection forms. Distribute to subcontractors.
 - .3 Follow-up and ensure corrective measures are taken.
 - .6 Keep inspection reports and supervision related documentation on site.

1.15 TRAINING

- .1 Use only skilled workers on Work Site who are effectively trained in occupational health and safety procedures and practices pertinent to their assigned task.
- .2 Maintain employee records and evidence of training received. Make data available to Departmental Representative upon request.
- .3 When unforeseen or peculiar safety-related hazard, or condition occur during performance of Work, follow procedures in

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

- .4 All workers dealing with hazardous materials are required to provide evidence of training, in accordance with Provincial regulations.

1.16 MINIMUM
SITE SAFETY RULES

- .1 Notwithstanding requirement to abide by federal and provincial health and safety regulations; ensure the following minimum safety rules are obeyed by persons granted access to Work Site:
 - .1 Wear appropriate PPE pertinent to the Work or assigned task; minimum being hard hat, safety footwear, safety glasses safety vest and hearing protection.
 - .2 Immediately report unsafe condition at site, near-miss accident, injury and damage.
 - .3 Maintain site and storage areas in a tidy condition free of hazards causing injury.
 - .4 Obey warning signs and safety tags.
- .2 Brief persons of disciplinary protocols to be taken for non compliance. Post rules on site.

1.17 CORRECTION OF
NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

identified.

- .3 Departmental Representative will stop Work if non-compliance of health and safety regulations is not corrected in a timely manner.

1.18 INCIDENT
REPORTING

- .1 Investigate and report the following incidents to Departmental Representative:
 - .1 Incidents requiring notification to Provincial Department of Occupational Safety and Health, Workers Compensation Board or to other regulatory Agency.
 - .2 Medical aid injuries.
 - .3 Property damage in excess of \$10,000.00.
- .2 Submit report in writing.

1.19 HAZARDOUS
PRODUCTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).
- .2 Keep MSDS data sheets for all products delivered to site.
 - .1 Post on site.
 - .2 Submit copy to Departmental Representative.

1.20 SITE RECORDS

- .1 Maintain on Work Site copy of safety related documentation and reports stipulated to be produced in compliance with Acts and Regulations of authorities having jurisdiction and of those documents specified herein.
- .2 Upon request, make available to Departmental Representative or authorized Safety Officer for inspection.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

1.21 POSTING OF
DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on Work Site in accordance with Acts and Regulations of Province having jurisdiction.
- .2 Post other documents as specified herein, including:
 - .1 Site specific Health and Safety Plan.
 - .2 WHMIS data sheets.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

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|---|----|--|
| <u>1.1 RELATED WORK</u> | .1 | Section 02 41 16 - Sitework, Demolition and Removal. |
| <u>1.2 DEFINITIONS</u> | .1 | Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment. |
| <u>1.3 DISPOSAL OF WASTES AND HAZARDOUS MATERIALS</u> | .1 | Do not bury rubbish and waste materials on site. |
| | .2 | Do not dispose of hazardous waste or volatile materials, such as mineral spirits, paints, thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites. |
| | .3 | Store, handle and dispose of hazardous materials and hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines. |
| | .4 | Dispose of construction waste materials and demolition debris, resulting from work, at approved landfill sites only. Carryout such disposal in strict accordance with provincial and municipal rules and regulations. Separate out and prevent improper disposal of items banned from landfills. |
| | .5 | Establish methods and undertake construction practices which will minimize waste and optimize use of construction materials. Separate at source all construction waste materials, demolition debris and product packaging and delivery containers into various waste categories in order to maximize recycling abilities of various materials and avoid disposal of debris at landfill site(s) |

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

in a "mixed state". Where recycling firms, specializing in recycling of specific materials exist, transport such materials to the recycling facility and avoid disposal at landfill sites.

- .6 Communicate with landfill operator prior to commencement of work, to determine what specific construction, demolition and renovation waste materials have been banned from disposal at the landfill and at transfer stations. Note that paint chips are considered hazardous waste and will be restricted from landfilling.

1.5 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with governing regulations and requirements.
- .4 Pumped water must meet applicable federal, provincial, and municipal standards before it can be discharged to a surface water body. If regulatory guidelines exceedences are noted, the Departmental Representative has the right to issue stop pumping instructions to the Contractor. Contractor will not be compensated for any delays associated with retrofitting equipment to meet guidelines.

1.6 PERMITS

- .1 All guidelines and instructions stated on permits must be strictly adhered to.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

1.7 WORK ADJACENT
TO WATERWAYS

- .1 Do not operate construction equipment in waterways.
- .2 Do not use waterway beds for borrow material.
- .3 Do not dump excavated fill, waste material or debris in waterways.
- .4 At borrow sites, design and construct temporary crossings to minimize erosion to waterways in strict conformance with provincial and federal environmental regulations.
- .5 Do not skid logs or construction materials across waterways.
- .6 Ensure refueling of any type of equipment does not, either directly or indirectly, create pollution by causing or permitting any leaks or spills.
- .7 Maintain equipment in good working condition with no fluid leaks, loose hoses or fittings.

1.8 POLLUTION
CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .4 Have emergency spill response equipment and rapid clean-up kit, appropriate to work, at site. Locate adjacent to work and where hazardous materials are stored. Provide

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

personal protective equipment as required for clean-up.

- .5 Report, to Federal and Provincial Department of the Environment, spills of petroleum and other hazardous materials as well as accidents having potential of polluting the environment. Also notify Departmental Representative and submit a written spill report to Departmental Representative within 24 hours of occurrence.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

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| <u>1.1 SANITARY FACILITIES</u> | .1 | Provide sanitary facilities for work force in accordance with governing regulations and ordinances. |
| | .2 | Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition. |
| <u>1.2 WATER SUPPLY</u> | .1 | Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances. |
| <u>1.3 SCAFFOLDING</u> | .1 | Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CSA797-09, or other applicable standard acceptable to Departmental Representative. Scaffolding is to be designed and stamped by a Professional Engineer, licensed to practice by PEG-NL in the Province of NL. Provide stamped design drawings and design notes to Departmental Representative. Erect scaffolding independent of walls. Remove when no longer required. |
| <u>1.4 CONSTRUCTION SIGN AND NOTICES</u> | .1 | Contractor or subcontractor advertisement signboards are not permitted on site. |
| | .2 | Only notices of safety or instructions are permitted on site. |
| | .3 | Maintenance and Disposal of Site Signs:
.1 Maintain approved signs and notices in good condition for duration of project and dispose of off site on completion of project or earlier if directed by Departmental Representative. |
| <u>1.5 REMOVAL OF TEMPORARY FACILITIES</u> | .1 | Remove temporary facilities from site when directed by Departmental Representative. |

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

PART 1 - GENERAL

1.1 SECTION
INCLUDES

.1 Barriers.

1.2 INSTALLATION
AND REMOVAL

.1 Provide temporary controls in order to
execute work expeditiously.

.2 Remove from site all such work after use.

1.3 HOARDING

.1 Erect temporary site enclosure if required
by governing authorities, using new 1.2 m
high snow fence wired to rolled steel "T" bar
fence posts spaced at 2.4 m centres. Provide
one lockable truck gate. Maintain fence in
good repair.

1.4 GUARD RAILS
AND BARRICADES

.1 Provide secure, rigid guard rails and
barricades as required to protect against
falls. Note steep cliffs around work area
and construct barricades to protect workers.

.2 Provide as required by governing authorities.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

PART 1 - GENERAL

1.1 GENERAL

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
- .2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .3 Prevent accumulation of wastes which create hazardous conditions.
- .4 Provide adequate ventilation during use of volatile or noxious substances.

1.2 CLEANING DURING CONSTRUCTION

- .1 Maintain project grounds and public properties in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.
- .2 Provide on-site garbage containers for collection of waste materials and debris.
- .3 Remove waste materials and debris from site on a daily basis.

1.3 FINAL CLEANING

- .1 In preparation for acceptance of the Work perform final cleaning. Final cleaning to include exterior rake of work area, to satisfaction of Departmental Representative.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

1.1 SECTION
INCLUDES

- .1 Project Record Documents as follows:
 - .1 Manual of paint products used, including Manufacturer's literature brochures.

1.2 PROJECT RECORD
DOCUMENTS

- .1 Departmental Representative will provide two white print sets of contract drawings and two copies of Specifications.
- .2 Maintain at site one set of the contract drawings and specifications to record actual "As-Built" site conditions.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

PART 1 - GENERAL

- 1.1 DESCRIPTION
- .1 This section specifies requirements for demolishing and removing wholly or in part various items designated to be removed or partially removed.
 - .2 Demolition and removal will consist of, but not necessarily be limited to, the following:
 - .1 Removal of loose/flaking paint from the wooden substrate associated with the buildings, including wood siding, wooden trims, frames, pillars, landing/railing/steps, etc.
 - .2 Miscellaneous removal of trims and pillars as noted on the drawings. Note that temporary supports are to be provided when the existing pillars of the Proprietors House are removed, pending new installation.
 - .3 Removal of the siding from the Salt Store and disposal at an approved waste site. For the purposes of Bidding, the Contractor is to assume that leachable lead is present in the paint and substrate associated with the siding on the Salt Store. In this regard, the siding itself is to be disposed of as hazardous lead waste (landfilling of the siding will not be permitted).
- 1.2 MEASUREMENT FOR PAYMENT
- .1 This portion of the work will not be measured for payment but will be included in the Lump Sum Amount of the contract.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 EXECUTION

- .1 Inspect site and verify with Departmental Representative objects designated for removal.
- .2 Locate and protect utility lines. Preserve in operating condition active utilities traversing site.

3.2 REMOVAL

- .1 Remove in their entirety all materials and objects specified for removal.
- .2 Do not disturb adjacent work designated to remain in place.

3.3 DISPOSAL OF MATERIAL

- .1 All demolished materials will become property of contractor and will be removed from site and disposed of to satisfaction of Departmental Representative and in accordance with environmental guidelines. It is the sole responsibility of the contractor to dispose of all demolished materials at an approved disposal site. Ensure that disposal site is approved and willing to accommodate any materials disposed of from work site. Note that flaking/peeling paint (and the siding substrate itself, on the Salt Store), is to be transported and disposed of as hazardous lead waste.
- .2 Contractor shall obtain and pay for all necessary permits and disposal fees for use of an approved waste disposal site.

3.4 RESTORATION

- .1 Upon completion of work, remove debris, trim surfaces and leave work site in clean

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

condition.

- .2 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

PART 1 - GENERAL

- 1.1 REFERENCES .1 Guideline for Lead on Construction Projects from Occupational Health and Safety Branch, Ontario Ministry of Labour, April 2011.
- .2 Health Canada
.1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
- .3 Human Resources and Social Development Canada (HRSDC)
.1 Canada Labour Code Occupational Health and Safety Regulations.
- .4 Transport Canada (TC)
.1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .5 Management of Disposal of Construction, Abatement and Demolition Waste Containing Lead-Based Paint, 2010, NL Department of Environment and Conservation.
- 1.2 SCOPE .1 For the purposes of this work scope, lead based paint is defined by the federal Ministry of Health, under the Hazardous Products Act, as a paint or other similar material that dries to a solid film that contains over 90 mg/kg (0.009%) dry weight of lead. Reference the analytical data appended to the specifications which notes the concentration of lead in the exterior surfaces as 8000mg/kg to 16000mg/kg (in this regard, the existing painted surfaces are to be considered as leachable lead for the purposes of transportation and disposal and will be restricted from landfilling). For the

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

purposes of Bidding, the Contractor is to assume that the siding, once removed from the Salt Store, is to be disposed of as hazardous lead waste.

- .2 Comply with requirements of this Section when performing following Work:

.1 Removal of flaking/peeling paint from the existing wood surfaces, as indicated on the drawings. Consider this activity to be a Type 2a activity as defined in the document referenced in Part 1.1.1 of this specification section.

.2 Disposal of lead based paint and abrasive blasting material in accordance with the NL Department of Environment Regulations, as defined in the reference document noted under Part 1.1.5 of this specification section. For the purposes of transportation and disposal, the lead paint (and siding on the Salt Store) is considered leachable and is to be disposed of as hazardous waste.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.
- .3 Provide proof of Contractor's General and Environmental Liability Insurance governing abatement of lead.
- .4 Quality Control:
.1 Provide proof satisfactory to

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

Departmental Representative that employees had instruction on hazards of lead exposure, respirator use, dress, entry and exit from Work Area, and aspects of work procedures and protective measures.

- .2 Provide proof that supervisory personnel have attended lead abatement course, of not less than one day duration, approved by Departmental Representative. Minimum of one supervisor for every ten workers.
- .5 All shop drawings for scaffolding, temporary supports and structures to be utilized in the work shall be submitted under seal of professional engineer licensed to practice in Newfoundland & Labrador.

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with federal, provincial/Territorial and local requirements pertaining to lead, in case of conflict among those requirements or with these specifications the more stringent requirement applies. Comply with regulations in effect at time work is performed.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Polyethylene 0.15 mm unless otherwise specified; in sheet size to minimize joints.
- .2 FR polyethylene: 0.15 mm woven fibre reinforced fabric bonded both sides with polyethylene.
- .3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.
- .4 Slow - drying sealer: non-staining, clear,

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

water - dispersible type that remains tacky on surface for at least 8 hours and designed for trapping residual lead paint residue.

- .5 Lead waste containers: metal fibre type acceptable to dump operator with tightly fitting covers and 0.15 mm sealable polyethylene liners.
 - .1 Label containers with pre-printed cautionary warning "Lead" clearly visible when ready for removal to disposal site.

PART 3 - EXECUTION

- 3.1 SUPERVISION
 - .1 Approved Supervisor must remain within Work Area during disturbance, removal, or handling of lead based paints.
- 3.2 RESPIRATORS
 - .1 For Type 2a operation, as per Part 1.2.2 of this specification section, use half mask particulate respirator with N-, R- or P-series filter, and 95, 99 or 100% efficiency.
- 3.3 GENERAL
 - .1 Washing facilities to be established on site before removal of lead paint surfaces. Washing facilities to consists of a wash basin, water, soap and towels.
 - .2 No eating, drinking, chewing gum or smoking in work area.
 - .3 Drop sheets to be used below all lead operations which produce or may produce dust, chips or debris containing lead.
 - .4 Dust and waste to be cleaned up and removed by vacuuming with a HEPA filter equipped vacuum.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .5 Clean-up after each operation to be done to prevent lead contamination and exposure to lead.

3.4 MEASURES

- .1 Type 2a (removal of flaking/peeling paint From wood surfaces):
 - .1 Post signs to warn of lead hazard.
 - .2 Wear respirators in accordance with Part 3.2 of this specification, during all manual scraping activities.
 - .3 Wear protective clothing to prevent skin contamination, including but not limited to coveralls, gloves, hats and footwear or disposable coverlets; safety glasses, face shields or goggles. All protective clothing to be removed at the end of each shift and be decontaminated.
- .2 If grinding/scraping/washing (or demolition of the siding from the Salt Store) has the potential to release lead dust, the following is to be implemented into the Contractor's work plan (note that Departmental Representative reserves the right to enforce the following requirement at any time if it becomes apparent that lead dust is being released as a result of the Contractor's work activities):
 - .1 Construct full tight enclosure (with tarps that are generally impermeable and fully sealed joints and entryways). Install negative pressure machine system and operate continuously from installation of polyethylene sheeting until completion of final cleanup.
 - .2 Seal off openings, polyethylene sheeting sealed with tape. Cover floor surfaces or working platform in work area from wall to wall with FR polyethylene drop sheets. Build airlocks at entrances and exits from work areas to ensure work areas are always closed off by one

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- curtained doorway when workers enter or exit. At point of access to work areas install warning signs.
- .3 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Authority having jurisdiction
 - .4 Where water application is required provide temporary water supply by use of appropriately sized hoses for application of water as required.
 - .5 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
 - .6 Worker Decontamination Enclosure System includes Equipment and Access Room and Clean Room, as follows:
 - .1 Equipment and Access Room: construct between exit and work areas, with two curtained doorways, one to the rest of the site, and one to work area. Install waste receptor and storage facilities for workers' shoes and protective clothing to be re-worn in work areas. Build large enough to accommodate specified facilities, equipment needed, and at least one worker allowing sufficient space to change comfortably.
 - .2 Clean Room: construct with curtained doorway to outside of enclosures. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

.7 Construction of Decontamination

Enclosures:

.1 Construct framing for enclosures or otherwise provide portable enclosures as approved by the Departmental Representative. Line enclosure with polyethylene sheeting and seal with tape, apply two layers of FR polyethylene on floor.

.2 Construct curtain doorways between enclosures so when people move through or waste containers and equipment are moved through doorway, one of two closure comprising doorway always remains closed.

.3 Shower room in decontamination facility to be provided with the following:

.1 Hot and cold water or water of constant temperature not less than 40 degrees Celsius or more than 50 degrees Celsius.

.2 Individual controls inside to regulate water flow and temperature.

.4 Prior to each shift in which a decontamination facility is being used, a competent person should inspect the facility to ensure that there are no defects that would allow lead-containing dust to escape. Defects should be repaired before the facility is used. The decontamination facility should be maintained in a clean and sanitary condition.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

1.1 REFERENCES

- .1 Codes and standards referenced in this section refer to the latest edition thereof.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-11.3, Hardboard.
 - .2 CAN/CGSB-11.5, Hardboard, Precoated, Factory Finished, for Exterior Cladding.
 - .3 CAN/CGSB-11.6, Installation of Exterior Hardboard Cladding.
 - .4 CAN/CGSB-51.32, Sheathing, Membrane, Breather Type.
- .3 Canadian Standards Association (CSA)
 - .1 CSA B111, Wire Nails, Spikes and Staples.
 - .2 CSA O121, Douglas Fir Plywood.
 - .3 CSA O151, Canadian Softwood Plywood.
 - .4 NLGA Standard Grading Rules for Canadian Lumber.

1.2 DELIVERY AND STORAGE

- .1 Siding for Salt Store will be supplied by the Owner. Once turned over to the Contractor, protect to avoid damage to finished surface. If rotted siding is discovered on the other buildings and requires replacement, the siding is to be supplied and installed by Contractor.
- .2 Store in an unheated structure or under cover until application. Siding may be temporarily stored outside if at least 4 inches off the ground and on a flat, well drained surface protected from moisture with a shed pack or waterproof cover.

1.3 MATERIALS

- .1 Clapboard Siding: Owner supplied for Salt Store only. Contractor to install siding on Salt Store. If rotted siding requires replacement on the other buildings, it is

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

to be supplied and installed by Contractor (siding to match existing to approval of Departmental Representative). For Bidding assume 30m2 of rotted siding is to be supplied and replaced new, on the other buildings (include these costs in the lump sum Bid).

- .2 Moldings and trim: Contractor to supply and install: Western Lodgepole Pine or Eastern Spruce, No. 1 select or better grade, factory finished same as siding.
- .3 Nails: Contractor to supply and install: Cape Cod nails or mechanically galvanized (if approved by Departmental Representative), to securely and rigidly retain the work permanently in position (all pre-finished baked-on coatings to match siding finish).
- .5 Sealant: Contractor to supply and install: latex sealant, color to exactly match siding.

1.4 FINISH

- .1 Paint as noted on drawings. Intent is to match the existing colours.

1.5 INSTALLATION

- .1 Install siding and accessories to manufacturer's printed instructions.
- .2 Install siding for natural watershed.
- .3 Install siding in straight aligned lengths, set level with plumb ends and corners.
- .4 Achieve siding joints no less than 32 inches (812 mm) apart in adjoining boards and distribute evenly over wall surface.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .5 Miter external and internal corners:
Install corner strips, closures, frieze
boards skirt boards and trim.
- .6 Face nail 1 inch (25mm) from bottom of
siding board directly into sheathing,
drive nail head just flush with siding
surface; do not indent or penetrate
painted coating.
- .7 Carefully set exposed nails flush with
siding coating.
- .8 Touch-up blemished siding materials to
match siding color.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

PART 1 GENERAL

1.1 Related
Sections

- .1 01 33 00 - Submittal Procedures.
- .2 02 83 12 Lead Paint Abatement Maximum Precautions
- .3 07 46 23 Wood Siding

1.2 References

- .1 Environmental Protection Agency (EPA)
 - .1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings).
 - .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
 - .3 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - February 2004.
 - .2 Standard GPS-1-05, MPI Green Performance Standard for Painting and Coatings.
 - .4 National Fire Code of Canada.
 - .5 Society for Protective Coatings (SSPC)
 - .1 Systems and Specifications, SSPC Painting Manual 2005.

1.3 Quality
Assurance

- .1 Qualifications:
 - .1 Qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in painting work. Apprentices may be employed provided they work under the

Exterior Painting
 Ryan Premises National Historic Site
 Bonavista, NL

2016-01-16

direct supervision of a qualified journeyman in accordance with applicable trade regulations.

- .2 Conform to latest MPI requirements for exterior painting work including preparation and priming.
- .3 Materials: in accordance with MPI Painting Specification Manual "Approved Product" listing and from a single manufacturer for each system used.
- .4 Paint materials such as linseed oil, shellac, and turpentine to be highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and to be compatible with other coating materials as required.

1.4 Performance Requirements

- .1 Environmental Performance Requirements:
 - .1 Green Performance in accordance with MPI Standard GPS-1.

1.5 Scheduling

- .1 Submit work schedule for various stages of painting to Engineer for approval. Submit schedule minimum of 48 hours in advance of proposed operations.
- .2 Obtain written authorization from Engineer for changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants in and about building.

1.6 Submittals

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product

Exterior Painting
 Ryan Premises National Historic Site
 Bonavista, NL

2016-01-16

characteristics, performance
 criteria, physical size, finish and
 limitations.

- .3 Upon completion, submit records of products used. List products in relation to finish system and include the following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.
 - .3 Colour numbers.
 - .4 MPI Environmentally Friendly classification system rating.
 - .5 Manufacturer's Material Safety Data Sheets (MSDS).
 - .4 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit duplicate 300 mm length sample panels of each paint, stain, clear coating with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards submitted on the following substrate materials:
 - .1 13 mm clapboard siding for finishes over wood surfaces.
 - .2 When approved, samples shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.
 - .3
- 1.7 Quality Control .1 Provide mock-up as noted on the drawings.
- 1.8 Maintenance .1 Extra Materials:
 - .1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Submit one, four litre can of each type and colour of finish coating. Identify

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

colour and paint type in relation to established colour schedule and finish system.

- 1.9 Delivery, Storage And Handling
- .1 Deliver, store and handle 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. Remove paint materials from storage only in quantities required for same day use.
 - .10 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
 - .11 Fire Safety Requirements:

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .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 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.) are regarded as 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.
 - .2 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
 - .3 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
 - .4 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.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- 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).
- .5 Close and seal tightly partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

1.10 Ambient
Conditions

- .1 Heating, Ventilation and Lighting:
 - .1 Provide temporary ventilating and heating equipment. 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 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate temporary lighting facilities to be provided by General Contractor.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .1 Unless specifically pre-approved by specifying body, Paint Inspection Agency and, applied product manufacturer, perform no priming or painting work when:
 - .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 or 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 or when it is foggy, misty, raining or snowing at site.
- .2 Perform no priming or painting work when maximum moisture content of substrate exceeds:
 - .1 15 % for wood.
- .3 Conduct moisture tests using a properly calibrated electronic Moisture Meter.
- .3 Surface and Environmental Conditions:
 - .1 Apply primer or paint to adequately prepared surfaces and to surfaces within moisture limits noted herein.
 - .2 Apply paint when previous coat of paint is dry or adequately cured.
 - .3 Apply paint finishes when conditions forecast for entire period of

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- application fall within manufacturer's recommendations.
- .4 Do not apply primer or paint when:
 - .1 Temperature is expected to drop below 10 degrees C before paint has thoroughly cured.
 - .2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.
 - .3 Surface to be painted is wet, damp or frosted.
 - .5 Provide and maintain cover when primer or paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.
 - .6 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
 - .7 Remove primer or paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

PART 2 PRODUCTS

- 2.1 Materials
- .1 Paint materials listed in latest edition of MPI Approved Products List (APL) are acceptable for use on this project.
 - .2 Paint materials for paint systems: to be products of single manufacturer.
 - .3 Acceptable products (or approved equivalents), are as follows:

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- Primer (1 coat): Dulux Gripper 60000.
- Topcoats (2 coats): Dulux Diamond Exterior 100% Acrylic Paint 1640.

- 2.2 Colours
- .1 The intent is to match the existing colours (coordinate with the Departmental Representative).
 - .2 Colours to be custom colours and/or historic type as directed by Departmental Representative.
 - .3 Consult the analytical data appended to the specifications with respect to the paint colours associated with the work. Departmental Representative have final approval with respect to paint colours to be used on this project.

PART 3 EXECUTION

- 3.1 General
- .1 Perform preparations and cleaning procedures in strict accordance with manufacturer's instructions and as herein specified, for each substrate condition. Progression of work from preparation to priming and painting shall proceed in a timely fashion so as to not allow time for bared, prepped or primed, unfinished or completely unfinished substrate to be unnecessarily exposed to weather before receiving finish coats.
 - .2 The goal of a historic painting project such as this is to provide a very high quality, durable paint finish, while retaining as much of the paint history as possible and protecting the historic substrate from any unnecessary damage.
 - .3 Take all necessary precautions to protect elements and finishes from damage by precipitation during work of this section.
 - .4 All manufacturer's printed instructions

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

are to be followed unless otherwise instructed in this document or by the Owner directly.

- .5 Perform all work that disturbs lead containing paint in accordance with Section 02 83 12 Lead Paint Abatement Maximum Precautions.

Evaluate Substrate

- .6 Thoroughly assess substrate to determine if any carpentry repairs are necessary prior to beginning priming.
- .7 Identify all areas where repairs are suggested for Department Representative review.
- .8 Contractor is not to perform any repairs prior to consultation with Departmental Representative.

Cleaning

- .9 Gentlest means possible to be utilized. Water at a pressure of less than 60 psi and a stiff bristle brush to be used.
- .10 Clean wood surfaces exposed to maritime atmosphere:
- .11 Scrub area with diluted detergent solution and clean warm water using a stiff bristle brush to remove salt, dirt and oil.
- .12 Hose down scrubbed area with clean water until foreign matter is flushed from surface.
- .13 Allow washed area to drain completely and allow to dry thoroughly.
- .14 If stubborn biological staining exists, a 3:1 hot water: bleach mixture should be applied by handheld compression tank

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

sprayer with a natural brush.

.15 The use of tri-sodium phosphate (TSP) and other products containing phosphates or sodium salts is forbidden.

.16 Paint Retention

.17 Preference shall always be given to well adhered paint.

Paint Removal

.18 Mechanical: Scrape with hand tools all surfaces exhibiting areas of loose or peeling paint, and areas of adhesion failure. Hand sand after scraping using a grit of no lower than 80, but appropriate to achieve a smooth surface but not remove substrate. Feather all rough edges to provide a smooth transition between paint layers and substrate. As it is imperative that the substrate be free of all marks from sanding and tools, a disc sander is not to be considered. Sandpaper to be industrial, open-coat. Sand paper of the appropriate grid to be used to sand rough or fuzzed areas left after priming, but must not expose substrate.

3.2 Manufacture Instructions

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

3.3 Preparation

.1 Perform preparation and operations for exterior painting in accordance with MPI Maintenance Repainting Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .3 Clean and prepare exterior surfaces to be repainted in accordance with MPI Maintenance Repainting Manual requirements. Refer to additional notes on the drawings.

3.4 Protection

- .1 Protect factory finished products and equipment.
- .2 Protect passing pedestrians, and general public in and about building.
- .3 Remove light fixtures, surface hardware on doors, and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Store items and re-install after painting is completed.
- .4 As painting operations progress, place "WET PAINT" signs in pedestrian and vehicle traffic areas to approval of Departmental Representative.

3.5 Application

- .1 Priming
 - .1 Method of application to be approved by Departmental Representative. Apply primer by brush or roller. Conform to manufacturer's application instructions unless specified otherwise.
 - .2 Exposed nail heads to be spot primed with a rust inhibitor.
 - .3 New wood to be primed on all sides prior to installation.
 - .4 Brush and Roller Application:
 - .1 Apply primer in a uniform layer using brush and/or roller of types suitable for application.
 - .2 Work primer into cracks, crevices and corners.
 - .3 Prime surfaces and corners not

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

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- 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 shall be free of roller tracking and heavy stipple unless approved by Departmental Representative.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
 - .6 Apply primer as continuous film of uniform thickness.
 - .7 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
 - .5 All joints or gaps around doors, windows or vertical joints of siding where water invasion may occur are to be filled with an approved latex caulk, not to be applied until primer is dry.
 - .2 Painting
 - .1 Method of application to be approved by Departmental Representative. Apply paint by brush only. Conform to manufacturer's application instructions unless specified otherwise.
 - .2 Upon completion of previous treatments, inspect all surfaces prior to paint application. Lightly hand sand rough or fuzzed areas. Care is to be taken not to expose substrate or re-priming will be necessary.

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

- .3 Brush Application:
 - .1 Apply paint in a uniform layer using brush of types suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 Paint surfaces and corners not accessible to brush using daubers and/or sheepskins.
 - .4 Brush out runs and sags, and over-lap marks.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
 - .6 Apply coats of paint as continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
 - .7 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .4 Sand and dust between coats to remove visible defects.
- .5 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as projecting ledges.
- .6 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
- .7 Apply additional paint coating where undercoats, stains, or other conditions show through paint film, until uniform finish colour is achieved.
- .8 Provide a sample piece of clapboard siding (300mm length) with finish paint to Departmental Representative. Label the back of the sample with the

Exterior Painting
Ryan Premises National Historic Site
Bonavista, NL

2016-01-16

following information: project Name;
paint manufacturer; vendor; number of
coats; date of application and
Contractor name.

- 3.6 Field Quality Control .1 Inspection:
- .1 Advise Departmental Representative when each surface and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- 3.7 Cleaning .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .1 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.
- 3.8 Restoration .1 Clean and re-install hardware items removed before undertaken painting operations.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.
- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

Appendix A: Analytical Data of Paint Samples

Your Project #: AFN-5-788-1
Site Location: RYAN PREMISES - BONAVIDA
Your C.O.C. #: 5-788-1

Attention:Neil Hunt

AFN Engineering Inc
29 Brad Gushue Crescent
St. John's, NL
A1H 0A3

Report Date: 2016/01/15
Report #: R3852733
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B603562

Received: 2016/01/08, 09:46

Sample Matrix: Paint
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Metals Paint Acid Extr. ICPMS	2	2016/01/12	2016/01/12	ATL SOP 00058	EPA 6020A R1 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key



Maxxam
15 Jan 2016 09:14:37 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Avery Withrow, Project Manager

Email: AWithrow@maxxam.ca

Phone# (902)420-0203 Ext:233

=====
This report has been generated and distributed using a secure automated process.

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ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		BPX884	BPX885		
Sampling Date		2016/01/06	2016/01/06		
COC Number		5-788-1	5-788-1		
	UNITS	BONAVIDA-1	BONAVIDA-2	RDL	QC Batch
Metals					
Acid Extractable Lead (Pb)	mg/kg	16000	8000	5.0	4341206
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	16.6°C
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Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4341206	BAN	Matrix Spike [BPX884-01]	Acid Extractable Lead (Pb)	2016/01/12		NC	%	75 - 125
4341206	BAN	Spiked Blank	Acid Extractable Lead (Pb)	2016/01/12		97	%	75 - 125
4341206	BAN	Method Blank	Acid Extractable Lead (Pb)	2016/01/12	<5.0		mg/kg	
4341206	BAN	RPD [BPX884-01]	Acid Extractable Lead (Pb)	2016/01/12	32		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

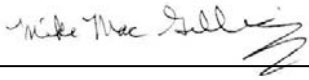
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

VALIDATION SIGNATURE PAGE



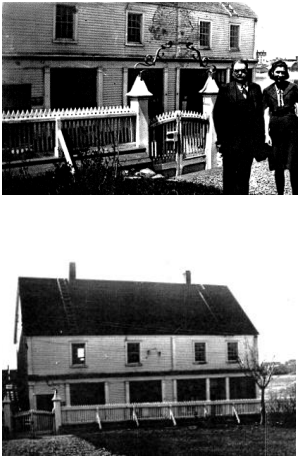

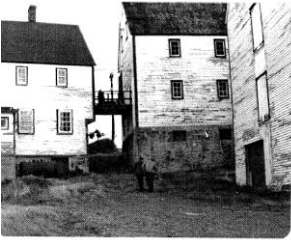






The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).





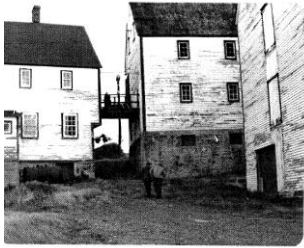


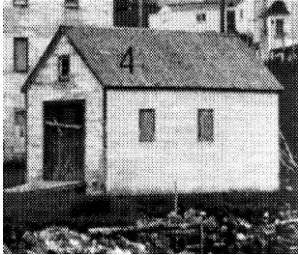
Mike MacGillivray, Scientific Specialist (Inorganics)

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EVOLUTION OF BUILDINGS' COLOR AT RYAN PREMISES

Buildings (current pictures)	1900s	Pre 1912	1912	1940s	1946	1970s	1991	Present
<p>No. 1. Retail Shop. Circa 1860-1874</p> 			<p>White walls with dark accents at corners (with the result of paint analysis, this dark colour may have been brown-red).</p> 	<p>White walls with white trim.</p> 	<p>White walls with dark (dark red) corner and dark window trim. Windows on first floor of main façade are also painted in a dark colour. Left door is dark with dark trim.</p> 	<p>Wall are painted white. Windows trim are dark (red). Dark (red) trim at corners.</p> 	<p>Wall are painted white. Windows trim are white. Dark (red) trim at corners. Left front door is white with white trim. Right front door is with white trim. Dark roof.</p> 	<p>White walls. Red trim around windows, corners and roof. Left front door is painted white with red trim. Right front door is white with white trim.</p>
<p>No. 2. Retail Store. Circa 1874-1879</p> 		<p>White (off white/beige) with dark accents (red).</p>	<p>White walls with dark (red) accents at corners.</p> 		<p>White Walls with dark (red) corner trim.</p> 	<p>Walls are painted white. Windows trim are dark (red). Dark trim at corners.</p> 	<p>White walls. Corners, windows and roof trim are red. Dark opening on main façade.</p> 	<p>White walls with red trim at corners, roof and windows. Just one red door on main façade (no opening).</p>

EVOLUTION OF BUILDINGS' COLOR AT RYAN PREMISES

Buildings (current pictures)	1900s	Pre 1912	1912	1940s	1946	1970s	1991-1992	Present
<p>No. 3. Fish Store. Circa 1888-1890</p> 	<p>Do not appear to be painted</p>	<p>All white with no evidence of trim.</p>	<p>White walls with dark (red) accents at corners.</p> 	<p>White walls with dark (red) accents at corners.</p>		<p>White walls with dark (red) windows, corners and roof trim. Garage door at left is painted in a dark color. The two "door" openings on second and third floor are white with dark trim.</p> 	<p>White with red corners, window and roof trim.</p> 	<p>White walls with red windows, corners and roof trim. Garage door at left is red and entrance door at right is white. The two "door" openings on second and third floor are red.</p>
<p>No 4. Salt Store. Circa 1941-1942</p> 				<p>White (off white/beige) walls with white door. No evidence of trims.</p>			<p>White with dark (red) corners, windows and roof trim. Dark door.</p> 	<p>White walls with red trim at corners, roof and windows. Main door is painted red.</p>

EVOLUTION OF BUILDINGS' COLOR AT RYAN PREMISES

Buildings (current pictures)	1900s	Pre 1912	1912	1940s	1946	1970s	1991	Present
<p>No. 5. Proprietors House. Circa 1860</p> 		<p>May have been with white walls with dark (red) trim. (based on paint analysis)</p>	<p>White walls with no evidence of dark accents at trim.</p> 	<p>1940s White wall with dark (red) trim at corners and windows. Entrance door is painted white with dark trim. Veranda post and decoration is white. Veranda floor appear in a dark colour.</p> 			 <p>White with dark (red) corners, windows and roof trim. Dark roof. Front door is white with dark (red) trim. Veranda porch posts and decoration are white. Veranda roof is dark.</p>	<p>White with red corners, windows and roof trim. Dark roof. Front door is white with red trim. Veranda porch posts and decoration are white. Veranda roof is dark. W/C ramp trim is yellow. Back door is painted red.</p>

Notes: Data are from textual, historical, photographic and archival documents, as well as from oral history. Left empty boxes indicate that no textual, photographic or oral information on the building's color for a specific date was available or that the information was just uncertain or inconsistent. The term "dark color" is used when the information is taken from black and white photography. We can therefore hypothesize that "dark" in question was "dark red" or "brown red" for some buildings. In his Interview, Hubert Stagg (born in Bonavista in 1923) mention that the Ryan's buildings were always painted white with red trim, a kind of Indian red, like a brown red.

PAINT ANALYSIS OF SAMPLES FROM RYAN PREMISES NHS, NEWFOUNDLAND

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In the current study, 11 paint samples from the exterior walls of 5 buildings (Table 1) that exist at the Ryan Premises National Historic Site were sent to the Conservation Science laboratory of Parks Canada for scientific analysis. The latter includes both the determination of the color of the finish used at a particular time in the building's history and the identification of the paint's components (pigment, binder, filler). However, due to a very tight deadline, we currently present the color matching results together with the analytical results of the top white finish only. The reason for the chemical identification of both the white pigment and the binder lies in the tendency of all architectural paints to discolor with age¹, a fact that is particularly apparent for bright whites². The factors that play the most significant role in the degradation of the white paint layer, which would eventually affect the color matching results, are the yellowing of oil mediums, fading and/or darkening of light-sensitive pigments, air pollution and continuous oxidation reactions¹. So, the identification of the ingredients used in the original paint will help us define the degree of yellowing and consequently the potential alteration of the original colour to the current one.

Furthermore, we would like to address that in order to determine the color of the coats with some degree of precision¹, a relatively large area of each individual coat has to be exposed³ so the color can be analysed in situ by a spectrophotometer or using the Munsell color code. The analysis of small samples in the laboratory lacks a degree of precision, especially for the inner layers, since their color match has to be done in the sample's mounted cross section. This is due to the fact that the inner layers cannot be exposed⁴, so as the color can be perceived with the naked eye. Therefore, their exposure has to be carried out in a cross section of the sample mounted in an acrylic resin (Bio-Plastic). The exposure is in turn accomplished through grinding and polishing of the samples. The resulted mounted cross sections acquire the whole paint layers sequence however the layers' fine thicknesses complicate their color matching. The latter has been carried out to the mounted cross sections using the Munsell color chips under the stereomicroscope with an illumination of an artificial light simulating natural north light.

1

<https://books.google.ca/books?id=U8a7JhAnLzkC&pg=PA9&lpg=PA9&dq=color+matching+munsell+chips+for+historical+purposes&source=bl&ots=Sf0M04VQCO&sig=gXiyAsRoyaRYJBi0B1xePvwwutl&hl=el&sa=X&ved=0ahUKEwj4INGtxZPOAhW16IMKHU09A5kQ6AEIWDAl#v=onepage&q=color%20matching%20munsell%20chips%20for%20historical%20purposes&f=false>

² file:///U:/GoogleChrome/Downloads/RF_TechSheet_-_Yellowing_Of_Whites%20(1).pdf

³ [https://books.google.ca/books?id=c9Gh5sdH_tkC&pg=SA5-PA10&lpg=SA5-](https://books.google.ca/books?id=c9Gh5sdH_tkC&pg=SA5-PA10&lpg=SA5-PA10&dq=color+matching+munsell+chips+for+historical+purposes&source=bl&ots=5Sp70I4G2R&sig=aAf5n0nQqXI8EO0vETJNwID1IQs&hl=el&sa=X&ved=0ahUKEwj4INGtxZPOAhW16IMKHU09A5kQ6AEIRzAF#v=onepage&q=color%20matching%20munsell%20chips%20for%20historical%20purposes&f=false)

[PA10&dq=color+matching+munsell+chips+for+historical+purposes&source=bl&ots=5Sp70I4G2R&sig=aAf5n0nQqXI8EO0vETJNwID1IQs&hl=el&sa=X&ved=0ahUKEwj4INGtxZPOAhW16IMKHU09A5kQ6AEIRzAF#v=onepage&q=color%20matching%20munsell%20chips%20for%20historical%20purposes&f=false](https://books.google.ca/books?id=c9Gh5sdH_tkC&pg=SA5-PA10&lpg=SA5-PA10&dq=color+matching+munsell+chips+for+historical+purposes&source=bl&ots=5Sp70I4G2R&sig=aAf5n0nQqXI8EO0vETJNwID1IQs&hl=el&sa=X&ved=0ahUKEwj4INGtxZPOAhW16IMKHU09A5kQ6AEIRzAF#v=onepage&q=color%20matching%20munsell%20chips%20for%20historical%20purposes&f=false)

⁴ The removal of the top layer was carried out in two red samples both manually and chemically. However both practices resulted in the destruction of the samples.

North light is essential in order to render the colors accurately without the effects of the yellow spectrum of direct sunlight⁵. Of course this technique lacks a certain degree of precision (small thickness of the paint layer, mixture of colours, discoloration of the inner layers due to aging). However, due to the similarity of the results from both the spectrophotometer (expressed in Munsell parameters) and the comparison of the Munsell color chips with the color of the top finish layer in the mounted cross sections, the above practice was eventually performed.

Table 1: Description of samples

Building No.	1	1	2	2	3	3	4	4	5	5	5
Sample No.	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11
Colour (top finish)	White	Red	white	red	white	red	white	red	white	red	yellow

Analytical results

The top white finish of samples 1, 3, 5, 7 and 9 was analysed by spectroscopic techniques (Raman and ATR-FTIR) resulting in the identification of both the pigment and the binder. The former is rutile (titanium dioxide) (Figure 1) and the latter is linseed oil (Figure 2), a historically popular material to cover wood (Garvin 2002). The resulting composition indicates that a potential alteration of the initial colour is derived from the yellowing of the drying oil medium and not from a mutation of the white pigment. Rutile's form of titanium dioxide is considered as one of the most colorfast of all pigments^{6,7}. Furthermore, it is chemically inert and does not react with airborne pollutants, organic solvents or other pigments as well as it exhibits increased weather resistance⁶. On the contrary, the yellowing of drying oils has been known qualitatively for centuries (Levison 1985). Among them, linseed oil has the tendency to yellow the most (Dorge and Howlett 1998). However, this yellowing occurs more readily in the dark and can be at least partially reversed by exposure to light (Dorge and Howlett 1998). This means that exterior paints are affected less by the condensation reactions that lead to yellowing of linseed oil which in turn impacts on the preserved colour of the top finish. Furthermore, the yellowing of linseed oil in titanium dioxide white is caused by the tendency of the oil to migrate and form a thin film on the paint surface⁵, a fact that can be hindered by the addition of zinc white⁵. Bearing in mind that for cost reasons, titanium dioxide is seldom used as the sole ingredient in paint pigment (Garvin 2002), we can assume that zinc white may have been used⁸ as a component in the original paint mixture which limits further the yellowing result.

⁵ https://en.wikipedia.org/wiki/Historic_paint_analysis

⁶ [file:///U:/GoogleChrome/Downloads/RF_TechSheet_-_Yellowing_Of_Whites%20\(1\).pdf](file:///U:/GoogleChrome/Downloads/RF_TechSheet_-_Yellowing_Of_Whites%20(1).pdf)

⁷ www.naturalpigments.com/titanium-dioxide-pigment.html

⁸ In order to confirm the presence of zinc white, further analysis is needed.

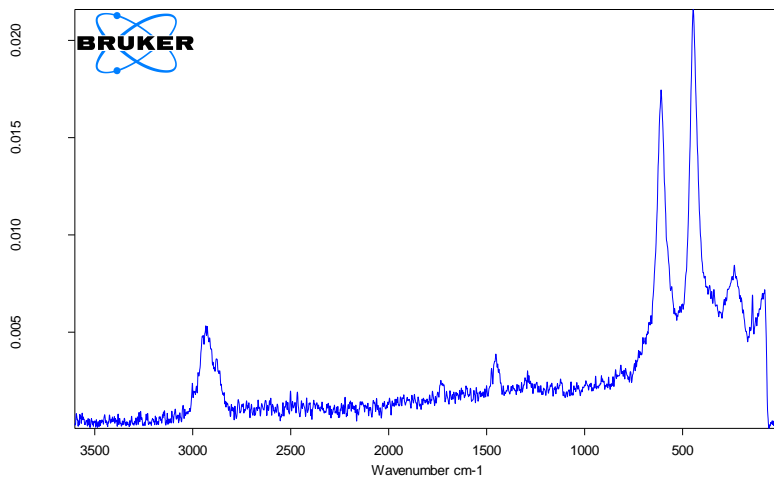


Figure 1: Raman spectrum of the white top finish of Sample #1 - Building 1. Characteristic peaks of rutile: 446(s) cm^{-1} , 611(s) cm^{-1} , 237(m) cm^{-1} , 143(w) cm^{-1} . Characteristic peaks of linseed oil: 2931(s) cm^{-1} , 1449(m) cm^{-1} , 1291(m) cm^{-1} .

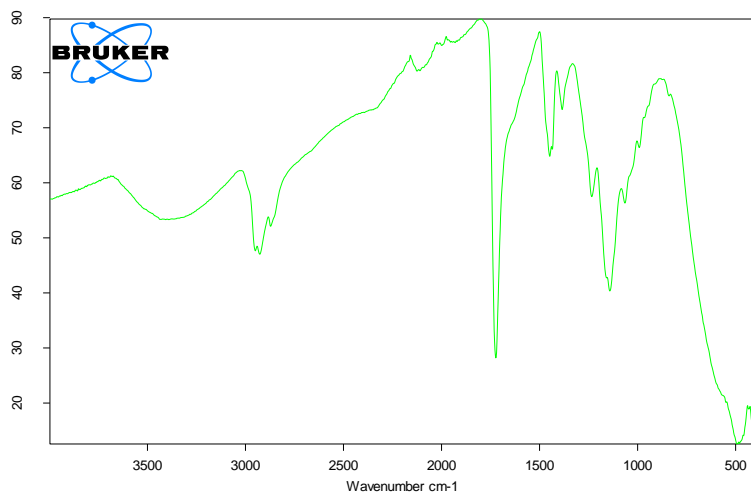


Figure 2: ATR spectrum of the white top finish of Sample #1 - Building 1. Characteristic peaks of oil: 1722 cm^{-1} , 1450 cm^{-1} , 1234 cm^{-1} , 1146 cm^{-1} .

Color matching results

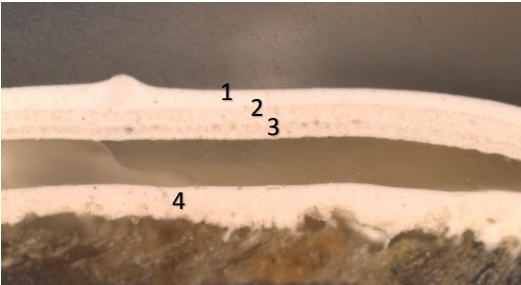
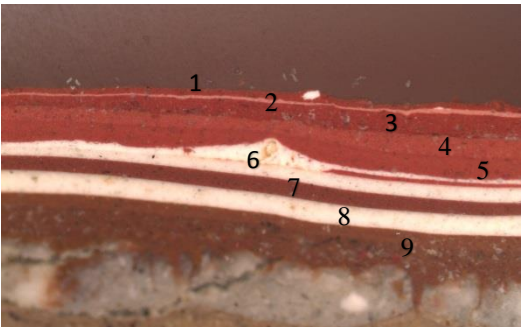
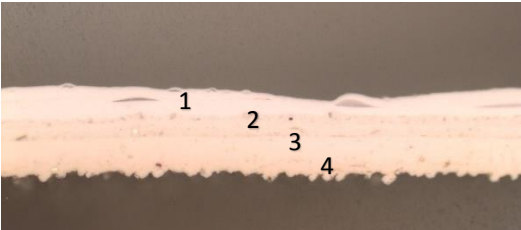
All the top layers of both the white and the red samples were color matched by the Konica Minolta CM-2600d spectrophotometer. The results were displayed in the Munsell code notation. All the inner layers were color matched using the Munsell color chips. Let us not forget though that there will always be a degree of uncertainty and area of tolerance in matching the original paint color to a Munsell color notation under standard conditions of illumination⁹. Furthermore, a certain degree of discoloration (even though and especially for the more susceptible white colours this may be small-see above) is expected to all architectural paints¹⁰. The color code notation obtained by matching the samples can be used to specify the paint colour desired. The results are summarized in the following table (Table 2):

⁹

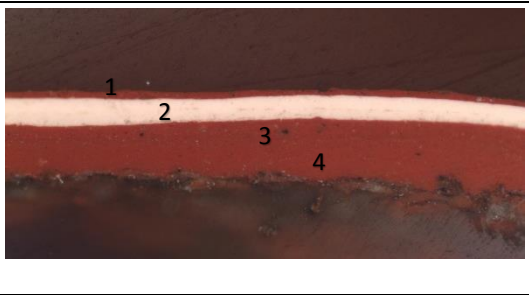
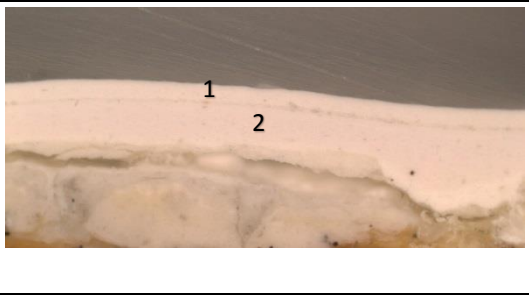
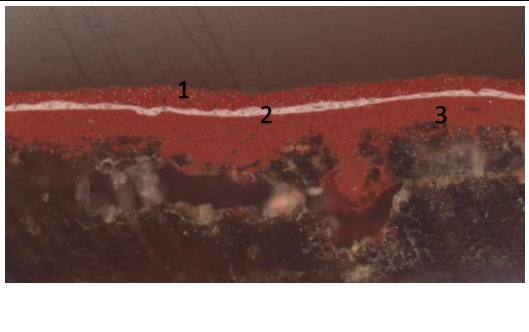
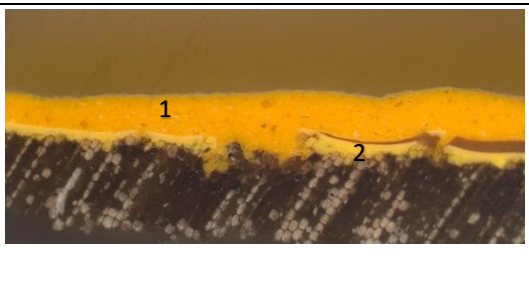
<https://books.google.ca/books?id=U8a7JhAnLzkC&pg=PA9&lpg=PA9&dq=color+matching+munsell+chips+for+historical+purposes&source=bl&ots=Sf0M04VQCO&sig=gXiyAsRoyaRYJBi0B1xePvwwutl&hl=el&sa=X&ved=0ahUKewj4INGtxZPOAhWi6IMKHU09A5kQ6AEIWDAl#v=onepage&q=color%20matching%20munsell%20chips%20for%20historical%20purposes&f=false>

¹⁰

Table 2: Color matching results

Sample	Image of Cross section under the Optical Microscope	Munsell Colour
<p>Bldg 1 Sample #1</p>		<p>1 (top finish-white). Results from the spectrophotometer: 4.5Y 9.1/0.1 Closest Munsell chip: N9.5 (Neutrals)</p> <p>2 (inner off white layer attached to the top finish). Munsell chip: 5P 9/1</p> <p>3 (coarse off white paint layer). Munsell chip: N9 (Neutrals)</p> <p>4 (innermost off white paint layer). Munsell chip: N8.75 (Neutrals)</p>
<p>Bldg 1 Sample #2</p>		<p>1 (top finish-red). Results from the spectrophotometer: 9.6R 4/5.7 Closest Munsell chip: 10R 4/6</p> <p>2 (inner white layer attached to the top finish). Munsell chip: 5P 9/1</p> <p>3 (dark red paint layer). Munsell chip: 10R 4/6</p> <p>4 (red paint layer). Munsell chip: 10R 5/6</p> <p>5 (red white layer attached to the inner white). Munsell chip: 10R 4/8</p> <p>6 (white coarse paint layer). Munsell chip: 10PB 9/11</p> <p>7 (dark red paint layer). Munsell chip: 2.5YR 3/6</p> <p>8 (white paint layer). Munsell chip: N9.25</p> <p>9 (brown innermost paint layer attached to the white background). Munsell chip: 2.5YR 4/2</p>
<p>Bldg 2 Sample #3</p>		<p>1 (top finish-white). Results from the spectrophotometer: 6.2PB 9.2/0.6 Closest Munsell chip: N9.5 (Neutrals)</p> <p>2 (inner white layer attached to the top finish). Munsell chip: 5P 9/1</p> <p>3 (off white paint layer). Munsell chip: 5PB 9/1</p> <p>4 (innermost off white/beige paint layer). Munsell chip: 5Y 9/1</p>

<p>Bldg 2 Sample #4</p>		<p>1 (top finish-red). Results from the spectrophotometer: 9.3R 4/5.7 Closest Munsell chip: 10R 4/6</p> <p>2 (inner red layer attached to the top finish). Munsell chip: 10R 5/6</p> <p>3 (white paint layer). <i>Not matched. Very thin layer. Not continuous.</i></p> <p>4 (innermost red paint layer). Munsell chip: 10R 4/8</p>
<p>Bldg 3 Sample #5</p>		<p>1 (top finish-white). Results from the spectrophotometer: 2.8PB 9.2/0.2 Closest Munsell chip: N9.5 (Neutrals)</p> <p>2 (inner white layer attached to the wood). Munsell chip: N9.25 (Neutrals)</p>
<p>Bldg 3 Sample #6</p>		<p>1 (top finish-red). Results from the spectrophotometer: 9.7R 4/5.9 Closest Munsell chip: 10R 4/6</p> <p>2 (inner white layer attached to the top finish). Munsell chip: 5P 9/1</p> <p>3 (red paint layer). Munsell chip: 10R 4/6</p> <p>4 (innermost red paint layer). Munsell chip: 7.5R 4/6</p>
<p>Bldg 4 Sample #7</p>		<p>1 (top finish-white). Results from the spectrophotometer: 8.5B 9/0.3 Closest Munsell chip: N9 (Neutrals)</p> <p>2 (inner off white layer attached to the top finish). Munsell chip: 10PB 9/1</p> <p>3 (white paint layer). Munsell chip: 5PB 9/1</p> <p>4 (innermost off white/beige paint layer). Munsell chip: 5Y 9/1</p>

<p>Bldg 4 Sample #8</p>		<p>1 (top finish-red). Results from the spectrophotometer: 8.5R 4.1/5.5 Closest Munsell chip: 10R 4/6</p> <p>2 (inner white layer attached to the top finish). Munsell chip: 10PB 9/1</p> <p>3 (coarse red paint layer). Munsell chip: 10R 4/6</p> <p>4 (innermost red paint layer). Munsell chip: 10R 4/4</p>
<p>Bldg 5 Sample #9</p>		<p>1 (top finish-white). Results from the spectrophotometer: 4.7B 9.2/0.2 Closest Munsell chip: 5PB 9/1</p> <p>2 (inner white layer attached to the top finish). Munsell chip: N9.25 (Neutrals)</p>
<p>Bldg 5 Sample #10</p>		<p>1 (top finish-red). Results from the spectrophotometer: 9.9R 3.9/5.6 Closest Munsell chip: 10R 4/6</p> <p>2 (inner white layer attached to the top finish). Munsell chip: N9.25 (Neutrals)</p> <p>3 (innermost red paint layer-attached to the wood). Munsell chip: 10R 5/6</p>
<p>Bldg 5 Sample #11</p>		<p>1 (top finish-dark yellow). Munsell chip: 1.25Y 8/12</p> <p>2 (inner yellow layer attached to the top finish and the wood). Munsell chip: 5Y 8.5/12</p>

References

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