Public Works and Government Services Canada

Requisition No: EZ899-182095/A

DRAWINGS & SPECIFICATIONS
for
Asbestos Abatement for the OSD area at IOS

APPROVED BY:

Regional Manager — NOV 0 8 2017
Date

Construction Safety Coordinator — 07.11.14
Date

TENDER:

Project Manager — 07-11-2017
Date

Real Property Services Branch, Professional and Technical Services, Pacific Region
Room 219 - 800 Burrard Street, Vancouver, B.C., V6Z 0B9

Specification Index

ABATEMENT OF SUSPENDED CEILING AND PLENUM

END OF INDEX

Section 01 11 55 GENERAL INSTRUCTIONS

ABATEMENT OF SUSPENDED CEILING AND PLENUM

Contents

1.0 Codes

1.1 Perform work to CURRENT Codes, Construction Standards and Bylaws, including Amendments up to the TENDER closing date. All work under this contract shall be done in strict accordance with all applicable Federal, Provincial, Local regulations, and other standards and codes governing asbestos abatement and any other trade work done in conjunction with the abatement.

1.2 These specifications are intended to describe the minimum requirements for undertaking and completing the Work as described below. Wherein should these specifications and any of the CURRENT Codes, Construction Standards and Bylaws vary, the higher more stringent requirement and/or standard shall apply in accordance with but not limited to those Standards and Guidelines of the British Columbia Occupational Health and Regulation as enforced in accordance with the requirements of WorkSafeBC.

1.3 Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

1.4 The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, Provincial, and local regulations pertaining to work practices, hauling and disposal of hazardous waste, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable regulations. Contractor shall hold the Owner and the Owner's Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other on the part of himself, his employees, or his subcontractors.

2.0 Descriptions of Work

2.1 Work under this Contract covers Asbestos Abatement of Suspended Ceiling and Air Plenum of the lower level of the Ocean Sciences Physics Building located at 9860 West Saanich Road, Sidney, B.C. The wall surfacing compound survey for the Ocean Sciences Physics Building, Plan Lines 20 through 31 is reported in the appended "Pre Renovation Wall Surfacing Compound - Project No.: 161-17554-00". This survey reported Chrysotile asbestos in the drywall joint compound for the lower level of the Ocean Sciences Physics Building, Plan Lines 20 through 31. The drywall debris and dust assessment of the Ocean Sciences Physics Building, Lower Level Rooms with Suspended Ceiling Tiles is reported in the appended document "Assessment of Suspect Drywall Debris and Dust - Project No.: 171-08088-00". This assessment reported Chrysotile asbestos in the drywall

debris and dust atop of the suspended ceilings for the lower level of the Ocean Sciences Physics Building.

2.1.1 Work to be undertaken in three separate Phases includes the isolation, handling, and removal of the suspended ceiling tiles and tracking, removal of Paraline® linear metal ceiling, cleaning of overlying appurtenances, and clear coat encapsulation of above exposed unpainted drywall joint compound comprising air plenum abatement works to be undertaken by an approved abatement contractor using high risk safe work practices and procedures.

2.2 Work to be performed under this Contract includes, but is not limited to, the following items.

2.2.1 The high risk abatement procedural removal, transfer and disposal of all suspended ceiling tiles, tracking, and hanger wire and strapping (asbestos contaminated) is to be undertaken in three Phases for **Rooms 1217, 1217a, 1218, 1218a, 1220, 1221, 1223, 1224, 1238, 1239, 1246 and the Centre South Corridor** as indicated on Drawing Figure 3 and described in Section 028213 and as directed by the Departmental Representative.

2.2.2 The high risk abatement procedural removal, transfer and disposal of all suspended Paraline® linear metal ceiling, supports, and hanger wire and strapping (asbestos contaminated) is to be undertaken in three Phases for **Room 1225 and the Mid-Office Corridor** as indicated on Drawing Figure 3 and described in Section 028213 and as directed by the Departmental Representative.

2.2.3 For the above-noted Rooms and Corridors in Sections 2.2.1 and 2.2.2, the drywall with asbestos containing drywall joint compound is not to be removed however, repairs to damaged drywall and other consequential appurtenances resulting from suspended ceiling tracking removal are to be satisfactorily prepared in readiness for application of occupancy level paint (by others) and re-installation of tracking (by others) as described in Section 028213 and as directed by the Departmental Representative.

2.2.4 For the above-noted Rooms and Corridors in Sections 2.2.1 and 2.2.2, the application of specified clear coat encapsulation to plenum level unpainted drywall with asbestos containing drywall joint compound is to be undertaken as described in Section 028213 and as directed by the Departmental Representative.

2.2.5 For the above-noted Rooms and Corridors in Sections 2.2.1 and 2.2.2, the application of void packing to inner office side top of wall cavities is to be undertaken as described in Section 028213 and as directed by the Departmental Representative.

2.2.6 The removal, transfer and disposal of all post abatement containments and demobilization from site is to be undertaken as described in Section 028213 and as directed by the Departmental Representative.

2.2.7 Project is not complete until documentation is submitted without any deficiencies.

2.2.8 The contractor is to work with and take direction from the Public Works and Government Services Canada (PWGSC) provided Departmental Representative and/or Consultant. Contractor is to provide a schedule for site work so that site security can be apprised of planned activities and present at required.

2.2.9 Completion of project is to be done by March 31, 2018.

3.0 Contract Documents

3.1 The Contract documents, drawings and specifications are intended to complement each other, and to provide for and include everything necessary for the completion of the work.

3.2 Drawings are, in general, diagrammatic and are intended to indicate the scope and general arrangement of the work.

4.0 Other Contracts

4.1 Further Contracts may be awarded while this contract is in progress.

4.2 Cooperate with other Contractors in carrying out their respective works and carry out instructions from Departmental Representative.

4.3 Coordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Departmental Representative, in writing, any defects which may interfere with proper execution of this Work.

5.0 WORK BY OTHERS

5.1 Co-operate with other Contractors in carrying out their respective works and carry out instructions as directed by the Departmental Representative.

5.2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to the Departmental Representative or Consultant, in writing, any defects which may interfere with proper execution of Work.

5.3 Work of Project executed prior to start of Work of this Contract, and which is specifically excluded from this Contract:

5.3.1 Prior to each of the three Phases the Departmental Representative will arrange for the removal of all office furnishings, contents and personal effects in preparation for handover to the Contractor.

5.4 Work of Project which will be executed after completion of Work of this Contract, and which is specifically excluded from this Contract:

5.4.1 Subsequent to Contractor completion of each of the three Phases, the Departmental Representative will arrange for the painting of Contractor repaired drywall, installation of replacement suspended ceiling system(s), and adjustment/in-setting of appurtenances including HVAC supply and returns, lighting, smoke detectors, sprinkler heads, wiring and conduits to be aligned with the replacement suspended ceiling.

5.5 Construct Work during the three Phases is to provide for continuous safe public usage of adjacent office areas beyond the scope of works which are or may be occupied by unprotected works.

5.6 The Contractor shall have available during the three Phases occupancy usage portions of the **South Corridor** and **Centre South Corridor** as indicated below and directed by the Departmental Representative.

6.0 Division of Specifications

6.1 The specifications are subdivided in accordance with the current 6-digit National Master Specifications System.

6.2 A division may consist of the work of more than 1 subcontractor. Responsibility for determining which subcontractor provides labour, material, equipment and services required to complete the work rests solely with the Contractor.

6.3 In the event of discrepancies or conflicts when interpreting the drawings and specifications, the specifications govern.

7.0 WORK SEQUENCE

7.1 Construct Work in stages to accommodate Owner's continued use of premises during construction.

7.2 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.

7.3 Required stage Phases:

7.3.1 **Phase 01** is to include the Work to be performed for **Rooms 1217, 1217a, 1218, 1218a, and the Mid-Office Corridor** as indicated on Drawing Figure 3 and described in Section 026133 and as directed by the Departmental Representative.

7.3.2 **Phase 02** is to include the Work to be performed for **Rooms 1220, 1221, 1223, 1224, 1225** as indicated on Drawing Figure 3 and described in Section 026133 and as directed by the Departmental Representative.

7.3.3 **Phase 03** is to include the Work to be performed for Rooms **1238, 1239, 1246 and the Centre South Corridor** as indicated on Drawing Figure 3 and described in Section 026133 and as directed by the Departmental Representative.

7.4 Construct Work during the three Phases is to provide for continuous safe public usage of adjacent office areas beyond the scope of works which are or may be occupied by unprotected works.

7.5 The Contractor shall have available during the three Phases occupancy usage portions of the **South Corridor** and **Centre South Corridor** as indicated below and directed by the Departmental Representative.

7.5.1 South Corridor portion availability for Contractor usage during Phase 01 shall include the full width portion alignment extending between the northeast entry to Room 1216 through to 1.5 m east of the east wall of the Mid-Office Corridor.

7.5.2 South Corridor portion availability for Contractor usage during Phase 02 shall include the full width portion alignment extending between 1.5 m west of the west wall of the Mid-Office Corridor through the intersection with but not including the Centre South Corridor.

7.5.3 South Corridor portion availability for Contractor usage during Phase 03 shall include the full width portion alignment extending from the east outer edge of the door frame entry to Room 1225 through to the intersection with and including the Centre South Corridor.

7.5.4 Centre South Corridor portion availability for Contractor usage during Phase 03 shall include the full width portion alignment extending from the south extent building entry through to the intersection with but not including the North Corridor.

7.6 Do not close off public usage of facilities until use of one Phase of Work will provide alternate usage as directed by the Departmental Representative.

7.7 Maintain fire access/control.

8.0 Time of Completion

8.1 Completion of project is to be done by March 31, 2018.

9.0 Hours of Work

9.1 Restrictive as follows:

9.1.1 Schedule works including but limited mobilization, containment, abatement removal, encapsulation and demobilization work after normal working hours of the building and during the day on weekends and/or holidays. Normal weekday working hours of the building are 07:30 to 16:30 hours.

9.1.2 Notify Departmental Representative of all after hours work, including weekends and holidays.

10.0 Work Schedule

10.1 Carry on work as per indicated "PHASES" and as follows:

10.1.1 Within 5 working days after Contract award, provide a "phasing bar chart" and a schedule showing anticipated progress stages and final completion of the work within the period required by the Contract documents.

10.1.1.1 Submission of shop drawings, product data, MSDS sheets and samples.

10.1.1.2 Commencement and completion of work of each of section of the specifications or trade for each Phase as outlined.

10.1.1.3 Final completion date within the time period required by the Contract documents.

1.1 Do not change approved Schedule without notifying Departmental Representative.

1.2 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of Departmental Representative.

11.0 Cost Breakdown

11.1 Before submitting the first progress claim, submit a breakdown of the Contract lump sum prices in detail as directed by the Departmental Representative.

12.0 Codes, Bylaws, Standards

12.1 Perform work in accordance with the codes and standards listed in the technical sections of the contract documents, Construction Standards and/or any other Code or Bylaw of local application.

12.2 Comply with applicable local bylaws, rules and regulations enforced at the location concerned.

12.3 Meet or exceed requirements of Contract documents, specified standards, codes and referenced documents.

12.4 In any case of conflict or discrepancy, the most stringent requirements shall apply.

13.0 Documents Required

13.1 Maintain 1 copy each of the following at the job site:

13.1.1 Contract drawings.

13.1.2 Contract specifications.

13.1.3 Addenda to Contract documents.

13.1.4 Copy of approved work schedule.

13.1.5 Change orders.
13.1.6 Other modifications to Contract.
13.1.7 Any issued Permits.
13.1.8 Waste manifest(s) for transport and disposal at permitted/approved disposal facility for the asbestos contaminated waste.
13.1.9 General liability and environmental liability insurance,
13.1.10 WorkSafeBC coverage,
13.1.11 Notice of Project Involving Asbestos (submitted to WorkSafeBC),
13.1.12 Respiratory Protection Program, and up-to-date respirator fit test forms for all employees who will be wearing a respirator.
13.1.13 Training Certificates, or proof of adequate training
13.1.14 On-site conducted DOP Test certificate for all HEPA vacuums and air extractors
13.1.15 Exposure Control Plan, Risk Assessment and Safe Work Procedures for all work involving asbestos.

14.0 Regulatory Requirements

14.1 Obtain and pay for - Certificates, Licenses and other permits required by regulatory municipal, provincial or federal authorities to complete the work.
14.2 Provide inspection authorities with plans and information required for issue of acceptance certificates.

15.0 Contractor's Use of Site

15.1 Contractor’s use of the worksite is exclusive and complete for the execution of the work.
15.2 Contractor is the Prime Contractor and assumes responsibility for assigned premises for performance of this work.
15.3 Contractor shall be responsible for coordination of all work activities on site, including the work of other contractors engaged by the Departmental Representative.
15.4 Contractor shall perform work in accordance with Contract documents. Ensure work is carried out in accordance with indicated phasing. Do not unreasonably encumber site with material or equipment. Ground access is available. Use of elevators is not required or permitted.
15.5 Contractor shall accept liability for damage, safety of equipment and overloading of existing equipment.

16.0 Examination

16.1 Examine site and be familiar and conversant with existing conditions likely to affect work.
16.2 Recommended is to provide photographs of adjacent properties, objects and structures liable to be damaged or be the subject of subsequent claims.

17.0 Existing Services

17.1 Where work involves breaking into or connecting to existing services, carry out work at times directed by the authorities having jurisdiction.

18.0 Location of Equipment and Fixtures

18.1 Contractor shall locate all work area existing materials including but not limited to equipment, fixtures, appurtenances, utilities, conduits, HVAC system componentry, and outlets.

18.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space, and in accordance with manufacturer's recommendations for safety, access and maintenance. Water and electrical lines are to be suspended overhead to avoid trip hazards.

18.3 Inform Departmental Representative of impending installation and obtain his approval for actual locations.

18.4 Submit field drawings or shop drawings to indicate the relative position of various services and equipment when required by the Departmental Representative.

19.0 Cutting and Patching

19.1 Submit field drawings or shop drawings to indicate the services and equipment requiring cutting or alteration when required by the Departmental Representative.

19.2 Cut existing suspended ceiling tile tracking, Paraline® linear metal ceiling sections, and associated supports and hangers as required to accommodate full abatement removal.

19.3 Remove items so shown or specified.

19.4 Do not cut, bore, or sleeve load-bearing members.

19.5 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

19.6 Fit work airtight to pipes, sleeves ducts, conduits and wall cavities.

19.7 Patch and make good drywall surfaces cut, damaged or disturbed, to Departmental Representative's approval. Match existing material, finish and texture in preparation for painting (painting by others).

19.8 Making good is defined as matching construction and finishing materials and the adjacent surfaces such that there is no visible difference between existing and new surfaces when viewed from 1.5 metres in ambient light, and includes sanded drywall patch sealed in preparation for painting the whole surface to the next change in plane.

20.0 Setting Out of Work

20.1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

20.2 Provide devices needed to lay out and construct work.

20.3 Supply such devices as templates required to facilitate Departmental Representative's inspection of work.

21.0 Quality of Work

21.1 Ensure that quality workmanship is performed through use of skilled tradesmen, under supervision of qualified journeyman.

21.2 In cases of dispute, decisions as to standard or quality of work rest solely with the Departmental Representative, whose decision is final.

22.0 Works Coordination

22.1 Coordinate work of subtrades: Designate one person to be responsible for review of contract documents and managing coordination of Work.

22.2 Convene meetings between subcontractors whose work interfaces and ensure awareness of areas and extent of interface required. Publish minutes of each meeting.

22.3 Work coordination:

22.3.1 Ensure cooperation between trades in order to facilitate general progress of Work and avoid situations of spatial interference.

22.3.2 Ensure that each trade provides all other trades reasonable opportunity for completion of Work and in such a way as to prevent unnecessary delays, cutting, patching and removal or replacement of completed work.

22.3.3 Ensure disputes between subcontractors are resolved.

22.4 The Departmental Representative is not responsible for, or accountable for extra costs incurred as a result of Contractor's failure to coordinate work.

22.5 Maintain efficient and continuous supervision.

23.0 Project Meetings

23.1 The Departmental Representative will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

24.0 Testing and Inspections

24.1 Specific requirements for inspection and testing to be carried out by testing service or laboratory approved by the Departmental Representative are specified in the technical sections.

24.2 The Contractor will appoint and pay for the services of testing agency or testing laboratory as specified, and where required for the following:

24.2.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.

24.2.2 Inspection and testing performed exclusively for Contractor's convenience.

24.3 Where inspections by designated testing laboratory reveal work is not in accordance with the Contract requirements, Contractor shall pay costs for additional tests or inspections as the Departmental Representative may require verification of acceptability of corrected work.

24.4 The Departmental Representative may require, and pay for, additional inspection and testing services not included in Paragraph 17.2.

24.5 Provide Departmental Representative with 2 copies of testing laboratory reports as soon as they are available.

24.6 Ensure that work to be inspected is complete at the time of inspection and in accordance with the contract documents. Additional inspections required due to the incomplete work or poorly executed work, as judged by the departmental representative, as well as additional design or remedial work caused by deviations from these drawings, may be charged to the contractor.

24.7 The Contractor shall give a minimum 24 hours' notice to the Departmental Representative for any inspection to be carried out.

25.0 Cleaning

25.1 Daily conduct cleaning and disposal operations. Comply with local ordinances and anti-pollution laws. Refer to Section 017411 – Cleaning.

25.2 Ensure cleanup of the work areas each day after completion of work.

25.3 Keep work areas clean and continue cleaning as required until work is sufficiently completed or ready to be open to the public.

25.4 Clean interior building areas when ready to receive finish painting and continue cleaning on an as-needed basis until building is sufficiently completed or ready for occupancy.

25.5 In preparation for interim and final inspections:

25.5.1 Examine all sight-exposed interior and exterior surfaced and concealed spaces.

25.5.2 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior finished surfaces, including glass and other polished surfaces.

25.6 Use cleaning materials and methods in accordance with instructions of the manufacturer of the surface to be cleaned.

26.0 General Requirements For Waste Management And Disposal

26.1 All debris and deleterious substances generated during project activities shall be contained in the immediate work area, collected and appropriately disposed of in accordance with all applicable legislation, guidelines, and best management practices or as prescribed in the list of mitigation measures.

26.2 The Contractor/Operator shall be responsible for assuring that all reasonable efforts are implemented to eliminate or minimize waste production.

26.3 At work sites all food wastes and discarded food items shall be stored in closed, leak-proof storage containers that prevents access by wildlife. All material which can be recycled, such as paper and cardboard products, glass bottles and plastic and metal containers, to be recycled where possible. Contractor is responsible for the proper collection, storage and transportation of garbage and recyclable waste to disposal facilities.

26.4 Open burning of waste is strictly prohibited

27.0 Dust Control

27.1 Provide temporary dust-tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of work and public.

27.2 Maintain and relocate protection until such work is complete.

28.0 Environmental Protection

28.1 Prevent extraneous materials from contaminating air beyond the construction area by providing temporary enclosures during work.

28.2 Control traffic on site to prevent mud or construction debris from being carried through the remainder of the site property, laneways or onto public roads, tracking and spilling of debris on roads, etc.

28.3 Implement control measures to prevent releases that could contaminate soil, groundwater, and air; and do not store fuel on site.

28.4 Do not dispose of unfiltered liquid waste or volatile materials into storm or sanitary sewers.

28.5 Ensure proper disposal procedures in accordance with all applicable regulations.

29.0 Products Supplied by Departmental Representative

29.1 Products supplied by Departmental Representative – refer to following sections:
- **29.1.1** N/A

29.2 Contractor's duties:
- **29.2.1** Promptly inspect stored products, and give written report upon request to Departmental Representative on condition of all items received.
- **29.2.2** Transport and deliver to work area.
- **29.2.3** Handle materials at site.
- **29.2.4** Install and finish products as specified.

30.0 Security Clearances

30.1 Personnel employed on this project will be subject to security check. Obtain requisite clearances, as instructed, for each individual required to enter the premises.

30.2 Personnel will be checked at start of work shift and provided with pass which must be worn at all times.

30.3 Contractor shall be fully responsible for securing the premises and its contents throughout the construction period.

31.0 Access, Delivery, Staging and Accommodation

31.1 Approval from Departmental Representative is required for access and delivery to the Site. The Contractor is to maintain this approval for the duration of the Contract.

32.0 Storage Facilities

32.1 Storage space will be limited to the area of construction in the locations approved by the Departmental Representative.

33.0 Testing and Inspection

33.1 The Client will appoint a Consultant and pay for the services of testing agency or testing laboratory as specified, and where required for the following:
- **33.1.1** Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
- **33.1.2** Inspection and testing performed exclusively for Contractor's convenience.
- **33.1.3** Tests specified to be carried out by Contractor under the Departmental Representative's supervision.
- **33.1.4** Provide Contractor with copies of testing laboratory reports as soon as they are available.

33.2 Where tests or inspections by designated testing laboratory reveal work is not in accordance with the Contract requirements, Contractor shall pay costs for additional tests or inspections as the Departmental Representative may require to verify acceptability of correct work.

33.3 Contractor shall furnish labour and facilities to:
- **33.3.1** Notify Departmental Representative in advance of planned testing.
- **33.3.2** Where materials are specified to be tested, make available to the Consultant those items required for sample collection including but not limited the site area, disposable coveralls, decontamination and clean room facilities, and personal as required for occupational sample collection of representative samples in the required quantity for laboratory analysis.

33.3.3 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Departmental Representative.

33.4 The Departmental Representative may require, and pay for, additional inspection and testing services not included in Paragraph 27.1.

34.0 Power

34.1 Power source connections will be limited to that approved by the Departmental Representative. The Contractor is to provide and connect certify a ground fault power panel suitable to handle all Contractor power requirements. All power routing is to be approved by the Departmental Representative and may require elevation to avoid trip hazards.

35.0 Water Supply

35.1 Fresh water is available at site. The Contractor is responsible for making and maintaining all water connections. The Contractor is responsible for providing, certifying, and maintaining all hot water connections. All water routing is to be approved by the Departmental Representative and may require elevation to avoid trip hazards.

36.0 Sanitary Facilities

36.1 Contractor is allowed to bring portable washrooms, decontamination, and shower facility equipment for temporary on-site placement in locations approved by the Departmental Representative.

37.0 Scaffolding

37.1 Construct and maintain scaffolding in rigid, secure and safe manner.

38.0 Additional Drawings

38.1 The Departmental Representative may furnish additional drawings for clarification. These additional drawings have the same meaning and intent as if they were included with the plans referred to in the Contract documents.

38.2 Upon request, Departmental Representative may furnish up to a maximum of 4 sets of Contract documents for use by the Contractor at no additional cost. Should more than 4 sets of documents be required the Departmental Representative will provide them at additional cost.

39.0 Payment

39.1 Monthly progress payments as per contract.

40.0 Familiarization with Site

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

41.0 Submission of Tender

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

END OF SECTION

Section 01 33 11 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

ABATEMENT OF SUSPENDED CEILING AND PLENUM

Contents

1.0 Approvals

1.1 Approval of shop drawings to be sent to departmental representative for approval..

2.0 General

2.1 This Section specifies general requirements and procedures for the Contractor's submissions of shop drawings, product data, samples and other requested submittals to Departmental Representative for review. Additional specific requirements for submissions are specified in individual technical sections.

2.2 Present shop drawings, product data and samples in SI Metric units.

2.3 Where items or information is not produced in SI Metric units, converted values are acceptable.

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

2.5 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract documents and stating reasons for deviations.

2.6 Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Departmental Representative's review of submission unless Departmental Representative gives written acceptance of specific deviations.

2.7 Make any changes in submissions which Departmental Representative may require consistent with Contract documents and resubmit as directed by Departmental Representative.

2.8 Notify Departmental Representative in writing, when resubmitting, of any revisions other than those requested by Departmental Representative.

2.9 **Do not proceed with work until relevant submissions are reviewed and approved by the Departmental Representative.**

3.0 Submission Requirements

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

3.2 Allow [(5) five], [(10 ten] days for Departmental Representative's review of each submission, unless noted otherwise.

3.3 Accompany submissions with transmittal letter, in duplicate, containing:

- **3.3.1** Date.
- **3.3.2** Project title and number.
- **3.3.3** Contractor's name and address.
- **3.3.4** Identification and quantity of each shop drawing, product data and sample.
- **3.3.5** Other pertinent data.

3.4 Submissions shall include:

- **3.4.1** Date and revision dates.
- **3.4.2** Project title and number.
- **3.4.3** Name and address of:
- **3.4.4** Subcontractor.
- **3.4.5** Supplier.
- **3.4.6** Manufacturer.

3.5 Contractor's stamp, signed by Contractor's authorized representative, certifying approval of submissions, verification of field measurements and compliance with Contract documents.

3.6 Details of appropriate portions of work as applicable.

- **3.6.1** Fabrication.
- **3.6.2** Layout, showing dimensions (including identified field dimensions: and clearances.
- **3.6.3** Setting or erection details.
- **3.6.4** Capacities.
- **3.6.5** Performance characteristics.
- **3.6.6** Standards.
- **3.6.7** Operating weight.
- **3.6.8** Wiring diagrams.
- **3.6.9** Single line and schematic diagrams.
- **3.6.10** Relationship to adjacent work.

3.7 After Departmental Representative's review, distribute copies.

4.0 Shop Drawings

4.1 Shop drawings: original drawings or modified standard drawings provided by Contractor to illustrate details of portion of work which are specific to project requirements.

4.2 Maximum sheet size: 850 x 1050 mm (33" x 41").

4.3 Submit 6 prints of shop drawings for each requirement requested in the specification sections and/or as requested by the Departmental Representative.

4.4 Cross-reference shop drawing information to applicable portions of the Contract documents.

5.0 Shop Drawings Review

5.1 Review of shop drawings by Public Works and Government Services Canada is for the sole purpose of ascertaining conformance with the general concept.

5.2 This review shall not mean that Public Works and Government Services Canada approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same.

5.3 This review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and Contract documents.

5.4 Without restricting the generality of the foregoing, the Contractor is responsible for:

5.4.1 Dimensions to be confirmed and correlated at the job site.

5.4.2 Information that pertains solely to fabrication processes or to techniques of construction and installation.

5.4.3 Coordination of the work of all sub-trades.

6.0 Product Data

6.1 Product data: manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products or any other specified information.

6.2 Delete information not applicable to project.

6.3 Supplement standard information to provide details applicable to project.

6.4 Cross-reference product data information to applicable portions of Contract documents.

6.5 Submit 6 copies of product data.

7.0 Samples

7.1 Samples: examples of materials, equipment, quality, finishes and workmanship.

7.2 Where colour, pattern or texture is a criterion, submit a full range of samples.

7.3 **Reviewed and accepted samples will become the standard of workmanship and material against which installed work will be verified.**

8.0 Progress Schedule

8.1 Submit work schedule and cost breakdown as required in Section 01.11.55.

END OF SECTION

Section 01 35 33 HEALTH & SAFETY REQUIREMENTS

ABATEMENT OF SUSPENDED CEILING AND PLENUM

Contents

PWGSCC Update on Asbestos Use

Effective April 1, 2016, all Public Works and Government Services Canada (PWGSC) contracts for new construction and major rehabilitation will prohibit the use of asbestos-containing materials. Further information can be found at http://www.tpsgc-pwgsc.gc.ca/comm/vedette-features/2016-04-19-00-eng.html

1.0 References

1.1 Government of Canada

- **1.1.1** Canada Labour Code - Part II.
- **1.1.2** Canada Occupational Health and Safety Regulations.
- **1.1.3** Canadian Environmental Protection Act,1999 (CEPA 1999)
- **1.1.4** Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149)
- **1.1.5** Transportation of Dangerous Goods Act, 1992 (TDG Act) [1992], (c. 34).
- **1.1.6** Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).
- **1.1.7** Health Canada / Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS).
- **1.1.8** National Research Council Canada Institute for Research in Construction (NRC-IRC)

1.2 National Building Code of Canada (NBC)

- **1.2.1** Part 8, Safety Measures at Construction and Demolition Sites.

1.3 The Canadian Electric Code (as amended)

1.4 Canadian Standards Association (CSA) as amended

- **1.4.1** CSA Z797-2009 Code of Practice for Access Scaffold
- **1.4.2** CSA S269.1-1975 (R2003) Falsework for Construction Purposes
- **1.4.3** CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures
- **1.4.4** CSA Z1006-10 Management of Work in Confined Spaces.
- **1.4.5** CSA Z462- Workplace Electrical Safety Standard

1.5 National Fire Code of Canada 2010 (as amended)

- **1.5.1** Part 5 – Hazardous Processes and Operations and Division B as applicable and required

1.6 American National Standards Institute (ANSI):

- **1.6.1** ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.

1.7 Fire Protection

- **1.7.1** FCC No. 301, Standard for Construction Operations.
- **1.7.2** FCC No. 302, Standard for Welding and Cutting.
- **1.7.3** CSA S269.1-1975 (R2003) Falsework for Construction Purposes

1.8 Province of British Columbia

- **1.8.1** Workers Compensation Act Part 3-Occupational Health and Safety.
- **1.8.2** Occupational Health and Safety Regulation (BC Reg. 296/97, including amendments to date of work)
- **1.8.3** “Safe Work Practices for Handling Asbestos” (2012)
- **1.8.4** “Lead-Containing Paints and Coatings; Preventing Exposure in the Construction Industry” (2011)
- **1.8.5** Hazardous Waste Regulation (BC Reg. 63/88)
- **1.8.6** Contaminated Sites Regulation

1.9 Related Assessment Reports
- **1.9.1** Pre Renovation Wall Surfacing Compound - Project No.: 161-17554-00
- **1.9.2** Assessment of Suspect Drywall Debris and Dust - Project No.: 171-08088-00
- **1.9.3** Hazardous Materials Assessment Report - Project No.: 171-_____-00

2.0 Related Sections

2.1 Refer to the following sections as required

2.1.1	General Instructions	Section 01 11 55
2.1.2	Health & Safety Requirements	Section 01 35 33
2.1.3	Cleaning	Section 01 74 11
2.1.4	Waste Management	Section 01 74 19
2.1.5	Hazmat Specifications	Section 02 82 13

3.0 Workers' Compensation Board Coverage

3.1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.

3.2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

4.0 Compliance with Regulations

4.1 PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.

4.2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

5.0 Submittals

5.1 Submit to Departmental Representative submittals listed for review in accordance with Section 013311

5.2 Work affected by submittals shall not proceed until review is complete.

5.3 Submit the following:
- **5.3.1** Notice of Project for Asbestos (to WorkSafeBC)
- **5.3.2** Site Specific Health and Safety Plan.
- **5.3.3** Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- **5.3.4** Copies of incident and accident reports.
- **5.3.5** Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
- **5.3.6** Emergency Procedures.
- **5.3.7** Detailed work schedule for approval by the Departmental Representative

5.4 The Departmental Representative will review the Contractor's site-specific project Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 5 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.

5.5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.

5.6 Submission of the Site Specific Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:

5.6.1 Be construed to imply approval by the Departmental Representative.

5.6.2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.

5.6.3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

6.0 Responsibility

6.1 Assume responsibility as the Prime Contractor for work under this contract.

6.2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

6.3 Comply with and enforce compliance by employees with safety requirements of Contract documents, applicable Federal, Provincial, Territorial and local statutes, regulations, and ordinances, and with Site Specific Health and Safety Plan.

7.0 Health and Safety Coordinator

7.1 The Health and Safety Coordinator must:

7.1.1 Be responsible for completing all health and safety training and ensuring that personnel that do not successfully complete the required training are not permitted to enter the site to perform work.

7.1.2 Be responsible for implementing, revising, daily enforcing, and monitoring the Site Specific Health and Safety Plan.

7.1.3 Be on site during execution of work.

8.0 General Conditions

8.1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.

8.2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.

8.2.1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

8.2.2 Secure site at night time as deemed necessary to protect site against entry.

9.0 Project/Site Conditions

9.1 Work at site will involve contact with:

9.1.1 Multi-employer work site.

9.1.2 Federal employees and general public

9.1.3 Asbestos - review site documentation for work area(s)

9.1.4 Work on electrical systems will include a safe work procedure. Possibility of electrical back feeds from other sources. All wiring will be considered energized until tested.

9.2 Refer to Section 011155 General Instruction for access and staging areas in order to develop Health and Safety Plan.

10.0 Utility Clearances

10.1 The Contractor is solely responsible for all utility detection and clearances prior to starting the work.

10.2 The Contractor will not rely solely upon the Reference Drawings or other information provided for utility locations.

11.0 Regulatory Requirements

11.1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.

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

12.0 Work Permits

12.1 Obtain speciality permits related to project before start of work.

13.0 Filing of Notice

13.1 The General Contractor is to complete and submit a Notice of Project Asbestos as required by Provincial authorities.

13.2 Provide copies of all notices to the Departmental Representative.

14.0 Site Specific Health and Safety Plan

14.1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.

14.2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:

14.2.1 Primary requirements:

a) Contractor's safety policy.
b) Identification of applicable compliance obligations.
c) Definition of responsibilities for project safety/organization chart for project.
d) General safety rules for project.
e) Job-specific safe work, procedures.
f) Inspection policy and procedures.
g) Incident reporting and investigation policy and procedures.
h) Occupational Health and Safety Committee/Representative procedures.
i) Occupational Health and Safety meetings.
j) Occupational Health and Safety communications and record keeping procedures.

14.2.2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.

14.2.3 List hazardous materials to be brought on site as required by work.

14.2.4 Indicate engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.

14.2.5 Identify personal protective equipment (PPE) to be used by workers.

14.2.6 Identify personnel and alternates responsible for site safety and health.

14.2.7 Identify personnel training requirements and training plan, including site orientation for new workers.

14.3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.

14.4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.

14.5 Departmental Representative's review: the review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

15.0 Emergency Procedures

15.1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:

- **15.1.1** Designated personnel from own company.
- **15.1.2** Regulatory agencies applicable to work and as per legislated regulations.
- **15.1.3** Local emergency resources.
- **15.1.4** Departmental Representative.

15.2 Include the following provisions in the emergency procedures:

- **15.2.1** Notify workers and the first-aid attendant, of the nature and location of the emergency.
- **15.2.2** Evacuate all workers safely.
- **15.2.3** Check and confirm the safe evacuation of all workers.
- **15.2.4** Notify the fire department or other emergency responders.
- **15.2.5** Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
- **15.2.6** Notify Departmental Representative.

15.3 Provide written rescue/evacuation procedures as required for, but not limited to:

- **15.3.1** Work at high angles.
- **15.3.2** Work in confined spaces or where there is a risk of entrapment.
- **15.3.3** Work with hazardous substances.
- **15.3.4** Underground work.
- **15.3.5** Work on, over, under and adjacent to water.
- **15.3.6** Workplaces where there are persons who require physical assistance to be moved.

15.4 Design and mark emergency exit routes to provide quick and unimpeded exit.

15.5 Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

16.0 Hazardous Products

16.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labeling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.

16.2 Where use of hazardous and toxic products cannot be avoided:

- **16.2.1** Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 013311.
- **16.2.2** In conjunction with Departmental Representative, schedule to carry out work during "off hours" when tenants have left the building.
- **16.2.3** Provide adequate means of ventilation in accordance with Section 028213.
- **16.2.4** The contractor shall ensure that the product is applied as per manufacturers' recommendations.
- **16.2.5** The contractor shall ensure that only pre-approved products are brought onto the work site in an adequate quantity to complete the work.

17.0 Asbestos Hazard

17.1 Carry out any activities involving asbestos in accordance with applicable Provincial / Federal Regulations.

17.2 Removal and handling of asbestos will be in accordance with applicable Provincial / Federal Regulations.

18.0 PCB Removals

18.1 Fluorescent light tubes which contain mercury and associated light fixture ballasts which contain polychlorinated biphenyls (PCBs) are classified as hazardous waste.

18.2 Remove, handle, transport and dispose of as indicated in Section 028400].

19.0 Removal of Lead-Containing Paints

19.1 All paints containing TCLP lead concentrations above 5 ppm are classified as hazardous.

19.2 Carry out demolition and/or remediation activities involving lead-containing paints in accordance with WorkSafeBC Regulations.

19.3 Dry Scraping/Sanding of any materials containing lead is strictly prohibited.

19.4 The use of Methylene Chloride based paint removal products is strictly prohibited.

20.0 Silica

20.1 Carry out work in accordance with WorkSafeBC regulations

21.0 Electrical Safety Requirements

21.1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.

21.1.1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.

21.1.2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

22.0 Electrical Lockout

22.1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.

SPEC NOTE: Procedures specified for lockout need to be consistent with site procedures for existing facilities or equipment.

22.2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Departmental Representative.

22.3 Keep the documents and lockout tags at the site and list in a log book for the full duration of the Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.

23.0 Overloading

23.1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

24.0 Falsework

24.1 Design and construct falsework in accordance with CSA S269.1.

25.0 Scaffolding

25.1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA –S269.2 and B.C. Occupational Health and Safety Regulations.

26.0 Confined Spaces

26.1 Carry out work in confined spaces in compliance with Provincial / Territorial Regulations.

27.0 Powder-Actuated Devices

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

1.0 Fire Safety and Hot Work

27.2 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.

27.3 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

28.0 Fire Safety Requirements

28.1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

28.2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

28.3 Portable gas and diesel fuel tanks are not permitted on most federal work sites. Approval from the DR is required prior to any gas or diesel tank being brought onto the work site.

29.0 Fire Protection and Alarm System

29.1 Fire protection and alarm systems shall not be:

- **29.1.1** Obstructed.
- **29.1.2** Shut off.
- **29.1.3** Left inactive at the end of a working day or shift.

29.2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

29.3 Be responsible/liable for costs incurred from the fire department, the building owner and the tenants, resulting from false alarms.

30.0 Unforeseen Hazards

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

31.0 Posted Documents

31.1 Post legible versions of the following documents on site:

- **31.1.1** Site Specific Health and Safety Plan.
- **31.1.2** Sequence of work.
- **31.1.3** Emergency procedures.
- **31.1.4** Site drawing showing project layout, locations of the first-aid station, evacuation route and marshaling station, and the emergency transportation provisions.

31.1.5 Notice of Project Asbestos.
31.1.6 Floor plans or site plans.
31.1.7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
31.1.8 Workplace Hazardous Materials Information System (WHMIS) documents.
31.1.9 Material Safety Data Sheets (MSDS).
31.1.10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.

31.2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.

31.3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

32.0 Meetings

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

33.0 Correction of Non-Compliance

33.1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.

33.2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.

33.3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

END OF SECTION

Section 01 61 10 PRODUCT REQUIREMENTS

ABATEMENT OF SUSPENDED CEILING AND PLENUM

Contents

1.0 Products/Material and Equipment

1.1 Use NEW products/material and equipment unless otherwise specified. The term "products" is referred to throughout the specifications.

1.2 Use products of 1 manufacturer for material and equipment of the same type or classification unless otherwise specified.

1.3 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.

1.4 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions. Departmental Representative will designate which document is to be followed.

1.5 Provide metal fastenings and accessories in the same texture, colour and finish as base metal in which they occur.

- **1.5.1** Prevent electrolytic action between dissimilar metals.
- **1.5.2** Use non-corrosive fasteners, anchors and spacers for securing exterior work.

1.6 Fastenings which cause spalling or cracking are not acceptable.

1.7 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

1.8 Use heavy hexagon heads, semi-finished unless otherwise specified.

1.9 Bolts may not project more than 1 diameter beyond nuts.

1.10 Types of washers as follows:

- **1.10.1** Plain type washers: use on equipment and sheet metal.
- **1.10.2** Soft gasket lock type washers: use where vibrations occur.
- **1.10.3** Resilient washers: use with stainless steel Use primer or enamel to match original.

1.11 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact.

1.12 Prevent damage, adulteration and soiling of products during delivery, handling and storage. Immediately remove rejected products from site.

1.13 Store products in accordance with suppliers' instructions.

1.14 Touch up damaged factory finished surfaces to Departmental Representative's satisfaction:

- **1.14.1** Use primer or enamel to match original.
- **1.14.2** Do not paint over nameplates

2.0 Quality of Products

2.1 Products, materials and equipment (referred to as products) incorporated into work shall be new, not damaged or defective, and of the best quality (compatible with the specifications) for the purpose intended. If requested, furnish evidence as to type, source and quality of the products provided.

2.2 Defective products will be rejected regardless of previous inspections.

2.2.1 Inspection does not relieve responsibility, but is precaution against oversight or error.

2.2.2 Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

2.2.3 Retain purchase orders, invoices and other documents to prove that all products utilized in this Contract meet the requirements of the specifications. Produce documents when requested by the Departmental Representative.

2.2.4 Should any dispute arise as to quality or fitness of products, the decision rests strictly with the Departmental Representative based upon the requirements of the Contract documents.

2.2.5 Unless otherwise indicated in the specifications, maintain uniformity of manufacture for any particular or like item throughout the building.

2.2.6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

3.0 Availability of Products

3.1 Immediately upon signing the Contract, review product delivery requirements and anticipate foreseeable supply delays for any items.

3.2 If delays in supply of products are foreseeable, notify Departmental Representative of such in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of the work.

3.3 In event of failure to notify Departmental Representative at the start of work and should it subsequently appear that the work may be delayed for such reason, the Departmental Representative reserves the right to substitute more readily available products of similar character, at no increase in either the Contract price or the Contract time.

3.4 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

4.0 Manufacturer’s Instructions

4.1 Unless otherwise indicated in the specifications, install or erect products in accordance with the manufacturer’s instructions.

4.1.1 Do not rely on labels or enclosures provided with products.

4.1.2 Obtain written instructions directly from the manufacturer.

4.2 Notify Departmental Representative in writing of conflicts between the specifications and the manufacturer’s instructions so that the Departmental Representative may establish the course of action.

4.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Departmental Representative to require removal and re-installation at no increase in either the Contract price of the Contract time.

5.0 Contractor's Options for Selection of Products for Tendering

5.1 Products are specified by "**Prescriptive" specifications**: select any product meeting or exceeding specifications.

5.2 Products specified under "**Acceptable Products**" (used for complex Mechanical or Electrical Systems): select any one of the indicated manufacturers, or any other manufacturer meeting or exceeding the Prescriptive specifications and indicated Products.

5.3 Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.

5.4 Products specified to meet particular design requirements or to match existing materials: use only material specified Approved Product. Alternative products may be considered provided full technical data is received in writing by Departmental Representative in accordance with "Special Instructions to Tenderers".

5.5 When products are specified by a referenced standard or by Performance specifications, upon request of Departmental Representative obtain from manufacturer and independent laboratory report showing that the product meets or exceeds the specified requirements.

6.0 Substitution After Contract Award

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

6.2 **Proposals for substitution may only be submitted after Contract award.** Such request must include statements of respective costs of items originally specified and the proposed substitution.

6.3 Proposals will be considered by the Departmental Representative if:

- **6.3.1** products selected by tenderer from those specified are not available;
- **6.3.2** delivery date of products selected from those specified would unduly delay completion of Contract, or
- **6.3.3** alternative product to that specified, which is brought to the attention of considered by Departmental Representative as equivalent to the product specified, and will result in a credit to the Contract amount.

6.4 **Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as result of substitution.**

6.5 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative, and the Contract price will be reduced accordingly.

END OF SECTION

Section 01 74 11 CLEANING

ABATEMENT OF SUSPENDED CEILING AND PLENUM

Contents

1.0 Related Requirements

1.1 Refer to the following sections as required

1.1.1	General Instructions	Section 01 11 55
1.1.2	Health & Safety Requirements	Section 01 35 33
1.1.3	Waste Management	Section 01 74 19
1.1.4	Hazmat Specifications	Section 02 82 13

2.0 Project Cleanliness

2.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Departmental Representative or other Contractors.

2.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Burning of waste is prohibited.

2.3 Cleaning equipment and un-controlled and/or non-filtered discharge is prohibited.

2.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

2.5 Provide on-site leak proof containers for collection of waste materials and debris.

2.6 See Section 01.11.55 - General Requirements for waste and food containers.

2.7 Provide and use marked separate bins for designated waste and recycling. Refer to Section 01.11.55 that includes General Requirements for Waste Management and Disposal.

2.8 Use regional disposal facilities for waste materials and debris and appropriate recycling facilities for recyclable items - Refer to Section 01.74.19.

3.0 Final Cleaning

3.1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

3.2 Prior to final review remove surplus products, tools, construction machinery and equipment.

3.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

3.4 Remove waste products and debris including that caused by Owner or other Contractors, and leave Work clean and suitable for occupancy.

3.5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. See clause 1.2.6 above for burning wood on site:

4.0 Waste Management and Disposal

4.1 Separate waste material for recycling in accordance with Section 01.11.55.

5.0 Products – Not Used

6.0 Execution – Not Used

END OF SECTION

Section 01 74 19 WASTE MANAGEMENT AND DISPOSAL

ABATEMENT OF SUSPENDED CEILING AND PLENUM

Contents

1.0 Related Work

1.1 Refer to the following sections as required

1.1.1	General Instructions	Section 01 11 55
1.1.2	Health & Safety Requirements	Section 01 35 33
1.1.3	Cleaning	Section 01 74 11
1.1.4	Hazmat Specifications	Section 02 82 13

2.0 Definitions

2.1 Waste Audit (WA): relates to projected waste generation. Involves controlled separation of waste.

2.2 Waste Reduction Workplan (WRW): a written report which addresses opportunities for reduction, re-use or recycling of materials.

2.3 Materials Source Separation Program (MSSP): consists of a series of ongoing activities to separate re-usable and recyclable waste material into material categories from other types of waste at point of generation.

3.0 Materials Source Separation

3.1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.

3.2 Recycle hazardous wastes for which there is approved, cost effective recycling process available.

3.3 Send hazardous wastes to authorized permitted hazardous waste disposal or treatment facilities.

3.4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.

3.5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

3.6 Dispose of hazardous wastes in timely fashion in accordance with applicable federal and provincial regulations.

3.7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.

3.8 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:

- **3.8.1** Hazardous wastes recycled in manner constituting disposal.
- **3.8.2** Hazardous waste burned for energy recovery.
- **3.8.3** Lead-acid battery recycling.
- **3.8.4** Hazardous wastes with economically recoverable precious metals.

3.9 Before project start-up, prepare Materials Source Separation Program. Provide separate containers for re-usable and/or recyclable materials of the following:

3.9.1 Gypsum board.
3.9.2 Metals.
3.9.3 Wood.
3.9.4 Plastics
3.9.5 Other materials as indicated in technical sections.

3.10 Implement Materials Source Separation Program for waste generated on project in compliance with approved methods and as approved by Departmental Representative.

3.11 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

3.12 Locate separated materials in areas which minimize material damage.

4.0 Diversion of Materials

4.1 Create a list of materials to be separated from the general waste stream and stockpiled in separate containers, to the approval of the Departmental Representative and consistent with applicable fire regulations.

4.1.1 Mark containers.
4.1.2 Provide instruction on disposal practices.

5.0 Storage, Handling and Application

1.1 Do work in compliance with Waste Reduction Work Plan.

1.2 Handle waste materials not re-used, salvaged, or recycled in accordance with appropriate regulations and codes.

1.3 Materials in separated condition: collect, handle, store on site, and transport off-site to an approved and authorized recycling facility.

1.4 Materials must be immediately separated into required categories for re-use or recycling.

1.5 Unless specified otherwise, materials for removal become the Contractor's property.

1.6 On-site sale of salvaged/recyclable material is not permitted.

1.7 **Provide Departmental Representative with receipts** indicating quantity of material delivered to landfill.

1.8 **Provide Departmental Representative with receipts** indicating quantity and type of materials sent for recycling.

END OF SECTION

Section 02 82 13 HAZMAT SPECIFICATIONS

ABATEMENT OF SUSPENDED CEILING AND PLENUM

Contents

1.0 GENERAL

1.1 DOCUMENTS

1.1.1 This Section of the specification forms part of the Contract Documents and is to be read, interpreted, and coordinated with all other parts.

1.2 SCOPE OF WORK

1.2.1 Work under this Contract covers all work activities including but not limited to the HIGH RISK EXECUTION removal, disposal, encapsulation, enclosure, handling of, transfer of hazardous waste and general waste to a permitted facility, or work activities required for asbestos abatement of suspended ceiling (tiles, tracking, and hangers) and air plenum surfaces that contain asbestos or are contaminated with asbestos.

1.2.2 During the time of asbestos material handling (work at risk of disturbing asbestos building materials and contaminated materials), the Abatement Contractor shall coordinate work, and take full responsibility for the health and safety of all personnel working in the contracted areas.

1.2.3 Workers must wear appropriate respiratory protection while performing work activities that are at risk of disturbing asbestos containing materials. Consequently, workers within the work area will be required to wear respiratory protection acceptable to the Workers' Compensation Board of British Columbia and Consultant.

1.2.4 All scaffolding systems, used on this project, shall be designed by a professional engineer, registered in the province of British Columbia. Once the scaffolding has been erected, and prior to use by other trades, the scaffolding engineer shall inspect the scaffolding and issue a signed and sealed letter to Consultant, stating that the scaffolding has been erected in accordance with his design, is structurally sound, and in accordance with the Workers' Compensation Board of British Columbia requirements.

1.3 DESCRIPTION OF WORK

The Work under this Contract shall be performed as described in the Technical Specifications and Contract Documents. The Work shall include but not necessarily be limited to the following:

1.3.1 Supply all labour, materials, services, and equipment, necessary to safely remove principally using HIGH RISK EXECUTION procedures and dispose of materials that are likely to be contaminated with asbestos from the designated areas of the buildings as described below, and associated activities. The Contractor and his sub-trades shall work multiple shifts and weekends, if necessary to ensure completion on schedule. Cost of multiple shifts and weekends shall be included within the tendered price.

Client: Public Services and Procurement Canada

Project: Abatement of Suspended Ceiling and Plenum
Lower Level Rooms, Ocean Sciences Physics Building
9860 West Saanich Road, Sidney, BC

Location: Lower Level Rooms, Ocean Sciences Physics Building
9860 West Saanich Road, Sidney, BC

1.3.2 BASE BID

1.3.2.1 **General Notes**

a) It is the intent of this specification to: remove all suspended ceilings tiles, tracking, and hangers excluding anchor point fasteners; wipe down and clean above the suspended ceiling level all upper level exposed surfaces including walls, ceilings, and overlying appurtenances; and clear coat encapsulation of all unpainted drywall joint compound for the Contracted Areas. Contractor is responsible for determining the quantities of materials and reviewing plans, specifications and reports such that they understand the locations and amounts of hazardous materials that will be impacted by the Work of this contract, and such that appropriate plans and budgets can be included in their overall bids prior to submission of their Tender.

b) This Section of the Specification must be read in conjunction with all other parts of the Contract Documents.

c) The Abatement Contractor shall carry at least five (5) million dollars of Environmental Pollution and Contamination Insurance with asbestos inclusion, and General Liability Insurance in the amount of five (5) million dollars, unless there is a more stringent requirement in the Tender Documents. Evidence of such insurance in such form as may be required by the Owner shall be lodged with the Owner prior to the commencement of any work.

d) Destructive testing was not performed during the asbestos materials survey. If potential asbestos containing materials are exposed during abatement activities, potential asbestos containing materials shall be considered to be asbestos containing until laboratory analysis or further investigation determines otherwise.

If the Contractor, during work activities, should discover hazardous materials, asbestos containing materials, or potential asbestos containing materials not included in the Description of Work for this project, he is not to disturb such materials pending instructions from the Client Representative or Consultant, who will communicate to the Contractor the appropriate action.

e) Air sampling in accordance with the Workers' Compensation Board of British Columbia requirements during asbestos abatement activities will be performed by the Owner's Consultant.

f) The Owner shall provide the Contractor with access to an existing electrical panel (non GFI) for the Abatement Contractor's use during the project. The Contractor shall only utilize the provided breaker for his electrical requirements during the project.

g) The Contractor may use public sanitary facilities for abatement personnel at the building, and maintain them in a clean and sanitary condition throughout the project.

h) The Owner shall provide potable cold water for construction purposes. The Contractor shall connect to Owner's existing water system. Connection location must be agreeable by Owner.

i) The Contractor shall utilize qualified trades for disconnecting, purging, and capping utilities leading to/from the designated abatement areas and associated equipment.

j) Waste disposal bins (metal dumpsters) shall be located at the area designated by the Owner and as described at the site walk-through, in a location that does not encumber the Owner's use of shipping/ receiving bays.

k) Waste transportation to be conducted in accordance with BC Reg. 63/88 and the Federal Transportation of Dangerous Goods Regulation.

l) Waste disposal to be conducted in accordance with BC Reg. 63/88.

m) Site Plans are provided for reference only.

1.3.2.2 **ASBESTOS – SUSPENDED CEILINGS**

The drywall joint compound for the lower level of the Ocean Sciences Physics Building is asbestos-containing. Chrysotile asbestos has been identified in the drywall debris and dust on exposed surfaces within the plenum including atop of the suspended ceilings, appurtenances, framing, walls, and upper fixed ceilings.

a) Remove and dispose of as asbestos waste suspended ceiling tiles, tracking, and hangers excluding anchor point attachment fasteners from areas as indicated on the Site Plans.

b) Dust and debris on the exposed surfaces within the plenum including atop of the suspended ceilings, appurtenances, framing, walls, and upper fixed ceilings are to be vacuumed up with HEPA filtered vacuum equipment, or removed by damp wiping, and disposed of as asbestos waste.

1.4 RELATED WORK

Refer to the following sections as required

1.4.1	General Instructions	Section 01 11 55
1.4.2	Shop Drawings, Product Data and Samples	Section 01 33 11
1.4.3	Health & Safety Requirements	Section 01 35 33
1.4.4	Product Requirement	Section 01 61 10
1.4.5	Cleaning	Section 01 74 11
1.4.6	Waste Management	Section 01 74 19

1.5 TERMINOLOGY (Definitions)

1.5.1 Air Monitoring - The process of measuring the fibre content of a known volume of air collected during a specific period of time, in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation.

1.5.2 Airlock - A system for permitting ingress or egress without permitting air movement between a contaminated area and an non-contaminated area, typically consisting of two curtained doorways at least six (6) feet (1.83 metres) apart. Proper use of an airlock dictates that one passes through the first doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.

1.5.3 Asbestos - A term used to identify a group of fibrous silicates. The most common types of asbestos are, Chrysotile, Amosite, and Crocidolite. Other types of asbestos are Actinolite, Anthophyllite, and Tremolite.

1.5.4 Asbestos Banner Tape - A pre-manufactured three (3) inch wide white polyethylene banner tape imprinted (red and black) with "DANGER - ASBESTOS - Cancer and Lung Disease Hazard - Authorized Personnel Only - HEPA Respirators And Protective Clothing Are Required In This Area"

1.5.5 Asbestos Containing Materials (ACM) - A manufactured article or other material, other than vermiculite insulation, includes materials that contain at least 0.5% asbestos, as determined by methods referenced in WSBC OHSR section 6.1. Vermiculite insulation containing any asbestos, as determined by the referenced method, is also an ACM

1.5.6 Asbestos Warning Sign - A sign, readable from twenty-five feet, stating: WARNING ASBESTOS, Cancer and Lung Disease Hazard, Authorized Personnel Only, HEPA Filtered Respirators and Protective Clothing are Required in This Area.

1.5.7 Amended Water - Water with a non-ionic surfactant added for the purpose of reducing surface tension to allow thorough wetting of asbestos containing materials.

1.5.8 Authorized Visitor - The Owner, the Owner's authorized representative, or a representative of any regulatory or other agency having jurisdiction over the project.

1.5.9 Clean Room - A non-contaminated area or room which is part of the worker decontamination enclosure facility, with provisions for storage of workers' street clothes and clean protective equipment.

1.5.10 Consultant - Asbestos Abatement Consultant and/or Hazardous Materials Consultant designated by the Client.

1.5.11 Containment - An isolation system designed to effectively contain asbestos fibres within a designated work area where asbestos-containing materials are handled, removed, encapsulated, or enclosed.

1.5.12 Crated - Plywood self supporting structure built over equipment or materials of sufficient strength to protect such equipment or materials from damage or contamination for the duration the project.

1.5.13 CSA - Canadian Standards Association.

1.5.14 Curtained Doorway - A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of polyethylene sheeting over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway, and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Two curtained doorways spaced a minimum of six (6) feet (two metres) apart form an airlock.

1.5.15 Dangerous Goods - product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.

1.5.16 DOP Test - Dioctyl Phthalate aerosol challenge of a HEPA filter. A DOP test is used to establish the integrity and effectiveness of a HEPA filter to collect particles greater than or equal to 0.3 microns in diameter with 99.97% efficiency.

1.5.17 Decontamination Enclosure Facility - A series of connected rooms, separated from the work area and from each other by airlocks, for the decontamination of workers, materials, and equipment.

1.5.18 Disposal Bag - A minimum 6 mil (0.15 mm) thick polyethylene bag that is labelled with the following information: hazardous materials; health hazards; and respirator and/or clothing protection required.

1.5.19 Dispose Of - As defined by the latest edition of the British Columbia Environmental Management Act, Hazardous Waste Regulation, and the latest edition of Transport Canada's - Transportation of Dangerous Goods Regulations.

1.5.20 Duct Tape - Minimum two (2) inch wide cloth reinforced duct tape.

1.5.21 Encapsulant (Sealant) - A liquid material which can be applied to asbestos containing material which controls the possible release of asbestos fibres from the material either by creating a membrane over the surface

(bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

1.5.22 Encapsulation - The application of an encapsulant to asbestos containing materials to control the release of asbestos fibres into the air.

1.5.23 Enclosure - The construction of an airtight, impermeable, permanent barrier around asbestos containing materials to control the release of asbestos fibres into the air.

1.5.24 Equipment Decontamination Enclosure System - That portion of a decontamination enclosure facility designed for controlled transfer of materials and equipment into or out of the work area, typically consisting of a washroom, holding area, and non-contaminated area.

1.5.25 Equipment Room - An area or room which is part of the worker decontamination enclosure facility, with provisions for storage of contaminated clothing and equipment.

1.5.26 Fibre Concentration - The number of fibres per volume (ml) of air collected.

1.5.27 Fibre Density - The number of fibres per area (mm2) of filter.

1.5.28 Fixed Object - A unit of equipment or furniture in the work area which cannot be removed.

1.5.29 Friable Material - A material, when dry, that can easily be crumbled or powered by hand pressure.

1.5.30 Glove Bag Technique - A method with limited applications for removing small amounts of asbestos containing material from HVAC ducts, pipe runs, valves, joints, elbows, and other non-planar surfaces in a non-contained (isolated) work area. The glove bag assembly is a manufactured device consisting of glove bag (typically constructed of six (6) mil transparent polyethylene or polyvinyl chloride plastic), two (2) inward projecting long sleeves, and internal tool pouch, and an attached labelled receptacle for asbestos waste. The glove bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibres released during the process. All workers who are permitted to use the glove bag technique must be highly trained, experienced, and skilled in this method.

1.5.31 Ground Fault Interrupt Electrical Panel (GFI) - An Electrical panel, outside the work area, equipped exclusively with "Class A" ground fault circuit interrupter breakers of sufficient capacity to provide for lighting and equipment used during work.

1.5.32 Hazardous Material - product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.

1.5.33 Hazardous Waste - hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.

1.5.34 Hazardous Building Material - component of a building or structure that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when altered, disturbed or removed during maintenance, renovation or demolition.

1.5.35 HEPA (High Efficiency Particulate Air) Filter - A throw-away extended-media dry-type filter in a rigid frame, having minimum particle-collection efficiency of 99.97% for 0.3 micrometer (micron) thermally-generated dioctyl phthalate (DOP) particles or specified alternate aerosol, and a maximum clean-filter pressure drop of 1.0" WG when tested at rated air flow capacity.

1.5.36 HEPA Vacuum Equipment - A vacuum system equipped with HEPA filtration.

1.5.37 High Risk Work Procedures - As defined by the latest edition of the Workers' Compensation Board of British Columbia Occupational Health & Safety Regulation.

1.5.38 Holding Area - A chamber between the washroom and an non-contaminated area in the equipment decontamination enclosure system. The holding area comprises an airlock.

1.5.39 HVAC System - Heating Ventilation & Air Conditioning system.

1.5.40 Moderate Risk Work Procedures - As defined by the latest edition of the Workers' Compensation Board of British Columbia Occupational Health & Safety Regulation.

1.5.41 Movable Object - A unit of equipment or furniture in the work area which can be removed from the work area.

1.5.42 Negative Pressure Ventilation Unit - A portable exhaust system equipped with HEPA filtration capable of maintaining a constant low velocity air flow into contaminated areas from adjacent non-contaminated areas. The minimum acceptable negative air pressure differential between the work area and adjacent non-contaminated areas is 0.02 inches of water column.

1.5.43 NIOSH - National Institute for Occupational Safety and Health (U.S.).

1.5.44 Owner - The Owner, building Owner, or his authorized representative.

1.5.45 Permissible Concentration (for Asbestos) - The time-weighted eight hour maximum level of exposure that is considered to be a safe level for unprotected personnel.

1.5.46 Removal - All herein specified procedures necessary to strip all asbestos containing materials from the designated areas and to dispose of these materials in an acceptable manner.

1.5.47 Respirator - A device worn by a person which prevents that person from inhaling harmful airborne substances.

1.5.48 Risk of Exposure to Asbestos Fibres - The likelihood of being exposed to airborne asbestos fibres when asbestos containing materials are used or handled.

1.5.49 Scaffold - A temporary elevated or suspended work unit and its supporting structure used for supporting worker(s) or materials, or both.

1.5.50 Shower Room - A room between the clean room and the equipment room in the workers decontamination enclosure facility, with hot and cold running water controlled and regulated at the shower head, and suitably arranged for complete showering during the decontamination sequence. Showers are to be equipped with waste water filtration system capable of pumping sufficient quantities of water to insure that the worker decontamination shower units do not overflow.

1.5.51 Surfactant - A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

1.5.52 Tape - Minimum two (2) inch wide cloth reinforced duct tape.

1.5.53 Trades Person - A worker who has received proper and adequate training in his or her particular field, is fully qualified, and of which 80% of the work force has a minimum of one year experience.

1.5.54 WCB - Workers' Compensation Board of British Columbia (WorkSafeBC).

1.5.55 Waste Transfer Airlock - A decontamination system utilized for transferring containerized waste from the inside to the outside of the work area.

1.5.56 Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with water and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

1.5.57 Work Area - Designated rooms, spaces or areas of the project in which asbestos abatement procedures are to be undertaken or which may become contaminated as a result of such abatement procedures. A "High Risk Work Area" is a work area which has been sealed, isolated with polyethylene and equipped with a worker decontamination facility. A "Moderate Risk Work Area" is a controlled access work area which has not been isolated or equipped with a worker decontamination facility.

1.5.58 Worker Decontamination Facility - A decontamination enclosure facility for workers, typically consisting of a connected clean room, shower room, and equipment room, separated by airlocks.

1.6 APPLICABLE REGULATIONS AND GUIDELINES

1.6.1 All work under this contract shall be done in strict accordance with all applicable Federal, Provincial, Local regulations, and other standards and codes governing asbestos abatement and any other trade work done in conjunction with the abatement.

1.6.2 The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict between the requirements and these specifications exists, the most stringent requirements shall apply.

1.6.3 Codes and Standards:

a) Canadian Standards Association (CSA)

b) Underwriters Laboratories, Canada (ULC)

c) American Society for Testing and Materials (ASTM)

d) National Building Code

e) Fire Protection Engineering Services, HRSDC

f) British Columbia Building Code

g) Canadian Electrical Code

h) Requirements for High Voltage Installation

i) Workers' Compensation Board of British Columbia "Occupational Health & Safety Regulation"

j) British Columbia Environmental Management Act, Hazardous Waste Regulation

k) British Columbia Environmental Management Act, Contaminated Sites Regulation.

l) Canada Labour Code - Part II

m) Canada Occupational Health and Safety Regulations.

n) Transport Canada - Transportation of Dangerous Goods Regulations

1.7 SUBMITTALS AND NOTICES

Prior to Commencement of Work the Contractor shall:

1.7.1 Send written notification of proposed work activities involving asbestos, to the applicable Occupational Hygiene Officer at the Workers' Compensation Board of British Columbia (standard "Notice of Project for Employment Involving Asbestos" forms are available for this purpose) including site specific work procedures and an exposure control plan, not fewer than three (3) normal working days prior to the commencement of any on site work activity. Provide Consultant with a copy of this notice, at the same time that it is sent to the Workers' Compensation Board of British Columbia.

1.7.2 When applicable, send written notification of proposed work activities involving asbestos, to the regional office of Labour Canada, not fewer than five (5) working days prior to the commencement of any on site work activity. Provide Consultant with a copy of this notice.

1.7.3 Submit proof satisfactory to the Owner and Consultant that all required permits, site location, and arrangements for transport and disposal of asbestos contaminated materials have been obtained.

1.7.4 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.

1.7.5 Submit to Consultant, a copy of the carriers "Licence to Transport Hazardous Waste" (a copy of this licence must be kept in each transport vehicle/trailer).

1.7.6 Submit a Critical Path Work Schedule to Consultant prior to delivering equipment or materials to the site.

1.7.7 Submit to Consultant, shop drawings for layout and construction of the worker decontamination facilities and barriers for isolation of the work areas in compliance with these specifications and applicable regulations.

1.7.8 Submit to Consultant, shop drawings for scaffolding and/or hoarding/enclosures, if required for this project, in compliance with these specifications and applicable regulations.

1.7.9 Submit to Consultant, a copy of the "DOP" (Dioctyl Phthalate) test results for all HEPA filtered equipment tested on site. "DOP" testing of negative air units used for High Risk, Modified-Moderate Risk, and Moderate Risk work must be conducted on site prior to use on this project. "DOP" testing of HEPA filtered canister or other type vacuum systems used for High Risk, Modified-Moderate Risk, and Moderate Risk work must be conducted on site prior to use on this project. Other HEPA equipment must be "DOP" tested within thirty (30) calendar days prior to use on this project. Additional DOP testing of all HEPA filtered equipment shall be conducted and documented every thirty (30) calendar days from the last test date, for the duration of the project or whenever HEPA filters are replaced.

1.7.10 Submit manufacturer's certification that vacuums, portable ventilation equipment, and other equipment required to contain airborne fibres are equipped with HEPA filtering systems as specified.

1.7.11 Submit documentation of NIOSH approvals for all respiratory protective equipment utilized on site, include manufacturers certification of HEPA filtration capabilities for all cartridges and filters.

1.7.12 Submit documentation of respirator fit-testing for all Contractor employees and agents who must enter the work area. This fit-testing shall be in accordance with CSA Standard Z94.4 1982.

1.7.13 Submit to Consultant, and post on site, a list containing the names and telephone numbers of the Contractor's key personnel.

1.7.14 Submit to Consultant, and post on site, a list containing the names, addresses, and telephone numbers, of emergency response personnel. The list shall include, but not be limited to, ambulance, hospital, fire department, police department, and building security.

1.7.15 Submit documentation to Consultant, that the Contractor's employees, including foreman, supervisors, and any other personnel or agents who may be exposed to airborne asbestos fibres, have received adequate training in the safe handling of asbestos containing materials.

1.7.16 Submit manufacturer's specification data sheets and material safety data sheets, for all products and materials prior to use on this project.

1.7.17 Submit documentation to Consultant, signed by a certified electrician, stating that all electrical power within the work area has been isolated or identified, the Ground Fault Interrupt (GFI) electrical panel has been installed properly and is in good working order, and that all temporary power cables and electrical lighting cables have an operational ground wire and are in good working condition, in accordance with article 3.1.1.3 and article 3.2.1.4 of this Section.

1.7.18 When rental equipment is to be used in asbestos abatement areas or to transport asbestos contaminated waste, a written notification concerning intended use of the rental equipment must be provided to the rental agency with a copy issued to Consultant

1.7.19 Submit copies of all "Hazardous Waste Manifest" forms for the transportation and disposal of all contaminated waste materials removed from the work area during the abatement process. Registered "Waste Generator Number" will be provided by the Owner and must be listed on each manifest prior to transport of waste.

1.7.20 With the Owner, inspect the premises wherein all abatement and abatement related activities will occur and submit a statement signed by both, agreeing on building and fixture condition prior to the commencement of work. If this document is not submitted to Consultant, it is assumed that the Contractor is reporting no damage to the buildings prior to the start of work.

1.8 SITE SECURITY

1.8.1 Work area access shall be restricted to authorized, trained, and protected personnel. Authorized personnel are limited to the Contractor's employees, employees of Subcontractors, the Owner and his representatives, representatives of Consultant, and representatives of Federal and Provincial regulatory agencies having jurisdiction over the project. A list of authorized personnel shall be established prior to project start and posted in a conspicuous location near the entrance to the work area.

1.8.2 Entry into the work area by unauthorized individuals shall be reported immediately to the Owner and Consultant

1.8.3 Access to "High Risk" work areas shall be through a single worker decontamination enclosure system. All other means of access (doors, windows, hallways, corridors, etc.) shall be blocked or locked so as to prevent entry to or exit from the work area. The only exceptions for this rule are the waste pass-out airlock which shall be sealed except during the removal of containerized asbestos waste from the work area, and emergency exits in case of fire or accident. Emergency exits shall not be locked from the inside, however, they shall be sealed with polyethylene and tape until needed.

1.8.4 The Contractor shall be responsible for site security for the duration of the project.

1.9 EMERGENCY PLANNING

1.9.1 Emergency procedures shall be in written form and prominently posted in a conspicuous location at the entrance to the work area. Everyone prior to entering the work area must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.

1.9.2 Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, heat stress, confined spaces, and general injury situations.

1.9.3 Fire extinguishers shall be placed strategically throughout the work area enclosure at the rate of; two ten pound (10 lb.) ABC dry chemical fire extinguishers for the first one thousand (1000) square feet of floor area, or portion thereof; and one ten pound (10 lb.) ABC dry chemical fire extinguisher per every additional two thousand (2000) square feet of floor area, or portion thereof. In addition to the fire extinguishers inside the work area enclosure, a minimum of two ten pound (10 lb.) ABC dry chemical fire extinguishers shall be placed outside the work area enclosure, preferably in the Clean Room.

1.9.4 Employees shall be trained in evacuation procedures in the event of workplace emergencies.

1.9.5 For non-life threatening situations, employees injured or otherwise incapacitated, shall decontaminate following normal procedures, with assistance from fellow workers if necessary, before exiting the work area to obtain medical treatment.

1.9.6 Where a life threatening medical emergency arises in an asbestos work area, usual protective measures should be temporarily ignored if they would otherwise cause an immediate threat to the workers' life or recovery, e.g. removal of respirators for mouth to mouth resuscitation, or leaving worker fully clothed if spinal injury is suspected. Where protective equipment and clothing can be left in place without interfering with the emergency management of the injured worker in a contaminated work area, it should not be removed until a non-contaminated area has been reached. On site decontamination procedures should only be carried out if

they do not interfere with medical emergency procedures. When first aid, ambulance, or other emergency personnel are required to enter a contaminated work area, they shall be informed of the hazards, provided with and instructed in the use of respirators and protective clothing, and instructed in entry and exit procedures. If it is not possible to decontaminate the injured worker, he shall be covered in such a way to minimize contaminating clean areas. The cover should not hinder access to the patient by first aid or ambulance personnel. If the injured worker is contaminated with asbestos on arrival at hospital, the hospital staff must be informed and advised of the hazards related to asbestos, the appropriate disposal of contaminated clothing, and decontamination procedures.

1.9.7 Telephone numbers of all emergency response personnel, and Contractor's key personnel shall be prominently posted at the entrance to the work area, along with the location of the nearest telephone.

1.9.8 The Contractor shall provide and maintain first-aid services, equipment, and supplies according to the requirements of Part 33 of the Occupational Health and Safety Regulation. For the purpose of determining the level of first aid required, the number of workers on site shall include the Owner's representatives and employees of the Consultant.

1.10 PERSONNEL PROTECTION

1.10.1 Prior to commencement of asbestos abatement activities, all personnel MUST have received adequate training in the handling of asbestos containing materials, and MUST be able to read and fully understand the written (and posted) Site Specific Work Procedures and Emergency Procedures for the project. Consultant reserves the right at any time to test all personnel to ensure adequacy of asbestos training.

1.10.2 Workers shall be provided with personally issued, individually identified (marked with waterproof designations) respirators.

1.10.3 Respirators shall be suitable for the asbestos exposure level in the work area in accordance with this specification and the requirements of the Workers' Compensation Board of British Columbia. Where respirators with disposable filters are employed, provide sufficient filters for replacement as recommended by the manufacturer, and applicable regulations.

1.10.4 Provide authorized visitors with suitable protective clothing, applicable safety equipment and footwear, and respiratory protection complete with new filters or cartridges, as described within this specification, so as they may safely access the work area whenever required.

1.10.5 Workers and authorized visitors must be trained in the maintenance, use and limitations of their respirators. Workers and authorized visitors must also be fit tested on personally issued and individually marked respirators, using a protocol acceptable to the Workers' Compensation Board of British Columbia and Consultant Fit testing is to be conducted and documented prior to the start of asbestos related work activities and on a weekly basis for the duration of the project.

1.10.6 Workers and authorized visitors must perform positive and negative air pressure fit tests each time a respirator is worn. Powered air purifying respirators shall be tested for adequate flow in accordance with the manufacturers' written instructions.

1.10.7 No supervisors, authorized visitors, or workers shall wear facial hair that could interfere with the respirator to face seal.

1.10.8 Workers and authorized visitors shall be provided clean dry socks, or clean dry disposable Tyvek booties, for each entry into the work area.

1.10.9 Provide workers with sufficient suits of protective full body clothing. Such clothing shall consist of full body coveralls with hoods, that fits snugly at the neck, wrists and ankles. Provide eye protection and hard hats as required by applicable safety regulations. Non disposable type protective clothing and footwear shall be left in the "Work Area" or "Equipment Room", until the end of the asbestos abatement work shift, at which time such items shall be disposed of as asbestos waste, or shall be thoroughly cleaned of all asbestos or asbestos containing material. Disposable type protective clothing, headgear, and footwear may be provided.

1.10.10 Provide and post, at the entrance to the "Work Area", the site specific entry, exit, and work procedures to be followed by workers, as described within this specification.

1.10.11 The Abatement Contractor's designated Site Superintendent must remain on site at all times while asbestos abatement activities are being performed. Since there may be a requirement for two work crews, it is therefore required that the Contractor state in the Tender Documents, the names of the site superintendents that the Contractor is proposing to use on this project.

2.0 PRODUCTS

2.1 MATERIALS

2.1.1 Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name.

2.1.2 Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination. Replacement materials shall be stored outside the work area until asbestos abatement is completed.

2.1.3 Damaged, deteriorating or previously used materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos shall be disposed of in accordance with the applicable regulations.

2.1.4 Polyethylene sheeting for walls and stationary objects shall be a minimum of 6 mil (0.15 mm) thick. Floors and all other applications shall incorporate sheeting of at least 12 mil (0.30 mm) and 10 mil (0.25 mm) thickness, as specified, in widths selected to minimize the frequency of joints.

2.1.5 Method of attaching polyethylene sheeting shall be agreed upon in advance by the Contractor and Consultant, and selected to minimize damage to equipment and surfaces. Special care shall be taken to minimize damage to painted drywall surfaces. Method of attachment may include any combination of cloth reinforced duct tape, furring strips, spray glue, staples, nails, screws or other effective procedures capable of sealing adjacent sheets of polyethylene and capable of sealing polyethylene to dissimilar finished or unfinished surfaces under both wet and dry conditions (including the use of amended water).

2.1.6 Polyethylene sheeting utilized for worker decontamination facility shall be non-transparent.

2.1.7 Asbestos waste receptor: each waste receptor shall consist of two separate impermeable containers. The first (inner) container shall consist of a 6 mil (0.15 mm) minimum thickness polyethylene bag. If the waste being placed into the first container is abrasive or has sharp edges that may cut the first container, the debris shall be placed into a cardboard box or burlap sack (or similar device) prior to being placed within the first (inner) container. The second (outer) container shall consist of a 6 mil (0.15 mm) polyethylene bag. The second (outer) container shall be such to prevent any perforating rips, or tears in the container during transport or disposal. The outer container must bear a pre-printed label and otherwise be acceptable to the disposal site, BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation, and the Workers' Compensation Board of British Columbia.

2.1.8 Asbestos Warning signs shall be displayed at all conceivable locations where access to the work area is possible. Such signs shall be conspicuously located and shall read:

W A R N I N G ! A S B E S T O S
Cancer and Lung Disease Hazard
Authorized Personnel Only
HEPA Filtered Respirators and
Protective Clothing Required in this Area

2.1.9 Surfactant [wetting agent] shall be mixed with water in a concentration to provide complete penetration and saturation of asbestos containing material.

2.1.10 Slow drying sealer: glue or sealer which remains tacky on surface for minimum of 8 hours under ideal conditions for purpose of trapping residual airborne fibre during settling period. Sealer applied to substrate surfaces scheduled for re-insulation to be compatible with the latter product.

2.1.11 **Encapsulation materials shall comply at a minimum with CGSB 1-GP-205M requirements, be clear drying, and be approved by the Owner prior to the materials being delivered to the project site. Approved materials include Towerthon Sealant 20300 (Cloverdale Industrial Protective Coatings) and Grip-Tack 6408-Clear (Fiberlock Technologies).**

2.1.12 Enclosure systems shall be constructed of materials so that when the enclosure is completed there is limited potential for impact damage to the barrier, and no potential for fibre release. Enclosure materials shall be evaluated and approved by Consultant prior to the materials being delivered to the project site.

2.1.13 Provide all other materials, such as lumber, nails and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the work area.

2.2 TOOLS AND EQUIPMENT

2.2.1 A sufficient quantity of negative air pressure ventilation units equipped with HEPA filtration shall be utilized so as to provide a minimum of one (1) workplace air change every fifteen (15) minutes. Negative air pressure units shall be exhausted outside the building, in such a manner so as not to allow exhaust air to migrate back into the building or near occupied areas.

2.2.2 Provide local exhaust ventilation with exhaust air discharged through a HEPA filter for all dust producing operations **outside** a containment where asbestos or asbestos containing dust is handled or used.

2.2.3 Respiratory protection during all stages of the project must be in compliance with the latest edition of the Workers' Compensation Board of British Columbia Occupational Health & Safety Regulation.

2.2.4 Full bodied impermeable disposable coveralls complete with attached head covering, designed to fit snugly at the neck, wrists, and ankles. Standard of acceptance - Dupont Tyvek or equivalent. Disposable coveralls shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing.

2.2.5 Non-skid laceless rubber boots that are to remain in the work area until the completion of the asbestos abatement phase of the project, at which time they shall be disposed of as contaminated waste, or be thoroughly decontaminated with soap and water.

2.2.6 Additional safety equipment (e.g. hard hats, eye protection, safety shoes, gloves etc.), as necessary, shall be provided to all workers and authorized visitors.

2.2.7 A sufficient supply of scaffolds, ladders, lifts, and hand tools (e.g. scrapers, wire cutters, brushes, utility knives, wire saws, mops, rags, and sponges, etc.) shall be provided as required.

2.2.8 Suitable spray equipment shall be provided for the application of amended water, and sealer as required.

2.2.9 A sufficient supply of HEPA filtered vacuum systems shall be available during all stages of the project.

2.2.10 **Encapsulant shall be sprayed using airless spray equipment. Airless equipment and tip size shall be in accordance with the encapsulant manufacturer's recommendations.**

2.2.11 All water hoses used by the Contractor shall be 250 psi industrial grade rubber water hose with factory installed fittings. The water supply shall be turned off at the tie-in to the Owner's water source, when the water is not in use, or at the end of each work shift. The water hose lines shall not be under pressure when the Abatement Contractor is not on site. The water hose lines shall be secured and made safe if they pass through an occupied area of the building.

2.2.12 A two stage water filtration pumping system designed to filter contaminates from decontamination shower water shall be utilized in conjunction with the worker decontamination shower units. The water filtration system shall be capable of pumping sufficient quantities of water to insure that the worker decontamination shower units do not overflow. The first stage water filter of the water filtration system shall be capable of removing particles 100 microns or larger, and the second stage filter shall be capable of removing particles 5 microns or larger.

3.0 EXECUTION

3.1 HIGH RISK EXECUTION

3.1.1 High Risk Work Area Preparation

3.1.1.1 Asbestos Warning signs (advising: Warning Asbestos, Cancer and Lung Disease Hazard, Authorized Personnel Only, HEPA Filtered Respirators And Protective Clothing Are Required In This Area), shall be posted at all conceivable approaches to work areas and other location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the work area to permit all personnel to read the sign and take the necessary protective measures to avoid exposure. Additional signs may need to be posted following construction of workplace enclosure barriers.

3.1.1.2 Shut down, isolate, and lock out all heating, cooling and air conditioning system (HVAC) components that are in, supply, or pass through the work area. Seal all intake and exhaust vents and ducts in the work area where applicable, with two layers of Polyethylene sheeting each a minimum of 6 mil (0.15 mm) thick. Also seal any seams in system components that pass through the work area. Remove all HVAC system filters and place in labelled polyethylene bags for disposal as asbestos contaminated waste.

3.1.1.3 Shut down and physically lock out ALL existing electric power and equipment within the work area enclosure, and other areas wherever and whenever there is a danger of electrical shock. Coordinate this activity with the local engineering supervisor to ensure that essential services are maintained. If it is essential that non-GFI electrical cables must remain energized within the work area, the Contractor shall isolate the energized electrical lines in the work area by double wrapping the lines with 6 mil polyethylene and sealing the joints of the polyethylene with duct tape, and clearly identify the energized electrical lines with brightly coloured fluorescent orange flagging tape spirally wrapped around the electrical lines (outerface of polyethylene wrap), and the identification method included in the Contractor's Site Specific Work Procedures to the Workers' Compensation Board of British Columbia. Provide temporary power and lighting sources with "Class A" Ground Fault Circuit Interrupters (GFI). All temporary power cables and electrical light cables shall have ground wires. Ensure safe lock out of existing electrical power and installation (including ground faulting) of temporary power sources and equipment in compliance with all applicable electrical code, and regulatory board requirements. Prior to Consultants pre-contamination inspection, the Contractor shall have his electrical Subcontractor provide written documentation on company letterhead, to Consultant, stating that all electrical power within the work area has been isolated, the Contractor's GFI panel has been installed properly and is in good working order, and that all temporary power cables and electrical lighting cables have an operational ground wire (two wire brewery cables will not be allowed in the work area). See article 1.7.17 of this Section.

3.1.1.4 **Pre-clean all movable objects within the work area including the retention for subsequent reuse all electrical fixtures.** Pre-cleaning shall be through the use of HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate. After cleaning, these objects shall be removed from the work area and carefully stored in a non-contaminated location.

3.1.1.5 Pre-clean all fixed objects in the work area using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate. After pre-cleaning, enclose fixed objects in polyethylene sheeting and seal securely in place with tape. Sensitive or easily damaged objects or equipment which must remain in the work area will require crating prior to sealing with polyethylene.

3.1.1.6 Pre-clean all surfaces in the work area using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters shall not be used. Do not disturb asbestos containing materials during the pre-cleaning phase.

3.1.1.7 Walls shall be constructed of wood or metal framing to support barriers in all openings larger than three (3) feet by seven (7) feet (915 mm x 2134 mm).

3.1.1.8 Seal off all windows, doorways, elevator openings, corridor entrances, drains, ducts, grills, grates, diffusers, skylights and any other openings between the work area and non-contaminated areas outside of the work area (including the outside of the building, tunnels and crawl spaces) with polyethylene sheeting and duct tape.

3.1.1.9 Cover doorways with plywood prior to sealing with polyethylene. Special care shall be taken to maintain emergency exits from the work area in the event of fire or other emergency.

3.1.1.10 Cover floors and walls in the work area with polyethylene sheeting. Cover floors first so that sheeting extends at least 12 inches (305 mm) up the walls of the work area. Minimum floor covering shall consist of one top layer of fibre reinforced 12 mil (0.30 mm) polyethylene sheeting, and one bottom layer of 10 mil (0.25 mm) polyethylene sheeting. It is recommended that additional layers of polyethylene sheeting be utilized as drop sheets to aid in clean-up of bulk materials.

3.1.1.11 Apply layers of floor polyethylene separately with seams taped in position. Polyethylene sheeting shall be sized to minimize seams. If the floor area necessitates seams, those on successive layers of sheeting shall be staggered to reduce the potential for water to penetrate to the flooring material. A distance of at least 3 feet (914 mm) between seams is sufficient. DO NOT locate seams at wall/floor joints.

3.1.1.12 Floor sheeting shall be installed in a fashion so as to prevent slippage between successive layers of material.

3.1.1.13 Wall sheeting shall be secured adequately to prevent it from falling away from the walls. This will require additional support/attachment when negative pressure ventilation systems and amended water are utilized.

3.1.1.14 Emergency exits shall be established and clearly marked with duct tape arrows or other effective designations to permit easy location from anywhere within the work area. They shall be secured to

prevent access from non-contaminated areas and still permit emergency exiting. These exits shall be properly sealed with polyethylene sheeting which can be cut to permit egress if needed. These exits may be the worker decontamination enclosure, the waste pass-out airlock and/or other alternative exits satisfactory to fire officials and Consultant

3.1.1.15 Ducts, mechanical and electrical equipment, and other ceiling mounted fixtures which interfere with the removal of asbestos materials shall be removed or lowered by qualified trades persons. The Contractor shall reinstall all fixtures and items removed during the contract.

3.1.2 Worker Decontamination Facility

3.1.2.1 Plans for the construction of the worker's decontamination enclosure, including materials and layout, shall be submitted as a shop drawing, and approved by Consultant prior to work initiation. Worker decontamination enclosure systems constructed at the work site shall utilize opaque polyethylene sheeting or other acceptable materials for privacy. Detailed descriptions of portable pre-fabricated units, if used, must be submitted to Consultant for approval, prior to arrival on site.

3.1.2.2 Construct a worker decontamination enclosure system contiguous to the work area consisting of three totally enclosed chambers separated from each other and the work area by air locks as follows:

a) An equipment room with two curtained doorways, one to the work area and one to the shower room.

b) A walk-through shower room with two curtained doorways, one to the equipment room and one to the clean room. The walk-through shower facility with hot and cold water that can be regulated at the shower head, shall contain at least one shower head for every five (5) workers or portion thereof. Careful attention shall be paid to the shower enclosure to insure against leaking of any kind. Ensure an adequate supply of soap, shampoo, and clean dry towels at all times in the shower room.

c) A clean room with one curtained doorway into the shower and one entrance or exit to non-contaminated areas of the building. The clean room shall have sufficient space for storage of the workers' street clothes, towels, and other non-contaminated items. If the entrance/exit door to the non-contaminated areas of the building, enters an occupied area of the building, an additional solid wood (minimum 1/2" thick plywood) locking door shall be installed to keep the building occupants from entering the clean room.

3.1.2.3 Clean room shall be sized to adequately accommodate the work crew. Benches shall be provided as well as hooks or lockers for the storage of street clothes. Clean disposable clothing, replacement filters for respirators, clean dry towels and other necessary items shall be provided in adequate supply and stored on shelves in the clean room. Install a mirror in the clean room to assist workers in the fitting of respiratory protection. Where required, the clean room shall be outfitted with a lockable door in order to restrict access by unauthorized personnel. Lighting, heat, and electricity shall be provided as necessary for worker comfort. The clean room shall not be used for storage of tools, equipment or materials (except as specifically designated), or as an office space.

3.1.2.4 The equipment room shall be used for storage of equipment and tools at the end of a shift after they have been decontaminated using a HEPA filtered vacuum and/or wet cleaning techniques as appropriate. Replacement filters (in sealed containers until used) for HEPA vacuums and negative pressure ventilation equipment, extra tools, containers of surfactant and other materials and equipment that may be required during the abatement may also be stored here as needed. A waste container consisting of a labelled 6 mil polyethylene disposal bag for collection of disposable clothing shall be located in this room. Contaminated footwear (e.g. rubber boots, other reusable footwear) shall be stored in this area for reuse the following work shift.

3.1.2.5 Passage through all airlocks and decontamination enclosure system chambers shall be through curtained doorways consisting of two sheets of overlapping polyethylene sheeting. One sheet shall be secured at the top and left side, the other at the top and right side. Both sheets shall have weights attached to the bottom to ensure that they hang straight and maintain a seal over the doorway when not in use.

3.1.3 Equipment and Waste Transfer Decontamination Enclosure

3.1.3.1 Provide or construct a waste and equipment decontamination and transfer enclosure system contiguous to the work area consisting of two totally enclosed chambers separated by air locks, constructed as follows:

a) A washroom, constituting an airlock, with a curtained doorway to a designated area of the work area and a curtained doorway to the holding area.

b) A holding area, constituting an airlock, with a curtained doorway to a non-contaminated area outside the work area. Wherever possible, the equipment and waste transfer enclosure shall be located where there is direct access from the work area to the outside of the building.

3.1.3.2 The equipment and waste transfer enclosure shall be constructed in similar fashion to the worker decontamination enclosure facility using similar materials as well as airlock and curtain doorway design.

3.1.3.3 The equipment and waste transfer enclosure shall not be used to enter or exit the work area.

3.1.4 Isolation of the Work Area

3.1.4.1 The contaminated work area shall be separated from non-contaminated, or occupied areas of the building by the construction of air tight barriers.

3.1.4.2 During asbestos abatement activities all polyethylene barriers inside the workplace, in the worker decontamination enclosure facility, in the waste transfer enclosure, and at partitions constructed to isolate the work area from occupied areas shall be inspected at least twice daily by the Contractor; prior to the start of each day's abatement activities and following the completion of the day's abatement activities. The Contractor shall record these inspections in his site log book.

3.1.4.3 Damage and defects in the isolation barrier enclosure system are to be repaired immediately upon discovery.

3.1.4.4 Use smoke tubes to test the effectiveness of the barrier system daily, or when directed by Consultant

3.1.4.5 If at any time during abatement activities air monitoring or visual inspection indicates that areas outside the work area enclosures are contaminated with asbestos, or if damage occurs to the work area barriers, work shall immediately stop, and the cause of the problem shall be rectified. Clean up of surfaces outside of the work area using HEPA vacuums or wet cleaning techniques may be necessary.

3.1.4.6 Install and initiate the operation of negative pressure ventilation equipment as needed to provide a minimum of one (1) air change in the work area every fifteen (15) minutes. Minimum acceptable negative air pressure differential is 0.02 inches of water column. Openings made in the isolation barrier system to accommodate negative air units shall be made airtight with tape and/or caulking as required. Ensure that adequate power supply is available at all times to satisfy the requirements of the negative air pressure ventilating units. Exhaust ducts of negative air pressure ventilation units shall be sealed and mechanically fastened to the exhaust port of the unit(s). Negative pressure ventilation units shall be exhausted to the outside of the building, in such a manner so as not to allow exhausted air to migrate back into the building or near occupied areas. Negative pressure ventilation equipment shall be DOP tested in accordance with Articles 1.6.16 and 1.8.9.

3.1.4.7 The exhaust ducts from the negative air pressure ventilation units to the exterior of the building, shall be aluminized mylar flexible spiral duct with a 6 mil polyethylene tube insert on the inside the spiral duct. The exhaust ducts, when passing through areas of the building occupied by the public or building staff, shall be enclosed by a solid barrier of 3/8" plywood, painted off-white. The wood enclosure shall be constructed and located to suit current National Building Code requirements regarding headroom and means of egress.

3.1.4.8 To facilitate the exhausting of air from the negative air pressure ventilation exhaust ducts to the exterior of the building, glazing units may be removed from windows. The glazing units shall be replaced with a plywood infill panel, cut to suit the window and exhaust duct, and of sufficient thickness to provide complete security to the building. The thickness of the plywood infill panel (depending upon location and security requirements), and the location of the glazing units that are to be removed, shall be pre-approved by the Owner. The Contractor shall be responsible for building security for the duration of the project, especially during the time that the glazing units are removed. The windows shall be replaced by the Contractor, utilizing qualified glazing trades persons.

3.1.4.9 Once constructed, sealed, and reinforced as necessary, the work area enclosure may be smoke tested for leakage by Consultant prior to the commencement of abatement activities. Required repairs or reconstruction shall be initiated to ensure absolute isolation of the work area.

3.1.4.10 Commencement of work at risk of disturbing asbestos shall not occur until:

a) Enclosure systems have been constructed, tested and approved by Consultant

b) Negative pressure ventilation systems are functioning adequately, and specified negative air pressure differential has been established.

c) If and as required, local exhaust systems are functioning adequately.

d) All pre-abatement submissions, notifications, posting and permits have been provided and are satisfactory to Consultant

e) Approved Asbestos Warning signs are displayed at all conceivable entrances to the work area.

f) An adequate supply of equipment and materials for abatement, clean-up, and disposal are on hand.

g) All worker training, and respirator fit testing is completed and documented.

h) Contractor receives written permission from the Owner to proceed with abatement activities.

3.1.5 Disturbance of Asbestos in Order to Complete Final Seal

3.1.5.1 Workers shall be provided full protective measures for contaminated conditions in order to perform work that is likely to disturb asbestos containing materials.

3.1.5.2 Where removal of a suspended ceiling is necessary to complete the isolation barrier, remove minimum sections of the ceiling required to access areas above the ceiling which must be sealed to prevent the escape of airborne fibres or water to unprotected areas of the building. Areas requiring sealing include but are not limited to: holes, pipe penetrations, electrical penetrations, duct penetrations, service ways, and above ceiling spaces that have no physical barrier at the edge of the work area.

3.1.5.3 In any area where asbestos containing materials must be disturbed, or removed to complete the seal, the asbestos containing material must be saturated with amended water applied from a low pressure hand sprayer prior to removal in conjunction with HEPA vacuuming. This procedure will only be approved when absolutely necessary, and when all persons in the vicinity are equipped with appropriate respiratory protection. Any area which requires the disturbance of asbestos containing materials in order to complete the isolation of the work area shall be sealed last, in order to gain full benefit of the negative air system. Work procedures of this nature shall be conducted under the supervision of Consultant

3.1.6 Removal of Contaminated Building Components

3.1.6.1 Where building components such as mechanical systems, electrical systems, and heat activated devices, etc., must be removed to perform the abatement, remove components carefully, HEPA vacuum and/or wet-sponge each component prior to its removal. Wrap clean components in polyethylene sheeting and seal with tape. Store as designated by the Owner.

3.1.7 Asbestos Removal

3.1.7.1 Wetting and removal of asbestos containing materials shall not proceed until the work area has been inspected and approved by Consultant

3.1.7.2 Wet all asbestos containing material with an amended water solution using equipment capable of providing a fine spray mist, in order to reduce airborne fibre concentrations when the material is disturbed. Saturate the material to the substrate, however, do not allow excessive water to accumulate in the work area. Keep all removed material wet enough to prevent fibre release until it can be containerized for disposal. Maintain a high humidity in the work area by misting or spraying to assist in fibre settling and reduce airborne concentrations. Wetting procedures are not equally effective on all types of asbestos containing materials but, shall however, be used in all cases.

3.1.7.3 Saturated asbestos containing material shall be removed in manageable sections. Removed material should be containerized before moving to a new location for continuance of work. Surrounding areas shall be periodically sprayed and maintained in a wet condition until all visible material is cleaned up.

3.1.7.4 Containers (labelled 6-mil polyethylene bags) shall be sealed when full. Double bagging of waste material is necessary. Disposal bags shall be decontaminated on exterior surfaces by wet cleaning and HEPA vacuuming before being placed in a second disposal bag in the waste decontamination enclosure.

3.1.7.5 Large components removed intact may be wrapped in two separately sealed layers of 6 mil (0.15 mm) polyethylene sheeting, secured with tape, and, labelled prior to transport to the landfill site.

3.1.7.6 Asbestos containing or contaminated waste with sharp-edged components (e.g. nails, screws, metal lath, tin sheeting) will tear the polyethylene bags and sheeting and shall be placed into suitable tear proof impermeable containers for disposal.

3.1.7.7 Co-ordinate storage of hazardous materials to be used by the Contractor to complete the Work with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.

3.1.7.8 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

3.1.7.9 Co-ordinate transportation and disposal with Departmental Representative.

3.1.7.10 Before shipping material obtain written notice from intended hazardous waste treatment or disposal facility it will accept material and it is licensed to accept this material.

3.1.7.11 As work progresses, and to prevent exceeding available storage capacity on site, removed sealed and labelled asbestos waste and transport to authorized disposal area in accordance with requirements of disposal authority, BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation, the Workers' Compensation Board of British Columbia, and these specifications.

3.1.7.12 After completion of all stripping work, all work area and plenum surfaces including but not limited to upper walls, upper ceilings, structural members, building components, appurtenances, ducting, piping, thermal pipe insulations, conduits, cables and lines, and polyethylene sheeting on walls, floors, and coverings on non-removable items are to be wet brushed, wet sponged or cleaned by some damp application equivalent method to remove all visible dust and/or residue. During this work the work area being cleaned shall be kept damp.

3.1.7.13 After completion of the above noted wet-wiping, apply insulation between exposed stud works at mid-wall height level to close openings near top of office interior drywall sheeting which stops between approximately 2” (5 cm) to 4” (10 cm) above the current suspended ceiling tracking. The application of insulation is to effectively isolate at approximately the suspended ceiling height level the remainder of the wall cavity extending down to the floor level.

3.1.7.14 After the work area has been rendered free of all visible dust and/or residues, insulations applied to isolate wall cavities, and following the inspection and acceptance by Consultant, apply the first of two coatings of slow drying sealer to all surfaces within the work area and plenum including but not limited to upper walls, upper ceilings, structural members, building components, appurtenances, ducting, piping, thermal pipe insulations, conduits, cables and lines, and polyethylene sheeting on walls, floors, and coverings on non-removable items, to seal in non-visible residue. Allow a minimum of two (2) hours for fibre settling for the first coating prior to application of the second coating. Allow a minimum of eight (8) hours for fibre settling with no activity in the work area. If insulation or acoustical materials are to be re-applied to the abated area, be certain that the encapsulant selected will permit good adhesion to the substrate and is compatible with the replacement product. Sealer must be pre-approved by Consultant prior to use.

3.1.8 Entry and Exit Procedures

3.1.8.1 All workers and authorized visitors, before entering the "Work Area", shall be trained in and familiar with all regulations, personal protection requirements (including workplace entry and exit procedures) and emergency procedures.

3.1.8.2 Workers and authorized visitors shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of asbestos containing or contaminated materials and until final clean-up is completed.

3.1.8.3 All workers and authorized visitors shall enter and exit "Work Area", through the workers' decontamination facility.

3.1.8.4 All workers and authorized visitors shall, prior to entering the work area, remove all street clothes in the clean room, put on appropriate respiratory protection (as deemed adequate for the project conditions), clean disposable coveralls, head covering and foot covering. Hard hats, eye protection, and gloves shall also be utilized if required. Clean respirators and protective clothing shall be provided and utilized by each person for each separate entry into the work area.

3.1.8.5 Personnel wearing designated personal protective equipment shall proceed from the clean room, through the shower room and equipment room, to the asbestos abatement work area. In order to prevent flow through contamination, personnel entering the work area should carefully pass through one curtained doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second curtained doorway.

3.1.8.6 Before leaving the work area, and prior to entering the equipment room all personnel shall remove gross contamination from the outside of respirators and protective clothing, with particular attention devoted to the bottoms of footwear. Personnel shall then proceed to the equipment room where they shall remove all protective equipment except respirators. Deposit disposable clothing into appropriately labelled containers for disposal.

3.1.8.7 Reusable, contaminated footwear shall be stored in the equipment room when not in use in the work area. Upon completion of abatement it shall be disposed of as asbestos contaminated waste (rubber boots may be decontaminated at the completion of the abatement for reuse).

3.1.8.8 Still wearing the respirator, proceed naked to the shower; still wearing the respirator, clean the outside of the respirator with soap and water; while showering, remove the respirator; personnel shall then shower and shampoo to remove residual asbestos contamination.

3.1.8.9 Various types of respirators will require slight modification of these procedures. An airline respirator with HEPA filtered disconnect protection may be disconnected in the equipment room immediately prior to entering the shower. If Powered Air Purifying Respirator are used, care must be taken to prevent water from entering the filter/power pack assembly which is not waterproof.

3.1.8.10 After showering and drying off, proceed to the clean room and dress in street clothes.

3.1.8.11 Eating, drinking, chewing, and smoking, are not permitted in the work area or decontamination facility. Smoking on the Owner's property will only be allowed in designated areas if approved by the Owner.

3.1.9 Equipment Removal and Waste Transfer Procedures

3.1.9.1 Clean external surfaces of contaminated containers and equipment thoroughly by wet sponging or HEPA vacuum before moving such items into the equipment decontamination enclosure system washroom for final cleaning and removal to non-contaminated areas. Ensure that personnel do not leave work areas through the equipment decontamination enclosure system.

3.1.9.2 Asbestos contaminated waste that has been containerized shall be transported out of the work area through the waste container pass-out airlock.

3.1.9.3 Waste pass-out procedures shall utilize two teams of workers, an "inside" team and an "outside" team.

3.1.9.4 The inside team wearing appropriate protective clothing and respirators for inside the work area shall clean the outside, including bottoms, of properly labelled containers (bags or wrapped components) using HEPA vacuums and wet wiping techniques and transport them into the waste container pass-out airlock. No worker from the inside team shall further exit the work area through this airlock.

3.1.9.5 The outside team, wearing appropriate protective clothing and assigned respirators, shall enter the airlock from outside the work area, enclose the bags in clean, labelled, 6 mil polyethylene bags, and

remove them from the airlock to the outside. No worker from the outside team shall further enter the work area through this airlock.

3.1.9.6 When not in use, the doorway to the waste transfer enclosure shall be secured to prevent unauthorized entry.

3.1.10 Asbestos Enclosure Procedures

3.1.10.1 Clean, prepare and isolate the work area in accordance with these specifications.

3.1.10.2 Spray areas that will be disturbed during the installation of hangers or other support/framing materials for the enclosure with water. Keep these areas damp to reduce airborne fibre concentrations.

3.1.10.3 Remove loose or hanging asbestos containing materials in accordance with these specifications.

3.1.10.4 After installation of hangers and other fixing devices and before installation of enclosure barrier, repair damaged areas as required.

3.1.10.5 Use hand tools equipped with HEPA filtered local exhaust ventilation, to drill, cut into, or otherwise disturb asbestos containing materials during the installation of support systems for the enclosures. (Alternatively, these areas of material could be removed prior to installation of supports.)

3.1.10.6 Enclosure barrier materials shall be impact resistant and provide an air-tight barrier once construction is complete.

3.1.10.7 Lower utilities as necessary and reinstall using qualified trades persons, in a manner which permits proper utilization and does not disturb the integrity of the enclosure barrier. Utility maintenance shall not require the enclosure to be opened or disturbed.

3.1.10.8 Enclosed asbestos containing materials shall be designated appropriately with Asbestos Warning signs in order to warn building maintenance personnel and general occupants of the potential asbestos hazard in the event that they are required to disturb the enclosure. One Asbestos Warning sign shall be installed for every twenty (20) lineal feet (6 metres) of enclosure surface or portion thereof.

3.1.11 Clean Up

3.1.11.1 Remove the cleaned polyethylene sheeting from walls and floors. When removing polyethylene sheeting, the material shall be carefully rolled away from the walls to the centre of the work area. As polyethylene is removed from the work area, all surfaces shall be HEPA vacuumed or wet cleaned. Windows, doors, HVAC system vents and all other openings shall remain sealed. The negative pressure ventilation units shall remain in continuous operation until clean-up is complete.

3.1.11.2 Decontaminate all tools and equipment and remove at the appropriate time in the cleaning sequence.

3.1.11.3 Place polyethylene, tape, cleaning materials, and other contaminated debris in disposal bags for transport to the landfill site. All waste, including non-asbestos insulation overspray, shall be treated as asbestos containing materials and disposed of as asbestos waste.

3.1.11.4 At the completion of the clean-up operation the Contractor and Consultant shall inspect the work area to ascertain that no dust or debris remains on surfaces as a result of dismantling or clean-up operations.

3.1.12 Air Monitoring

3.1.12.1 From commencement of work until completion of the clean-up operation, the Owner will be conducting air monitoring both inside and outside the work area enclosure.

3.1.12.2 Air sampling collection and analysis shall be conducted in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation.

3.1.12.3 The fibre level in areas outside the High Risk work areas, where there has been no disturbance of asbestos containing materials, shall not be permitted to exceed the following action level:

Asbestos (all forms) 0.05 fibres/ml (based on a Permissible Concentration of 0.1 fibre/ml)

3.1.12.4 The fibre level in the Clean Room shall not be permitted to exceed the following level:

Asbestos (all forms) 0.05 fibres/ml (based on a Permissible Concentration of 0.1 fibre/ml)

3.1.12.5 The fibre level in a High Risk Work Area shall not be permitted to exceed the following levels as applicable for different types of respiratory protection, without the written authorization of Consultant:

Powered Air Purifying (negative pressure)	3.7 fibres/ml
Powered Air Purifying (positive pressure)	7.5 fibres/ml
Air Supplying Continuous Flow	7.5 fibres/ml
Air Supplying Pressure Demand	75.0 fibres/ml
Air Supplying SCBA Pressure Demand	750.0 fibres/ml

3.1.12.6 Prior to air clearance monitoring, allow a minimum of two (2) hours for fibre settling for the first coating prior to application of the second coating and subsequently allow a minimum of eight (8) hours for fibre settling with no activity in the work area following application of the second coating of spray applied sealer.

3.1.12.7 Notify Consultant that the work area is ready for air clearance monitoring a minimum 8 hours in advance of the required time. Delays resulting in Consultant stand-by-time of more than 1 hour from that notified will be charged back on a time and materials basis to the Contractor.

3.1.12.8 Air clearance monitoring will be conducted by Consultant. If air sampling determines that asbestos levels in the work area are equal to or less than the level listed below, and as stipulated by the Workers' Compensation Board of British Columbia, the Contractor may proceed with the final clean up:

Asbestos (all forms)	0.02 fibres/ml

3.1.12.9 If applicable, re-insulation and retrofit may be carried out at this time subject to the approval of the Owner.

3.1.12.10 Dismantling of high risk work area enclosures shall be performed utilizing Moderate Risk Work Procedures as outlined in article 3.2 of this section.

3.2 MODERATE RISK EXECUTION

3.2.1 Moderate Risk Work Area Preparation

3.2.1.1 Clearly mark the boundary of the Work Area by placing Barrier Tape or fences around the Work Area.

3.2.1.2 Post Asbestos Warning signs at all conceivable approaches to work areas and other location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance sufficiently far enough away from the work area to permit all personnel to read the sign and take the necessary protective measures to avoid exposure.

3.2.1.3 Shut down, isolate, and lock out all heating, cooling and air conditioning system (HVAC) components that are in, supply, or pass through the work area. Seal all intake and exhaust vents in the work area with tape and polyethylene. Also seal any seams in system components that pass through the work area.

If the mechanical system cannot be shut down and isolated, obtain approval from the Owner to cut the ducts at the perimeter of the work area enclosure and cap the ends of the ducts and seal with tape. Seal all ends of ducts and/or vents in the work area with tape and polyethylene. Also seal seams in system components that pass through the work area.

3.2.1.4 Shut down and physically lock out all existing electric power and equipment within the work area enclosure and other areas wherever and whenever there is a danger of electrical shock. Coordinate this activity with the local engineering supervisor. Provide temporary power and lighting sources with "Class A" Ground Fault Circuit Interrupters (GFI). All temporary power cables and electrical light cables shall have ground wires. Ensure safe lock out of existing electrical power and installation (including ground faulting) of temporary power sources and equipment in compliance with all applicable electrical code, and regulatory board requirements. Prior to Consultants pre-contamination inspection, the Contractor shall have his electrical Subcontractor provide written documentation on company letterhead, to Consultant, stating that all electrical power within the work area has been isolated, the Contractor's GFI panel has been installed properly and is in good working order, and that all temporary power cables and

electrical lighting cables have an operational ground wire (two wire brewery cables will not be allowed in the work area). See article 1.7.17 of this Section.

3.2.1.5 Establish a decontamination area at one or more entrances to the Moderate Risk Work Area. The decontamination area (also called washout facility) shall contain a polyethylene drop sheet, polyethylene disposal bag, bucket of warm water and sponge, and/or a HEPA filtered vacuum cleaner.

3.2.1.6 Commencement of work at risk of disturbing asbestos shall not occur until:

a) All pre-abatement submissions, notifications, posting and permits have been provided and are satisfactory to Consultant.

b) Approved Asbestos Warning signs are displayed at all conceivable entrances to the work area.

c) An adequate supply of equipment and materials for abatement, clean-up, and disposal are on hand.

d) All worker training, and respirator fit testing is completed, documented and copies have been submitted to Consultant.

e) Contractor receives written permission from Consultant to proceed with abatement activities.

f) If and as required, local exhaust systems are functioning adequately.

3.2.2 Isolation of the Work Area for Modified Moderate Risk Work

3.2.2.1 The work area shall be separated from non-contaminated, or occupied areas of the building by the construction of air tight barriers.

3.2.2.2 During asbestos abatement activities all polyethylene barriers enclosing the work area shall be inspected at least twice daily by the Contractor; prior to the start of each day's abatement activities and following the completion of the day's abatement activities. The Contractor shall record these inspections in his site log book.

3.2.2.3 Damage and defects in the isolation barrier enclosure system are to be repaired immediately upon discovery.

3.2.2.4 Use smoke tubes to test the effectiveness of the barrier system daily, or when directed by Consultant

3.2.2.5 If at any time during abatement activities air monitoring or visual inspection indicates that areas outside the work area enclosures are contaminated with asbestos, or if damage occurs to the work area barriers, work shall immediately stop, and the cause of the problem shall be rectified. Clean up of surfaces outside of the work area using HEPA vacuums or wet cleaning techniques may be necessary.

3.2.2.6 Install and initiate the operation of negative pressure ventilation equipment as needed to provide a minimum of one (1) air change in the work area every fifteen (15) minutes. Minimum acceptable negative air pressure differential is 0.02 inches of water column. Openings made in the isolation barrier system to accommodate negative air units shall be made airtight with tape and/or caulking as required. Ensure that adequate power supply is available at all times to satisfy the requirements of the negative air pressure ventilating units. Exhaust ducts of negative air pressure ventilation units shall be sealed and mechanically fastened to the exhaust port of the unit(s). Negative pressure ventilation units shall be exhausted to the outside of the building, in such a manner so as not to allow exhausted air to migrate back into the building or near occupied areas. Negative pressure ventilation equipment shall be DOP tested in accordance with Articles 1.6.16 and 1.8.9.

The exhaust ducts from the negative air pressure ventilation units to the exterior of the building, shall be aluminized mylar flexible spiral duct with a 6 mil polyethylene tube insert on the inside the spiral duct. The exhaust ducts, when passing through areas of the building occupied by the public or building staff, shall be enclosed by a solid barrier of 3/8" plywood, painted off-white. The wood enclosure shall be constructed and located to suit current National Building Code requirements regarding headroom and means of egress.

To facilitate the exhausting of air from the negative air pressure ventilation exhaust ducts to the exterior of the building, glazing units may be removed from windows. The glazing units shall be replaced with a plywood infill panel, cut to suit the window and exhaust duct, and of sufficient thickness to provide complete security to the building. The thickness of the plywood infill panel (depending upon location and security requirements), and the location of the glazing units that are to be removed, shall be pre-approved by the Owner. The Contractor shall be responsible for building security for the duration of

the project, especially during the time that the glazing units are removed. The windows shall be replaced by the Contractor, utilizing qualified glazing trades persons.

3.2.2.7 Once constructed, sealed, and reinforced as necessary, the work area enclosure may be smoke tested for leakage by Consultant prior to the commencement of abatement activities. Required repairs or reconstruction shall be initiated to ensure absolute isolation of the work area.

3.2.2.8 Commencement of work at risk of disturbing asbestos shall not occur until; enclosure systems have been constructed, tested and approved by Consultant; negative pressure ventilation systems are functioning adequately, and specified negative air pressure differential has been established; and approved Asbestos Warning signs are displayed at all conceivable entrances to the work area.

3.2.3 Asbestos Abatement

3.2.3.1 Before beginning work, remove visible dust from surfaces in the work area where dust is likely to be disturbed during the course of the work. Use HEPA vacuum, or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate. Do not use compressed air to clean up or remove dust from any surface.

3.2.3.2 Prevent the spread of dust from the work area using measures appropriate to the work to be done.

3.2.3.3 Use polyethylene drop sheets over flooring and objects that are to remain in the work area.

3.2.3.4 Other than loose material which shall be removed by HEPA vacuum, friable material containing asbestos to be removed or disturbed shall be thoroughly wetted before and during work. Use garden reservoir type low velocity fine mist sprayer. Perform work in a manner to reduce dust creation to lowest levels practicable.

3.2.3.5 For the abatement of gypsum board filling compounds or other types of materials that will generate high fibre levels, a full height 6 mil polyethylene curtain shall be installed at the perimeter of the work area, and the work area subjected to a negative air pressure differential with the use of a HEPA filtered negative air unit, in order to control the non-asbestos (gypsum board fibres) fibres from migrating outside the work area, contaminating ambient air samples and the adjacent areas. HEPA filtered Powered Air Purifying Respirators (PAPR) shall be utilized by personnel performing gypsum board demolition. A Worker Decontamination Enclosure with shower may be required.

3.2.3.6 Asbestos containing suspended ceiling tracking, ceiling tiles, or other asbestos containing materials that may cut or puncture the polyethylene disposal bag, shall have the ends tapped over or otherwise capped to prevent puncture prior to being double bagged or double wrapped.

3.2.3.7 Place waste containing asbestos in sealed impermeable disposal bags. Drop sheets and disposable protective clothing shall be treated as asbestos waste and shall be wetted and folded to contain dust, then placed in disposal bags.

3.2.3.8 Large components removed intact may be wrapped in two separately sealed layers of polyethylene sheeting, sealed and secured with duct tape, and labelled prior to transport to the landfill site.

3.2.4 Pipe Insulation Removal Using Glove Bag Method

3.2.4.1 Prior to removing mechanical insulation, clean up dust and debris in the work area using a HEPA filtered vacuum equipment or by damp wiping.

3.2.4.2 Place polyethylene drop sheets over equipment and objects that are to remain in the work area, as required, to prevent the possible spread of asbestos dust.

3.2.4.3 Place polyethylene drop sheets on the floor of the work area under the mechanical insulation that are to be removed.

3.2.4.4 Where a difference exists between the WCB Regulations, the manufacturer's written instructions, and these work procedures, the most stringent procedures shall apply.

3.2.4.5 Place tools necessary to remove asbestos containing pipe insulation in the bottom of the glove bag. Install the glove bag on the pipe in accordance with manufacturer's written instructions. Seal bag to pipe with shoulder straps and duct tape. Insert nozzle of spray pump (containing amended water) into the glove bag through the valve.

3.2.4.6 Wet asbestos insulation prior to and during the removal procedure. Follow manufacturer's written instructions for the removal of asbestos insulation. Arrange asbestos insulation in bag to obtain full capacity of bag. Thoroughly wet down the insulation that is stored in the lower section of the glove bag.

3.2.4.7 Clean the surfaces where the asbestos materials have been removed and wash waste to the bottom of the glove bag.

3.2.4.8 Encapsulate the pipe where the insulation was removed and all exposed ends of asbestos insulation by spraying or painting the surfaces with Encapsulating Sealer.

3.2.4.9 Waste material in bags intended for use at more than one location and which are equipped with internal zippers to seal off waste, shall be sealed off in lower sections of glove bag. Before glove bag is removed from pipe, evacuate the air out of the glove bag using a HEPA filtered vacuum. Reinstall bag in new location before breaking lower seal.

3.2.4.10 To dispose of glove bag when full or upon the completion of asbestos removal, wash top section and tools thoroughly. Put all tools into one of the gloves. Invert the glove by pulling it out of the bag. All tools should now be inside the inverted glove. Twist the glove to create a separate pouch and double tape it to seal the tools inside. Tape seals should be at least two (2) inches apart. Cut the glove between the tape seals and place in the next glove bag, or into a bucket of water. Open pouch under water and clean tools thoroughly. Evacuate the air out of the glove bag using a HEPA filtered vacuum. Twist the glove bag to isolate the asbestos waste in the bottom of the bag and tape to seal the waste. While glove bag is still on the pipe slide a polyethylene disposal bag over glove-bag. Release shoulder straps, fold top of bag over and lower into the disposal bag. Seal disposal bag with duct tape.

3.2.4.11 After removal of bag, ensure that pipe is free of all residue. Remove all residue using HEPA vacuum or wet cloths. Ensure that surfaces are free of sludge which after drying could release asbestos fibres. Seal exposed surfaces of pipe with specified sealer to encapsulate any residual fibres. Seal remaining ends of asbestos containing pipe insulation with a non-asbestos fire rated canvas adhered with a liberal coat of lagging adhesive or encapsulating sealer, as required.

3.2.4.12 All work will be subject to visual inspection and air monitoring. Any contamination of surrounding areas indicated by visual inspection, or air monitoring will require the complete enclosure and clean-up of affected areas.

3.2.5 Entry and Exit Procedures

3.2.5.1 All workers and authorized visitors, before entering the work area, shall be trained in and familiar with all regulations, personal protection requirements (including workplace entry and exit procedures) and emergency procedures.

3.2.5.2 Workers and authorized visitors shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of asbestos containing or contaminated materials and until final clean up is completed.

3.2.5.3 All workers and authorized visitors shall, prior to entering the work area, put on appropriate respiratory protection (as deemed adequate for the project conditions), clean disposable coveralls, head covering and foot covering. Hard hats, eye protection, and gloves shall also be utilized if required. Clean respirators and protective clothing shall be provided and utilized by each person for each separate entry into the work area.

3.2.5.4 Eating, drinking, chewing, and smoking, are not permitted in the work area or decontamination facility.

3.2.5.5 Smoking on the Owner's property will only be allowed in designated areas if approved by the Owner.

3.2.5.6 Before leaving the work area workers shall decontaminate their protective clothing using a HEPA vacuum or by damp wiping. Store clean protective clothing in clean plastic bag for reuse, or, if protective clothing is not to be reused, dispose of as contaminated waste.

3.2.5.7 Workers shall wash hands and face immediately upon leaving the work area.

3.2.6 Asbestos Enclosure Procedures

3.2.6.1 Clean, prepare and isolate the work area in accordance with these specifications.

3.2.6.2 Spray areas that will be disturbed during the installation of hangers or other support/framing materials for the enclosure with water. Keep these areas damp to reduce airborne fibre concentrations.

3.2.6.3 Remove loose or hanging asbestos containing materials in accordance with these specifications.

3.2.6.4 After installation of hangers and other fixing devices and before installation of enclosure barrier, repair damaged areas of fireproofing/thermal insulation materials as required using a non-asbestos containing

replacement material. Prepare surfaces and apply replacement material in accordance with manufacturer's written instructions.

3.2.6.5 Use hand tools equipped with HEPA filtered local exhaust ventilation, to drill, cut into, or otherwise disturb asbestos containing materials during the installation of support systems for the enclosures. (Alternatively, these areas of material could be removed prior to installation of supports.)

3.2.6.6 Enclosure barrier materials shall be impact resistant and provide an air-tight barrier once construction is complete.

3.2.6.7 Lower utilities as necessary and reinstall using qualified trades persons, in a manner which permits proper utilization and does not disturb the integrity of the enclosure barrier. Utility maintenance shall not require the enclosure to be opened or disturbed.

3.2.6.8 Enclosed asbestos containing materials shall be designated appropriately with Asbestos Warning signs in order to warn building maintenance personnel and general occupants of the potential asbestos hazard in the event that they are required to disturb the enclosure. One Asbestos Warning sign shall be installed for every twenty (20) lineal feet (6 metres) of enclosure surface or portion thereof.

3.2.7 Clean Up

3.2.7.1 Frequently during the work and immediately after completion of the work clean up dust and waste containing asbestos using a HEPA vacuum or by damp mopping.

3.2.7.2 Place asbestos containing waste in sealed disposal bags. Drop sheets and disposable protective clothing shall be treated as asbestos waste and shall be wetted and folded to contain dust and then placed in disposal bags.

3.2.7.3 Immediately before their removal from the work area, and disposal, clean each filled disposal bag using damp cloths or HEPA vacuum and place in second clean disposal bag.

3.2.7.4 Seal and remove double-bagged waste from site. Dispose of waste asbestos in accordance with requirements of Provincial and Federal authority having jurisdiction.

3.2.7.5 Place polyethylene, tape, cleaning materials, and other contaminated debris in disposal bags for transport to the landfill site.

3.2.7.6 When removing polyethylene sheeting, the material shall be carefully rolled away from the walls to the centre of the work area. As polyethylene is removed from the work area, all surfaces shall be HEPA vacuumed or wet cleaned.

3.2.7.7 Perform final thorough clean-up of work areas and adjacent areas affected by the work using HEPA vacuum.

3.2.7.8 At the completion of the clean-up operation, the Contractor and Consultant shall inspect the work area to ascertain that no dust or debris remains on surfaces as a result of dismantling or clean-up operations.

3.2.8 Air Monitoring

3.2.8.1 From commencement of work until completion of the clean-up operation, Consultant will be conducting air monitoring both inside and outside the work area.

3.2.8.2 Air sampling collection and analysis shall be conducted in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation.

3.2.8.3 The fibre level in areas outside the Moderate Risk work areas, where there has been no disturbance of asbestos containing materials, shall not be permitted to exceed the following action level:

Asbestos (all forms)	0.05 fibres/ml (based on a Permissible Concentration of 0.1 fibre/ml)

3.2.8.4 With the exception of gypsum board removal (where a polyethylene enclosure, negative air unit, & PAPR are utilized) the fibre level in the Moderate Risk work area shall not be permitted to exceed the following action level:

Asbestos (all forms)	0.50 fibres/ml

3.2.8.5 Respirators shall be selected in accordance with the following maximum airborne fibre level concentrations:

Half Facepiece	0.7 fibres/ml
Full Facepiece	3.7 fibres/ml
Powered Air Purifying (negative pressure)	3.7 fibres/ml
Powered Air Purifying (positive pressure)	7.5 fibres/ml

3.2.8.6 Notify Consultant that the work area is ready for post abatement air monitoring.

3.2.8.7 If required, post abatement ambient monitoring will be conducted by Consultant If air sampling determines that asbestos levels in the work area are equal to or less than the level listed below, and as stipulated by the Workers' Compensation Board of British Columbia, the Contractor may proceed with the final clean up:

Asbestos (all forms)	0.05 fibres/ml	(based on a Permissible Concentration of 0.1 fibre/ml)

3.2.8.8 If air monitoring or visual inspection determines that areas outside the work area are contaminated, these areas shall be maintained and cleaned, in the same manner as that applicable to the work area.

3.3 DISPOSAL

3.3.1 Asbestos containing waste, contaminated building materials or equipment, and water used in the Work Area, shall be sealed and labelled in double 6 mil polyethylene bags, for transport to the landfill site.

3.3.2 As the work progresses, to prevent exceeding available storage capacity on site, sealed and labelled containers of asbestos containing waste shall be removed and transported to the pre-arranged disposal location.

3.3.3 Copies of all transportation manifests or other documentation of disposal shall be delivered to the Owner for his records. Copy 2 (green) of the waste manifest shall be provided to Consultant. The waste manifest form shall be signed by the Contractor and the Disposal Site Operator, as the responsibility for the material changes hands. If a separate carrier is employed, his name, address, telephone number and signature shall also appear on the waste manifest form.

3.3.4 Personnel loading or off-loading asbestos containing waste shall be protected by disposable clothing including head and body protection, and a minimum of a half face piece, air-purifying, dual cartridge respirators equipped with HEPA filters.

3.3.5 Any debris or residue observed on containers or surfaces outside of the work area resulting from clean-up or disposal activities shall be immediately cleaned up using HEPA filtered vacuum equipment and/or wet methods as appropriate.

3.3.6 If large metal dumpsters are used for asbestos waste disposal, they shall be equipped with **doors and tops** that can be closed and locked to prevent, birds of prey, vermin, vandalism and provide security while on site and during transportation. Unbagged material, or non-asbestos waste, shall not be placed in these containers. Bags shall be placed, not thrown, into these containers to avoid splitting. Disposal bins shall not be filled more than one foot (305 mm) from the top of the bin. Disposal bins (doors) shall be sealed in order to prevent water leakage.

3.3.7 Following the removal of all containerized waste, the cargo area shall be decontaminated using HEPA vacuums and/or wet cleaning methods.

3.4 RE-ESTABLISHMENT OF WORK AREA SYSTEMS AND OBJECTS

3.4.1 In coordination with the local engineering supervisor, re-establish HVAC, mechanical and electrical systems in proper working order. **With the exception of light fixtures**, re-establish objects that were moved to temporary locations. Decontaminate filter assembly using HEPA vacuums and wet cleaning techniques. Dispose of old filters in HVAC systems as asbestos waste. Note the locations requiring install of new replacement filters in HVAC systems.

3.4.2 **Repair all areas of damage that occurred as a result of abatement activities. The drywall with asbestos containing drywall joint compound is not to be removed however, repairs to damaged drywall and other consequential appurtenances resulting from suspended ceiling tracking removal are to be satisfactorily prepared (mudded and sanded in readiness for application of occupancy level paint (by others) and re-installation of tracking (by others) as described and directed by the Departmental Representative.**

3.4.3 Where applicable, a qualified sub-trade shall re-install all safety equipment such as fire alarm systems, heat and/or smoke detectors, fire-fighting equipment, emergency lighting, and exit lighting.

END OF SECTION

REPORT N^{O} 161-17554-00

PRE-RENOVATION WALL SURFACING COMPOUND SURVEY

FISHERIES & OCEANS CANADA.

OCEAN SCIENCES PHYSICS BUILDING, PLAN LINES 20 THROUGH 31
9860 WEST SAANICH ROAD, SIDNEY, BC, V8L 4B2

JANAURY 2017

WSP

PRE-RENOVATION WALL SURFACING COMPOUND SURVEY

FISHERIES & OCEANS CANADA.

OCEAN SCIENCES PHYSICS BUILDING, PLAN LINES 20 THROUGH 31

9860 WEST SAANICH ROAD, SIDNEY, BC

PROJECT NO: 161-17554-00

Date: 20 January 2017

WSP Canada Inc.
760 Enterprise Crescent
Victoria, BC V8Z 6R4

Phone: +1 250-475-1000
www.wspgroup.com

Project No.: 161-17554-00

January 20, 2017

Real Property, Safety & Security,
Fisheries and Oceans Canada
9860 West Saanich Road
Sidney, BC, V8L 4B2

Attention: Linda Barley

Project: **Pre-Renovation Wall Surfacing Compound Survey**

Address: **Ocean Sciences Physics Building, Plan Lines 20 Through 31, 9860 West Saanich Road, Sidney, BC.**

1 INTRODUCTION

WSP Consultants Ltd. (WSP) was retained by Fisheries and Oceans Canada for the provision of a Pre-Renovation Wall Surfacing Compound Survey for the Ocean Sciences Physics Building, Plan Lines 20 through 31 located at 9860 West Saanich Road, Sidney, British Columbia.

WSP was called upon to attend the Site to establish the presence / absence, location, type, and percentage content of potential asbestos within the drywall joint compound, skim coat on concrete, vinyl wall panelling, suspended ceiling tile, duct mastic, thermal pipe insulation, and floor tile utilized in the construction of the ground floor level Physics Building by means of sample collection and subsequent laboratory analysis. These materials may potentially be altered during planned renovations.

WSP has assumed the subject site building was constructed pre-1970s and appears to have undergone renovations since construction. Based on the estimated period of construction and subsequent renovations, asbestos building materials may be present.

WSP understands that the limited extent scheduled to be renovated or altered includes those rooms east of, but not including Corridor 1260, on the ground floor level of the Physics Building totaling approximately 16,670 sq. ft. (1,549 m^2).

The objective of a Pre-Renovation Wall Surfacing Compound Survey is to identify asbestos materials from those specified at the specified locations by means of sample collection and subsequent laboratory analysis. Section 20.112 of the BC Occupational Health and Safety Regulation requires that asbestos materials survey should be conducted by a qualified person prior to any demolition or renovation activity which might disturb asbestos materials. The Canadian Occupational Health and Safety Regulations and Canada Labour Code, Part II, which applies to all areas under federal jurisdiction, stipulate the requirements for protection of employees.

The survey and review was conducted in general accordance with WorkSafeBC Occupational Health and Safety Regulations Part 20, Construction, Excavation and Demolition, Section 20.112 Hazardous Materials.

The Pre-Renovation Wall Surfacing Compound Survey was conducted by identifying suspect ACMs through on-site bulk sampling and analysis. This report documents the on-site field review of potential asbestos building materials completed by WSP from December 6th through 8th of 2016.

2 LIMITATIONS

This Pre-Renovation Wall Surfacing Compound Survey included construction materials and components only. As it is neither practical nor feasible to sample materials on a foot by foot basis, visually similar materials' analysis results were extrapolated throughout the client designated areas of the structure and / or based on estimated phases of construction, where that information was made available.

Energised electrical and mechanical equipment or systems were not opened for safety reasons. This survey excluded owner or occupant articles such as furniture or stored items. Concealed or inaccessible materials within the building structure, fire doors, roofing, and below ground materials including tanks and pipes were specifically excluded from our scope of work.

No exterior wall componentry, paints (except the three samples designated by the client), upper surface roofing, nor below-grade water, drainage or plumbing systems or sub surface investigation of materials were included in the scope of this Pre-Renovation Hazardous Materials Survey.

3 SITE DESCRIPTION

The areas the client indicated as the renovation zone are assumed to have been constructed during an era when use of asbestos in building materials was potentially common. Interior finishes encountered included drywall joint compound, skim coat on concrete, vinyl wall panelling, suspended ceiling tile, duct mastic, thermal pipe insulation, and floor tile. A Site Plan is attached in Appendix I.

4 SCOPE OF WORK

To achieve the objective of this investigation, WSP completed the following scope of work:

4.1 ON-SITE PRE DEMOLITION ASBESTOS MATERIAL SURVEY

- Review as-built drawings and previous reports provided;
- Visually identify interior building materials potentially containing asbestos;
- On site review and collection of bulk building material samples suspected to contain asbestos; and
- Preparation of this report summarizing the specific asbestos containing building materials identified through review and analysis. Photographs were taken of the suspect asbestos building materials as well as the general area to give context.

5 METHODOLOGY

From December 6th through 8th of 2016, Mr. Gordon Philippe, B. Tech. Environmental Technologist of WSP conducted the Pre-Renovation Wall Surfacing Compound Survey site work according to the following protocol. Visual review was conducted for suspect asbestos materials likely to be impacted by renovation activities. Areas typically containing suspect asbestos materials were reviewed from the accessible areas. The completed Chain-of-Custodies (COCs) and the Laboratory Reports of analytical results are presented in in Appendix II.

For the purpose of this report, the scope of work was limited to the "potential renovation zone rooms and materials" including those rooms east of, but not including Corridor 1260, on the ground floor level of the Physics Building.

5.1 ASBESTOS-CONTAINING MATERIALS (ACMS)

Based on the assumed period of subject site building construction and alterations, asbestos-containing materials were considered likely to be present.

Accordingly, bulk sampling for suspect asbestos materials was deemed prudent. Review was based on experienced professional judgment in consideration of, but not necessarily limited to, the era of construction, and uniformity of materials and size of area of homogeneous materials.

Sampling locations included targeting specific areas planned for wall penetrations and appurtenance attachments.

The building materials review and bulk material sample collection for analysis of potential asbestos was consistent with recognized industry standards and principles of good occupational hygiene practice for mid-twentieth century period of construction/alteration in North America.

6 REGULATORY FRAMEWORK

The details of the regulatory frameworks for ACMs are found in Appendix III.

7 ASBESTOS MATERIALS SURVEY RESULTS

The results of the Pre-Renovation Wall Surfacing Compound Survey are summarized below.

Area descriptions for the following Corridors are defined as follows:

- South Corridor –> The east – west oriented corridor extending from the double doors located north of Room 1216 (Line 20) through to the 'T' hallway junction north of Room 1238 (Line 25.7).
- North Corridor –> The east – west oriented corridor extending from the single door located south of Room 1226 (Line 20) through to the Exit at the eastern most extent (Line 31).
- Centre South Corridor –> The north – south oriented corridor extending from the T' hallway junction with the North Corridor (Line V) through to the Exit at the far south extent (Line R1).

A Site Plan and Sampling Location Plans are attached in Appendix I. The completed Chain-of-Custodies (COCs) and the Laboratory Reports of analytical results are presented in in Appendix II.

7.1 ASBESTOS-CONTAINING MATERIALS

The rooms comprising the potential renovation areas are tabulated below along with the associated WSP collected bulk material samples for potential asbestos and the corresponding IATL laboratory results of asbestos content.

'Material of Interest' descriptions for samples are based on site observations and as listed on the Chain of Custody. Additional descriptions in brackets i.e., (White Joint Compound*) are those corresponding to the associated laboratory report finding descriptions. The majority of sampled materials are Wall Surfacing Compounds. **Bold indicates asbestos detected above 0.5% criteria.** For ease of identification, drywall joint compound samples are listed in black text and atypical non-drywall joint compound materials are listed in blue text within the table below.

Table 1: Suspect ACM Sampling Results

Area	Material of Interest	Sample ID	Content/Type
South Corridor	**South Wall East Extent Drywall Joint Compound**	**16-SCorr-01**	**PC 1.8 % Chrysotile**
South Corridor	**South Wall Near Room 1224 Drywall Joint Compound**	**16-SCorr-02**	**PC 1.7 % Chrysotile**
South Corridor	**South Wall Near Room 1220 Drywall Joint Compound**	**16-SCorr-03**	**PC 1.5 % Chrysotile**
South Corridor	**South Wall Near Room 1218 Drywall Joint Compound**	**16-SCorr-04**	**PC 1.4 % Chrysotile**
South Corridor	**South Wall Near Room 1217 Drywall Joint Compound**	**16-SCorr-05**	**PC 1.9 % Chrysotile**
South Corridor	**North Wall SE Corner off Room 1215b Drywall Joint Compound**	**16-SCorr-06**	**PC 2.2 % Chrysotile**
South Corridor	**North Wall SW Corner off Room 1222c Drywall Joint Compound**	**16-SCorr-07**	**PC 2.1 % Chrysotile**
South Corridor	North Wall SW Corner off Staircase Skim Coat (White Joint Compound*) over Concrete (Grey Plaster*)	16-SCorr-08	None Detected for asbestos

Area	Material of Interest	Sample ID	Content/Type
South Corridor	**West Wall in Central South Exit Hall Drywall Joint Compound**	**16-SCorr-09**	**PC 1.2 % Chrysotile**
South Corridor	**West End of Corridor South Side of Double Doors Drywall Joint Compound**	**16-SCorr-10**	**PC 1.2 % Chrysotile**
South Corridor	West End of Corridor North Side of Double Doors Skim Coat (White Plaster*) over Concrete (Grey Plaster*)	16-SCorr-11	None Detected for asbestos
North Corridor	**South Wall Near Room 1251 Drywall Joint Compound**	**16-NCorr-01**	**PC 2.2 % Chrysotile**
North Corridor	North Wall Near Room 1252 Drywall Joint Compound	16-NCorr-02	None Detected for asbestos
North Corridor	South Wall NW Corner off Room 1246 Drywall Joint Compound	16-NCorr-03	None Detected for asbestos
North Corridor	**North Wall Near Room 1243 Drywall Joint Compound**	**16-NCorr-04**	**PC 1.5 % Chrysotile**
North Corridor	**South Wall Near Room 1215d Drywall Joint Compound**	**16-NCorr-05**	**PC 1.2 % Chrysotile**
North Corridor	**North Wall Near Room 1227 Drywall Joint Compound**	**16-NCorr-06**	**PC 2.4 % Chrysotile**
Centre South Corridor	**East Wall Near Room 1237 Drywall Joint Compound**	**16-CSCorr-01**	**PC 1.8 % Chrysotile**
Centre South Corridor	**East Wall Near Room 1240 Drywall Joint Compound**	**16-CSCorr-02**	**PC 1.3 % Chrysotile**
Centre South Corridor	**West Wall Near Room 1242 Drywall Joint Compound**	**16-CSCorr-03**	**PC 1.4 % Chrysotile**
Centre South Corridor	**West Wall Near Room 1238 Drywall Joint Compound**	**16-CSCorr-04**	**PC 1.2 % Chrysotile**
Centre South Corridor	West Wall Near Staircase Skim Coat (White Plaster*)	16-CSCorr-05	None Detected for asbestos
Room 1200	Wall Opposite Entry Door Drywall Joint Compound	16-1200-01	None Detected for asbestos
Room 1200	SE Corner Wall of Store Room 1201 Drywall Joint Compound	16-1200-02	None Detected for asbestos
Room 1202	**East Wall Drywall Joint Compound**	**16-1202-01**	**PC 1.3 % Chrysotile**
Room 1202	**West Wall Drywall Joint Compound**	**16-1202-02**	**PC 1.5 % Chrysotile**
Room 1202a	**West Wall Drywall Joint Compound**	**16-1202a-03**	**PC 1.6 % Chrysotile**
Room 1202a	**South Wall Drywall Joint Compound**	**16-1202a-04**	**PC 1.7 % Chrysotile**
Room 1215b	**East Wall Drywall Joint Compound**	**16-1215b-01**	**PC 1.5 % Chrysotile**
Room 1215b	**North Wall Drywall Joint Compound**	**16-1215b-02**	**PC 1.8 % Chrysotile**

Area	Material of Interest	Sample ID	Content/Type
Room 1215b	Outside Southern West Panel Wall Vinyl On Wall Panelling	16-1215b-03	None Detected for asbestos
Room 1215b	East Exterior Side of Room 1215d Vinyl On Wall Panelling	16-1215b-04	None Detected for asbestos
Room 1216	**North Wall Drywall Joint Compound**	**16-1216-01**	**PC 1.3 % Chrysotile**
Room 1216	**East Wall Drywall Joint Compound**	**16-1216-02**	**PC 1.4 % Chrysotile**
Room 1216	**Drywall Joint Compound**	**16-1216-03**	**PC 2.2 % Chrysotile**
Room 1217	2' x 4' Suspended Ceiling Tile	16-1217-01	None Detected for asbestos
Room 1217	**Red Duct Mastic**	**16-1217-02**	**PC 6.3 % Chrysotile**
Room 1217	**North Wall Drywall Joint Compound**	**16-1217-03**	**PC 1.7 % Chrysotile**
Room 1217	**West Wall Drywall Joint Compound**	**16-1217-04**	**PC 2.4 % Chrysotile**
Room 1218	**North Wall Drywall Joint Compound**	**16-1218-01**	**PC 1.6 % Chrysotile**
Room 1218	**East Wall Drywall Joint Compound**	**16-1218-02**	**PC 2.5 % Chrysotile**
Room 1218	**South Wall Drywall Joint Compound**	**16-1218-03**	**PC 2.0 % Chrysotile**
Room 1219	**East Wall Drywall Joint Compound**	**16-1219-01**	**PC 2.3 % Chrysotile**
Room 1219	**North Wall Drywall Joint Compound**	**16-1219-02**	**PC 2.1 % Chrysotile**
Room 1219	**West Wall Drywall Joint Compound**	**16-1219-03**	**PC 1.5 % Chrysotile**
Room 1222a	**North Wall East Side of Steel Column Drywall Joint Compound**	**16-1222a-01**	**PC 3.1 % Chrysotile**
Room 1222a	**North Wall West Side of Steel Column Drywall Joint Compound**	**16-1222a-02**	**PC 2.3 % Chrysotile**
Room 1222a	West Wall - Vinyl On Wall Panelling (Grey/Tan Sheetrock*)	16-1222a-03	None Detected for asbestos
Room 1222c	East Wall - Vinyl On Wall Panelling (Off-White Non-Fibrous*)	16-1222c-01	None Detected for asbestos
Room 1222c	**North Wall East End Drywall Joint Compound**	**16-1222c-02**	**PC 2.8 % Chrysotile**
Room 1224	**North Wall Drywall Joint Compound**	**16-1224-01**	**PC 3.2 % Chrysotile**
Room 1224	**South Wall Drywall Joint Compound**	**16-1224-02**	**PC 2.6 % Chrysotile**
Room 1225	**East Wall Drywall Joint Compound**	**16-1225-01**	**PC 3.0 % Chrysotile**

Area	Material of Interest	Sample ID	Content/Type
Room 1227	**North Wall Drywall Joint Compound**	**16-1227-01**	**PC 3.4 % Chrysotile**
Room 1227	**South Wall Drywall Joint Compound**	**16-1227-02**	**PC 2.7 % Chrysotile**
Room 1233	**North Wall Drywall Joint Compound**	**16-1233-01**	**PC 2.5 % Chrysotile**
Room 1233	**East Wall Drywall Joint Compound**	**16-1233-02**	**PC 3.1 % Chrysotile**
Room 1233	**South Wall Drywall Joint Compound**	**16-1233-02**	**PC 2.8 % Chrysotile**
Room 1234	**East Wall Drywall Joint Compound**	**16-1234-01**	**PC 2.9 % Chrysotile**
Room 1234	**West Wall Drywall Joint Compound**	**16-1234-02**	**PC 1.9 % Chrysotile**
Room 1236	**Upper South Wall East End Drywall Joint Compound**	**16-1236-01**	**PC 3.3 % Chrysotile**
Room 1238	**North Wall Drywall Joint Compound**	**16-1238-01**	**PC 2.0 % Chrysotile**
Room 1238	**West Wall Drywall Joint Compound**	**16-1238-02**	**PC 2.2 % Chrysotile**
Room 1238	**South Wall Drywall Joint Compound**	**16-1238-03**	**PC 2.1 % Chrysotile**
Room 1239	**North Wall COC incorrect notation as Vinyl Wall Paneling however, backup photograph confirmed material as Drywall Joint Compound**	**16-1239-01**	**PC 2.4 % Chrysotile**
Room 1239	**East Wall Drywall Joint Compound**	**16-1239-02**	**PC 2.3 % Chrysotile**
Room 1239	**West Wall Drywall Joint Compound**	**16-1239-03**	**PC 2.9 % Chrysotile**
Room 1240	**West Wall Drywall Joint Compound**	**16-1240-02**	**PC 3.3 % Chrysotile**
Room 1240	**South Wall Drywall Joint Compound**	**16-1240-03**	**PC 2.7 % Chrysotile**
Room 1240	**Northwest Obtuse Corner Wall Off Room 1241 Drywall Joint Compound**	**16-1240-04**	**PC 2.5 % Chrysotile**
Room 1242	**North Wall Drywall Joint Compound**	**16-1242-01**	**PC 2.6 % Chrysotile**
Room 1242	**West Wall Drywall Joint Compound**	**16-1242-02**	**PC 2.3 % Chrysotile**
Room 1242	**South Wall Drywall Joint Compound**	**16-1242-03**	**PC 1.8 % Chrysotile**
Room 1242	**East Wall Drywall Joint Compound**	**16-1242-04**	**PC 1.9 % Chrysotile**
Room 1243	North Wall Drywall Joint Compound	16-1243-01	None Detected for asbestos

Area	Material of Interest	Sample ID	Content/Type
Room 1243	**West Wall Drywall Joint Compound**	**16-1243-02**	**PC 2.0 % Chrysotile**
Room 1243	**South Wall Drywall Joint Compound**	**16-1243-03**	**PC 1.8 % Chrysotile**
Room 1246	2' x 4' Suspended Ceiling Tile	16-1246-01	None Detected for asbestos
Room 1246	**Northeast Obtuse Corner Wall at West Entrance Drywall Joint Compound**	**16-1246-02**	**PC 1.5 % Chrysotile**
Room 1246	**North Wall East End Near Square Conduit Drywall Joint Compound**	**16-1246-03**	**PC 1.7 % Chrysotile**
Room 1246	**North Wall East End Near Large Round Green Painted Duct Drywall Joint Compound**	**16-1246-04**	**PC 1.9 % Chrysotile**
Room 1246	**North Wall East End Small Diameter Thermal Pipe Hard Mud Elbow Insulation Painted Yellow**	**16-1246-05**	**PC 5.1 % Chrysotile**
Room 1246	**East Wall South End Drywall Joint Compound**	**16-1246-06**	**PC 0.5 % Chrysotile**
Room 1248	12" Green Floor Tile	**16-1248-01**	PC Trace Chrysotile
	With Black Mastic		**PC 4.8 % Chrysotile**
Room 1248	**North Wall Drywall Joint Compound**	**16-1248-02**	**PC 2.1 % Chrysotile**
Room 1248	**Upper South Wall Drywall Joint Compound**	**16-1248-03**	**PC 2.1 % Chrysotile**
Room 1249	West Wall Drywall Joint Compound	16-1249-01	PC Trace Chrysotile
Room 1249	**East Wall Drywall Joint Compound**	**16-1249-02**	**PC 1.7 % Chrysotile**
Room 1250	**Eastern Far North Wall Drywall Joint Compound**	**16-1250-01**	**PC 1.6 % Chrysotile**
Room 1250	**Western North Wall Drywall Joint Compound**	**16-1250-02**	**PC 1.8 % Chrysotile**
Room 1250	**South Wall Drywall Joint Compound**	**16-1250-03**	**PC 1.3 % Chrysotile**
Room 1251	**North Wall Drywall Joint Compound**	**16-1251-01**	**PC 1.7 % Chrysotile**
Room 1251	**South Wall Drywall Joint Compound**	**16-1251-02**	**PC 1.5 % Chrysotile**
Room 1252	South Wall East End Medium Diameter Thermal Pipe Hard Mud Elbow Insulation Painted Caqui *Recommend further sampling of other hard mud elbows as some were observed to be in poor condition*	16-1252-00	None Detected for asbestos
Room 1252	**South Wall Drywall Joint Compound**	**16-1252-01**	**PC 1.6 % Chrysotile**

Area	Material of Interest	Sample ID	Content/Type
Room 1252	**North Wall Drywall Joint Compound**	**16-1252-02**	**PC 1.7 % Chrysotile**
Room 1253	North Wall - Jute Pattern Vinyl On Wall Panelling (White/Tan Ceiling Tile*)	16-1253-01	None Detected for asbestos
Room 1253	**East Wall Drywall Joint Compound**	**16-1252-02 (As per Photo should be 16-1253-02)**	**PC 1.2 % Chrysotile**
Room 1254	**East Wall Drywall Joint Compound**	**16-1254-01**	**PC 1.1 % Chrysotile**
Room 1254	**South Wall Drywall Joint Compound**	**16-1254-02**	**PC 1.2 % Chrysotile**
Room 1255	South Wall Leather Pattern Vinyl On Wall Panelling (White/Brown Sheetrock*)	16-1255-01	None Detected for asbestos
Room 1255	**East Wall Drywall Joint Compound**	**16-1255-02**	**PC 1.2 % Chrysotile**
Room 1255	West Wall Upper North Portion Drywall Joint Compound	16-1255-03	None Detected for asbestos
Room 1256	**South Wall Drywall Joint Compound**	**16-1256-01**	**PC 1.3 % Chrysotile**
Room 1257	**Lower North Wall Drywall Joint Compound**	**16-1257-01**	**PC 1.3 % Chrysotile**
Room 1257	**Upper North Wall Drywall Joint Compound**	**16-1257-02**	**PC 1.1 % Chrysotile**
Room 1257	**Upper West Wall Drywall Joint Compound**	**16-1257-03**	**PC 1.2 % Chrysotile**
Room 1258	**Upper East Wall Drywall Joint Compound**	**16-1258-01**	**PC 1.2 % Chrysotile**
Room 1259	**East Wall Near Room 1255 Drywall Joint Compound**	**16-1259-01**	**PC 1.2 % Chrysotile**
Room 1259	**West Wall Near Room 1258 Drywall Joint Compound**	**16-1259-02**	**PC 1.3 % Chrysotile**
Room 1259	**West Wall Near Room 1254 Drywall Joint Compound**	**16-1259-03**	**PC 1.1 % Chrysotile**
Room 1260	**Upper North Wall East Extent Drywall Joint Compound**	**16-1259-01**	**PC 1.2 % Chrysotile**
Room 1260	**Upper North Wall West Extent Drywall Joint Compound**	**16-1259-02**	**PC 1.2 % Chrysotile**

Notes: **Bold indicates asbestos detected above 0.5% criteria.**

According to WorkSafeBC, the definition of an asbestos-containing material is 0.5% by weight.

Based on the representative sampling, corresponding IATL analytical results of determined Chrysotile asbestos content, WorkSafeBC criteria, and site review assessment of visually similar materials, the following area materials were determined to be asbestos-containing:

- **All Drywall Joint Compound with PC 0.5% - 3.4% Chrysotile range in asbestos content;**
- **Red Coloured Duct Mastic PC 6.3% Chrysotile asbestos content;**

- **All 12” Square Green Floor Tile with Trace Chrysotile asbestos content. The associated Trace Level is associated with the one sample collected. Further sampling and analysis of similar floor tile is anticipated to return higher concentration results over that of the 0.5% by weight WorkSafeBC criteria;**
- **Black Mastic (under Green Floor Tile) with PC 3.4% Chrysotile asbestos content; and**
- **Small Diameter Thermal Pipe Hard Mud Elbow Insulation Painted Yellow with PC 5.1% Chrysotile asbestos content as found in Room 1246. Previous abatement works on former thermal pipe elbow insulations were apparent in the reviewed areas however, observations during the on-site review found some elbows apparently of original form in various states of condition. Those of various diameters and painted colours as observed in Room 1252 ranged from good to very poor condition. Further sampling and potential abatement upon determination of asbestos content is recommended.**

Based on the representative sampling, corresponding iATL analytical results of ‘None Detected’ for asbestos content, WorkSafeBC criteria, and site review assessment of visually similar materials, asbestos is not anticipated to be present within the remaining sampled materials including:

- Skim Coat over Concrete Walls Surrounding Staircases (“None Detected”);
- Prefabricated Vinyl Covered Wall Panelling of perimeter offices and the central open area work stations (“None Detected”); and
- Suspended Ceiling Tiles in common as specific to the reviewed area (“None Detected”).

7.2 LEAD BASED PAINTS

Limited paint sampling was undertaken in addition to the original scope as requested by Fisheries and Oceans representative at the time of the on-site orientation review.

The requested paint sample room areas are tabulated below along with the associated WSP collected bulk material surface coating samples and the corresponding IATL laboratory results of lead content.

Table 2: Suspect Paint Analysis Results

Area	Material of Interest	Sample ID	Content/Type
Room 1236	**Walls and Doors Tan Paint**	**16-1236-02**	**0.12 % Lead by Weight 1,200 ppm Lead**
Room 1236	**Structural Steel Layered Red Paint**	**16-1236-03**	**0.23 % Lead by Weight 2,300 ppm Lead**
Room 1236	**Ceiling Q-Decking Cream Paint**	**16-1236-03**	**0.11 % Lead by Weight 1,100 ppm Lead**

Notes: **Bold indicates lead detected above 600 mg/kg criteria.**

Lead based paints are not specifically defined in the WorkSafeBC regulations. BC Environmental Regulations[1] and WorkSafeBC Guidelines[2] require leachate testing prior disposal of lead waste.

WorkSafeBC has adopted the position that the removal of paint with a lead concentration as low as 0.06% (600 mg / kg) by aggressive techniques (i.e., abrasive blasting) can approach the occupational exposure limit. WorkSafeBC has also stated that lead concentrations as low as 0.009% (90 mg / kg) may present a risk to pregnant women and children.

- **The sampled paints from Room 1236 were found to have lead (Pb) content over the WorkSafe BC criteria of 600 mg/kg.**

BC Environmental Regulations and WorkSafe Guidelines require leachate testing prior to disposal of lead based paints on non-metallic surfaces. A representative sample of the whole waste (i.e. a core sample including the substrate and paint OR a cross-section of the paint covered substrate) should be submitted for the toxicity characteristic leaching procedure (TCLP) prior to disposal. Results of the TCLP test should be compared to the BC Ministry of Environment Hazardous Waste Criteria of 5.0 mg/L for Lead.

"All painted metallic renovation components are not characterized as hazardous waste so long as the paint is not removed from the painted surfaces."[3] However, the BC MOE encourages generators, of this waste type, to manage the waste at metal recyclers rather than by landfilling.

[1] Hazardous Waste Regulation
[2] Lead-Containing Coats and Paintings - Preventing Exposure in the Construction Industry
[3] BC MOE Technical Guidance 4, Environmental Management Act Applications, Guideline To Managing Lead-Containing Construction and Demolition Waste In BC, Version 1.0, January 2015

8 RECOMMENDATIONS

- Asbestos-containing materials must isolated, handled, or removed using safe work practices and procedures before renovation occurs. The WorkSafeBC publication "Safe Work Practices for Handling Asbestos" and the Occupational Health and Safety (OHS) Guideline G6.8 describe acceptable practices.
- A risk assessment for asbestos materials must be performed before renovation work begins to determine the exposure risk to workers and other persons as per OHS Guideline G20.112 Risk Assessment for Identified Asbestos.
- Proper procedures and documentation such as safe work practices, an exposure control plan, risk assessments and/or other controls must be developed for all workers involved in the handling/disturbance/removal of lead-containing paint with a lead content greater than 0.06%. In particular these requirements would apply to areas where the substrate metal with surface coatings is to be welded, cut, or ground using abrasive methods or if otherwise disturbed.
- Follow safe work procedures when cutting or grinding concrete, cementitious mortar, and/or other items containing crystalline silica.
- Safe work procedures should be followed when removing rodent droppings and or mould-contaminated materials if encountered.
- Prior to demolition, all electrical equipment and light ballasts should be checked for PCB content prior to disposal.
- Fluorescent light tubes and PCB ballasts should be recycled when removed from service. The Light Recycle website provides a list of recycling facilities on their website, at http://www.lightrecycle.ca/.
- Smoke detectors should be recycled when removed from service. AlarmRecycle is a recycling program for used or expired smoke and carbon monoxide (CO) alarms. Since October 1, 2011, BC residents have been able to drop off their smoke and CO alarms for recycling at AlarmRecycle drop-off locations across BC.
- BC Environmental Regulations[4] and WorkSafeBC Guidelines[5] require leachate testing prior disposal of lead waste. However some recyclers accept lead-painted demolition metal waste without leachate testing.
- Retain a copy of this report and provide it to any contractors who may be undertaking Renovation work in the building as required by Section 20.112 of the WorkSafeBC regulations.
- Following completion of the hazardous materials removal Provincial Regulations require that an inspection must be conducted by a Qualified Person to confirm that the hazardous materials have all been removed and an inspection report confirming the removal must be posted on site prior to renovation.

[4] Hazardous Waste Regulation
[5] Lead-Containing Coats and Paintings - Preventing Exposure in the Construction Industry

9 CLOSURE

No hazardous materials survey can wholly eliminate uncertainty regarding the potential for recognized hazardous materials conditions at the site. Performance of a standardized hazardous material survey protocol is intended to reduce, but not eliminate uncertainty regarding the potential for recognized hazardous materials at the site, given reasonable limits of time and cost.

This report has been prepared by WSP exclusively for Fisheries and Oceans Canada and is intended to provide a survey of the potential asbestos within the drywall joint compound, skim coat on concrete, vinyl wall panelling, suspended ceiling tile, duct mastic, thermal pipe insulation, and floor tile utilized in the construction of the ground floor level Physics Building, Plan Lines 20 through 31 located at 9860 West Saanich Road, Sidney, British Columbia.

The conclusions made in this report reflect WSP's best judgment in light of the information available at the time of preparation. No other warranty, expressed or implied, is made. Any use which a third party makes of this report, or any reliance on or decisions to be made or actions based on it, are the responsibility of such third parties. WSP accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this report. The standard limitations of this report are specified in Appendix IV.

Yours sincerely,

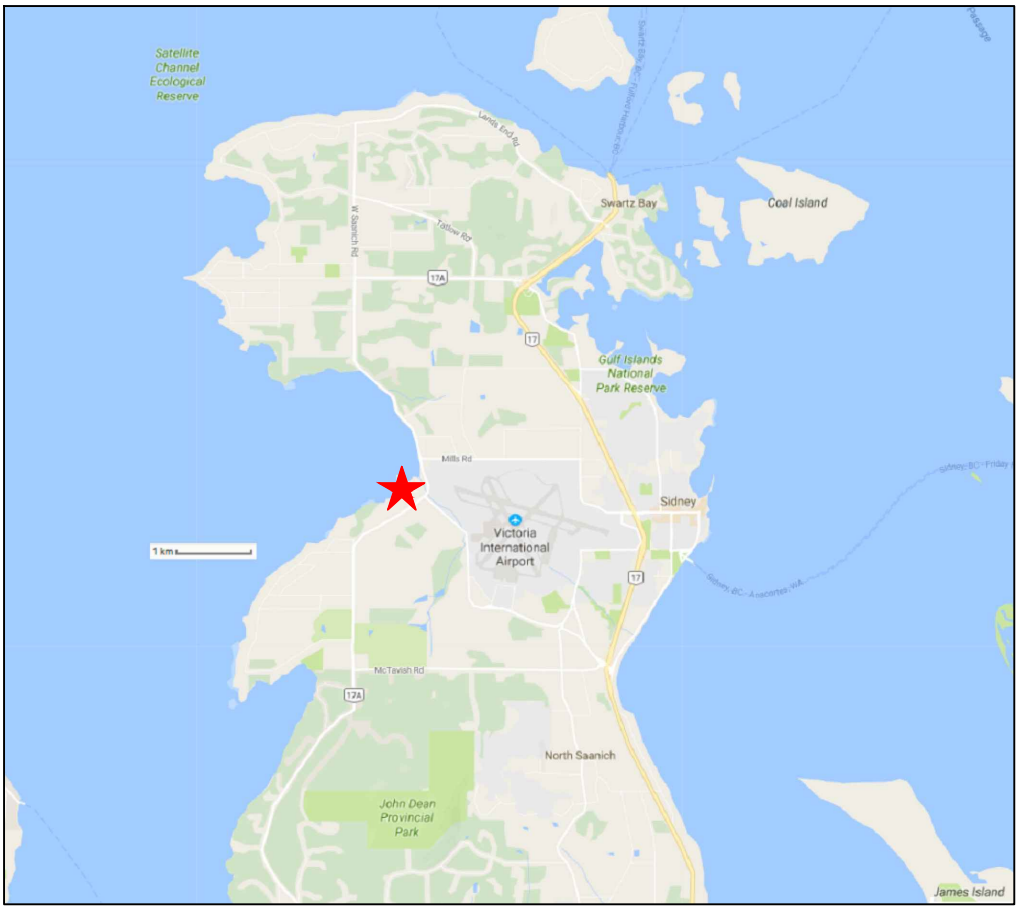
WSP CANADA INC.

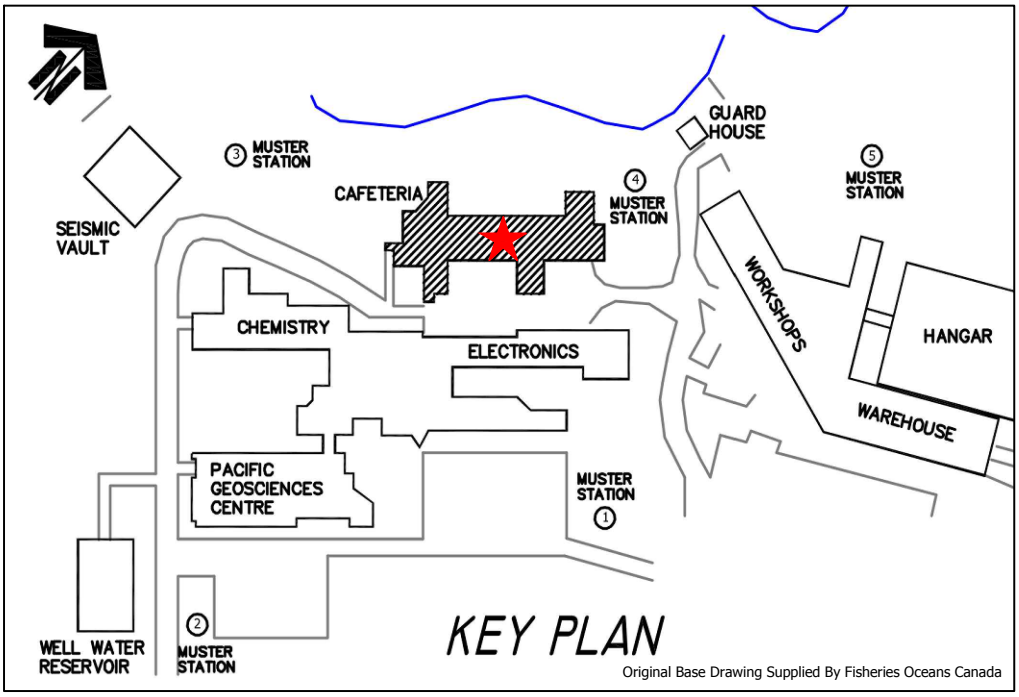
Gordon Philippe, B. Tech.
Environmental Technologist

Anthony Dickinson, M.A.Sc., P.Eng.
Senior Environmental Engineer

Appendix I	Site Plan and Sampling Location Plans.
Appendix II	Chain-of-Custodies and Laboratory Reports
Appendix III	Regulatory Framework
Appendix IV	Standard Limitations

APPENDIX I
SITE PLAN AND
SAMPLING LOCATION PLANS





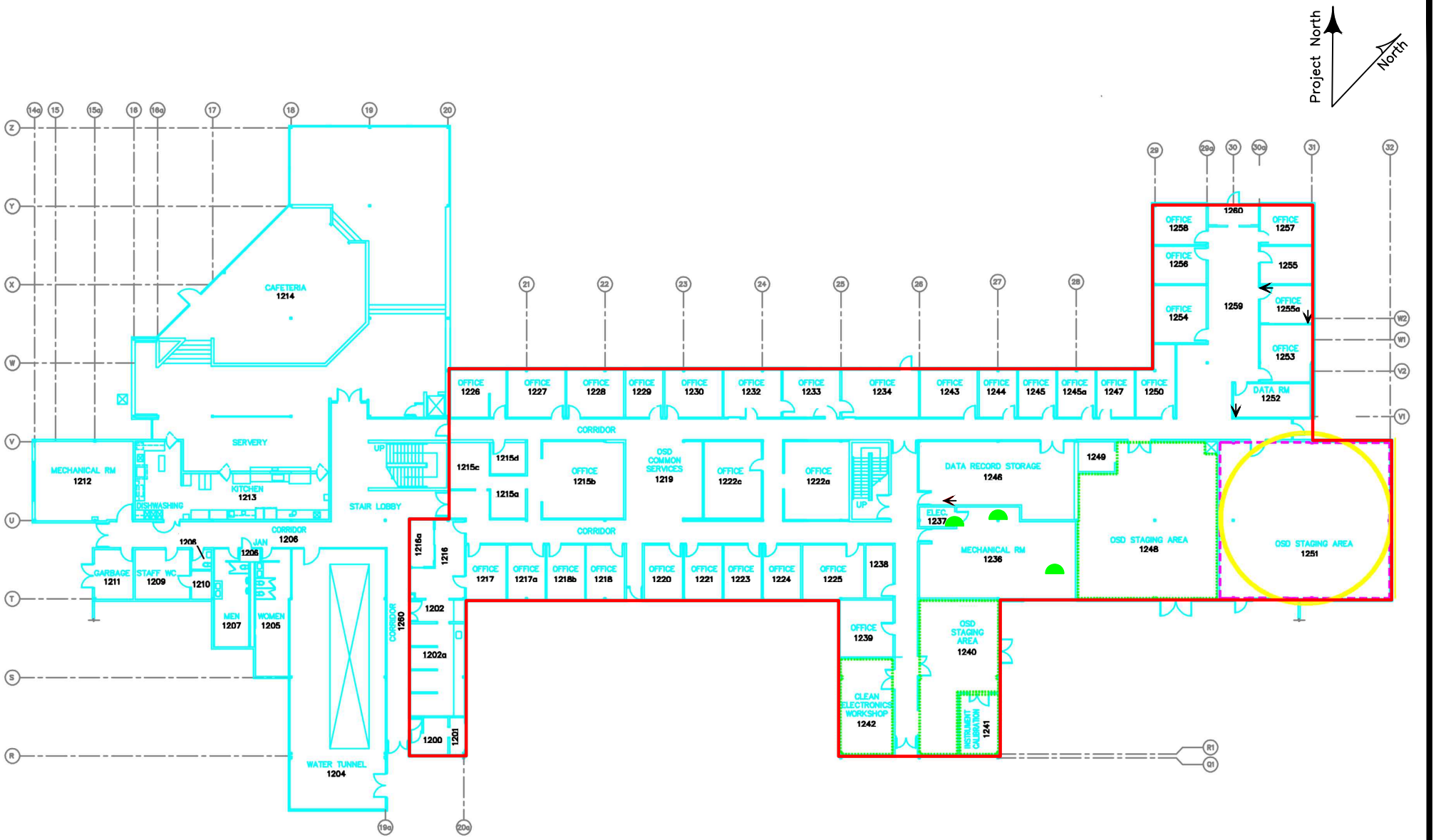
LEGEND

★ – SUBJECT SITE

WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE:	Site Location Map
PROJECT:	Pre Renovation Wall Surfacing Compound Survey Ocean Sciences Physics Building, Plan Lines 20 through 31 9860 West Saanich Road, Sidney, BC
CLIENT:	Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO.	161-17554-00
DWG. NO.	FIGURE 1



Original Base Drawing Supplied By Fisheries Oceans Canada

LEGEND

SUBJECT BUILDING AREA

WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Site Plan

PROJECT: Pre Renovation Wall Surfacing Compound Survey
Ocean Sciences Physics Building, Plan Lines 20 through 31
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO. 161-17554-00	
DWG. NO. FIGURE 2	

LEGEND

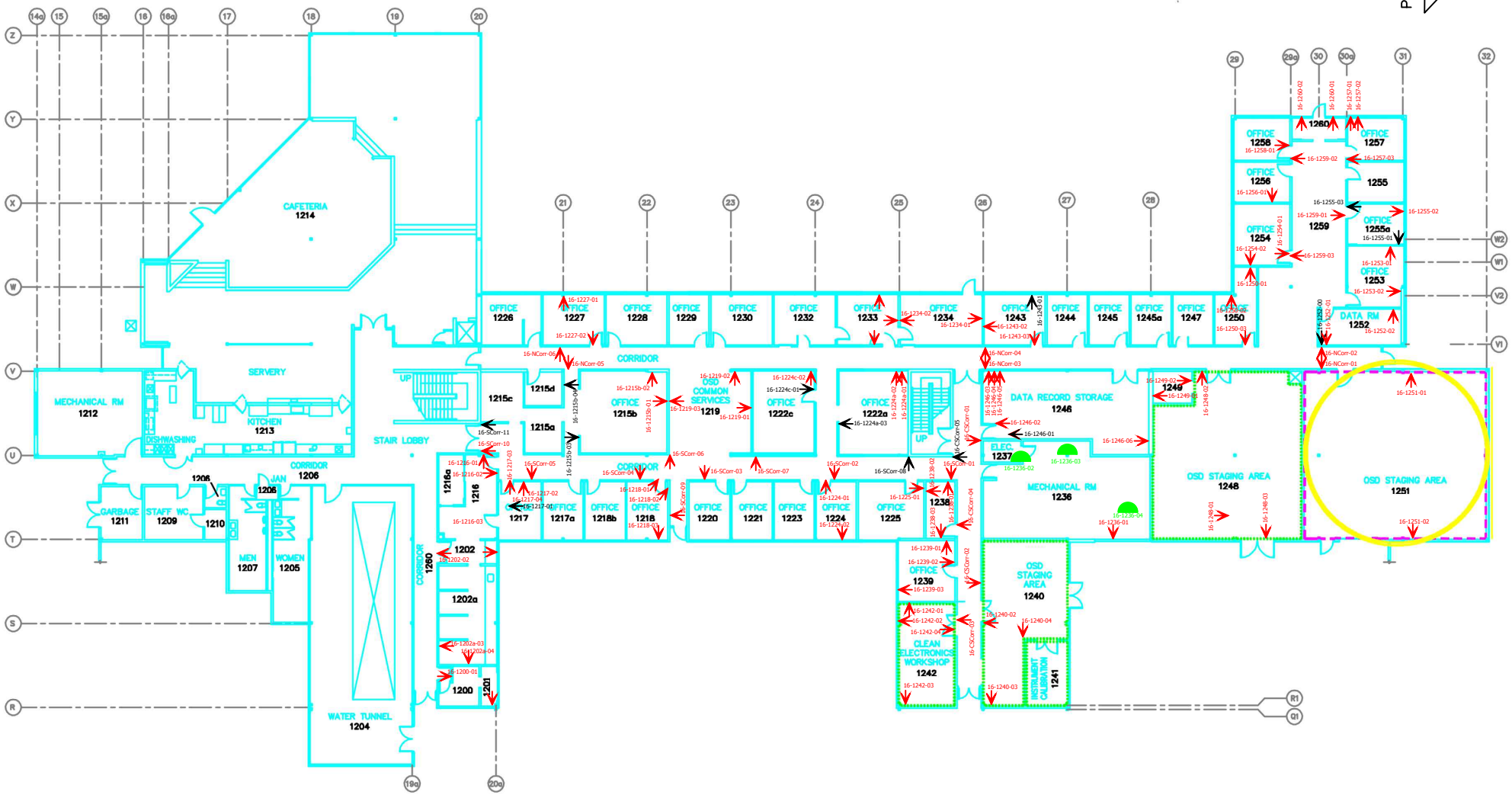
– ASBESTOS SAMPLE determined "NONE DETECTED"

– ASBESTOS SAMPLE determined to be ASBESTOS CONTAINING "CHRYSOTILE"

– LEAD SAMPLE lead (Pb) content OVER the WorkSafe BC criteria of 600 mg/kg

Project North

North



Original Base Drawing Supplied By Fisheries Oceans Canada

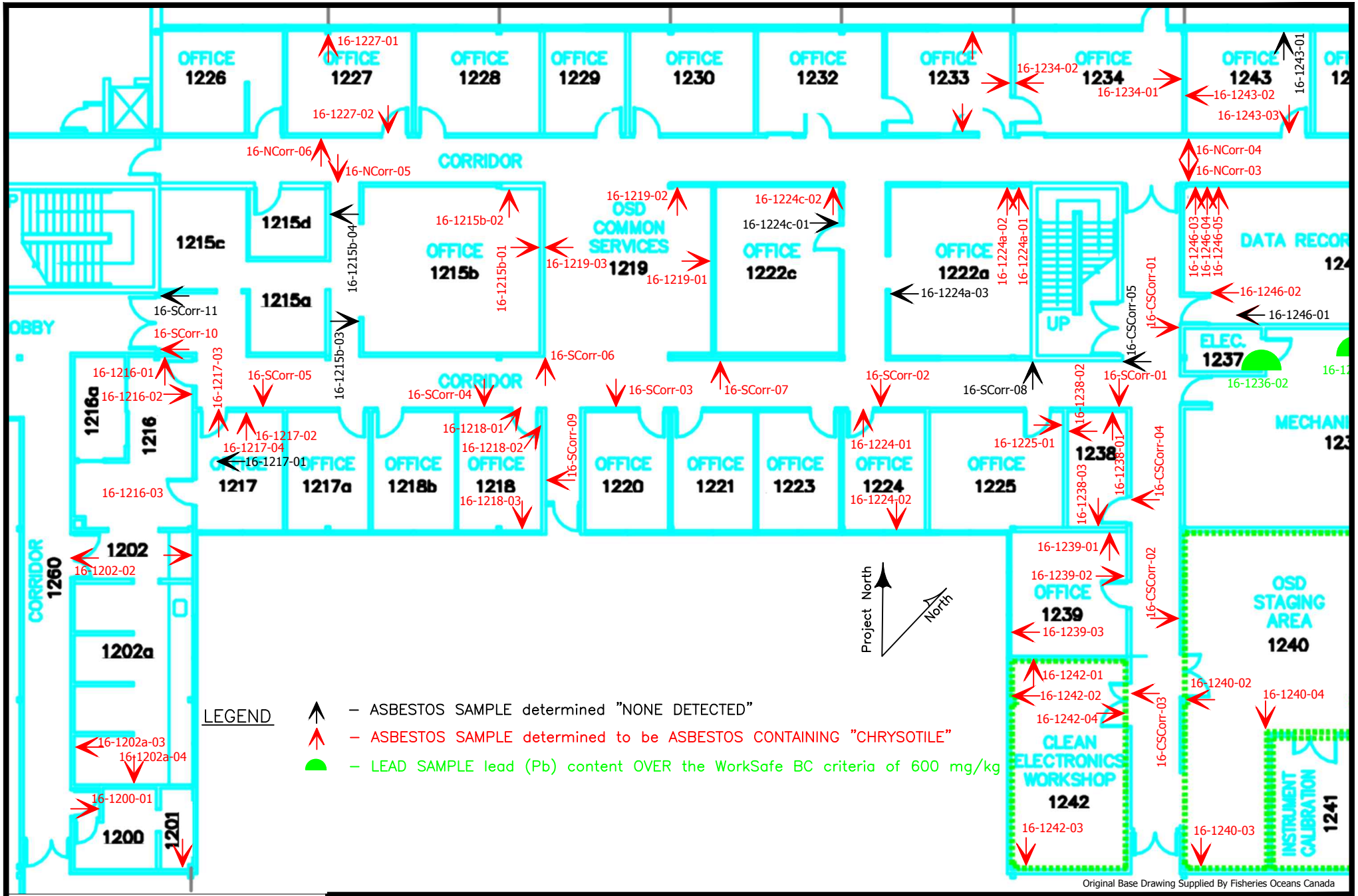
WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Sample Locations

PROJECT: Pre Renovation Wall Surfacing Compound Survey
Ocean Sciences Physics Building, Plan Lines 20 through 31
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO. 161-17554-00	
DWG. NO. FIGURE 3ABC	



Original Base Drawing Supplied By Fisheries Oceans Canada

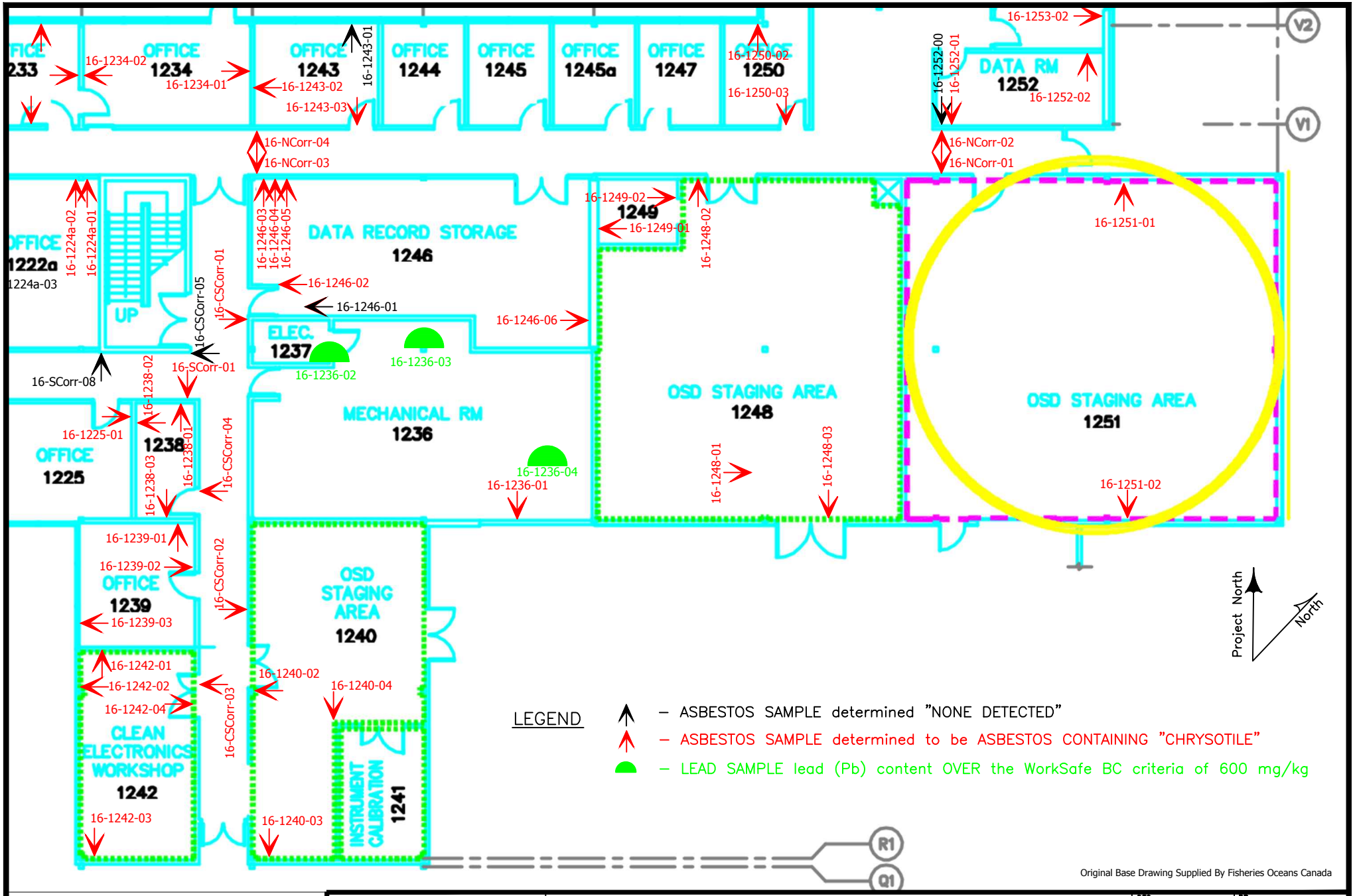
WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Sample Locations

PROJECT: Pre Renovation Wall Surfacing Compound Survey
Ocean Sciences Physics Building, Plan Lines 20 through 31
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO.	161-17554-00
DWG. NO.	FIGURE 3A



Original Base Drawing Supplied By Fisheries Oceans Canada

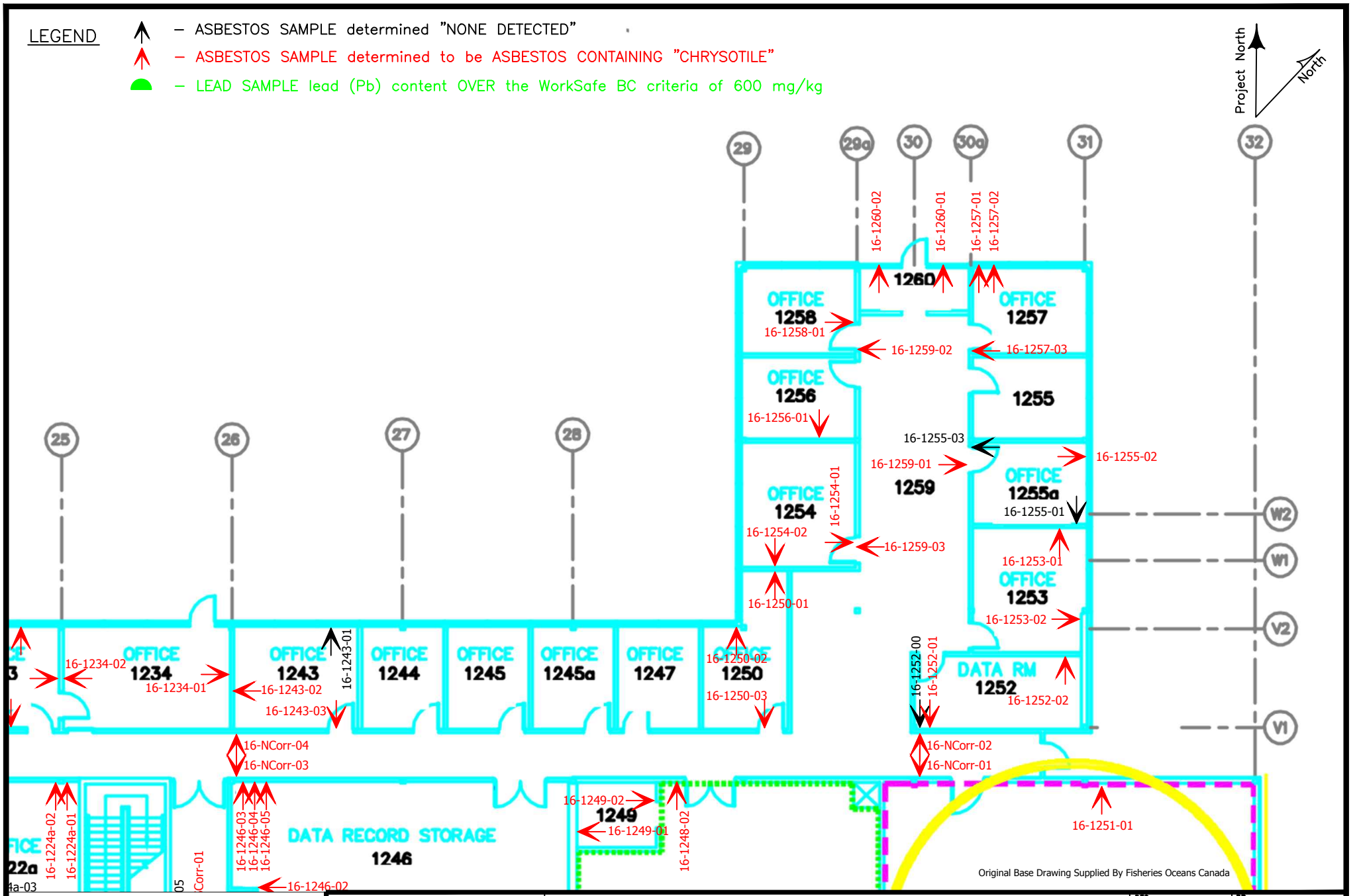
WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Sample Locations

PROJECT: Pre Renovation Wall Surfacing Compound Survey
Ocean Sciences Physics Building, Plan Lines 20 through 31
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO. 161-17554-00	
DWG. NO. FIGURE 3B	



WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Sample Locations

PROJECT: Pre Renovation Wall Surfacing Compound Survey
Ocean Sciences Physics Building, Plan Lines 20 through 31
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO. 161-17554-00	
DWG. NO. FIGURE 3C	

APPENDIX II
CHAIN-OF-CUSTODIES AND LABORATORY REPORTS

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Chain of Custody

–Bulk Asbestos –

Contact Information

Client Company:	WSP Canada Inc. (Levelton)	**Project Number:**	161-17554-00
Office Address:	760 Enterprise Crescent	**Project Name:**	DFO Physics Bld, Sidney, BC
City, State, Zip:	Victoria, BC, Canada V8Z 6R4	**Primary Contact:**	Gordon Philippe
Fax Number:	250-475-2211	**Office Phone:**	250-475-1000
Email Address:	Gordon.Philippe@WSPgroup.com	**Cell Phone:**	250-360-6537

PLM Instructions:

- ☒ PLM: Bulk Asbestos Building Materials EPA 600 R-93/116, 1993
- ☐ PLM: Bulk Asbestos Building Materials EPA 600 M-4/82-020, 1982
- ☐ PLM: Bulk Asbestos Building Materials NIOSH 9002, 1985
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.1, 2002
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.6, 2010
- ☐ TEM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.4, 2009

EMAILED
DEC 21 2016

- ☐ PLM: Point Counting
  - ☐ PC: via ELAP 198.1
  - ☐ PC: 400 Points
  - ☐ PC: 800 Points *
  - ☐ PC: 1600 Points *
- ☐ PLM: Instructions for Multi-Layered Samples
  - ☐ Analyze and Report All Separable Layers per EPA 600
  - ☐ Report Composite for Drywall Systems per NESHAP
  - ☐ Report All Layers and Composite Where Applicable
  - ☐ Only Analyze and Report Specifically Noted Layer
- ☐ PLM: Analyze Until Positive (Positive Stop)
  - ☐ AUP: by Homogenous Area as Noted
  - ☐ AUP: by Material Type as Noted
- ☐ PLM: NOB via 198.6
  - ☐ PLM: Friable via EPA 600 2.3
  - ☐ If <1% by PLM, to TEM via 198.4 *
  - ☐ If <1% by PLM, Hold for Instructions
- ☐ PLM: Non-Building Material*,** (Dust, Wipe, Tape)
  - ☐ Soil or Vermiculite Analysis*
  - ☐ CARB 435

Special Instructions: _____

** Additional charge and turnaround may be required* *** Alternative Method (ex: EPA 600/R-04/004) may be recommended by Laboratory*

Turnaround Time

Preliminary Results Requested Date: _____ (Specific date / time) ☐ Verbal ☒ Email ☐ Fax

☐ 10 Day ☒ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

RECEIVED
DEC 14 2016
iATL - By

Relinquished (Name/Organization):	Gordon/WSP Levelton	Date:	10 Dec 2016	Time:	Noon
Received (Name / iATL):		Date:		Time:	
Sample Login (Name / iATL):	12/12/16	Date:		Time:	
Analysis(Name(s) / iATL):	RM/Rhone VBS	Date:	12/20/16	Time:	
QA/QC Review (Name / iATL):		Date:		Time:	
Archived / Released:	QA/QC InterLAB Use:	Date:		Time:	

Rush later

X3 see attchd

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Chain of Custody

–Bulk Asbestos –

Contact Information

Client Company:	WSP Canada Inc. (Levelton)	**Project Number:**	161-17554-00
Office Address:	760 Enterprise Crescent	**Project Name:**	DFO Physics Bld, Sidney, BC
City, State, Zip:	Victoria, BC, Canada V8Z 6R4	**Primary Contact:**	Gordon Philippe
Fax Number:	250-475-2211	**Office Phone:**	250-475-1000
Email Address:	Gordon.Philippe@WSPgroup.com	**Cell Phone:**	250-360-6537

PLM Instructions:

- ☒ PLM: Bulk Asbestos Building Materials EPA 600 R-93/116, 1993
- ☐ PLM: Bulk Asbestos Building Materials EPA 600 M-4/82-020, 1982
- ☐ PLM: Bulk Asbestos Building Materials NIOSH 9002, 1985
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.1, 2002
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.6, 2010
- ☐ TEM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.4, 2009

- ☐ PLM: Point Counting
  - ☐ PC: via ELAP 198.1
  - ☐ PC: 400 Points
  - ☐ PC: 800 Points *
  - ☐ PC: 1600 Points *
- ☐ PLM: Instructions for Multi-Layered Samples
  - ☐ Analyze and Report All Separable Layers per EPA 600
  - ☐ Report Composite for Drywall Systems per NESHAP
  - ☐ Report All Layers and Composite Where Applicable
  - ☐ Only Analyze and Report Specifically Noted Layer
- ☐ PLM: Analyze Until Positive (Positive Stop)
  - ☐ AUP: by Homogenous Area as Noted
  - ☐ AUP: by Material Type as Noted
- ☐ PLM: NOB via 198.6
  - ☐ PLM: Friable via EPA 600 2.3
  - ☐ If <1% by PLM, to TEM via 198.4 *
  - ☐ If <1% by PLM, Hold for Instructions
- ☐ PLM: Non-Building Material*,** (Dust, Wipe, Tape)
  - ☐ Soil or Vermiculite Analysis*
  - ☐ CARB 435

Special Instructions: _____

** Additional charge and turnaround may be required* *** Alternative Method (ex: EPA 600/R-04/004) may be recommended by Laboratory*

Turnaround Time

Preliminary Results Requested Date: _____ (Specific date / time)

☐ Verbal ☒ Email ☐ Fax

☐ 10 Day ☒ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

Relinquished (Name/Organization):	Gordon/WSP Levelton	Date:	10 Dec 2016	Time:	Noon
Received (Name / iATL):		Date:		Time:	
Sample Login (Name / iATL):	121916	Date:		Time:	DEC 14 2016
Analysis(Name(s) / iATL):	12-20-16	Date:		Time:	
QA/QC Review (Name / iATL):		Date:		Time:	
Archived / Released: _____	QA/QC InterLAB Use: _____	Date:		Time:	

RECEIVED
iATL - Burlington

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Chain of Custody

–Bulk Asbestos –

Contact Information

Client Company:	WSP Canada Inc. (Levelton)	**Project Number:**	161-17554-00
Office Address:	760 Enterprise Crescent	**Project Name:**	DFO Physics Bld, Sidney, BC
City, State, Zip:	Victoria, BC, Canada V8Z 6R4	**Primary Contact:**	Gordon Philippe
Fax Number:	250-475-2211	**Office Phone:**	250-475-1000
Email Address:	Gordon.Philippe@WSPgroup.com	**Cell Phone:**	250-360-6537

PLM Instructions:

- ☒ PLM: Bulk Asbestos Building Materials EPA 600 R-93/116, 1993
- ☐ PLM: Bulk Asbestos Building Materials EPA 600 M-4/82-020, 1982
- ☐ PLM: Bulk Asbestos Building Materials NIOSH 9002, 1985
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.1, 2002
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.6, 2010
- ☐ TEM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.4, 2009

- ☐ PLM: Point Counting
  - ☐ PC: via ELAP 198.1
  - ☐ PC: 400 Points
  - ☐ PC: 800 Points *
  - ☐ PC: 1600 Points *
- ☐ PLM: Instructions for Multi-Layered Samples
  - ☐ Analyze and Report All Separable Layers per EPA 600
  - ☐ Report Composite for Drywall Systems per NESHAP
  - ☐ Report All Layers and Composite Where Applicable
  - ☐ Only Analyze and Report Specifically Noted Layer
- ☐ PLM: Analyze Until Positive (Positive Stop)
  - ☐ AUP: by Homogenous Area as Noted
  - ☐ AUP: by Material Type as Noted
- ☐ PLM: NOB via 198.6
  - ☐ PLM: Friable via EPA 600 2.3
  - ☐ If <1% by PLM, to TEM via 198.4 *
  - ☐ If <1% by PLM, Hold for Instructions
- ☐ PLM: Non-Building Material*,** (Dust, Wipe, Tape)
  - ☐ Soil or Vermiculite Analysis*
  - ☐ CARB 435

Special Instructions: _____

** Additional charge and turnaround may be required* *** Alternative Method (ex: EPA 600/R-04/004) may be recommended by Laboratory*

Turnaround Time

Preliminary Results Requested Date: _____ (Specific date / time) ☐ Verbal ☒ Email ☐ Fax

☐ 10 Day ☒ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

Relinquished (Name/Organization):	Gordon/WSP Levelton	Date: 10 Dec 2016	Time: Noon
Received (Name / iATL):		Date:	Time:
Sample Login (Name / iATL):		Date:	Time: DEC 14 2016
Analysis(Name(s) / iATL):	VBS	Date: 12/20/16	Time:
QA/QC Review (Name / iATL):		Date: 12/20/16	Time:
Archived / Released: _____	QA/QC InterLAB Use: _____	Date:	Time:

RECEIVED
iATL - BV

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	**iATL #**	**Location/Description**	**Notes**
16-SCorr-01	6107474	DWJC	
16-SCorr-02	6107475	DWJC	
16-SCorr-03	6107476	DWJC	
16-SCorr-04	6107477	DWJC	
16-SCorr-05	6107478	DWJC	
16-SCorr-06	6107479	DWJC	
16-SCorr-07	6107480	DWJC	
16-SCorr-08	6107481	Skim Coat on Concrete	
16-SCorr-09	6107482	DWJC	
16-SCorr-10	6107483	DWJC	
16-SCorr-11	6107484	Skim Coat on Concrete	
16-NCorr-01	6107485	DWJC	
16-NCorr-02	6107486	DWJC	
16-NCorr-03	6107487	DWJC	
16-NCorr-04	6107488	DWJC	
16-NCorr-05	6107489	DWJC	

DWJC = Drywall Joint Compound.

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	iATL #	Location/Description	Notes
16-NCorr-06	6107490	DWJC	
16-CSCorr-01	6107491	DWJC	
16-CSCorr-02	6107492	DWJC	
16-CSCorr-03	6107493	DWJC	
16-CSCorr-04	6107494	DWJC	
16-CSCorr-05	6107495	Skim Coat on Concrete	
16-1200-01	6107496	DWJC	
16-1200-02	6107497	DWJC	
16-1202-01	6107498	DWJC	
16-1202-02	6107499	DWJC	
16-1202a-03	6107500	DWJC	
16-1202a-04	6107501	DWJC	
16-1215b-01	6107502	DWJC	
16-1215b-02	6107503	DWJC	
16-1215b-03	6107504	Vinyl Wall Paneling	
16-1215b-04	6107505	Vinyl Wall Paneling	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	**iATL #**	**Location/Description**	**Notes**
16-1215d-01	6107506	DWJC	
16-1216-01	6107507	DWJC	
16-1216-02	6107508	DWJC	
16-1217-01	6107509	Suspended Ceiling Tile	
16-1217-02	6107510	Red Duct Mastic	
16-1217-03	6107511	DWJC	
16-1217-04	6107512	DWJC	
16-1218-01	6107513	DWJC	
16-1218-02	6107514	DWJC	
16-1218-03	6107515	DWJC	
16-1219-01	6107516	DWJC	
16-1219-02	6107517	DWJC	
16-1219-03	6107518	DWJC	
16-1222a-01	6107519	DWJC	
16-1222a-02	6107520	DWJC	
16-1222a-03	6107521	Vinyl Wall Paneling	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	iATL #	Location/Description	Notes
16-1222c-01	6107522	Vinyl Wall Paneling	
16-1222c-02	6107523	DWJC	
16-1224-01	6107524	DWJC	
16-1224-02	6107525	DWJC	
16-1225-01	6107526	DWJC	
16-1227-01	6107527	DWJC	
16-1227-02	6107528	DWJC	
16-1233-01	6107529	DWJC	
16-1233-02	6107530	DWJC	
16-1233-03	6107531	DWJC	
16-1234-01	6107532	DWJC	
16-1234-02	6107533	DWJC	
16-1236-01	6107534	DWJC	
16-1238-01	6107535	DWJC	
16-1238-02	6107536	DWJC	
16-1238-03	6107537	DWJC	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	iATL #	Location/Description	Notes
16-1239-01	6107538	Vinyl Wall Paneling	
16-1239-02	6107539	DWJC	
16-1239-03	6107540	DWJC	
16-1240-02	6107541	DWJC	
16-1240-03	6107542	DWJC	
16-1240-04	6107543	DWJC	
16-1242-01	6107544	DWJC	
16-1242-02	6107545	DWJC	
16-1242-03	6107546	DWJC	
16-1242-04	6107547	DWJC	
16-1243-01	6107548	DWJC	
16-1243-02	6107549	DWJC	
16-1243-03	6107550	DWJC	
16-1246-01	6107551	Suspended Ceiling Tile	
16-1246-02	6107552	DWJC	
16-1246-03	6107553	DWJC	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	iATL #	Location/Description	Notes
16-1239-01	6107538	Vinyl Wall Paneling	
16-1239-02	6107539	DWJC	
16-1239-03	6107540	DWJC	
16-1240-02	6107541	DWJC	
16-1240-03	6107542	DWJC	
16-1240-04	6107543	DWJC	
16-1242-01	6107544	DWJC	
16-1242-02	6107545	DWJC	
16-1242-03	6107546	DWJC	
16-1242-04	6107547	DWJC	
16-1243-01	6107548	DWJC	
16-1243-02	6107549	DWJC	
16-1243-03	6107550	DWJC	
16-1246-01	6107551	Suspended Ceiling Tile	
16-1246-02	6107552	DWJC	
16-1246-03	6107553	DWJC	

Start

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	**iATL #**	**Location/Description**	**Notes**
16-1246-04	6107554	DWJC	
16-1246-05	6107555	Yellow Small Dia/TPI Hard Mud Elbow	
16-1246-06	6107556	DWJC	
16-1248-01	6107557	12" Green Floor Tile & Black Mastic	
16-1248-02	6107558	DWJC	
16-1248-03	6107559	DWJC	
16-1249-01	6107560	DWJC	
16-1249-02	6107561	DWJC	
16-1250-01	6107562	DWJC	
16-1250-02	6107563	DWJC	
16-1250-03	6107564	DWJC	
16-1251-01	6107565	DWJC	
16-1251-02	6107566	DWJC	
16-1252-00	6107567	Caqui Medium Dia/TPI Hard Mud Elbow	
16-1252-01	6107568	DWJC	
16-1252-02	6107569	DWJC	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton)
Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	iATL #	Location/Description	Notes
16-1253-01	6107570	Canvas Texture Wall Paneling	
✱ 16-1252-02	6107571	DWJC	
16-1254-01	6107572	DWJC	
16-1254-02	6107573	DWJC	
16-1255-01	6107574	Leather Texture Wall Paneling	
16-1255-02	6107575	DWJC	
16-1255-03	6107576	DWJC	
16-1256-01	6107577	DWJC	
16-1257-01	6107578	DWJC	
16-1257-02	6107579	DWJC	
16-1257-03	6107580	DWJC	
16-1258-01	6107581	DWJC	
16-1259-01	6107582	DWJC	
16-1259-02	6107583	DWJC	
16-1259-03	6107584	DWJC	
16-1260-01	6107585	DWJC	

✱ Bag labeled 16-1253-02 W/121916

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	**iATL #**	**Location/Description**	**Notes**
16-1260-02	6107586	DWJC	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107474 **Client No.:** 16-SCorr-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107475 **Client No.:** 16-SCorr-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3
Lab No.: 6107476 **Client No.:** 16-SCorr-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 6107477 **Client No.:** 16-SCorr-04	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.6
Lab No.: 6107478 **Client No.:** 16-SCorr-05	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.1
Lab No.: 6107479 **Client No.:** 16-SCorr-06	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.8

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107480 **Client No.:** 16-SCorr-07	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 6107481 **Client No.:** 16-SCorr-08	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107481(L2) **Client No.:** 16-SCorr-08	**Description:** Grey Plaster **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107482 **Client No.:** 16-SCorr-09	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107483 **Client No.:** 16-SCorr-10	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107484 **Client No.:** 16-SCorr-11	**Description:** White Plaster **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107484(L2)
Client No.: 16-SCorr-11
Description: Grey Plaster
Facility:
Location:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6107485
Client No.: 16-NCorr-01
Description: White Joint Compound
Facility:
Location:

Percent Asbestos:
PC 2.2 *Chrysotile*

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
97.8

Lab No.: 6107486
Client No.: 16-NCorr-02
Description: White Joint Compound
Facility:
Location:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6107487
Client No.: 16-NCorr-03
Description: White Joint Compound
Facility:
Location:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6107488
Client No.: 16-NCorr-04
Description: White Joint Compound
Facility:
Location:

Percent Asbestos:
PC 1.5 *Chrysotile*

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
98.5

Lab No.: 6107489
Client No.: 16-NCorr-05
Description: White Joint Compound
Facility:
Location:

Percent Asbestos:
PC 1.2 *Chrysotile*

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
98.5

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107490 **Client No.:** 16-NCorr-06	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.6
Lab No.: 6107491 **Client No.:** 16-CSCorr-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107492 **Client No.:** 16-CSCorr-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107493 **Client No.:** 16-CSCorr-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.6
Lab No.: 6107494 **Client No.:** 16-CSCorr-04	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107495 **Client No.:** 16-CSCorr-05	**Description:** White Plaster **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107496 **Client No.:** 16-1200-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 1 Fibrous Glass	Percent Non-Fibrous Material: 99
Lab No.: 6107497 **Client No.:** 16-1200-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107498 **Client No.:** 16-1202-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107499 **Client No.:** 16-1202-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 6107500 **Client No.:** 16-1202a-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.4
Lab No.: 6107501 **Client No.:** 16-1202a-04	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107502 **Client No.:** 16-1215b-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 6107503 **Client No.:** 16-1215b-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107504 **Client No.:** 16-1215b-03	**Description:** Grey/Tan Sheetrock **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 35 Cellulose	Percent Non-Fibrous Material: 65
Lab No.: 6107505 **Client No.:** 16-1215b-04	**Description:** Grey/Tan Sheetrock **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 40 Cellulose	Percent Non-Fibrous Material: 60
Lab No.: 6107506 **Client No.:** 16-1216-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107507 **Client No.:** 16-1216-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.6

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107508 **Client No.:** 16-1216-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.8
Lab No.: 6107509 **Client No.:** 16-1217-01	**Description:** Grey/White Ceiling Tile **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 45 Fibrous Glass 40 Cellulose	Percent Non-Fibrous Material: 15
Lab No.: 6107510 **Client No.:** 16-1217-02	**Description:** Red Mastic **Facility:**	**Location:**
Percent Asbestos: ***PC 6.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: 25 Cellulose	Percent Non-Fibrous Material: 68.7
Lab No.: 6107511 **Client No.:** 16-1217-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3
Lab No.: 6107512 **Client No.:** 16-1217-04	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.6
Lab No.: 6107513 **Client No.:** 16-1218-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.4

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107514 **Client No.:** 16-1218-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.5
Lab No.: 6107515 **Client No.:** 16-1218-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.0*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98
Lab No.: 6107516 **Client No.:** 16-1219-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.7
Lab No.: 6107517 **Client No.:** 16-1219-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 6107518 **Client No.:** 16-1219-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 6107519 **Client No.:** 16-1222a-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.9

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107520
Client No.: 16-1222a-02

Description: White Joint Compound
Facility:

Location:

Percent Asbestos:
PC 2.3 *Chrysotile*

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
97.7

Lab No.: 6107521
Client No.: 16-1222a-03

Description: Grey/Tan Sheetrock
Facility:

Location:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
40 Cellulose

Percent Non-Fibrous Material:
60

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107522 **Client No.:** 16-1222c-01	**Description:** Off-White Non-Fibrous **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107523 **Client No.:** 16-1222c-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.2
Lab No.: 6107524 **Client No.:** 16-1224-01	**Description:** Off-White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.8
Lab No.: 6107525 **Client No.:** 16-1224-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.4
Lab No.: 6107526 **Client No.:** 16-1225-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.0*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97
Lab No.: 6107527 **Client No.:** 16-1227-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.6

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Vane Smith III
Analyst: Vane Smith

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107528 **Client No.:** 16-1227-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.3
Lab No.: 6107529 **Client No.:** 16-1233-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.5
Lab No.: 6107530 **Client No.:** 16-1233-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.9
Lab No.: 6107531 **Client No.:** 16-1233-03	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.2
Lab No.: 6107532 **Client No.:** 16-1234-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.1
Lab No.: 6107533 **Client No.:** 16-1234-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.1

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Vane Smith III
Analyst: Vane Smith

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107534 **Client No.:** 16-1236-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.7
Lab No.: 6107535 **Client No.:** 16-1238-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.0*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98
Lab No.: 6107536 **Client No.:** 16-1238-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.8
Lab No.: 6107537 **Client No.:** 16-1238-03	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 6107538 **Client No.:** 16-1239-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.6
Lab No.: 6107539 **Client No.:** 16-1239-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.7

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Vane Smith III
Analyst: Vane Smith

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107540 **Client No.:** 16-1239-03	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.1
Lab No.: 6107541 **Client No.:** 16-1240-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.7
Lab No.: 6107542 **Client No.:** 16-1240-03	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.3
Lab No.: 6107543 **Client No.:** 16-1240-04	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.5
Lab No.: 6107544 **Client No.:** 16-1242-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.4
Lab No.: 6107545 **Client No.:** 16-1242-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.7

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Vane Smith III
Analyst: Vane Smith

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107546 **Client No.:** 16-1242-03	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107547 **Client No.:** 16-1242-04	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.1
Lab No.: 6107548 **Client No.:** 16-1243-01	**Description:** Grey/Brown Fibrous **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 90 Cellulose	Percent Non-Fibrous Material: 10
Lab No.: 6107549 **Client No.:** 16-1243-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.0*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Vane Smith III
Analyst: Vane Smith

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107550 **Client No.:** 16-1243-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107551 **Client No.:** 16-1246-01	**Description:** White Ceiling Tile **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 50 Cellulose 30 Fibrous Glass	Percent Non-Fibrous Material: 20
Lab No.: 6107552 **Client No.:** 16-1246-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 6107553 **Client No.:** 16-1246-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3
Lab No.: 6107554 **Client No.:** 16-1246-04	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.1
Lab No.: 6107555 **Client No.:** 16-1246-05	**Description:** White Insulation **Facility:**	**Location:**
Percent Asbestos: ***PC 5.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: 10 Fibrous Glass	Percent Non-Fibrous Material: 84.9

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Randy Caran

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107556 **Client No.:** 16-1246-06	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 0.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 99.5
Lab No.: 6107557 **Client No.:** 16-1248-01	**Description:** Grey Floor Tile; 12" **Facility:**	**Location:**
Percent Asbestos: ***PC Trace*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107557(L2) **Client No.:** 16-1248-01	**Description:** Black Mastic **Facility:**	**Location:**
Percent Asbestos: ***PC 4.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 95.2
Lab No.: 6107558 **Client No.:** 16-1248-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 6107559 **Client No.:** 16-1248-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 6107560 **Client No.:** 16-1249-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC Trace*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Randy Caran

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107561 **Client No.:** 16-1249-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3
Lab No.: 6107562 **Client No.:** 16-1250-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.4
Lab No.: 6107563 **Client No.:** 16-1250-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107564 **Client No.:** 16-1250-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107565 **Client No.:** 16-1251-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3
Lab No.: 6107566 **Client No.:** 16-1251-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Randy Caran

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107567 **Client No.:** 16-1252-00	**Description:** White Insulation **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 2 Cellulose 10 Fibrous Glass	Percent Non-Fibrous Material: 88
Lab No.: 6107568 **Client No.:** 16-1252-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.4
Lab No.: 6107569 **Client No.:** 16-1252-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Randy Caran

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107570 **Client No.:** 16-1253-01	**Description:** White/Tan Ceiling Tile **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 50 Cellulose 10 Fibrous Glass	Percent Non-Fibrous Material: 40
Lab No.: 6107571 **Client No.:** 16-1252-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107572 **Client No.:** 16-1254-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.9
Lab No.: 6107573 **Client No.:** 16-1254-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107574 **Client No.:** 16-1255-01	**Description:** White/Brown Sheetrock **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 10 Cellulose Trace Fibrous Glass	Percent Non-Fibrous Material: 90
Lab No.: 6107575 **Client No.:** 16-1255-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Rachel McQuiggan

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107576 **Client No.:** 16-1255-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107577 **Client No.:** 16-1256-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107578 **Client No.:** 16-1257-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107579 **Client No.:** 16-1257-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.9
Lab No.: 6107580 **Client No.:** 16-1257-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107581 **Client No.:** 16-1258-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Rachel McQuiggan

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107582 **Client No.:** 16-1259-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107583 **Client No.:** 16-1259-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107584 **Client No.:** 16-1259-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.9
Lab No.: 6107585 **Client No.:** 16-1260-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107586 **Client No.:** 16-1260-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.9

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Rachel McQuiggan

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

Appendix to Analytical Report

Customer Contact:
Analysis: US EPA 600, R93-116

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Shirley Clark
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Bulk Building Materials
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by US EPA 600 93-116: Determination of Asbestos in Bulk Building Materials by Polarized Light Microscopy (PLM).

Certifications:

- NIST-NVLAP No. 101165-0
- NY-DOH No. 11021
- AIHA-LAP, LLC No. 100188

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analytical Methodology Alternatives: Your initial request for analysis may not have accounted for recent advances in regulatory requirements or advances in technology that are routinely used in similar situations for other qualified projects. You may have the option to explore additional analysis for further information. Below are a few options, listed as the matrix followed by the appropriate methodology. Also included are links to more information on our website.

Bulk Building Materials that are Non-Friable Organically Bound (NOB) by Gravimetric Reduction techniques employing PLM and TEM: ELAP 198.6 (PLM-NOB), ELAP 198.4 (TEM-NOB)

Loose Fill Vermiculite Insulation, Attic Insulation, Zonolite (copyright), etc.: US EPA 600 R-4/004 (multi-tiered analytical process)
Sprayed On Insulation/Fireproofing with Vermiculite (SOF-V): ELAP 198.8 (PLM-SOF-V)>

Soil, sludge, sediment, aggregate, and like materials analyzed for asbestos or other elongated mineral particles (ex. erionite, etc.): ASTM D7521, CARB 435, and other options available

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

Asbestos in Surface Dust according to one of ASTM's Methods (very dependent on sampling collection technique – by TEM): ASTM D 5755, D5756, or D6480

Various other asbestos matrices (air, water, etc.) and analytical methods are available.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a list with highlighted disclaimers that may be pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com**.

1) Note: No mastic provided for analysis.
2) Note: Insufficient mastic provided for analysis.
3) Note: Insufficient material provided for analysis.
4) Note: Insufficient sample provided for QC reanalysis.
5) Note: Different material than indicated on Sample Log / Description.
6) Note: Sample not submitted.
7) Note: Attached to asbestos containing material.
8) Note: Received wet.
9) Note: Possible surface contamination.
10) Note: Not building material. 1% threshold may not apply.
11) Note: Recommend TEM-NOB analysis as per EPA recommendations.
12) Note: Asbestos detected but not quantifiable.
13) Note: Multiple identical samples submitted, only one analyzed.
14) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.080%.
15) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.125%.

Recommendations for Vermiculite Analysis:

Several analytical protocols exist for the analysis of asbestos in vermiculite. These analytical approaches vary depending upon the nature of the vermiculite mineral being tested (e.g. un-processed gange, homogeneous exfoliated books of mica, or mixed mineral composites).Please contact your client representative for pricing and turnaround time options available.

iATL recommends initial testing using the EPA 600/R-93/116 method. This method is specifically designed for the analysis of asbestos in bulk building materials. It provides an acceptable starting point for primary screening of vermiculite for possible asbestos.

Results from this testing may be inconclusive. EPA suggests proceeding to a multi-tiered analysis involving wet separation techniques in conjunction with PLM and TEM gravimetric analysis (EPA 600/R-04/004).

Further information on this method and other vermiculite and asbestos issues can be found at the following: Agency for Toxic Substances and Disease Registry (ATSDR) www.atsdr.cdc.gov, United States Geological Survey (USGS) www.minerals.usgs.gov/minerals/, US EPA www.epa.gov/asbestos. The USEPA also has an informative brochure "Current Best Practices for Vermiculite Attic Insulation" EPA 747F03001 May 2003, that may assist the health and remediation professional.

The following is a summary of the analytical process outlines in the EPA 600/R-04/004 Method:

1)**Analytical Step/Method:** Initial Screening by PLM, EPA 600R-93/116
Requirements/Comments: Minimum of 0.1 g of sample. ~0.25% LOQ for most samples.

2)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

3)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Floats" only.

4)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

5)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Suspension" only.

LOQ, Limit of Quantitation estimates for mass and volume analyses.
*With advance notice and confirmation by the laboratory.
**Approximately 1 Liter of sample in double-bagged container (~9x6 inch bag of sample).

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Chain of Custody

– Environmental Lead –

Contact Information

Client Company:	WSP Canada Inc.	**Project Number:**	161-17554-00
Office Address:	760 Enterprise Crescent	**Project Name:**	DFO Physics Bld, Sidney, BC
City, State, Zip:	Victoria, BC, Canada V8Z 6R4	**Primary Contact:**	Gordon Philippe
Fax Number:	250-475-2211	**Office Phone:**	250-475-1000
Email Address:	Gordon.Philippe@WSPgroup.com	**Cell Phone:**	250-360-6537

iATL is accredited by the National Lead Laboratory Accreditation Program (NLLAP) to perform analytical testing of environmental samples for lead (Pb). The accreditation is through AIHA-LAP, LLC and several other nationally recognized state programs.

Matrix/Method:

- [x] Paint by AAS: ASTM D3335-85a, 2009
- [ ] Wipe/Dust by AAS: SW 846: 3050B: 700B, 2010
- [ ] Air by AAS: NIOSH 7082, 1994
- [ ] Soil by AAS: EPA SW 846 (Soil)
- [ ] Water by AAS-GF: ASTM D3559-03D, US EPA 200.9
- [ ] Other Metals (Cd, Zn, Cr) by AAS
- [ ] Toxicity Characteristic Leaching Procedure (TCLP) by AAS: US EPA 1311
- [ ] Other _____

Special Instructions:

_____

_____

Turnaround Time

Preliminary Results Requested Date: _____ (Specific date / time) ☐ Verbal ■ Email ☐ Fax

☐ 10 Day ■ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

Relinquished (Name/Organization):	Gordon / WSP	Date: 18 Nov 2106	Time: 15:30
Received (Name / iATL):		Date:	Time:
Sample Login (Name / iATL):	WMK 12/15/16	Date:	Time:
Analysis(Name(s) / iATL):	MS 12/20/16	Date:	Time:
QA/QC Review (Name / iATL):	ML 12/20/16	Date:	Time:
Archived / Released: _____	QA/QC InterLAB Use: _____	Date:	Time:

RECEIVED DEC 14 2016

iATL - By

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Environmental Lead –

Client: WSP Canada Inc. Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Client Sample #	iATL #	Location/ Description	Flow Rate	Start / End	Sampling time (min)	Area (ft2) Volume (L)	Results ( )
16-1236-02	6103828	Walls & Doors/Tan Paint					
16-1236-03	6103829	Structural Steel/Layered Red Paint					
16-1236-04	6103830	Ceiling Q-Decking/Cream Paint					

* = *Insufficient Sample Provided to Perform QC Reanalysis (<200mg)*
** = *Insufficient Sample Provided to Analyze (<50mg) ***= Matrix / Substrate Interference Possible*
FB = Method Requires the submittal of blank(s). ML = Multi Layered Sample. May result in inconsistent results.
These **preliminary results** are issued by iATL to expedite procedures by clients based upon the above data. iATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificate of Analysis will follow these preliminary results. The signed COA is to be considered the official results. All EPA, HUD, and NJDEP conditions apply.

IATL International Asbestos Testing Laboratories

9000 Commerce Parkway, Suite B, Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818
INFO@IATL.COM

DAILY QUALITY CONTROL DATA

LEAD SAMPLE ANALYSIS

(DATE: 12 / 20 / 16)

Standard	Total Lead (mg)	Percent Recovery **
Reagent Blank	0.000	< LOQ
Blank Spike	0.500	99
Lab Control Std	1.280	99
Matrix Spike - LBP *	0.35	97
Matrix Spike - Wipe *	0.37	98
Matrix Spike - Soil *	0.243	89
Matrix spike - Air *		
2.5 ppm Standard	0.25	96
10.0 ppm Standard	1.0	101
40.0 ppm Standard	4.0	102

AIHA-LAP, LLC No. 100188 **NYSDOH-ELAP No. 11021**

Analysis Method: ASTM D3335-85A
NIOSH 7082
EPA SW846 3050B 7000B

Comments: IATL assumes that all sampling complies with accepted methods.
All client supplied sampling data is assumed to be correct when calculating results.
Detection limit based upon 0.2 mg/L reporting limit and sample size.
* NIST Traceable.
** 80-120% acceptable limits.

Analyzed By: M. Stewart
Date: 12/20/16

Approved By: Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525897 - Lead Paint
Project: DFO Physics Bld., Sidney, BC
Project No.: 161-17554-00

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6103828
Client No.: 16-1236-02
Description: Tan
Location: Walls And Doors, 6-8 Dec 2016
Result (% by Weight): 0.12
Result (ppm): 1200
Comments:

Lab No.: 6103829
Client No.: 16-1236-03
Description: Red
Location: Structural Steel, 6-8 Dec 2016
Result (% by Weight): 0.23
Result (ppm): 2300
Comments:

Lab No.: 6103830
Client No.: 16-1236-04
Description: Cream
Location: Ceiling Q-Decking, 6-8 Dec 2016
Result (% by Weight): 0.11
Result (ppm): 1100
Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Mark Stewart

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525897 - Lead Paint
Project: DFO Physics Bld., Sidney, BC
Project No.: 161-17554-00

Appendix to Analytical Report:

Customer Contact:
Analysis: ASTM D3335-85a

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Shirley Clark
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Paint
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:
- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation.
All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.
Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B.
Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.
LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com.**

* Insufficient sample provided to perform QC reanalysis (<200 mg)

** Not enough sample provided to analyze (<50 mg)

*** Matrix / substrate interference possible.

APPENDIX III
REGULATORY FRAMEWORK

REGULATORY FRAMEWORK

1. Occupational Health and Safety Regulation (Including amendments up to B.C. Reg. 195/2015),
2. Safe Work Practices for Handling Asbestos, WorkSafeBC, (Publication Date January 15, 2013).
3. Hazardous Waste Regulation, BC Ministry Of Environment. (Including amendments up to B.C. Reg. 179/2016, July 19, 2016).
4. Environmental Management Act (As Current to August 24, 2016).
5. Transportation of Dangerous Goods Regulations (Including amendments up to SOR / 2016-95).
6. Canadian Occupational Health and Safety Regulations (Including amendments up to SOR / 86-304).
7. Canada Labour Code, Part II, - R.S.C., 1985, c. L-2

APPENDIX IV
STANDARD LIMITATIONS

TERMS OF REFERENCE FOR HAZARDOUS MATERIALS AND OCCUPATIONAL HEALTH AND SAFETY REPORTS ISSUED BY WSP CANADA INC.

1. STANDARD OF CARE

WSP Canada Inc. ("WSP") prepared and issued this report (the "Report") for its client (the "Client") in accordance with generally-accepted consulting practices for the hazardous materials and occupational health and safety disciplines. No other warranty, expressed or implied, is made. Unless specifically stated in the Report, the Report does not address environmental issues.

The terms of reference for hazardous materials and occupational health and safety reports issued by WSP (the "Terms of Reference") contained in the present document provide additional information and caution related to standard of care and the use of the Report. The Client should read and familiarize itself with these Terms of Reference.

2. COMPLETENESS OF THE REPORT

All documents, records, drawings, correspondence, data, files and deliverables, whether hard copy, electronic or otherwise, generated as part of the services for the Client are inherent components of the Report and, collectively, form the instruments of professional services (the "Instruments of Professional Services"). The Report is of a summary nature and is not intended to stand alone without reference to the instructions given to WSP by the Client, the communications between WSP and the Client, and to any other reports, writings, proposals or documents prepared by WSP for the Client relative to the specific site described in the Report, all of which constitute the Report.

TO PROPERLY UNDERSTAND THE INFORMATION, OBSERVATIONS, FINDINGS, SUGGESTIONS, RECOMMENDATIONS AND OPINIONS CONTAINED IN THE REPORT, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. WSP CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT AND ITS VARIOUS COMPONENTS.

3. BASIS OF THE REPORT

WSP prepared the Report for the Client for the specific objectives and purpose that the Client described to WSP. The applicability and reliability of any of the information, observations, findings, suggestions, recommendations and opinions contained in the Report are only valid to the extent that there was no material alteration to or variation from any of the said descriptions provided by the Client to WSP unless the Client specifically requested WSP to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information, observations, findings, suggestions, recommendations and opinions contained in the Report, or any component forming the Report, are for the sole use and benefit of the Client and the team of consultants selected by the Client for the specific project that the Report was provided. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION OR COMPONENT WITHOUT THE WRITTEN CONSENT OF WSP. WSP will consent to any reasonable request by the Client to approve the use of this Report by other parties designated by the Client as the "Approved Users". As a condition for the consent of WSP to approve the use of the Report by an Approved User, the Client must provide a copy of these Terms of Reference to that Approved User and the Client must obtain written confirmation from that Approved User that the Approved User will comply with these Terms of Reference, such written confirmation to be provided separately by each Approved User prior to beginning use of the Report. The Client will provide WSP with a copy of the written confirmation from an Approved User when it becomes available to the Client, and in any case, within two weeks of the Client receiving such written confirmation.

The Report and all its components remain the copyright property of WSP and WSP authorizes only the Client and the Approved Users to make copies of the Report, but only in such quantities as are reasonably necessary for the use of the Report by the Client and the Approved Users. The Client and the Approved Users may not give, lend, sell or otherwise disseminate or make the Report, or any portion thereof, available to any party without the written permission of WSP. Any use which a third party makes of the Report, or any portion of the Report, is the sole responsibility of such third parties. WSP accepts no responsibility for damages suffered by any third party resulting from the use of the Report. The Client and the Approved Users acknowledge and agree to indemnify and hold harmless WSP, its officers, directors, employees, agents, representatives or sub-consultants, or any or all of them, against any claim of any nature whatsoever brought against WSP by any third parties, whether in contract or in tort, arising or related to the use of contents of the Report.

TERMS OF REFERENCE FOR HAZARDOUS MATERIALS AND OCCUPATIONAL HEALTH AND SAFETY REPORTS ISSUED BY WSP CANADA INC. (continued)

5. INTERPRETATION OF THE REPORT

a. **Hidden Conditions**: The Client acknowledges that subsurface and concealed conditions may vary from those encountered or reviewed. WSP can only comment on the conditions observed on the date(s) the assessment is performed. The work is limited to those areas of concern identified by the Client and/or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assessment.

b. **Reliance on information**: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site investigation and field review and on the basis of information provided to WSP. WSP has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, WSP cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations or fraudulent acts of persons providing information.

c. **Additional Involvement by WSP**: To avoid misunderstandings, WSP should be retained to assist other professionals to explain relevant hazardous materials and occupational health and safety findings and to review the hazardous materials and occupational health and safety aspects of the plans, drawings and specifications of other professionals relative to the services provided by WSP. To ensure compliance and consistency with the applicable hazardous materials and occupational health and safety codes, legislation, regulations, guidelines and generally-accepted practices, WSP should also be retained to provide field review services during the performance of any related work. Where applicable, it is understood that such field review services must meet or exceed the minimum necessary requirements to ascertain that the work being carried out is in general conformity with the recommendations made by WSP. Any reduction from the level of services recommended by WSP will result in WSP providing qualified opinions regarding adequacy of the work.

6. ALTERNATE REPORT FORMAT

When WSP submits both electronic and hard copy versions of the Instruments of Professional Services, the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding upon WSP. The hard copy versions submitted by WSP shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions; furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed and sealed versions of the Instruments of Professional Services maintained or retained, or both, by WSP shall be deemed to be the overall originals for the Project.

The Client agrees that the electronic file and hard copy versions of Instruments of Professional Services shall not, under any circumstances, no matter who owns or uses them, be altered by any party except WSP. The Client warrants that the Instruments of Professional Services will be used only and exactly as submitted by WSP.

The Client recognizes and agrees that WSP prepared and submitted electronic files using specific software or hardware systems, or both. WSP makes no representation about the compatibility of these files with the current or future software and hardware systems of the Client, the Approved Users or any other party. The Client further agrees that WSP is under no obligation, unless otherwise expressly specified, to provide the Client, the Approved Users and any other party, or any or all of them, with specific software and hardware systems that are compatible with any electronic submitted by WSP. The Client further agrees that should the Client, an Approved User or a third party require WSP to provide specific software or hardware systems, or both, compatible with the electronic files prepared and submitted by WSP, for any reason whatsoever included but not restricted to an order from a court, then the Client will pay WSP for all reasonable costs related to the provision of the specific software or hardware systems, or both. The Client further agrees to indemnify and hold harmless WSP, its officers, directors, employees, agents, representative or sub-consultant, or any or all of them, against any claim or any nature whatsoever brought against WSP, whether in contract or in tort, arising or related to the provision or use or any specific software or hardware provided by WSP.

REPORT N^{O} 171-08088-00

ASSESSMENT OF SUSPECT DRYWALL DEBRIS AND DUST

FISHERIES & OCEANS CANADA.

OCEAN SCIENCES PHYSICS BUILDING, LOWER LEVEL ROOMS WITH SUSPENDED CEILING TILES 9860 WEST SAANICH ROAD, SIDNEY, BC, V8L 4B2

JUNE 16, 2017

WSP

ASSESSMENT OF SUSPECT DRYWALL DEBRIS AND DUST

FISHERIES & OCEANS CANADA.

OCEAN SCIENCES PHYSICS BUILDING, LOWER LEVEL ROOMS WITH SUSPENDED CEILING TILES

9860 WEST SAANICH ROAD, SIDNEY, BC

PROJECT NO: 171-08088-00

Date: June 16, 2017

WSP Canada Inc.
760 Enterprise Crescent
Victoria, BC V8Z 6R4

Phone: +1 250-475-1000
www.wspgroup.com

Project No.: 171-08088-00

June 16, 2017

Real Property, Safety & Security,
Fisheries and Oceans Canada
9860 West Saanich Road
Sidney, BC, V8L 4B2

Attention: Linda Barley

Project: **Assessment of Suspect Drywall Debris and Dust**

Address: **Ocean Sciences Physics Building, Lower Level Rooms With Suspended Ceiling Tiles, 9860 West Saanich Road, Sidney, BC.**

1 INTRODUCTION

WSP Consultants Ltd. (WSP) was retained by Fisheries and Oceans Canada for the provision of an Assessment of the Suspect Drywall Debris and Dust for the Ocean Sciences Physics Building, Lower Level Rooms with Suspended Ceiling Tiles located at 9860 West Saanich Road, Sidney, British Columbia.

A previously conducted Pre-Renovation Wall Surfacing Compound Survey for the Ocean Sciences Physics Building, Plan Lines 20 through 31, WSP Project No.: 161-17554-00, dated January 20, 2017 determined that all Drywall Joint Compound contained between PC 0.5% - 3.4% Chrysotile asbestos content and was thus identified as asbestos-containing material (ACM).

Occurrences of drywall debris on the upper surfaces of suspended ceiling tiles are anticipated to be the result of some prior utility installation works conducted at the site. Based on the findings of the January 20, 2017 Survey, the drywall debris on the upper surfaces of suspended ceiling tiles is potentially asbestos-containing. Accordingly, WSP understands that the assessment of suspect drywall debris and dust is required for regulatory compliance and due diligence purposes.

WSP was called upon to attend the Site to establish the presence / absence, location, type, and percentage content of potential asbestos within the drywall debris and dust visible in areas on top of the suspended ceiling tiles of the ground floor level Physics Building by means of sample collection and subsequent laboratory analysis.

Section 20.112 of the BC Occupational Health and Safety Regulation requires that asbestos materials survey should be conducted by a qualified person prior to any demolition or renovation activity which might disturb asbestos materials. The Canadian Occupational Health and Safety Regulations and Canada Labour Code, Part II, which applies to all areas under federal jurisdiction, stipulate the requirements for protection of employees.

The assessment was conducted in general accordance with WorkSafeBC Occupational Health and Safety Regulations Part 20, Construction, Excavation and Demolition, Section 20.112 Hazardous Materials.

2 LIMITATIONS

The scope of work was limited to the drywall debris and dust on the upper surfaces of suspended ceiling tiles associated within the lower level of the Physics Building.

For the purpose of this report, the scope of work was limited to known rooms with suspended ceiling tiles and the potential for the presence of the target materials including: Room 1202; Room 1216, Room 1216a; Room 1217; Room 1217a; Room 1218; Room 1218a; Room 1220; Room 1221; Room 1223; Room 1224; Room 1225; Room 1238; Room 1239; Room 1246; and the north-south oriented Corridor located west of Room 1246 on the ground floor level of the Physics Building. A Site Sampling Location Plan is attached in Appendix I.

The preliminary emphasis of the proposed work was to determine the potential range of asbestos content within the drywall debris and dust on the upper surfaces of suspended ceiling tiles.

Subsequent to a review of the photographs collected as part of the January 20, 2017 Survey, an on-site review was conducted to determine locations of readily observable drywall debris atop suspended ceiling tiles. WSP proposed to conduct a step out series of bulk sample collections at 3 of the identified drywall debris locations.

Delineation elsewhere other than the proposed three locations with potential asbestos-containing drywall debris and dust on the upper surfaces of suspended ceiling tiles is not included as part of the scope of the proposed work.

3 SCOPE OF WORK

To achieve the objective of this investigation, WSP completed the following scope of work:

- Review of floor plans and previous reports;
- Review of previous subject area plenum associated photographs;
- Identification of three locations with readily observable drywall debris potentially containing asbestos atop suspended ceiling tiles;
- Conduct step out sampling at each of the 3 determined locations including bulk material collection from the:
    - Readily apparent drywall debris within the principal center of observable accumulated material;
    - Readily apparent white drywall dust layer within 0.3 m of accumulated drywall debris;
    - Apparently not-white common area dust 0.3 m beyond readily apparent white drywall dust layer; and
    - Apparently not-white common area dust 0.6 m beyond readily apparent white drywall dust layer.
- Transfer of the bulk samples to an appropriately accredited laboratory for Transmission Electron Microscopy (TEM) analysis for the presence of asbestos; and
- Preparation of this report summarizing the asbestos materials identified through review and analysis. Photographs were taken of the three step out sample collection locations and adjacent area to give context.

4 METHODOLOGY

On June 5th 2017, Mr. Gordon Philippe, B. Tech. Environmental Technologist of WSP conducted the Assessment of the Suspect Drywall Debris and Dust site work according to the following protocol.

4.1 SAMPLING LOCATION IDENTIFICATION

Visual review was conducted to locate three locations of readily observable drywall debris and disbursed dust likely to contain portions of asbestos-containing Drywall Joint Compound.

Within the subject rooms, unpainted sections of drywall located above the suspended ceiling grid level were assessed for locations with utility conduit penetrations and associated resultant drywall debris on top of suspended ceiling tiles.

Adjacent intact drywall was reviewed for indications of applied drywall joint compound leading up to the debris source hole penetrations.

Those penetrations with joint compound indicators were assumed to have contributed associated drywall joint compound on portions of the debris and comprising portions of the surrounding dust.

The Assessment of the Suspect Drywall Debris and Dust was conducted through a step out series of four bulk sample collections at each of three separate locations. The collection of debris and dust was undertaken with the use of a microvacuum and a designated filter equipped cassette for each sample.

The microvacuum samples were collected in accordance with ASTM method D5755 (Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Concentrations[1]).

A Site Sampling Location Plan is attached in Appendix I. Photographs of the step out sampling at each room location are attached in Appendix II. The completed Chain-of-Custodies (COCs) and the Laboratory Reports of analytical results are presented in in Appendix III.

4.2 ASTM METHOD D5755 SIGNIFICANCE AND USE

“This microvacuum sampling and indirect analysis method is used for the general testing of non-airborne dust samples for asbestos. It is used to assist in the evaluation of dust that may be found on surfaces in buildings such as ceiling tiles, shelving, electrical components, duct work, carpet, etc. This test method provides an index of the surface loading of asbestos structures in the dust per unit area analyzed as derived from a quantitative TEM analysis.

This test method does not describe procedures or techniques required to evaluate the safety or habitability of buildings with asbestos-containing materials, or compliance with federal, state, or local regulations or statutes. It is the user’s responsibility to make these determinations.

At present, no relationship has been established between asbestos-containing dust as measured by this test method and potential human exposure to airborne asbestos. Accordingly, the users should consider other available information in their interpretation of the data obtained from this test method.

This definition of dust accepts all particles small enough to pass through a 1-mm (No. 18) screen. Thus, a single, large asbestos containing particle(s) (from the large end of the particle size distribution) dispersed during sample preparation may result in anomalously large asbestos surface loading results in the TEM analyses of that sample. It is, therefore, recommended that multiple independent samples

[1] https://www.astm.org/Standards/D5755.htm

are secured from the same area, and that a minimum of three samples be analyzed by the entire procedure."

4.3 ASTM METHOD D5755 SCOPE

"This test method covers a procedure to (a) identify asbestos in dust and (b) provide an estimate of the surface loading of asbestos in the sampled dust reported as the number of asbestos structures per unit area of sampled surface.

If an estimate of the asbestos mass is to be determined, the user is referred to Test Method D5756.

This test method describes the equipment and procedures necessary for sampling, by a microvacuum technique, non-airborne dust for levels of asbestos structures. The non-airborne sample is collected inside a standard filter membrane cassette from the sampling of a surface area for dust which may contain asbestos.

This procedure uses a microvacuuming sampling technique. The collection efficiency of this technique is unknown and will vary among substrates. Properties influencing collection efficiency include surface texture, adhesiveness, electrostatic properties and other factors.

Asbestos identified by transmission electron microscopy (TEM) is based on morphology, selected area electron diffraction (SAED), and energy dispersive X-ray analysis (EDXA). Some information about structure size is also determined.

This test method is generally applicable for an estimate of the surface loading of asbestos structures starting from approximately 1000 asbestos structures per square centimetre.

The procedure outlined in this test method employs an indirect sample preparation technique. It is intended to disperse aggregated asbestos into fundamental fibrils, fiber bundles, clusters, or matrices that can be more accurately quantified by transmission electron microscopy. However, as with all indirect sample preparation techniques, the asbestos observed for quantification may not represent the physical form of the asbestos as sampled. More specifically, the procedure described neither creates nor destroys asbestos, but it may alter the physical form of the mineral fibers.

The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only."

5 REGULATORY FRAMEWORK

Canadian and BC Occupational Health and Safety Regulations do not regulate or provide guidelines regarding a limit for correlation between asbestos-containing dust as measured by this test method and the potential for human exposure to airborne asbestos. In the absence of federally and provincially regulated surface deposition limits, ASTM reference levels are utilized. The ASTM reference levels indicate that surface concentrations exceeding that of 10,000 structures per square centimeters are considered 'above background' and concentrations exceeding 100,000 structures per square centimetre are considered 'high,' (Beard et al, 2004; Millette and Hays, 1994; Ehrenfeld, 2012, & iATL 2013). Concentrations below 1,000 structures per square centimeter could be considered 'background'.

The details of the applicable regulatory frameworks for ACMs are found in Appendix IV.

6 ASBESTOS MATERIALS SURVEY RESULTS

The three site sampling location descriptions are as follows:

- Room 1217, northwest corner, from on top of the suspended ceiling tile.
- Room 1220, southwest corner, from on top of the suspended ceiling tile.
- Room 1246, northwest corner, from on top of the suspended ceiling tile.

A Site Sampling Location Plan is attached in Appendix I. Photographs of the step out sampling at each room location are attached in Appendix II. The completed Chain-of-Custodies (COCs) and the Laboratory Reports of analytical results are presented in in Appendix III.

The results of the Suspect Drywall Debris and Dust sampling are summarized in the table below.

Table 1: TEM Analytical Results for Asbestos in Drywall Debris and Dust On Suspended Ceiling Tiles

Area	Material of Interest	Sample ID	Sample Area	Asbestos Type	Concentration of Asbestos Structures per square centimeter (s/cm^2)
Room 1217 NW Corner	Centre Drywall Debris Pile	17-1217-CTD-01	50 cm^2	Chrysotile	1,480,000
	0.3 m from Centre Debris Pile	17-1217-CTD-02	75 cm^2	Chrysotile	1,890,000
	0.3 m from Apparent Debris Pile	17-1217-CTD-03	100 cm^2	Chrysotile	1,630,000
	0.6 m from Apparent Debris Pile	17-1217-CTD-04	100 cm^2	Chrysotile	2,810,000
Room 1220 NW Corner	Centre Drywall Debris Pile	17-1220-CTD-01	50 cm^2	Chrysotile	13,700,000
	0.3 m from Centre Debris Pile	17-1220-CTD-02	75 cm^2	Chrysotile	1,050,000
	0.3 m from Apparent Debris Pile	17-1220-CTD-03	100 cm^2	Chrysotile	443,000
	0.6 m from Apparent Debris Pile	17-1220-CTD-04	100 cm^2	Chrysotile	464,000
Room 1246 NW Corner	Centre Drywall Debris Pile	17-1246-CTD-01	50 cm^2	Chrysotile	59,200,000
	0.3 m from Centre Debris Pile	17-1246-CTD-02	75 cm^2	Chrysotile	5,130,000
	0.3 m from Apparent Debris Pile	17-1246-CTD-03	100 cm^2	Chrysotile	401,000
	0.6 m from Apparent Debris Pile	17-1246-CTD-04	100 cm^2	Chrysotile	1,220,000

The following data interpretation information is an excerpt from the International Asbestos Testing Laboratories' document, "Asbestos in Surface Dust Information":

Experience [1] Standards: ASTM – Standards for Asbestos Control PCN#36-003022-00, 1.1, 2000	
Detection Limit [2]	**<1,000 s/cm^2**
Expected Ambient Levels [3]	**1,000 - 10,000 s/cm^2**
Moderate [4]	**10,000 - 50,000 s/cm^2**
Elevated [5]	**50,000 - 100,000 s/cm^2**
High [6]	**>100,000 s/cm^2**

1 – Based upon initial studies by Millette, Hays, Crankshaw, and others and used in ASTM materials.

2 – This can range from < 100 s/cm^2 to < 10,000 s/cm^2 depending on loading of particulate.

3 – Studies by Ewing, Crankshaw, etc., note levels from > 1,000 s/cm^2 - > 5,000 s/cm^2 in building with ACM (asbestos containing material).

4 – Possible response usually warrants PPE (Personal Protective Equipment), engineering response (HEPA vac surfaces), and airborne evaluation.

5 – Same as 4 with added additional sampling to establish any surface concentration gradients.

6 – Eminent danger of exceeding U.S. OSHA (U.S. Occupational Safety and Health Administration) PEL (Permissible Exposure Limit).

Note: U.S. OSHA PEL for asbestos, 8-hour shift is annotated in Table Z-1 as the American Conference of Industrial Hygienists (ACGIH) 2016 TLV (Threshold Limit Value) of 0.1 fibres/cubic centimeter of air. This value is equivalent to the BC Occupational Health and Safety Regulation of 8 hour TWA (Time Weighted Average) for asbestos (Ehrenfeld, 2012)."

7 CONCLUSIONS

- A high level of asbestos (Chrysotile) was found in the Drywall Debris and Dust as collected from all four step outs at each of the three determined room locations with readily observable suspect drywall debris atop suspended ceiling tiles

8 RECOMMENDATIONS

- Asbestos-containing materials must be isolated, handled, or removed using safe work practices and procedures before renovation occurs. The WorkSafeBC publication "Safe Work Practices for Handling Asbestos" and the Occupational Health and Safety (OHS) Guideline G6.8 describe acceptable practices.
- A risk assessment for asbestos materials must be performed before renovation work begins to determine the exposure risk to workers and other persons as per OHS Guideline G20.112 Risk Assessment for Identified Asbestos.
- Proper procedures and documentation such as safe work practices, an exposure control plan, risk assessments and/or other controls must be developed for all workers involved in the handling/disturbance/removal of lead-containing paint with a lead content greater than 0.06%. In

particular these requirements would apply to areas where the substrate metal with surface coatings is to be welded, cut, or ground using abrasive methods or if otherwise disturbed.

- Retain a copy of this report and provide it to any contractors who may be undertaking Renovation work in the building as required by Section 20.112 of the WorkSafeBC regulations.
- Following completion of the asbestos materials removal Provincial Regulations require that an inspection must be conducted by a Qualified Person to confirm that the hazardous materials have all been removed and an inspection report confirming the removal must be posted on site prior to renovation.

9 CLOSURE

This Assessment of the Suspect Drywall Debris and Dust cannot wholly eliminate uncertainty regarding the potential for recognized hazardous materials conditions at the site. Performance of a standardized hazardous material survey protocol is intended to reduce, but not eliminate uncertainty regarding the potential for recognized hazardous materials at the site, given reasonable limits of time and cost.

This report has been prepared by WSP exclusively for Fisheries and Oceans Canada and is intended to provide a survey of the potential asbestos within the drywall debris and dust visible in areas on top of the suspended ceiling tiles of the ground floor level Physics Building located at 9860 West Saanich Road, Sidney, British Columbia.

The conclusions made in this report reflect WSP's best judgment in light of the information available at the time of preparation. No other warranty, expressed or implied, is made. Any use which a third party makes of this report, or any reliance on or decisions to be made or actions based on it, are the responsibility of such third parties. WSP accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this report. The standard limitations of this report are specified in Appendix V.

Yours sincerely,

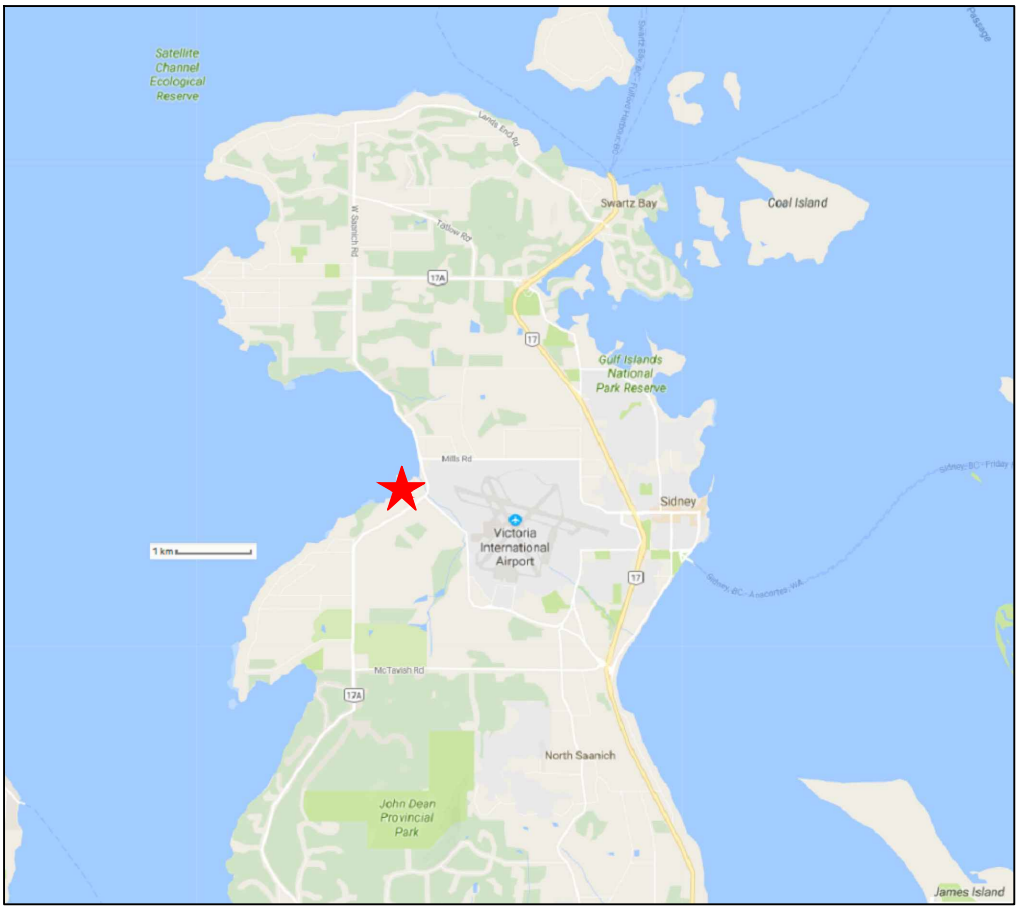
WSP CANADA INC.

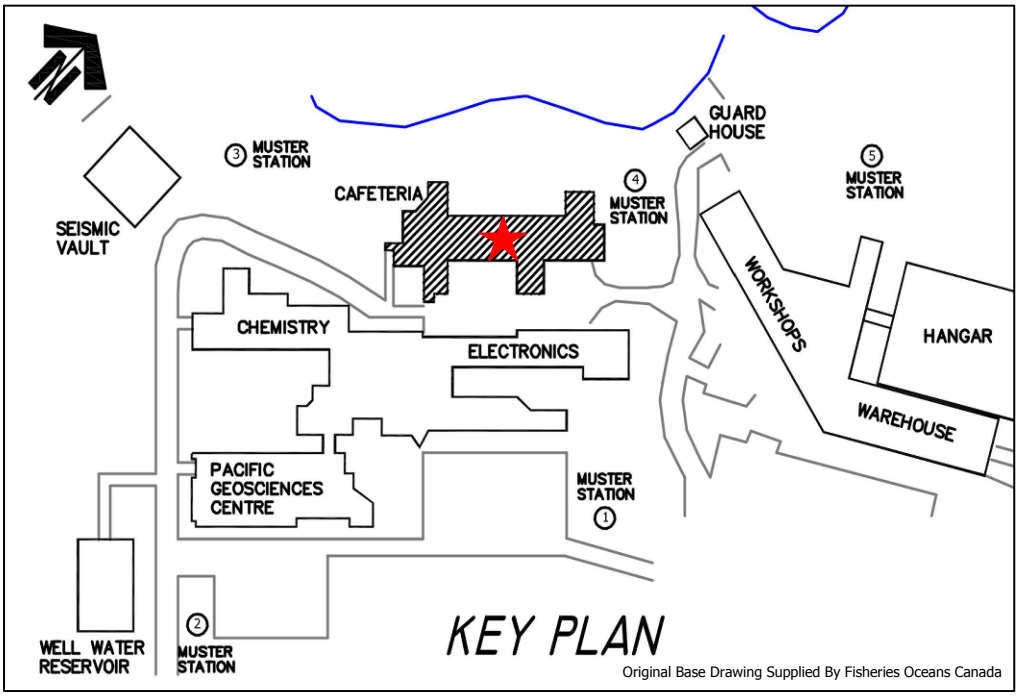
Gordon Philippe, B. Tech.
Environmental Technologist

Jim Young, B. Sc.
Air Quality Technician

Appendix I	Site Sampling Location Plan
Appendix II	Photographs
Appendix III	Chain-of-Custodies and Laboratory Reports
Appendix IV	Regulatory Framework
Appendix V	Standard Limitations

APPENDIX I
SITE SAMPLING LOCATION PLAN





LEGEND

★ – SUBJECT SITE

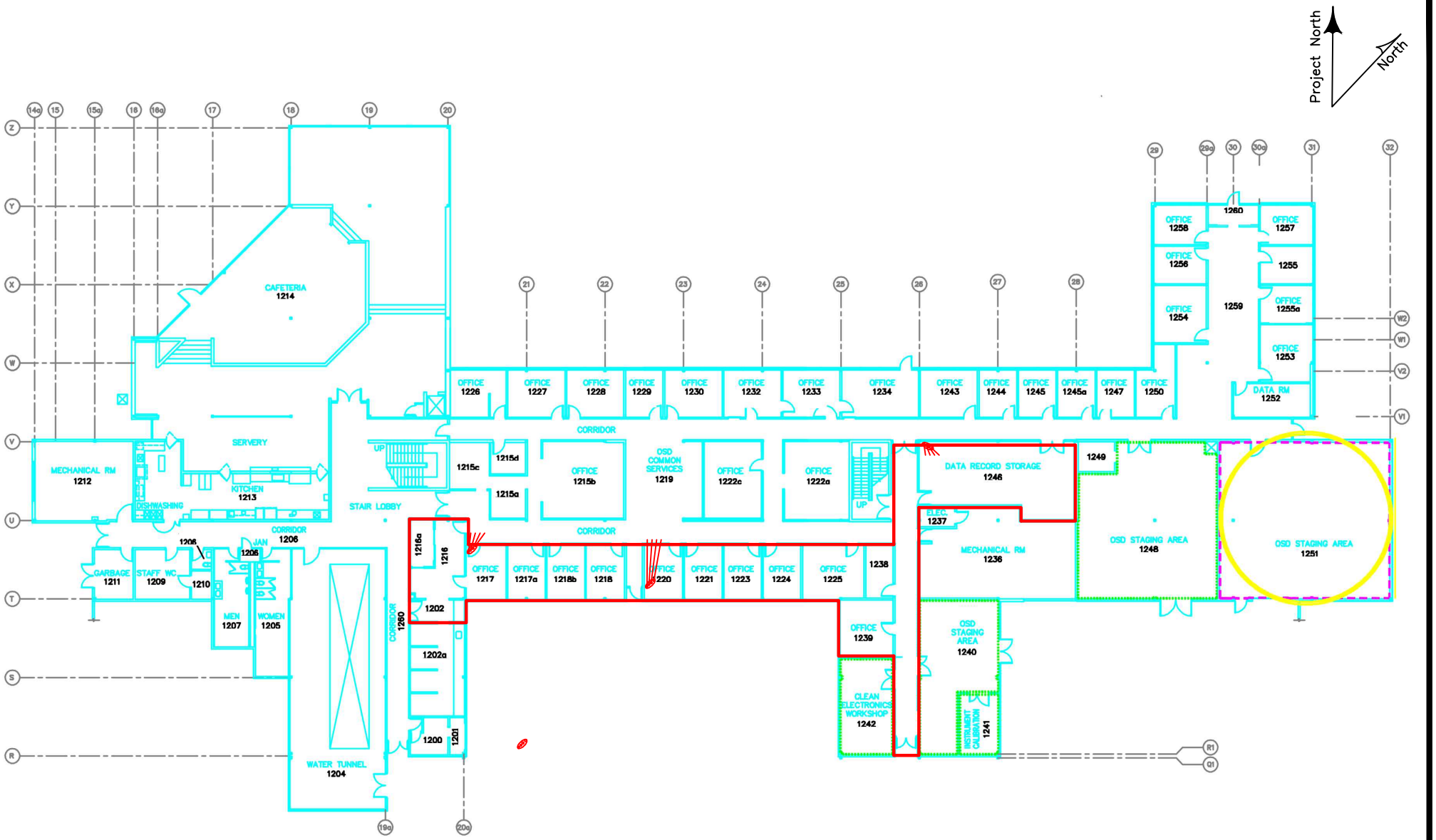
WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Site Location Map

PROJECT: Assessment of the Suspect Drywall Debris and Dust
Lower Level Rooms with Suspended Ceiling Tiles
Ocean Sciences Physics Building
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE June 2017
FILE NO. 171-08088-00	
DWG. NO. FIGURE 1	



Original Base Drawing Supplied By Fisheries Oceans Canada

LEGEND

SUBJECT BUILDING AREA

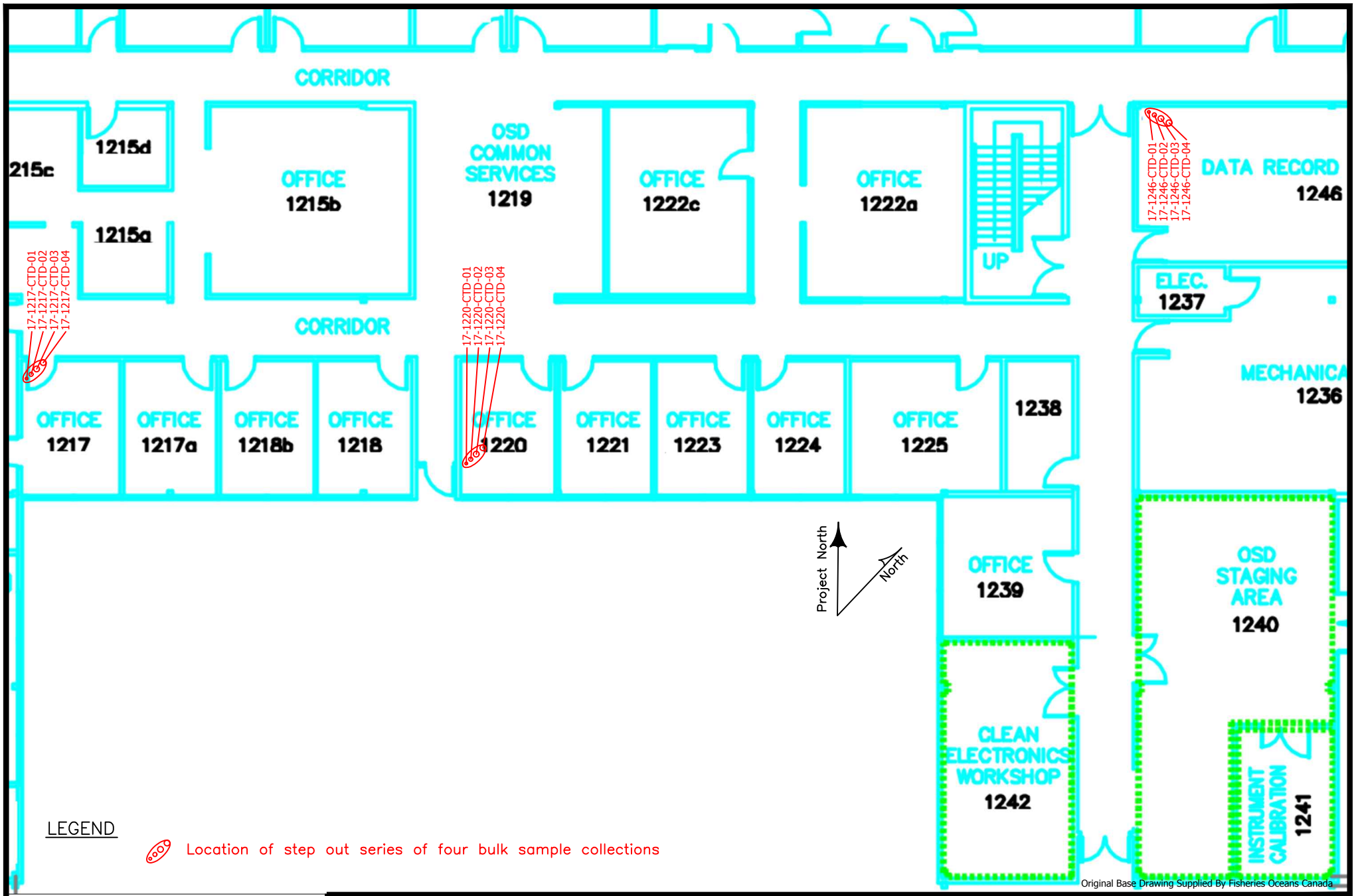
WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Site Plan

PROJECT: Assessment of the Suspect Drywall Debris and Dust
Lower Level Rooms with Suspended Ceiling Tiles
Ocean Sciences Physics Building
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE June 2017
FILE NO.	171-08088-00
DWG. NO.	FIGURE 2



WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Sample Locations

PROJECT: Assessment of the Suspect Drywall Debris and Dust
Lower Level Rooms with Suspended Ceiling Tiles
Ocean Sciences Physics Building
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE June 2017
FILE NO.	171-08088-00
DWG. NO.	FIGURE 3

APPENDIX II
PHOTOGRAPHS

Site sampling location → Room 1217, northwest corner, from on top of the suspended ceiling tile.

Site sampling location → Room 1220, southwest corner, from on top of the suspended ceiling tile.

Site sampling location → Room 1246, northwest corner, from on top of the suspended ceiling tile.

APPENDIX III
CHAIN-OF-CUSTODIES AND LABORATORY REPORTS

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Chain of Custody

Contact Information

Client Company:	WSP Canada Inc.	**Project Number:**	P17-11054-07
Office Address:	760 Enterprise Crescent	**Project Name:**	Assmnt Debris Physics Sidney E
City, State, Zip:	Victoria, BC, Canada V8Z 6R4	**Primary Contact:**	Gordon Philippe
Fax Number:	250-475-2211	**Office Phone:**	250-475-1000
Email Address:	Gordon.Philippe@WSPgroup.com	**Cell Phone:**	250-360-6537

Matrix:

☐ Air ☐ Water ☐ Soil ☐ Paint ☐ Bulk ☐ Surface Dust / Wipe ☒ Other: Microvac Surface Dust

Analysis Method:

☐ PCM: NIOSH 7400
☐ PCM: OSHA
☐ PCM: TWA

☐ Total Dust: NIOSH 0500
☐ Total Dust: NIOSH 0600

☐ AAS: Lead in Air
☐ AAS: Lead in Water
☐ AAS: Lead in Paint
☐ AAS: Lead Dust/Wipe[1]
☐ AAS: Lead in Soil
☐ AAS: TCLP
☐ AAS: Metals [Cd, Zn, Cr-circle]

PLM Use Bulk Asbestos Sample Log

☐ PLM: Bulk Asbestos EPA 600
☐ PLM: Point Counting 198.1
☐ PLM: NOB via 198.6 (PLM only)
☐ If <1% by PLM, to TEM via 198.4 [2]

IAQ Use Mold Sample Log

☐ IAQ: I Bioaersol Fungal Spore Trap[3]
☐ IAQ: II Bioaersol Fungal Spore
☐ IAQ: Tape, Bulk, Misc. Qualitative[3]
☐ IAQ: Tape, Bulk, Misc. Quantitative[3]
☐ IAQ: Other Culturable ID[2]

☐ TEM: AHERA
☐ TEM: NIOSH 7402
☐ TEM: ISO 10312
☐ TEM: ISO 13794
☐ TEM: Wipe ASTM 6480
☒ TEM: Microvac ASTM D5755
☐ TEM: Microvac ASTM D5756
☐ TEM: NOB 198.4
☐ TEM: Bulk Analysis
☐ TEM: Potable Water
☐ TEM: Non-Potable Water
☐ TEM: Other _____
☐ Soil: Call for Available Methods

1- Requires ASTM acceptable material 2- Call to confirm TAT 3- Non-culturable 4- With Non-fungal Microscopic Exam

Special Instructions: _____

MAY 15 2017

Turnaround Time

Preliminary Results Requested Date: _____ (Specific date / time)

☐ Verbal ☒ Email ☐ Fax

☐ 10 Day ☒ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Shipping Method

☐ FedEx ☐ UPS ☐ USPS ☐ Other _____

Chain of Custody

Relinquished (Name/Organization):	Gordon/WSP	Date: 06 June 2017	Time: 13:00
Received (Name / iATL):		Date:	Time:
Sample Login (Name / iATL):		Date:	Time:
Analyst (Name(s) / iATL):	VB	Date: 6/15/17	Time:
QA/QC Review (Name / iATL):		Date:	Time:
Archived / Released:	QA/QC InterLAB Use: 6-16-17	Date:	Time:

RECEIVED JUN 8 2017

prep BR 6/12/17

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. Project: P17-11054-07/ Assmnt Debris Physics Sidney BC

Sampling Date/Time: 05 June 2017 Total volume 50.ml

Bulk Asbestos Sample Log			
Client Sample #	iATL # Aliquot (ml)	Location/Description	Notes
17-1217-CTD-01	6253632 0.1	NW Corner/Centre Drywall Debris Pile	Collected from 50cm2 area
17-1217-CTD-02	6253633 0.1	NW Corner/0.3 m From Centre Debris Pile	Collected from 75cm2 area
17-1217-CTD-03	6253634 0.25	NW Corner/0.3 m From Apparent Debris Pile	Collected from 100cm2 area
17-1217-CTD-04	6253635 0.25	NW Corner/0.6 m From Apparent Debris Pile	Collected from 100cm2 area
17-1220-CTD-01	6253636 0.1	SW Corner/Centre Drywall Debris Pile	Collected from 50cm2 area
17-1220-CTD-02	6253637 0.25	SW Corner/0.3 m From Centre Debris Pile	Collected from 75cm2 area
17-1220-CTD-03	6253638 0.25	SW Corner/0.3 m From Apparent Debris Pile	Collected from 100cm2 area
17-1220-CTD-04	6253639 0.25	SW Corner/0.6 m From Apparent Debris Pile	Collected from 100cm2 area
17-1246-CTD-01	6253640 0.1	NW Corner/Centre Drywall Debris Pile	Collected from 50cm2 area
17-1246-CTD-02	6253641 0.25	NW Corner/0.3 m From Centre Debris Pile	Collected from 75cm2 area
17-1246-CTD-03	6253642 0.25	NW Corner/0.3 m From Apparent Debris Pile	Collected from 100cm2 area
17-1246-CTD-04	6253643 0.25	NW Corner/0.6 m From Apparent Debris Pile	Collected from 100cm2 area

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 6/15/2017
Report No.: 538243 - TEM Dust Microvac
Project: Assmnt Debris Physics Sidney BC
Project No.: P17-11054-07

TEM DUST SAMPLE ANALYSIS SUMMARY

Lab No.: 6253632
Client No.: 17-1217-CTD-01
Asbestos Type(s):
Chrysotile
Area (cm²): 50
Location: NW Corner/Centre Drywall Debris Pile
Density (s/mm²): 154
Concentration (s/cm²): 1480000

Lab No.: 6253633
Client No.: 17-1217-CTD-02
Asbestos Type(s):
Chrysotile
Area (cm²): 75
Location: NW Corner/0.3m From Centre Debris Pile
Density (s/mm²): 295
Concentration (s/cm²): 1890000

Lab No.: 6253634
Client No.: 17-1217-CTD-03
Asbestos Type(s):
Chrysotile
Area (cm²): 100
Location: NW Corner/0.3m From Apparent Debris Pile
Density (s/mm²): 846
Concentration (s/cm²): 1630000

Lab No.: 6253635
Client No.: 17-1217-CTD-04
Asbestos Type(s):
Chrysotile
Area (cm²): 100
Location: NW Corner/0.6m From Apparent Debris Pile
Density (s/mm²): 1460
Concentration (s/cm²): 2810000

Lab No.: 6253636
Client No.: 17-1220-CTD-01
Asbestos Type(s):
Chrysotile
Area (cm²): 50
Location: SW Corner/Centre Drywall Debris Pile
Density (s/mm²): 1420
Concentration (s/cm²): 13700000

Lab No.: 6253637
Client No.: 17-1220-CTD-02
Asbestos Type(s):
Chrysotile
Area (cm²): 75
Location: SW Corner/0.3m From Centre Debris Pile
Density (s/mm²): 410
Concentration (s/cm²): 1050000

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/8/2017
Date Analyzed: 06/15/2017
Signature:
Analyst: Tom Barkley

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 6/15/2017
Report No.: 538243 - TEM Dust Microvac
Project: Assmnt Debris Physics Sidney BC
Project No.: P17-11054-07

TEM DUST SAMPLE ANALYSIS SUMMARY

Lab No.:6253638
Client No.:17-1220-CTD-03
Asbestos Type(s):
Chrysotile
Area (cm²):100
Location:SW Corner/0.3m From Apparent Debris Pile
Density (s/mm²):231
Concentration (s/cm²):444000

Lab No.:6253639
Client No.:17-1220-CTD-04
Asbestos Type(s):
Chrysotile
Area (cm²):100
Location:SW Corner/0.6m From Apparent Debris Pile
Density (s/mm²):242
Concentration (s/cm²):465000

Lab No.:6253640
Client No.:17-1246-CTD-01
Asbestos Type(s):
Chrysotile
Area (cm²):50
Location:NW Corner/Centre Drywall Debris Pile
Density (s/mm²):6150
Concentration (s/cm²):59200000

Lab No.:6253641
Client No.:17-1246-CTD-02
Asbestos Type(s):
Chrysotile
Area (cm²):75
Location:NW Corner/0.3m From Centre Drywall Debris Pile
Density (s/mm²):2000
Concentration (s/cm²):5130000

Lab No.:6253642
Client No.:17-1246-CTD-03
Asbestos Type(s):
Chrysotile
Area (cm²):100
Location:NW Corner/0.3m From Apparent Debris Pile
Density (s/mm²):209
Concentration (s/cm²):402000

Lab No.:6253643
Client No.:17-1246-CTD-04
Asbestos Type(s):
Chrysotile
Area (cm²):100
Location:NW Corner/0.6m From Apparent Debris Pile
Density (s/mm²):635
Concentration (s/cm²):1220000

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/8/2017
Date Analyzed: 06/15/2017
Signature:
Analyst: Tom Barkley

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 6/15/2017
Report No.: 538243 - TEM Dust Microvac
Project: Assmnt Debris Physics Sidney BC
Project No.: P17-11054-07

Appendix to Analytical Report:

Customer Contact:
Analysis: ASTM D5755-09

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Shirley Clark
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Cassettes
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D5755-09

Please see our list of international, national, state, provincial, and local certifications at www.iatl.com

TEM settled dust results are dependent upon several factors, including sampling technique. iATL can supply references that may aid in the interpretation of results.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method requires submittal of blanks for analysis. Sample results are not corrected for contamination by field or analytical blanks.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.
(1)Note: Sample not analyzed.
(2)Note: Sample not analyzed at request of client.
(3)Note: Sample analysis terminated. Clearance criteria exceeded (average >70.0 s/mm^2). Set fails by AHERA 40 CFR 763.
(4)Note: Heavy loading (>0.1 s/cc) of non-asbestos particulate that might prohibit the required morphological, diffraction and elemental identification of asbestos. The absence of asbestos on the sample can not be concluded. Analysis for informational purposes only.
(5)Note: Heavy loading (>10% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>10%). Sample voided by AHERA 40 CFR 763.
(5A)Note: Heavy loading (>25% per grid opening) non-fibrous particulate. Sample analysis terminated. Clearance criteria exceeded (>25%). Sample voided by NIOSH 7402.
(6)Note: Sample turbidity >1.0 NTU. Therefore MDL >> 0.1 MFL. Does not meet National Primary Drinking Water Standards.

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 6/15/2017
Report No.: 538243 - TEM Dust Microvac
Project: Assmnt Debris Physics Sidney BC
Project No.: P17-11054-07

(7)Note: Sample integrity compromised. Received sample cassette with top open (40 CFR 763 c-e).
(8)Note: Received sample cassettes with portion of filter missing. "PCM re-prep"
(9)Note: Void - overloaded, unable to prep.
(10)Note: Void - filter damaged.
(11)Note: No volume supplied.
(12)Note: Heavy loading (>0.1 s/cc) of non-asbestos / non-fibrous particulate.
(13)Note: Method analytical sensitivity of <0.003 s/cc not attained due to volume of air sampled. NIOSH requires a minimum of 400L.
(13A)Note: Volume does not meet AHERA requirements.(<1188 L)
(14)Note: Geometric Mean = 0.xxxx Structures/cc
(15)Note: Samples received on 0.8 micron PCM filters. Samples must be submitted on 0.45 micron filter cassettes per AHERA guidelines
(18)Note: *Results are for informational purposes only. Samples received on 0.8um PCM cassettes. Per AHERA 40 CFR 763 guidelines samples must be obtained on a 0.45um cassette.

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 6/15/2017
Report No.: 538243 - TEM Dust Microvac
Project: Assmnt Debris Physics Sidney BC
Project No.: P17-11054-07

TEM DUST SAMPLE ANALYSIS DETAILS

Lab No.:6253632
Client No.:17-1217-CTD-01

Volume Filtered (mL):0.1
Dilution Factor (mL):50
Grid Openings:7
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0910
Sensitivity (s/mm²):11.0
Detection Limit (s/cm²):106000
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):50
Location:NW Corner/Centre Drywall Debris Pile
Asbestos Structures:14
Structures < 5 µm:14
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²):154
Structure Concentration (s/cm²):1480000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<11.0
Structure Concentration (s/cm²):<106000
Non-Asbestos Type(s):
None Detected

Lab No.:6253633
Client No.:17-1217-CTD-02

Volume Filtered (mL):0.1
Dilution Factor (mL):50
Grid Openings:6
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0780
Sensitivity (s/mm²):12.8
Detection Limit (s/cm²):82200
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):75
Location:NW Corner/0.3m From Centre Debris Pile
Asbestos Structures:23
Structures < 5 µm:21
Structures ≥ 5 µm:2
Structure Density (s/mm²):295
Structure Concentration (s/cm²):1890000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<12.8
Structure Concentration (s/cm²):<82200
Non-Asbestos Type(s):
None Detected

Lab No.:6253634
Client No.:17-1217-CTD-03

Volume Filtered (mL):0.25
Dilution Factor (mL):50
Grid Openings:3
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0390
Sensitivity (s/mm²):25.6
Detection Limit (s/cm²):49300
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:NW Corner/0.3m From Apparent Debris Pile
Asbestos Structures:33
Structures < 5 µm:33
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²):846
Structure Concentration (s/cm²):1630000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<25.6
Structure Concentration (s/cm²):<49300
Non-Asbestos Type(s):
None Detected

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/8/2017
Date Analyzed: 06/15/2017
Signature:
Analyst: Tom Barkley

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 6/15/2017
Report No.: 538243 - TEM Dust Microvac
Project: Assmnt Debris Physics Sidney BC
Project No.: P17-11054-07

TEM DUST SAMPLE ANALYSIS DETAILS

Lab No.:6253635
Client No.:17-1217-CTD-04

Volume Filtered (mL):0.25
Dilution Factor (mL):50
Grid Openings:2
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0260
Sensitivity (s/mm²):38.5
Detection Limit (s/cm²):74000
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:NW Corner/0.6m From Apparent Debris Pile
Asbestos Structures:38
Structures < 5 µm:36
Structures ≥ 5 µm:2
Structure Density (s/mm²):1460
Structure Concentration (s/cm²):2810000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<38.5
Structure Concentration (s/cm²):<74000
Non-Asbestos Type(s):
None Detected

Lab No.:6253636
Client No.:17-1220-CTD-01

Volume Filtered (mL):0.1
Dilution Factor (mL):50
Grid Openings:2
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0260
Sensitivity (s/mm²):38.5
Detection Limit (s/cm²):370000
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):50
Location:SW Corner/Centre Drywall Debris Pile
Asbestos Structures:37
Structures < 5 µm:35
Structures ≥ 5 µm:2
Structure Density (s/mm²):1420
Structure Concentration (s/cm²):13700000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<38.5
Structure Concentration (s/cm²):<370000
Non-Asbestos Type(s):
None Detected

Lab No.:6253637
Client No.:17-1220-CTD-02

Volume Filtered (mL):0.25
Dilution Factor (mL):50
Grid Openings:6
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0780
Sensitivity (s/mm²):12.8
Detection Limit (s/cm²):32900
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):75
Location:SW Corner/0.3m From Centre Debris Pile
Asbestos Structures:32
Structures < 5 µm:31
Structures ≥ 5 µm:1
Structure Density (s/mm²):410
Structure Concentration (s/cm²):1050000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<12.8
Structure Concentration (s/cm²):<32900
Non-Asbestos Type(s):
None Detected

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/8/2017
Date Analyzed: 06/15/2017
Signature:
Analyst: Tom Barkley

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 6/15/2017
Report No.: 538243 - TEM Dust Microvac
Project: Assmnt Debris Physics Sidney BC
Project No.: P17-11054-07

TEM DUST SAMPLE ANALYSIS DETAILS

Lab No.:6253638
Client No.:17-1220-CTD-03
Volume Filtered (mL):0.25
Dilution Factor (mL):50
Grid Openings:7
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0910
Sensitivity (s/mm²):11.0
Detection Limit (s/cm²):21100
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:SW Corner/0.3m From Apparent Debris Pile
Asbestos Structures:21
Structures < 5 µm:21
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²):231
Structure Concentration (s/cm²):444000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<11.0
Structure Concentration (s/cm²):<21100
Non-Asbestos Type(s):
None Detected

Lab No.:6253639
Client No.:17-1220-CTD-04
Volume Filtered (mL):0.25
Dilution Factor (mL):50
Grid Openings:7
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0910
Sensitivity (s/mm²):11.0
Detection Limit (s/cm²):21100
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:SW Corner/0.6m From Apparent Debris Pile
Asbestos Structures:22
Structures < 5 µm:22
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²):242
Structure Concentration (s/cm²):465000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<11.0
Structure Concentration (s/cm²):<21100
Non-Asbestos Type(s):
None Detected

Lab No.:6253640
Client No.:17-1246-CTD-01
Volume Filtered (mL):0.1
Dilution Factor (mL):50
Grid Openings:1
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0130
Sensitivity (s/mm²):76.9
Detection Limit (s/cm²):740000
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):50
Location:NW Corner/Centre Drywall Debris Pile
Asbestos Structures:80
Structures < 5 µm:80
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²):6150
Structure Concentration (s/cm²):59200000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<76.9
Structure Concentration (s/cm²):<740000
Non-Asbestos Type(s):
None Detected

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/8/2017
Date Analyzed: 06/15/2017
Signature:
Analyst: Tom Barkley

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 6/15/2017
Report No.: 538243 - TEM Dust Microvac
Project: Assmnt Debris Physics Sidney BC
Project No.: P17-11054-07

TEM DUST SAMPLE ANALYSIS DETAILS

Lab No.:6253641
Client No.:17-1246-CTD-02
Volume Filtered (mL):0.25
Dilution Factor (mL):50
Grid Openings:2
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0260
Sensitivity (s/mm²):38.5
Detection Limit (s/cm²):98700
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):75
Location:NW Corner/0.3m From Centre Drywall Debris Pile
Asbestos Structures:52
Structures < 5 µm:52
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²):2000
Structure Concentration (s/cm²):5130000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<38.5
Structure Concentration (s/cm²):<98700
Non-Asbestos Type(s):
None Detected

Lab No.:6253642
Client No.:17-1246-CTD-03
Volume Filtered (mL):0.25
Dilution Factor (mL):50
Grid Openings:7
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0910
Sensitivity (s/mm²):11.0
Detection Limit (s/cm²):21100
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:NW Corner/0.3m From Apparent Debris Pile
Asbestos Structures:19
Structures < 5 µm:19
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²):209
Structure Concentration (s/cm²):402000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<11.0
Structure Concentration (s/cm²):<21100
Non-Asbestos Type(s):
None Detected

Lab No.:6253643
Client No.:17-1246-CTD-04
Volume Filtered (mL):0.25
Dilution Factor (mL):50
Grid Openings:4
Opening Area (mm²):0.013
Area Analyzed (mm²):0.0520
Sensitivity (s/mm²):19.2
Detection Limit (s/cm²):37000
Micrograph Number:
EDXA Spectrum ID:

Area Sampled (cm²):100
Location:NW Corner/0.6m From Apparent Debris Pile
Asbestos Structures:33
Structures < 5 µm:33
Structures ≥ 5 µm: None Detected
Structure Density (s/mm²):635
Structure Concentration (s/cm²):1220000
Asbestos Type(s):
Chrysotile

Filter Type:MCE
Filter Size (mm²):962
Pore Size (µm):0.45
Non-Asbestos Structures: None Detected
Structure Density (s/mm²):<19.2
Structure Concentration (s/cm²):<37000
Non-Asbestos Type(s):
None Detected

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 6/8/2017
Date Analyzed: 06/15/2017
Signature:
Analyst: Tom Barkley

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 6/15/2017
Report No.: 538243 - TEM Dust Microvac
Project: Assmnt Debris Physics Sidney BC
Project No.: P17-11054-07

APPENDIX IV
REGULATORY FRAMEWORK

REGULATORY FRAMEWORK

1. Occupational Health and Safety Regulation (Including amendments up to B.C. Reg. 195/2015),
2. Safe Work Practices for Handling Asbestos, WorkSafeBC, (Publication Date January 15, 2013).
3. Hazardous Waste Regulation, BC Ministry Of Environment. (Including amendments up to B.C. Reg. 179/2016, July 19, 2016).
4. Environmental Management Act (As Current to August 24, 2016).
5. Transportation of Dangerous Goods Regulations (Including amendments up to SOR / 2016-95).
6. Canadian Occupational Health and Safety Regulations (Including amendments up to SOR / 86-304).
7. Canada Labour Code, Part II, - R.S.C., 1985, c. L-2

APPENDIX V
STANDARD LIMITATIONS

TERMS OF REFERENCE FOR HAZARDOUS MATERIALS AND OCCUPATIONAL HEALTH AND SAFETY REPORTS ISSUED BY WSP CANADA INC.

1. STANDARD OF CARE

WSP Canada Inc. ("WSP") prepared and issued this report (the "Report") for its client (the "Client") in accordance with generally-accepted consulting practices for the hazardous materials and occupational health and safety disciplines. No other warranty, expressed or implied, is made. Unless specifically stated in the Report, the Report does not address environmental issues.

The terms of reference for hazardous materials and occupational health and safety reports issued by WSP (the "Terms of Reference") contained in the present document provide additional information and caution related to standard of care and the use of the Report. The Client should read and familiarize itself with these Terms of Reference.

2. COMPLETENESS OF THE REPORT

All documents, records, drawings, correspondence, data, files and deliverables, whether hard copy, electronic or otherwise, generated as part of the services for the Client are inherent components of the Report and, collectively, form the instruments of professional services (the "Instruments of Professional Services"). The Report is of a summary nature and is not intended to stand alone without reference to the instructions given to WSP by the Client, the communications between WSP and the Client, and to any other reports, writings, proposals or documents prepared by WSP for the Client relative to the specific site described in the Report, all of which constitute the Report.

TO PROPERLY UNDERSTAND THE INFORMATION, OBSERVATIONS, FINDINGS, SUGGESTIONS, RECOMMENDATIONS AND OPINIONS CONTAINED IN THE REPORT, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. WSP CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT AND ITS VARIOUS COMPONENTS.

3. BASIS OF THE REPORT

WSP prepared the Report for the Client for the specific objectives and purpose that the Client described to WSP. The applicability and reliability of any of the information, observations, findings, suggestions, recommendations and opinions contained in the Report are only valid to the extent that there was no material alteration to or variation from any of the said descriptions provided by the Client to WSP unless the Client specifically requested WSP to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information, observations, findings, suggestions, recommendations and opinions contained in the Report, or any component forming the Report, are for the sole use and benefit of the Client and the team of consultants selected by the Client for the specific project that the Report was provided. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION OR COMPONENT WITHOUT THE WRITTEN CONSENT OF WSP. WSP will consent to any reasonable request by the Client to approve the use of this Report by other parties designated by the Client as the "Approved Users". As a condition for the consent of WSP to approve the use of the Report by an Approved User, the Client must provide a copy of these Terms of Reference to that Approved User and the Client must obtain written confirmation from that Approved User that the Approved User will comply with these Terms of Reference, such written confirmation to be provided separately by each Approved User prior to beginning use of the Report. The Client will provide WSP with a copy of the written confirmation from an Approved User when it becomes available to the Client, and in any case, within two weeks of the Client receiving such written confirmation.

The Report and all its components remain the copyright property of WSP and WSP authorizes only the Client and the Approved Users to make copies of the Report, but only in such quantities as are reasonably necessary for the use of the Report by the Client and the Approved Users. The Client and the Approved Users may not give, lend, sell or otherwise disseminate or make the Report, or any portion thereof, available to any party without the written permission of WSP. Any use which a third party makes of the Report, or any portion of the Report, is the sole responsibility of such third parties. WSP accepts no responsibility for damages suffered by any third party resulting from the use of the Report. The Client and the Approved Users acknowledge and agree to indemnify and hold harmless WSP, its officers, directors, employees, agents, representatives or sub-consultants, or any or all of them, against any claim of any nature whatsoever brought against WSP by any third parties, whether in contract or in tort, arising or related to the use of contents of the Report.

TERMS OF REFERENCE FOR HAZARDOUS MATERIALS AND OCCUPATIONAL HEALTH AND SAFETY REPORTS ISSUED BY WSP CANADA INC. (continued)

5. INTERPRETATION OF THE REPORT

a. **Hidden Conditions**: The Client acknowledges that subsurface and concealed conditions may vary from those encountered or reviewed. WSP can only comment on the conditions observed on the date(s) the assessment is performed. The work is limited to those areas of concern identified by the Client and/or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assessment.

b. **Reliance on information**: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site investigation and field review and on the basis of information provided to WSP. WSP has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, WSP cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations or fraudulent acts of persons providing information.

c. **Additional Involvement by WSP**: To avoid misunderstandings, WSP should be retained to assist other professionals to explain relevant hazardous materials and occupational health and safety findings and to review the hazardous materials and occupational health and safety aspects of the plans, drawings and specifications of other professionals relative to the services provided by WSP. To ensure compliance and consistency with the applicable hazardous materials and occupational health and safety codes, legislation, regulations, guidelines and generally-accepted practices, WSP should also be retained to provide field review services during the performance of any related work. Where applicable, it is understood that such field review services must meet or exceed the minimum necessary requirements to ascertain that the work being carried out is in general conformity with the recommendations made by WSP. Any reduction from the level of services recommended by WSP will result in WSP providing qualified opinions regarding adequacy of the work.

6. ALTERNATE REPORT FORMAT

When WSP submits both electronic and hard copy versions of the Instruments of Professional Services, the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding upon WSP. The hard copy versions submitted by WSP shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions; furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed and sealed versions of the Instruments of Professional Services maintained or retained, or both, by WSP shall be deemed to be the overall originals for the Project.

The Client agrees that the electronic file and hard copy versions of Instruments of Professional Services shall not, under any circumstances, no matter who owns or uses them, be altered by any party except WSP. The Client warrants that the Instruments of Professional Services will be used only and exactly as submitted by WSP.

The Client recognizes and agrees that WSP prepared and submitted electronic files using specific software or hardware systems, or both. WSP makes no representation about the compatibility of these files with the current or future software and hardware systems of the Client, the Approved Users or any other party. The Client further agrees that WSP is under no obligation, unless otherwise expressly specified, to provide the Client, the Approved Users and any other party, or any or all of them, with specific software and hardware systems that are compatible with any electronic submitted by WSP. The Client further agrees that should the Client, an Approved User or a third party require WSP to provide specific software or hardware systems, or both, compatible with the electronic files prepared and submitted by WSP, for any reason whatsoever included but not restricted to an order from a court, then the Client will pay WSP for all reasonable costs related to the provision of the specific software or hardware systems, or both. The Client further agrees to indemnify and hold harmless WSP, its officers, directors, employees, agents, representative or sub-consultant, or any or all of them, against any claim or any nature whatsoever brought against WSP, whether in contract or in tort, arising or related to the provision or use or any specific software or hardware provided by WSP.

REPORT N^{O} 161-17554-00 HMS

PRE-RENOVATION HAZARDOUS MATERIALS SURVEY – NOV. 2017 UPDATE

FISHERIES & OCEANS CANADA.

OCEAN SCIENCES PHYSICS BUILDING,

LOWER LEVEL PLAN LINES 20 THROUGH 31

9860 WEST SAANICH ROAD, SIDNEY, BC, V8L 4B2

NOVEMBER 2017

WSP

PRE-RENOVATION HAZARDOUS MATERIALS SURVEY – NOV. 2017 UPDATE

FISHERIES & OCEANS CANADA.

OCEAN SCIENCES PHYSICS BUILDING, LOWER LEVEL PLAN LINES 20 THROUGH 31

9860 WEST SAANICH ROAD, SIDNEY, BC

PROJECT NO: 161-17554-00 HMS

Date: November 15, 2017

WSP Canada Inc.
760 Enterprise Crescent
Victoria, BC V8Z 6R4

Phone: +1 250-475-1000
www.wspgroup.com

Project No.: 161-17554-00 HMS

November 15, 2017

Real Property, Safety & Security,
Fisheries and Oceans Canada
9860 West Saanich Road
Sidney, BC, V8L 4B2

Attention: Linda Barley

Project: **Pre-Renovation Hazardous Materials Survey Updated Nov 2017**

Address: **Ocean Sciences Physics Building, Lower Level, Plan Lines 20 Through 31, 9860 West Saanich Road, Sidney, BC.**

1 INTRODUCTION

WSP Consultants Ltd. (WSP) was retained by Fisheries and Oceans Canada for the provision of a Pre-Renovation Hazardous Materials Survey (PHMS) for the Ocean Sciences Physics Building, Lower Level, Plan Lines 20 through 31 located at 9860 West Saanich Road, Sidney, British Columbia (Site or Subject Site).

WSP was called upon to attend the Site to establish the presence / absence, location, type of hazardous materials utilized in the construction of the ground floor level Physics Building by means of site review including sample collection and subsequent laboratory analysis. Suspect hazardous materials may potentially be altered during planned renovations.

WSP has assumed the subject site building was constructed pre-1970s and appears to have undergone renovations since construction. Based on the estimated period of construction and subsequent renovations, hazardous building materials may be present at the Site.

WSP understands that the limited extent scheduled to be renovated or altered includes those rooms east of, but not including Corridor 1260, on the ground floor level of the Physics Building totaling approximately 16,670 sq. ft. (1,549 m^2).

The objective of the PHMS is to establish the presence / absence, location, and type of hazardous building materials utilized in the construction of the three buildings on Site by means of sample collection and subsequent laboratory analysis. Section 20.112 of the BC Occupational Health and Safety Regulation requires that a hazardous materials survey be conducted by a qualified person prior to any demolition or renovation activity which might disturb hazardous materials. The Canadian Occupational Health and Safety Regulations and Canada Labour Code, Part II, which applies to all areas under federal jurisdiction, stipulate the requirements for protection of employees.

For the purposes of this survey, hazardous building materials will be defined as:

- Asbestos-containing materials (ACM);
- Lead materials and lead-based paints (LBP);
- Mercury;
- Polychlorinated biphenyls (PCB);

- Crystalline silica;
- Ozone depleting substances (ODS);
- Radioactive materials (RAM);
- Mould and/or microbial growth; and
- Flammable, Explosive, or Potentially Toxic/Hazardous Materials.

The survey and review was conducted in general accordance with WorkSafeBC Occupational Health and Safety Regulations Part 20, Construction, Excavation and Demolition, Section 20.112 Hazardous Materials.

The PHMS was conducted by identifying the above defined hazardous materials including suspect ACM and LBP through on-Site bulk sampling and subsequent laboratory analysis, review for visual / olfactory presence of suspected mould growth, and review of elements or components which may contain lead products, mercury, PCB, ODS, and RAM.

The samples were analyzed by International Asbestos Testing Laboratories (IATL), following methods that comply with the WorkSafeBC Occupational Health and Safety Regulations and Hazardous Waste Regulation as defined by the BC Ministry of Environment.

This report updates the Pre-Renovation Wall Surfacing Compound Survey conducted December 6 through 8, 2016 with additional information collected during on-site field reviews conducted on June 5, 2017 and September 14, 2017 of potential hazardous building materials.

2 LIMITATIONS

The PHMS included construction materials and components only. As it is neither practical nor feasible to sample materials on a foot by foot basis, visually similar materials' analysis results were extrapolated throughout the structure and / or based on estimated phases of construction, where that information was made available.

Energised electrical and mechanical equipment or systems were not opened for safety reasons. This survey excluded owner or occupant articles such as furniture or stored items. Concealed or inaccessible materials within the building structure, fire doors, reinforcing elements, and below ground materials including tanks and pipes were specifically excluded from our scope of work.

No below-grade water, drainage or plumbing systems or sub surface investigation of materials were included in the scope of this PHMS. No attic or crawl space areas were encountered as part of this PHMS.

No exterior wall componentry, paints (except the three samples designated by the client), upper surface roofing, nor below-grade water, drainage or plumbing systems or sub surface investigation of materials were included in the scope of this Pre-Renovation Hazardous Materials Survey.

For the purpose of this report, the scope of work was limited to the "potential renovation zone rooms and materials" including those rooms east of, but not including Corridor 1260, on the ground floor level of the Physics Building.

3 SITE DESCRIPTION

The areas the client indicated as the renovation zone are assumed to have been constructed during an era when use of asbestos in building materials was potentially common. Interior finishes encountered included drywall joint compound, skim coat on concrete, vinyl wall panelling, suspended ceiling tile, duct mastic, thermal pipe insulation, and floor tile. A Site Plan is attached in Appendix I.

4 SCOPE OF WORK

The PHMS was performed by a qualified and experienced Environmental Technologist with AHERA Building Inspector Certification. The following tasks were performed as part of this survey:

- Review of the provided site plan room configuration drawing;
- Review of the provided previous asbestos-containing materials reports;
- On site review of building materials, and collection of bulk samples suspected to contain asbestos;
- On site review of building surface coatings, and collection of bulk samples (paints) suspected to contain elevated concentrations of lead;
- Visual review for identification of interior thermostats or fluorescent light tubes which may contain mercury;
- Visual review for identification of building construction materials which may contain silica such as concrete, cement, tile, brick, masonry, mortar;
- Visual review for identification of equipment which may have Ozone Depleting Substances (ODS i.e. halons or refrigerants);
- Visual review for identification of smoke detectors or exit signs with the potential to contain radioactive materials (RAM);
- Visual review of building interiors for signs of suspect mould growth;
- Visual review for stored materials which may be flammable or explosive;
- Photography of the above determined materials as encountered on Site; and
- Preparation of this report summarizing the specific hazardous building materials identified through review and analysis.

5 METHODOLOGY

From December 6th through 8th of 2016, and June 5, 2017 and September 14, 2017 Mr. Gordon Philippe, B. Tech. Environmental Technologist of WSP conducted the Pre-Renovation Hazardous Materials Survey site work according to the following protocol. Visual review was conducted for suspect hazardous materials likely to be impacted by renovation activities. Areas typically containing suspect hazardous materials were reviewed from the accessible areas.

WSP undertook on-Site bulk sampling for suspect asbestos materials, and suspect high lead content surface coatings (paints).

The bulk sample collection frequency for suspect asbestos materials and elevated lead content surface coatings (paints) was consistent with recognized industry standards and principles of good occupational

hygiene practice. The number of samples collected was based on experienced professional judgment in consideration of, but not necessarily limited to, the era of construction, and uniformity of materials, and size of area of homogeneous materials.

Collected samples were placed in plastic bags appropriate for the proposed analysis. The sample material descriptions, sample locations, and associated sample numbers were indicated on sample bags and the Chain-of-Custody (COC) forms. Chain-of-custody protocol was observed during handling and transportation of the bulk samples.

The bagged samples and COC forms were sent to International Asbestos Testing Laboratories (IATL) in Mount Laurel, New Jersey, USA for analyses. IATL is an accredited laboratory that participates in the American Industrial Hygiene Association's (AIHA) Bulk Asbestos Proficiency Analytical Testing (BAPAT) Program.

The completed Chain-of-Custodies (COCs) and the Laboratory Reports of analytical results are presented in Appendix II.

5.1 ASBESTOS-CONTAINING MATERIALS (ACMS)

Based on the assumed period of subject site building construction and alterations, asbestos-containing materials were considered likely to be present.

Accordingly, bulk sampling for suspect asbestos materials was deemed prudent. Review was based on experienced professional judgment in consideration of, but not necessarily limited to, the era of construction, and uniformity of materials and size of area of homogeneous materials.

Sampling locations included targeting specific areas planned for wall penetrations and appurtenance attachments.

The building materials review and bulk material sample collection for analysis of potential asbestos was consistent with recognized industry standards and principles of good occupational hygiene practice for mid-twentieth century period of construction/alteration in North America.

One-Hundred and Five (105) representative bulk samples of suspect materials that could potentially contain asbestos were collected.

Suspect asbestos samples were analyzed by iATL in accordance with PLM: Bulk Asbestos Building Materials EPA 600 R 93 / 116. 1993.

The analytical results for asbestos content of the bulk material samples are presented in the Laboratory Reports, included in Appendix II.

Based on WSP's professional opinion, the following materials were assumed not to contain asbestos during this survey and were classified as non-asbestos materials:

- Dimensional lumber;
- Metal Wall Studs;
- Metal T-Bar Tracking and Support Wire;
- Metal Q-deck Ceiling panels; and
- Structural Steel.

5.2 LEAD BASED PAINTS (LBP)

Three (3) representative bulk surface coating samples suspected to contain elevated lead were collected from within Mechanical Room 1236.

Suspect elevated lead content surface coating samples (paints) were analyzed by iATL in accordance with ASTM D3335-85A "Standard Method to Test for Low Concentrations of Lead in Paint by Atomic Absorption Spectrophotometry".

The analytical results for lead content of the bulk surface coating samples are presented in the Laboratory Reports, included in Appendix II.

5.3 LEAD PRODUCTS

The Site was visually reviewed for the presence of lead-containing building products. No samples were collected of these materials.

5.4 MOULD AND OTHER MICROBIAL CONTAMINANTS

The Site was visually reviewed for the presence of water damage and suspected mould growth. They were also visually reviewed for other microbial contaminants including animal wastes. No samples were collected.

5.5 CRYSTALLINE SILICA

The Site was visually reviewed for the presence of concrete or mineral-composite building materials which may contain crystalline silica. No samples were collected for analysis of silica content.

5.6 OTHER HAZARDOUS MATERIALS

The Site was visually reviewed for the presence of fluorescent light ballasts and tubes which could contain PCBs or mercury respectively; equipment which might contain ODS-containing halons or refrigerants; smoke detectors and exit signs which may contain RAM; and any stored flammable or explosive materials. No additional samples were collected.

6 REGULATORY FRAMEWORK

The details of the regulatory frameworks for ACM, LBP, PCB, mercury, RAM, and ODS are found in Appendix III.

7 ASBESTOS MATERIALS SURVEY RESULTS

The results of the Pre-Renovation Hazardous Materials Survey are summarized below.

Area descriptions for the following Corridors are defined as follows:

- South Corridor –> The east – west oriented corridor extending from the double doors located north of Room 1216 (Line 20) through to the 'T' hallway junction north of Room 1238 (Line 25.7).
- North Corridor –> The east – west oriented corridor extending from the single door located south of Room 1226 (Line 20) through to the Exit at the eastern most extent (Line 31).
- Centre South Corridor –> The north – south oriented corridor extending from the T' hallway junction with the North Corridor (Line V) through to the Exit at the far south extent (Line R1).

A Site Plan and Sampling Location Plans are attached in Appendix I. The completed Chain-of-Custodies (COCs) and the Laboratory Reports of analytical results are presented in in Appendix II.

7.1 ASBESTOS-CONTAINING MATERIALS

The rooms comprising the potential renovation areas are tabulated below along with the associated WSP collected bulk material samples for potential asbestos and the corresponding IATL laboratory results of asbestos content.

'Material of Interest' descriptions for samples are based on site observations and as listed on the Chain of Custody. Additional descriptions in brackets i.e., (White Joint Compound*) are those corresponding to the associated laboratory report finding descriptions. The majority of sampled materials are Wall Surfacing Compounds.

For ease of identification, drywall joint compound samples are listed in black text and atypical non-drywall joint compound materials are listed in blue text within the table below.

Notes: *Italic Text indicates that asbestos was detected below the WorkSafeBC 0.5% criteria.*

Bold Text indicates that asbestos was detected above the WorkSafeBC 0.5% criteria.

Table 1: Asbestos Content Results

Area	Material of Interest	Sample ID	Content/Type
South Corridor	South Wall East Extent Drywall Joint Compound	16-SCorr-01	PC 1.8 % Chrysotile
South Corridor	South Wall Near Room 1224 Drywall Joint Compound	16-SCorr-02	PC 1.7 % Chrysotile
South Corridor	South Wall Near Room 1220 Drywall Joint Compound	16-SCorr-03	PC 1.5 % Chrysotile
South Corridor	South Wall Near Room 1218 Drywall Joint Compound	16-SCorr-04	PC 1.4 % Chrysotile
South Corridor	South Wall Near Room 1217 Drywall Joint Compound	16-SCorr-05	PC 1.9 % Chrysotile
South Corridor	North Wall SE Corner off Room 1215b Drywall Joint Compound	16-SCorr-06	PC 2.2 % Chrysotile

Area	Material of Interest	Sample ID	Content/Type
South Corridor	**North Wall SW Corner off Room 1222c Drywall Joint Compound**	**16-SCorr-07**	**PC 2.1 % Chrysotile**
South Corridor	North Wall SW Corner off Staircase Skim Coat (White Joint Compound*) over Concrete (Grey Plaster*)	16-SCorr-08	None Detected for asbestos
South Corridor	**West Wall in Central South Exit Hall Drywall Joint Compound**	**16-SCorr-09**	**PC 1.2 % Chrysotile**
South Corridor	**West End of Corridor South Side of Double Doors Drywall Joint Compound**	**16-SCorr-10**	**PC 1.2 % Chrysotile**
South Corridor	West End of Corridor North Side of Double Doors Skim Coat (White Plaster*) over Concrete (Grey Plaster*)	16-SCorr-11	None Detected for asbestos
North Corridor	**South Wall Near Room 1251 Drywall Joint Compound**	**16-NCorr-01**	**PC 2.2 % Chrysotile**
North Corridor	North Wall Near Room 1252 Drywall Joint Compound	16-NCorr-02	None Detected for asbestos
North Corridor	South Wall NW Corner off Room 1246 Drywall Joint Compound	16-NCorr-03	None Detected for asbestos
North Corridor	**North Wall Near Room 1243 Drywall Joint Compound**	**16-NCorr-04**	**PC 1.5 % Chrysotile**
North Corridor	**South Wall Near Room 1215d Drywall Joint Compound**	**16-NCorr-05**	**PC 1.2 % Chrysotile**
North Corridor	**North Wall Near Room 1227 Drywall Joint Compound**	**16-NCorr-06**	**PC 2.4 % Chrysotile**
Centre South Corridor	**East Wall Near Room 1237 Drywall Joint Compound**	**16-CSCorr-01**	**PC 1.8 % Chrysotile**
Centre South Corridor	**East Wall Near Room 1240 Drywall Joint Compound**	**16-CSCorr-02**	**PC 1.3 % Chrysotile**
Centre South Corridor	**West Wall Near Room 1242 Drywall Joint Compound**	**16-CSCorr-03**	**PC 1.4 % Chrysotile**
Centre South Corridor	**West Wall Near Room 1238 Drywall Joint Compound**	**16-CSCorr-04**	**PC 1.2 % Chrysotile**
Centre South Corridor	West Wall Near Staircase Skim Coat (White Plaster*)	16-CSCorr-05	None Detected for asbestos
Room 1200	Wall Opposite Entry Door Drywall Joint Compound	16-1200-01	None Detected for asbestos
Room 1200	SE Corner Wall of Store Room 1201 Drywall Joint Compound	16-1200-02	None Detected for asbestos
Room 1202	**East Wall Drywall Joint Compound**	**16-1202-01**	**PC 1.3 % Chrysotile**
Room 1202	**West Wall Drywall Joint Compound**	**16-1202-02**	**PC 1.5 % Chrysotile**
Room 1202a	**West Wall Drywall Joint Compound**	**16-1202a-03**	**PC 1.6 % Chrysotile**

Area	Material of Interest	Sample ID	Content/Type
Room 1202a	South Wall Drywall Joint Compound	16-1202a-04	PC 1.7 % Chrysotile
Room 1215b	East Wall Drywall Joint Compound	16-1215b-01	PC 1.5 % Chrysotile
Room 1215b	North Wall Drywall Joint Compound	16-1215b-02	PC 1.8 % Chrysotile
Room 1215b	Outside Southern West Panel Wall Vinyl On Wall Panelling	16-1215b-03	None Detected for asbestos
Room 1215b	East Exterior Side of Room 1215d Vinyl On Wall Panelling	16-1215b-04	None Detected for asbestos
Room 1216	North Wall Drywall Joint Compound	16-1216-01	PC 1.3 % Chrysotile
Room 1216	East Wall Drywall Joint Compound	16-1216-02	PC 1.4 % Chrysotile
Room 1216	Drywall Joint Compound	16-1216-03	PC 2.2 % Chrysotile
Room 1217	2' x 4' Suspended Ceiling Tile	16-1217-01	None Detected for asbestos
Room 1217	**Red Duct Mastic**	**16-1217-02**	**PC 6.3 % Chrysotile**
Room 1217	North Wall Drywall Joint Compound	16-1217-03	PC 1.7 % Chrysotile
Room 1217	West Wall Drywall Joint Compound	16-1217-04	PC 2.4 % Chrysotile
Room 1218	North Wall Drywall Joint Compound	16-1218-01	PC 1.6 % Chrysotile
Room 1218	East Wall Drywall Joint Compound	16-1218-02	PC 2.5 % Chrysotile
Room 1218	South Wall Drywall Joint Compound	16-1218-03	PC 2.0 % Chrysotile
Room 1219	East Wall Drywall Joint Compound	16-1219-01	PC 2.3 % Chrysotile
Room 1219	North Wall Drywall Joint Compound	16-1219-02	PC 2.1 % Chrysotile
Room 1219	West Wall Drywall Joint Compound	16-1219-03	PC 1.5 % Chrysotile
Room 1222a	North Wall East Side of Steel Column Drywall Joint Compound	16-1222a-01	PC 3.1 % Chrysotile
Room 1222a	North Wall West Side of Steel Column Drywall Joint Compound	16-1222a-02	PC 2.3 % Chrysotile
Room 1222a	West Wall - Vinyl On Wall Panelling (Grey/Tan Sheetrock*)	16-1222a-03	None Detected for asbestos
Room 1222c	East Wall - Vinyl On Wall Panelling (Off-White Non-Fibrous*)	16-1222c-01	None Detected for asbestos
Room 1222c	North Wall East End Drywall Joint Compound	16-1222c-02	PC 2.8 % Chrysotile

Area	Material of Interest	Sample ID	Content/Type
Room 1224	North Wall Drywall Joint Compound	16-1224-01	PC 3.2 % Chrysotile
Room 1224	South Wall Drywall Joint Compound	16-1224-02	PC 2.6 % Chrysotile
Room 1225	East Wall Drywall Joint Compound	16-1225-01	PC 3.0 % Chrysotile
Room 1227	North Wall Drywall Joint Compound	16-1227-01	PC 3.4 % Chrysotile
Room 1227	South Wall Drywall Joint Compound	16-1227-02	PC 2.7 % Chrysotile
Room 1233	North Wall Drywall Joint Compound	16-1233-01	PC 2.5 % Chrysotile
Room 1233	East Wall Drywall Joint Compound	16-1233-02	PC 3.1 % Chrysotile
Room 1233	South Wall Drywall Joint Compound	16-1233-02	PC 2.8 % Chrysotile
Room 1234	East Wall Drywall Joint Compound	16-1234-01	PC 2.9 % Chrysotile
Room 1234	West Wall Drywall Joint Compound	16-1234-02	PC 1.9 % Chrysotile
Room 1236	Upper South Wall East End Drywall Joint Compound	16-1236-01	PC 3.3 % Chrysotile
Room 1238	North Wall Drywall Joint Compound	16-1238-01	PC 2.0 % Chrysotile
Room 1238	West Wall Drywall Joint Compound	16-1238-02	PC 2.2 % Chrysotile
Room 1238	South Wall Drywall Joint Compound	16-1238-03	PC 2.1 % Chrysotile
Room 1239	North Wall COC incorrect notation as Vinyl Wall Paneling however, backup photograph confirmed material as Drywall Joint Compound	16-1239-01	PC 2.4 % Chrysotile
Room 1239	East Wall Drywall Joint Compound	16-1239-02	PC 2.3 % Chrysotile
Room 1239	West Wall Drywall Joint Compound	16-1239-03	PC 2.9 % Chrysotile
Room 1240	West Wall Drywall Joint Compound	16-1240-02	PC 3.3 % Chrysotile
Room 1240	South Wall Drywall Joint Compound	16-1240-03	PC 2.7 % Chrysotile
Room 1240	Northwest Obtuse Corner Wall Off Room 1241 Drywall Joint Compound	16-1240-04	PC 2.5 % Chrysotile
Room 1242	North Wall Drywall Joint Compound	16-1242-01	PC 2.6 % Chrysotile
Room 1242	West Wall Drywall Joint Compound	16-1242-02	PC 2.3 % Chrysotile

Area	Material of Interest	Sample ID	Content/Type
Room 1242	**South Wall Drywall Joint Compound**	**16-1242-03**	**PC 1.8 % Chrysotile**
Room 1242	**East Wall Drywall Joint Compound**	**16-1242-04**	**PC 1.9 % Chrysotile**
Room 1243	North Wall Drywall Joint Compound	16-1243-01	None Detected for asbestos
Room 1243	**West Wall Drywall Joint Compound**	**16-1243-02**	**PC 2.0 % Chrysotile**
Room 1243	**South Wall Drywall Joint Compound**	**16-1243-03**	**PC 1.8 % Chrysotile**
Room 1246	2' x 4' Suspended Ceiling Tile	16-1246-01	None Detected for asbestos
Room 1246	**Northeast Obtuse Corner Wall at West Entrance Drywall Joint Compound**	**16-1246-02**	**PC 1.5 % Chrysotile**
Room 1246	**North Wall East End Near Square Conduit Drywall Joint Compound**	**16-1246-03**	**PC 1.7 % Chrysotile**
Room 1246	**North Wall East End Near Large Round Green Painted Duct Drywall Joint Compound**	**16-1246-04**	**PC 1.9 % Chrysotile**
Room 1246	**North Wall East End Small Diameter Thermal Pipe Hard Mud Elbow Insulation Painted Yellow**	**16-1246-05**	**PC 5.1 % Chrysotile**
Room 1246	**East Wall South End Drywall Joint Compound**	**16-1246-06**	**PC 0.5 % Chrysotile**
Room 1248	*12" Green Floor Tile*	**16-1248-01**	*PC Trace Chrysotile*
	With Black Mastic		**PC 4.8 % Chrysotile**
Room 1248	**North Wall Drywall Joint Compound**	**16-1248-02**	**PC 2.1 % Chrysotile**
Room 1248	**Upper South Wall Drywall Joint Compound**	**16-1248-03**	**PC 2.1 % Chrysotile**
Room 1249	*West Wall Drywall Joint Compound*	*16-1249-01*	*PC Trace Chrysotile*
Room 1249	**East Wall Drywall Joint Compound**	**16-1249-02**	**PC 1.7 % Chrysotile**
Room 1250	**Eastern Far North Wall Drywall Joint Compound**	**16-1250-01**	**PC 1.6 % Chrysotile**
Room 1250	**Western North Wall Drywall Joint Compound**	**16-1250-02**	**PC 1.8 % Chrysotile**
Room 1250	**South Wall Drywall Joint Compound**	**16-1250-03**	**PC 1.3 % Chrysotile**
Room 1251	**North Wall Drywall Joint Compound**	**16-1251-01**	**PC 1.7 % Chrysotile**
Room 1251	**South Wall Drywall Joint Compound**	**16-1251-02**	**PC 1.5 % Chrysotile**

Area	Material of Interest	Sample ID	Content/Type
Room 1252	South Wall East End Medium Diameter Thermal Pipe Hard Mud Elbow Insulation Painted Khaki. Recommend further sampling of other hard mud elbows as some were observed to be in poor condition	16-1252-00	None Detected for asbestos
Room 1252	**South Wall Drywall Joint Compound**	**16-1252-01**	**PC 1.6 % Chrysotile**
Room 1252	**North Wall Drywall Joint Compound**	**16-1252-02**	**PC 1.7 % Chrysotile**
Room 1253	North Wall - Jute Pattern Vinyl On Wall Panelling (White/Tan Ceiling Tile*)	16-1253-01	None Detected for asbestos
Room 1253	**East Wall Drywall Joint Compound**	**16-1252-02 (As per Photo should be 16-1253-02)**	**PC 1.2 % Chrysotile**
Room 1254	**East Wall Drywall Joint Compound**	**16-1254-01**	**PC 1.1 % Chrysotile**
Room 1254	**South Wall Drywall Joint Compound**	**16-1254-02**	**PC 1.2 % Chrysotile**
Room 1255	South Wall Leather Pattern Vinyl On Wall Panelling (White/Brown Sheetrock*)	16-1255-01	None Detected for asbestos
Room 1255	**East Wall Drywall Joint Compound**	**16-1255-02**	**PC 1.2 % Chrysotile**
Room 1255	West Wall Upper North Portion Drywall Joint Compound	16-1255-03	None Detected for asbestos
Room 1256	**South Wall Drywall Joint Compound**	**16-1256-01**	**PC 1.3 % Chrysotile**
Room 1257	**Lower North Wall Drywall Joint Compound**	**16-1257-01**	**PC 1.3 % Chrysotile**
Room 1257	**Upper North Wall Drywall Joint Compound**	**16-1257-02**	**PC 1.1 % Chrysotile**
Room 1257	**Upper West Wall Drywall Joint Compound**	**16-1257-03**	**PC 1.2 % Chrysotile**
Room 1258	**Upper East Wall Drywall Joint Compound**	**16-1258-01**	**PC 1.2 % Chrysotile**
Room 1259	**East Wall Near Room 1255 Drywall Joint Compound**	**16-1259-01**	**PC 1.2 % Chrysotile**
Room 1259	**West Wall Near Room 1258 Drywall Joint Compound**	**16-1259-02**	**PC 1.3 % Chrysotile**
Room 1259	**West Wall Near Room 1254 Drywall Joint Compound**	**16-1259-03**	**PC 1.1 % Chrysotile**
Room 1260	**Upper North Wall East Extent Drywall Joint Compound**	**16-1259-01**	**PC 1.2 % Chrysotile**
Room 1260	**Upper North Wall West Extent Drywall Joint Compound**	**16-1259-02**	**PC 1.2 % Chrysotile**

As of February 1, 2012, the definition of asbestos-containing material (ACM) for manufactured articles or other material, other than vermiculite insulation, includes materials that contain at least 0.5% asbestos, as determined by methods referenced in WorkSafeBC OHS Regulation section 6.1. According to WorkSafeBC, the definition of an asbestos-containing material is 0.5% by weight.

Based on the representative sampling, corresponding IATL analytical results of determined Chrysotile asbestos content, WorkSafeBC criteria, and site review assessment of visually similar materials, the following area materials were determined to be asbestos-containing:

- All Drywall Joint Compound with PC 0.5% - 3.4% Chrysotile range in asbestos content;
- Red Coloured Duct Mastic PC 6.3% Chrysotile asbestos content;
- All 12" Square Green Floor Tile with Trace Chrysotile asbestos content. The associated Trace Level is associated with the one sample collected. Further sampling and analysis of similar floor tile is anticipated to return higher concentration results over that of the 0.5% by weight WorkSafeBC criteria;
- Black Mastic (under Green Floor Tile) with PC 3.4% Chrysotile asbestos content; and
- Small Diameter Thermal Pipe Hard Mud Elbow Insulation Painted Yellow with PC 5.1% Chrysotile asbestos content as found in Room 1246. Previous abatement works on former thermal pipe elbow insulations were apparent in the reviewed areas however, observations during the on-site review found some elbows apparently of original form in various states of condition. Those of various diameters and painted colours as observed in Room 1252 ranged from good to very poor condition. Further sampling and potential abatement upon determination of asbestos content is recommended.

Based on the representative sampling, corresponding iATL analytical results of 'None Detected' for asbestos content, WorkSafeBC criteria, and site review assessment of visually similar materials, asbestos is not anticipated to be present within the remaining sampled materials including:

- Skim Coat over Concrete Walls Surrounding Staircases ("None Detected");
- Prefabricated Vinyl Covered Wall Panelling of perimeter offices and the central open area work stations ("None Detected"); and
- Suspended Ceiling Tiles in common areas specific to the reviewed area ("None Detected").

7.2 LEAD BASED PAINTS

Limited paint sampling was undertaken in addition to the original scope as requested by Fisheries and Oceans representative at the time of the on-site orientation review.

The requested paint sample room areas are tabulated below along with the associated WSP collected bulk material surface coating samples and the corresponding IATL laboratory results of lead content.

Notes: *Italic text indicates paint is above 90 ppm (lead containing by Health Canada definition)*

Bold Text indicates lead concentrations detected above 0.06% criteria.

Table 2: Lead Based Paint Results

Area	Material of Interest	Sample ID	Content/Type
Room 1236	***Walls and Doors Tan Paint***	***16-1236-02***	***0.12 % Lead by Weight 1,200 ppm Lead***
Room 1236	***Structural Steel Layered Red Paint***	***16-1236-03***	***0.23 % Lead by Weight 2,300 ppm Lead***
Room 1236	***Ceiling Q-Decking Cream Paint***	***16-1236-03***	***0.11 % Lead by Weight 1,100 ppm Lead***

Lead based paints are not specifically defined in the WorkSafeBC regulations. BC Environmental Regulations[1] and WorkSafeBC Guidelines[2] require leachate testing prior disposal of lead waste.

Health Canada and the US Consumer Product Safety Improvement Act both consider a lead-containing surface coating as a paint that contains over 0.009% (90 mg/kg) dry weight of lead. This corresponds to the concentration of lead in paint that may present risk to pregnant women and children.

To comply with WorkSafeBC regulations, if lead materials are identified at a site (this includes lead in paint), the employer must, before any renovation/demolition, have a qualified professional conduct a risk assessment and develop an exposure control plan, that contains safe work procedures, to protect workers that may be exposed to lead. When evaluating risk, the concentration of lead in paint and the activity must be considered together. In general, if aggressive techniques (i.e. cutting torch, abrasive blasting, and power grinders/sanders) are not used and if the lead concentration in paint is below 600 mg/kg, renovation/demolition workers are unlikely to be exposed to lead concentrations in air exceeding the 0.05 mg/m^3 TWA limit[3].

- All three paint samples from Room 1236 were found to have a lead content above 600 mg/kg.

[1] Hazardous Waste Regulation
[2] Lead-Containing Coats and Paintings - Preventing Exposure in the Construction Industry
[3] California division of Occupational Safety and Health requires an exposure control plan for concentrations above 600 mg/kg.

7.3 LEAD PRODUCTS

Component solder on wire connections of electric components and on sweated joints between copper pipes and fittings in the building are anticipated to potentially be lead containing.

Potential interior lead-containing battery pack emergency light fixtures were not observed in the hallways of the Site area.

Lead flashing like materials were not apparent on the interior areas of the Site.

7.4 MOULD AND OTHER MICROBIAL CONTAMINANTS

Neither mould growth not suspect mould like odour were apparent within the interior areas of the Site.

Rodent droppings were apparent on the upper surface of some suspended ceiling tiles within the site area.

7.5 POLYCHLORINATED BIPHENYLS (PCB)

PCB ballasts are not present within the Site area. All the old ballasts have been replaced with modern light fixtures.

7.6 MERCURY AND HEAVY METALS

The Site is illuminated using fluorescent light tubes which contain mercury vapour.

Mercury vapour in the range of approximately 10 to 50 mg is commonly present in fluorescent light tubes ranging in length from 0.61 to 2.44 m (2 to 8 ft.)[4].

Interior hallway elongated light fixtures potentially contain metal halide bulbs with heavy metal contents.

Thermostat controls for the Site area were not accessible for review of potential mercury content.

7.7 OZONE DEPLETING SUBSTANCES (ODS)

The Site area associated heating, ventilation, and air conditioning (HVAC) units are located to the exterior of the Site area.

Domestic style refrigerators may be present within some rooms within the Site area. Domestic style refrigerators commonly contain potential ODS refrigerants.

7.8 RADIOACTIVE MATERIALS (RAM)

Radioactive materials are potentially present within the Site area hard wired smoke detectors as observed to be mounted on Q-deck metal ceilings. Review of other types of monitoring detectors was beyond the scope of this investigation.

[4] http://www.newmoa.org/prevention/mercury/imerc/factsheets/lighting.cfm

7.9 CRYSTALLINE SUBSTANCES

It is anticipated that Crystalline Silica is present within the concrete perimeter foundation works, concrete stairwell encasements, concrete floor slabs, concrete masonry units (CMUs) and associated mortar, skim coat (white plaster), concrete (grey plaster), drywall joint compound, and drywall gypsum (trace).

7.10 FLAMMABLE, EXPLOSIVE, OR POTENTIALLY TOXIC/HAZARDOUS MATERIALS

Chemical storage of potential flammable, explosive, toxic/hazardous materials is typically limited to within designated storage cabinets located Site Area workshops and laboratories.

8 RECOMMENDATIONS

- A risk assessment for asbestos-containing materials must be performed prior to renovation or demolition work beginning to determine the exposure risk to workers and other persons as per OHS Guideline G20.112;
- All asbestos-containing materials must be removed using safe work practices and procedures prior to demolition activities. The WorkSafeBC publication "Safe Work Practices for Handling Asbestos" and the Occupational Health and Safety (OHS) Guideline G6.8 describes acceptable practices;
- If a paint coating is encountered during demolition activities that has not been discussed or analyzed it should be considered lead containing until sampling can demonstrate otherwise.
- A risk assessment for paints containing lead at concentrations above 90 mg/kg must be performed prior to renovation or demolition work beginning to determine the exposure risk to workers and other persons as per OHS Regulations 6.58.1 through 6.69
- Safe work procedures must be followed when cutting or grinding the concrete perimeter foundation works, concrete stairwell encasements, concrete floor slabs, concrete masonry units (CMUs) and associated mortar, skim coat (white plaster), concrete (grey plaster), drywall joint compound, and drywall gypsum (trace) that are assumed to contain crystalline silica.
- Fluorescent light tubes, compact fluorescents, and metal halide bulbs containing mercury and/or heavy metals should be recycled when removed from service. The Light Recycle website provides a list of recycling facilities on their website, at http://www.lightrecycle.ca/.
- Prior to demolition, all electrical equipment and light ballasts should be checked for PCB content prior to disposal. The identified PCB containing ballasts and any potential PCB containing transformers if so encountered should be handled transferred, and disposed of appropriately as hazardous waste.
- Safe work procedures should be followed when working in proximity to or removing mould-contaminated materials and animal waste (rodent droppings).
- HVAC, refrigerators, or other equipment with ODS charged contents if so encountered should be degassed by a certified refrigerant technician as required by British Columbia's Ozone Depleting Substances Regulation, prior to disposal.
- Smoke detectors or other equipment with RAMs if so encountered should be recycled when removed from service. AlarmRecycle is a recycling program for used or expired smoke and carbon

monoxide (CO) alarms. Since October 1, 2011, BC residents have been able to drop off their smoke and CO alarms for recycling at AlarmRecycle drop-off locations across BC.

- WSP should be notified if any suspect asbestos-containing material or hazardous materials not identified in this report are exposed or encountered during renovation/demolition of the Site area. Suspect materials should be considered hazardous pending further review.
- Retain a copy of this report and provide it to any contractors who may be undertaking renovation/demolition work in the Site area as required by Section 20.112 of the WorkSafeBC regulations.
- Following completion of hazardous materials removal, Provincial Regulations require that an inspection must be conducted by a Qualified Person to confirm that the hazardous materials have all been removed and an inspection report confirming the removal must be posted on site prior to renovation.

9 CLOSURE

No hazardous materials survey can wholly eliminate uncertainty regarding the potential for recognized hazardous materials conditions at the site. Performance of a standardized hazardous material survey protocol is intended to reduce, but not eliminate uncertainty regarding the potential for recognized hazardous materials at the site, given reasonable limits of time and cost.

This report has been prepared by WSP exclusively for Fisheries and Oceans Canada and is intended to provide a survey of the potential hazardous materials associated with and/or utilized in the construction of the ground floor level Physics Building, Plan Lines 20 through 31 located at 9860 West Saanich Road, Sidney, British Columbia.

The conclusions made in this report reflect WSP's best judgment in light of the information available at the time of preparation. No other warranty, expressed or implied, is made. Any use which a third party makes of this report, or any reliance on or decisions to be made or actions based on it, are the responsibility of such third parties. WSP accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this report. The standard limitations of this report are specified in Appendix IV.

Yours sincerely,

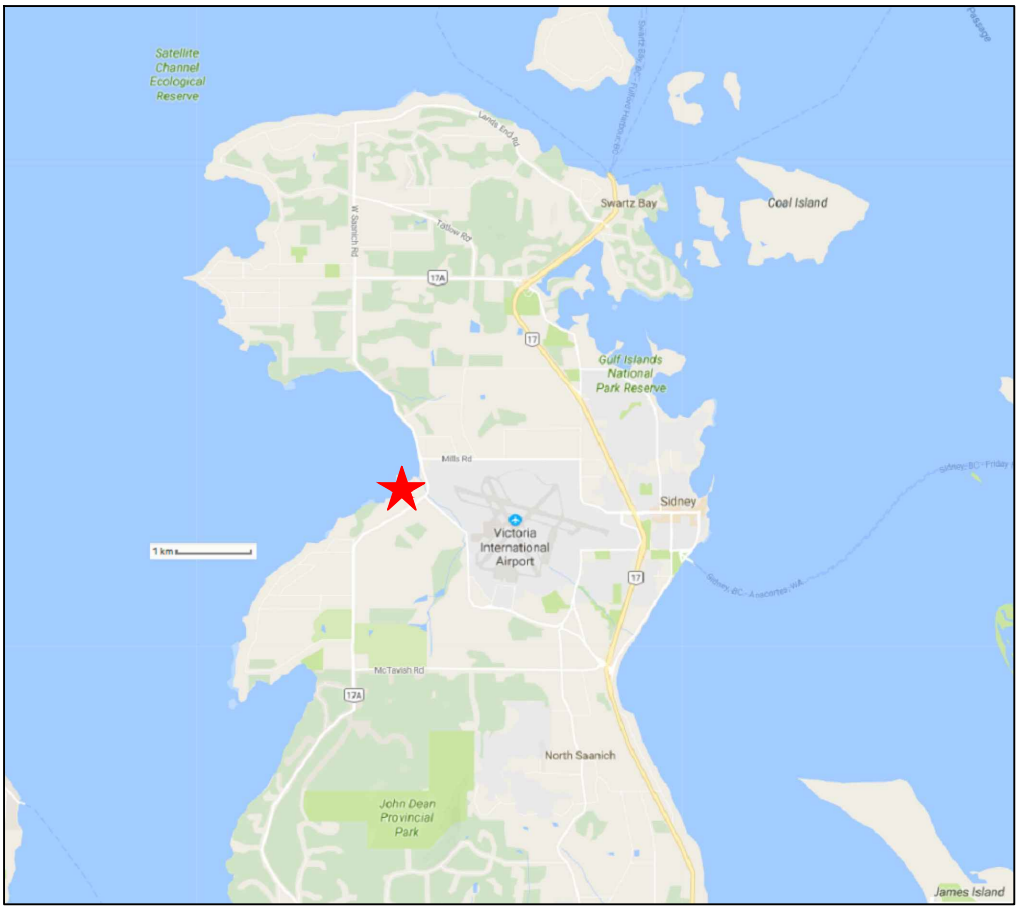
WSP CANADA INC.

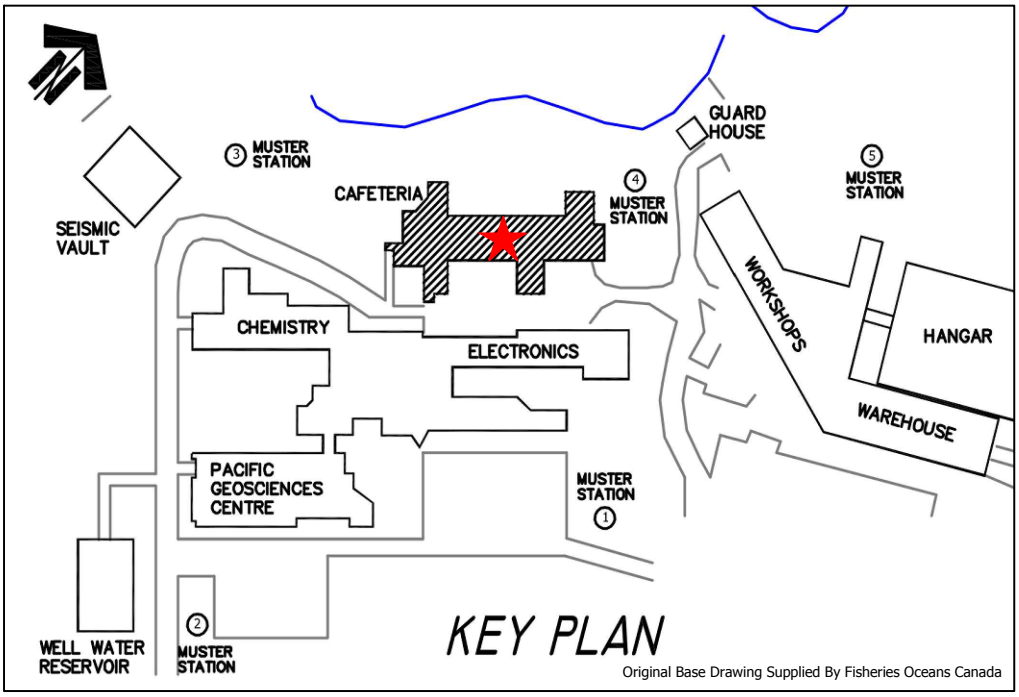
Gordon Philippe, B. Tech.
Environmental Technologist

Anthony Dickinson, M.A.Sc., P.Eng.
Senior Environmental Engineer

Appendix I	Site Plan and Sampling Location Plans.
Appendix II	Chain-of-Custodies and Laboratory Reports
Appendix III	Regulatory Framework
Appendix IV	Standard Limitations

APPENDIX I
SITE PLAN AND
SAMPLING LOCATION PLANS





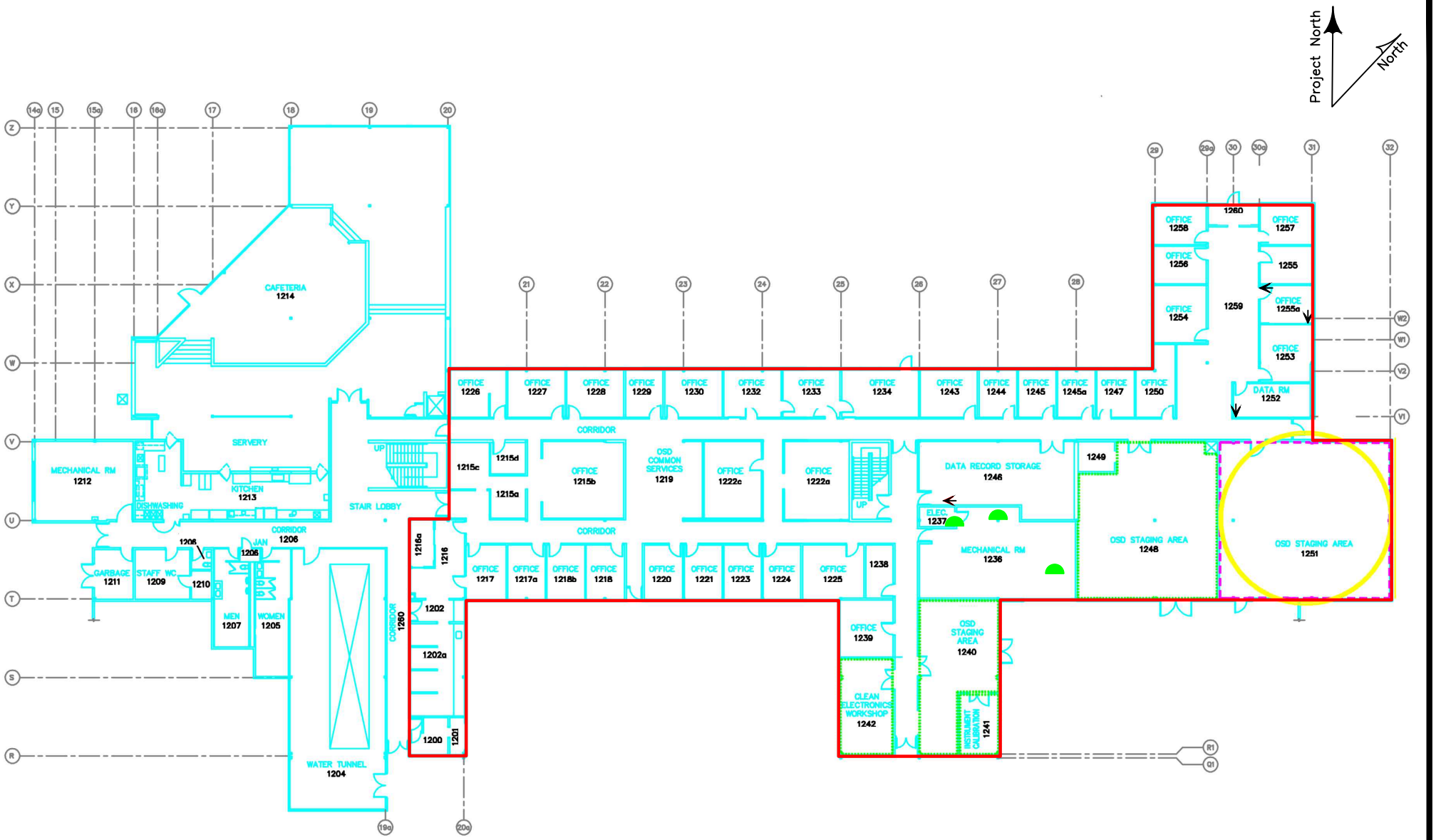
LEGEND

★ – SUBJECT SITE

WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE:	Site Location Map
PROJECT:	Pre Renovation Wall Surfacing Compound Survey Ocean Sciences Physics Building, Plan Lines 20 through 31 9860 West Saanich Road, Sidney, BC
CLIENT:	Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO.	161-17554-00
DWG. NO.	FIGURE 1



Original Base Drawing Supplied By Fisheries Oceans Canada

LEGEND

SUBJECT BUILDING AREA

WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Site Plan

PROJECT: Pre Renovation Wall Surfacing Compound Survey
Ocean Sciences Physics Building, Plan Lines 20 through 31
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO. 161-17554-00	
DWG. NO. FIGURE 2	

LEGEND

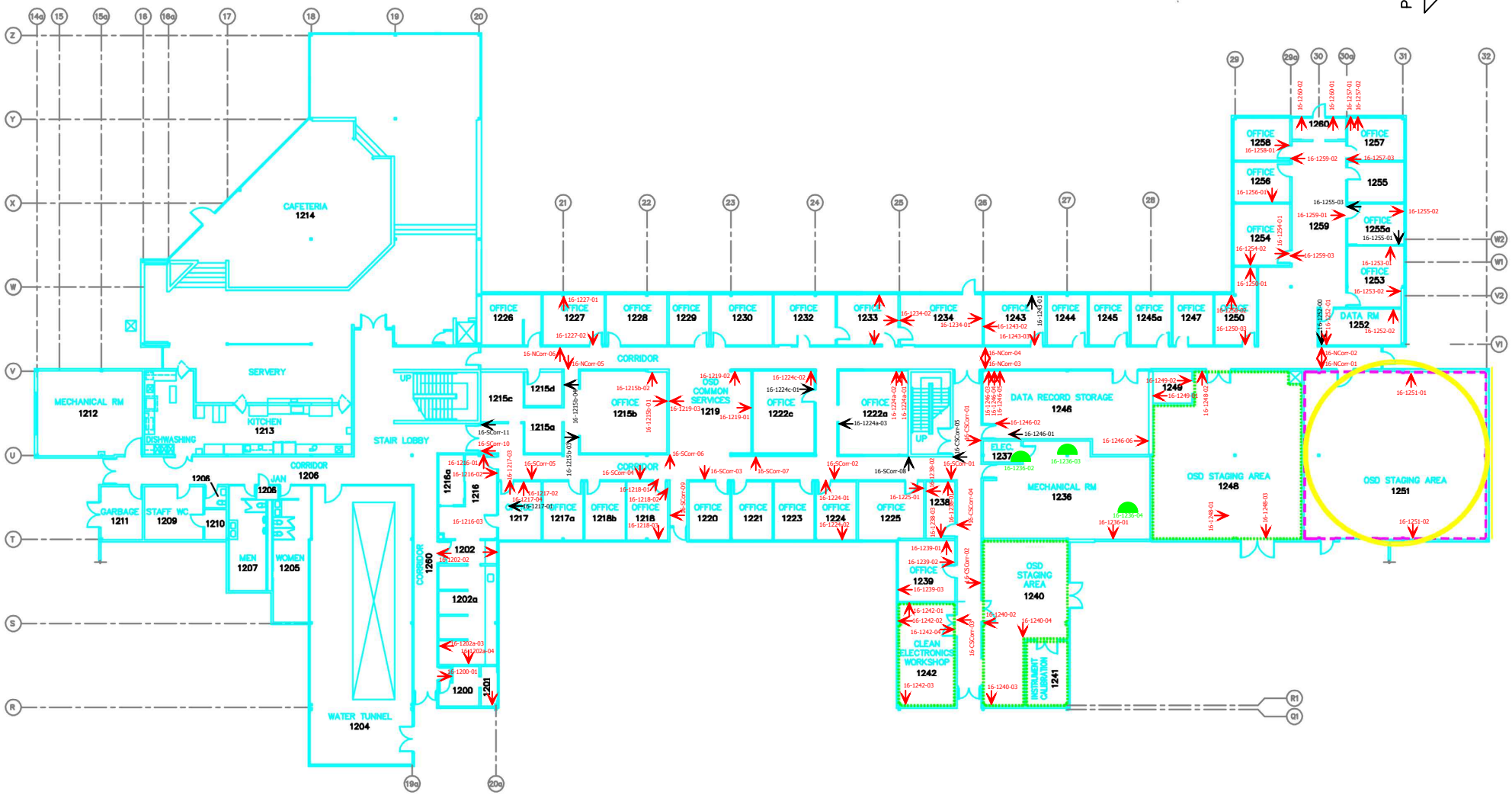
– ASBESTOS SAMPLE determined "NONE DETECTED"

– ASBESTOS SAMPLE determined to be ASBESTOS CONTAINING "CHRYSOTILE"

– LEAD SAMPLE lead (Pb) content OVER the WorkSafe BC criteria of 600 mg/kg

Project North

North



Original Base Drawing Supplied By Fisheries Oceans Canada

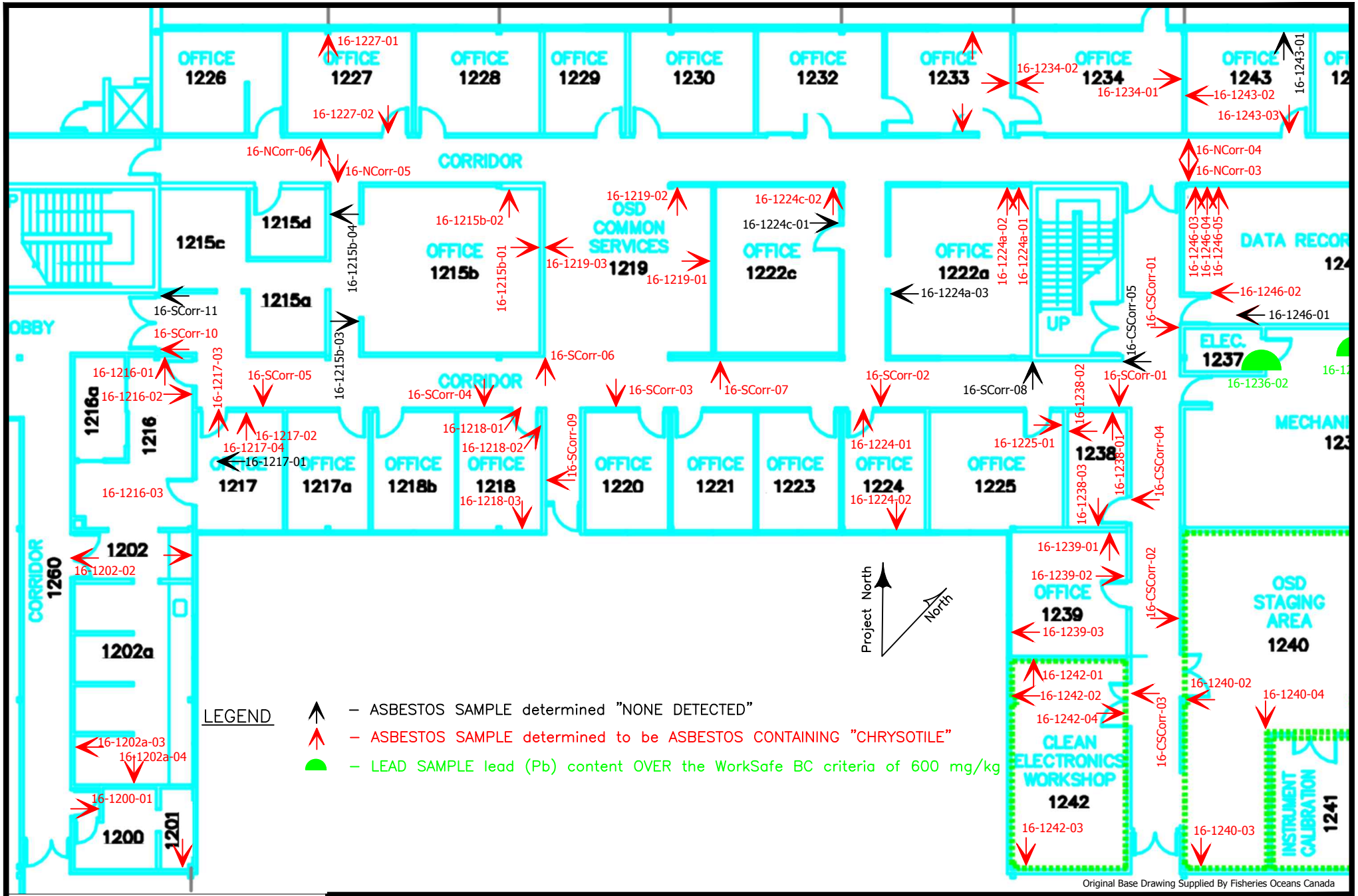
WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Sample Locations

PROJECT: Pre Renovation Wall Surfacing Compound Survey
Ocean Sciences Physics Building, Plan Lines 20 through 31
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO. 161-17554-00	
DWG. NO. FIGURE 3ABC	



Original Base Drawing Supplied By Fisheries Oceans Canada

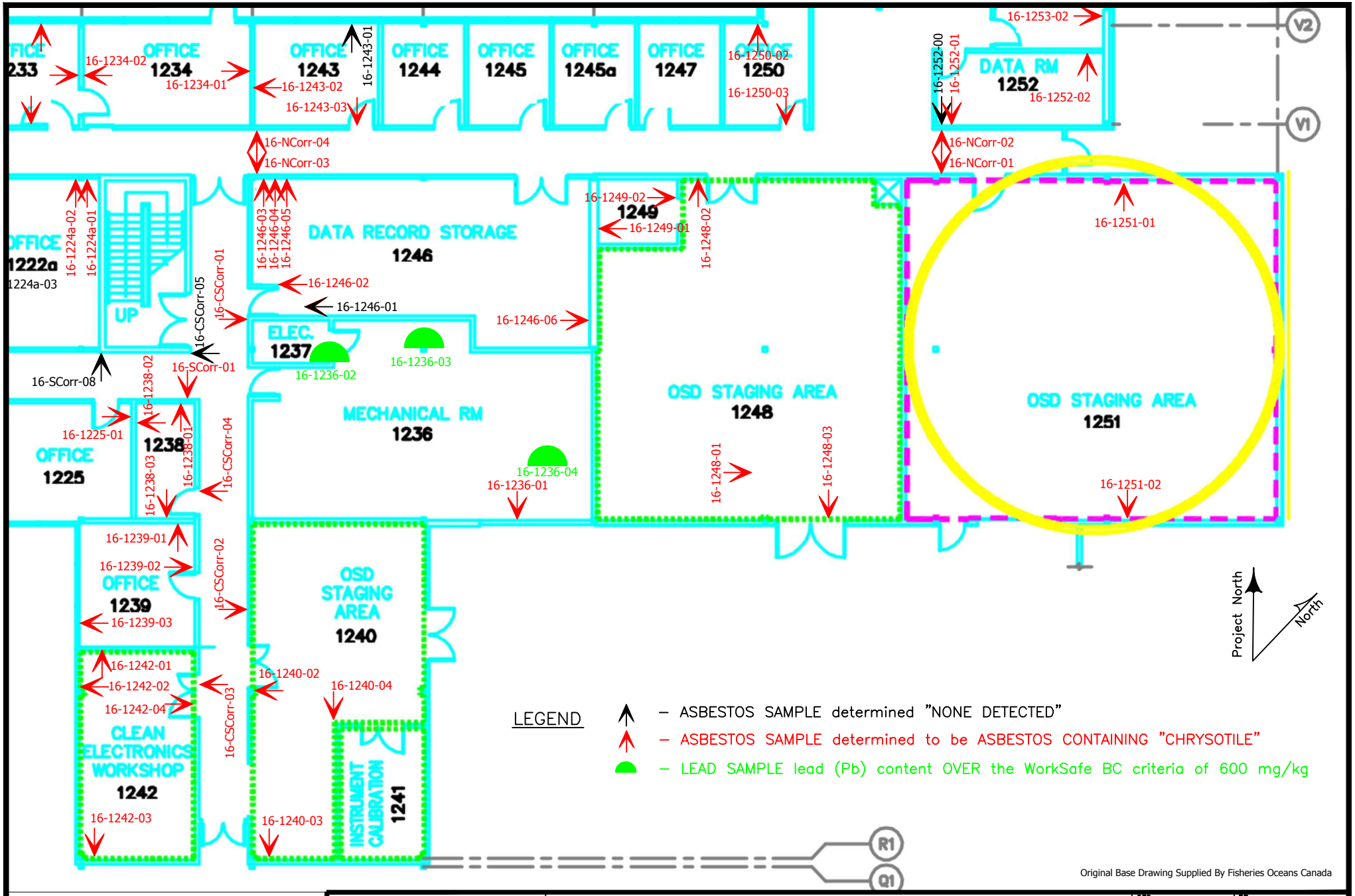
WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Sample Locations

PROJECT: Pre Renovation Wall Surfacing Compound Survey
Ocean Sciences Physics Building, Plan Lines 20 through 31
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO.	161-17554-00
DWG. NO.	FIGURE 3A



Original Base Drawing Supplied By Fisheries Oceans Canada

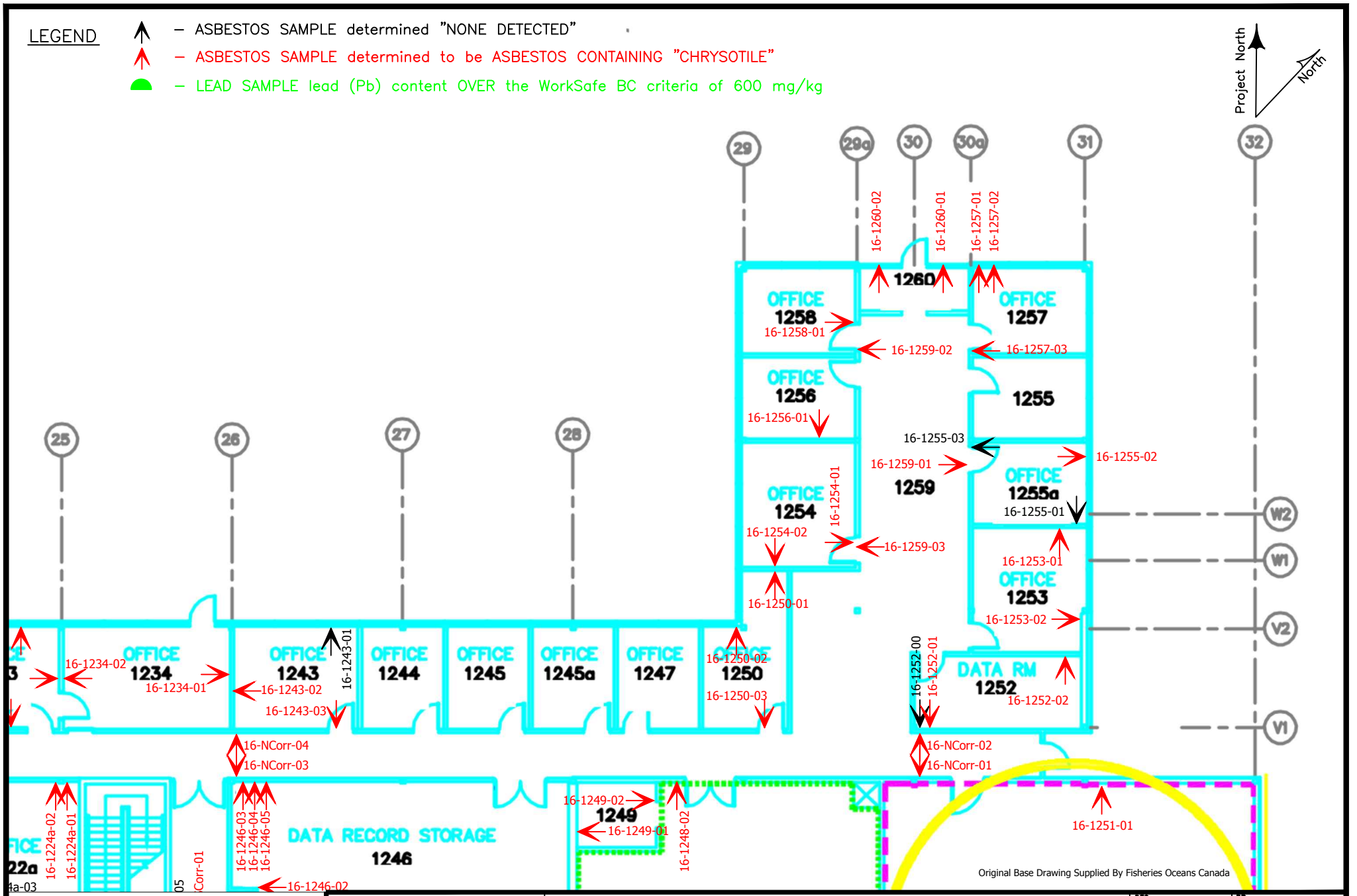
WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Sample Locations

PROJECT: Pre Renovation Wall Surfacing Compound Survey
Ocean Sciences Physics Building, Plan Lines 20 through 31
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO. 161-17554-00	
DWG. NO. FIGURE 3B	



WSP Canada Inc.
Victoria, BC V8Z 6R4
T: 250.475.1000 F: 250.475.2211
E: victoria@levelton.com
www.wspgroup.com

TITLE: Sample Locations

PROJECT: Pre Renovation Wall Surfacing Compound Survey
Ocean Sciences Physics Building, Plan Lines 20 through 31
9860 West Saanich Road, Sidney, BC

CLIENT: Fisheries and Oceans Canada

DES.	DR. GP
CH.	SCALE NTS
APP.	DATE JAN 2017
FILE NO. 161-17554-00	
DWG. NO. FIGURE 3C	

APPENDIX II
CHAIN-OF-CUSTODIES AND LABORATORY REPORTS

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Chain of Custody

–Bulk Asbestos –

Contact Information

Client Company:	WSP Canada Inc. (Levelton)	**Project Number:**	161-17554-00
Office Address:	760 Enterprise Crescent	**Project Name:**	DFO Physics Bld, Sidney, BC
City, State, Zip:	Victoria, BC, Canada V8Z 6R4	**Primary Contact:**	Gordon Philippe
Fax Number:	250-475-2211	**Office Phone:**	250-475-1000
Email Address:	Gordon.Philippe@WSPgroup.com	**Cell Phone:**	250-360-6537

PLM Instructions:

- ☒ PLM: Bulk Asbestos Building Materials EPA 600 R-93/116, 1993
- ☐ PLM: Bulk Asbestos Building Materials EPA 600 M-4/82-020, 1982
- ☐ PLM: Bulk Asbestos Building Materials NIOSH 9002, 1985
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.1, 2002
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.6, 2010
- ☐ TEM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.4, 2009

EMAILED
DEC 21 2016

- ☐ PLM: Point Counting
  - ☐ PC: via ELAP 198.1
  - ☐ PC: 400 Points
  - ☐ PC: 800 Points *
  - ☐ PC: 1600 Points *
- ☐ PLM: Instructions for Multi-Layered Samples
  - ☐ Analyze and Report All Separable Layers per EPA 600
  - ☐ Report Composite for Drywall Systems per NESHAP
  - ☐ Report All Layers and Composite Where Applicable
  - ☐ Only Analyze and Report Specifically Noted Layer
- ☐ PLM: Analyze Until Positive (Positive Stop)
  - ☐ AUP: by Homogenous Area as Noted
  - ☐ AUP: by Material Type as Noted
- ☐ PLM: NOB via 198.6
  - ☐ PLM: Friable via EPA 600 2.3
  - ☐ If <1% by PLM, to TEM via 198.4 *
  - ☐ If <1% by PLM, Hold for Instructions
- ☐ PLM: Non-Building Material*,** (Dust, Wipe, Tape)
  - ☐ Soil or Vermiculite Analysis*
  - ☐ CARB 435

Special Instructions: _____

** Additional charge and turnaround may be required* *** Alternative Method (ex: EPA 600/R-04/004) may be recommended by Laboratory*

Turnaround Time

Preliminary Results Requested Date: _____ (Specific date / time) ☐ Verbal ☒ Email ☐ Fax

☐ 10 Day ☒ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

RECEIVED
DEC 14 2016
iATL - By

Relinquished (Name/Organization):	Gordon/WSP Levelton	Date:	10 Dec 2016	Time:	Noon
Received (Name / iATL):		Date:		Time:	
Sample Login (Name / iATL):	12/12/16	Date:		Time:	
Analysis(Name(s) / iATL):	RM/Rhone VBS	Date:	12/20/16	Time:	
QA/QC Review (Name / iATL):		Date:		Time:	
Archived / Released:	QA/QC InterLAB Use:	Date:		Time:	

Rush later

X3 see attchd

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Chain of Custody

–Bulk Asbestos –

Contact Information

Client Company:	WSP Canada Inc. (Levelton)	**Project Number:**	161-17554-00
Office Address:	760 Enterprise Crescent	**Project Name:**	DFO Physics Bld, Sidney, BC
City, State, Zip:	Victoria, BC, Canada V8Z 6R4	**Primary Contact:**	Gordon Philippe
Fax Number:	250-475-2211	**Office Phone:**	250-475-1000
Email Address:	Gordon.Philippe@WSPgroup.com	**Cell Phone:**	250-360-6537

PLM Instructions:

- ☒ PLM: Bulk Asbestos Building Materials EPA 600 R-93/116, 1993
- ☐ PLM: Bulk Asbestos Building Materials EPA 600 M-4/82-020, 1982
- ☐ PLM: Bulk Asbestos Building Materials NIOSH 9002, 1985
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.1, 2002
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.6, 2010
- ☐ TEM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.4, 2009

- ☐ PLM: Point Counting
  - ☐ PC: via ELAP 198.1
  - ☐ PC: 400 Points
  - ☐ PC: 800 Points *
  - ☐ PC: 1600 Points *
- ☐ PLM: Instructions for Multi-Layered Samples
  - ☐ Analyze and Report All Separable Layers per EPA 600
  - ☐ Report Composite for Drywall Systems per NESHAP
  - ☐ Report All Layers and Composite Where Applicable
  - ☐ Only Analyze and Report Specifically Noted Layer
- ☐ PLM: Analyze Until Positive (Positive Stop)
  - ☐ AUP: by Homogenous Area as Noted
  - ☐ AUP: by Material Type as Noted
- ☐ PLM: NOB via 198.6
  - ☐ PLM: Friable via EPA 600 2.3
  - ☐ If <1% by PLM, to TEM via 198.4 *
  - ☐ If <1% by PLM, Hold for Instructions
- ☐ PLM: Non-Building Material*,** (Dust, Wipe, Tape)
  - ☐ Soil or Vermiculite Analysis*
  - ☐ CARB 435

Special Instructions: _____

** Additional charge and turnaround may be required* *** Alternative Method (ex: EPA 600/R-04/004) may be recommended by Laboratory*

Turnaround Time

Preliminary Results Requested Date: _____ (Specific date / time)

☐ Verbal ☒ Email ☐ Fax

☐ 10 Day ☒ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

Relinquished (Name/Organization):	Gordon/WSP Levelton	Date:	10 Dec 2016	Time:	Noon
Received (Name / iATL):		Date:		Time:	
Sample Login (Name / iATL):	121916	Date:		Time:	DEC 14 2016
Analysis(Name(s) / iATL):	12-20-16	Date:		Time:	
QA/QC Review (Name / iATL):		Date:		Time:	
Archived / Released: _____	QA/QC InterLAB Use: _____	Date:		Time:	

RECEIVED
iATL - Burlington

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Chain of Custody

–Bulk Asbestos –

Contact Information

Client Company:	WSP Canada Inc. (Levelton)	**Project Number:**	161-17554-00
Office Address:	760 Enterprise Crescent	**Project Name:**	DFO Physics Bld, Sidney, BC
City, State, Zip:	Victoria, BC, Canada V8Z 6R4	**Primary Contact:**	Gordon Philippe
Fax Number:	250-475-2211	**Office Phone:**	250-475-1000
Email Address:	Gordon.Philippe@WSPgroup.com	**Cell Phone:**	250-360-6537

PLM Instructions:

- ☒ PLM: Bulk Asbestos Building Materials EPA 600 R-93/116, 1993
- ☐ PLM: Bulk Asbestos Building Materials EPA 600 M-4/82-020, 1982
- ☐ PLM: Bulk Asbestos Building Materials NIOSH 9002, 1985
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.1, 2002
- ☐ PLM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.6, 2010
- ☐ TEM: Bulk Asbestos Building Materials NYSDOH-ELAP 198.4, 2009

- ☐ PLM: Point Counting
  - ☐ PC: via ELAP 198.1
  - ☐ PC: 400 Points
  - ☐ PC: 800 Points *
  - ☐ PC: 1600 Points *
- ☐ PLM: Instructions for Multi-Layered Samples
  - ☐ Analyze and Report All Separable Layers per EPA 600
  - ☐ Report Composite for Drywall Systems per NESHAP
  - ☐ Report All Layers and Composite Where Applicable
  - ☐ Only Analyze and Report Specifically Noted Layer
- ☐ PLM: Analyze Until Positive (Positive Stop)
  - ☐ AUP: by Homogenous Area as Noted
  - ☐ AUP: by Material Type as Noted
- ☐ PLM: NOB via 198.6
  - ☐ PLM: Friable via EPA 600 2.3
  - ☐ If <1% by PLM, to TEM via 198.4 *
  - ☐ If <1% by PLM, Hold for Instructions
- ☐ PLM: Non-Building Material*,** (Dust, Wipe, Tape)
  - ☐ Soil or Vermiculite Analysis*
  - ☐ CARB 435

Special Instructions: _____

** Additional charge and turnaround may be required* *** Alternative Method (ex: EPA 600/R-04/004) may be recommended by Laboratory*

Turnaround Time

Preliminary Results Requested Date: _____ (Specific date / time) ☐ Verbal ☒ Email ☐ Fax

☐ 10 Day ☒ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

Relinquished (Name/Organization):	Gordon/WSP Levelton	Date: 10 Dec 2016	Time: Noon
Received (Name / iATL):		Date:	Time:
Sample Login (Name / iATL):		Date:	Time: DEC 14 2016
Analysis(Name(s) / iATL):	VBS	Date: 12/20/16	Time:
QA/QC Review (Name / iATL):		Date: 12/20/16	Time:
Archived / Released: _____	QA/QC InterLAB Use: _____	Date:	Time:

RECEIVED
iATL - BV

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	**iATL #**	**Location/Description**	**Notes**
16-SCorr-01	6107474	DWJC	
16-SCorr-02	6107475	DWJC	
16-SCorr-03	6107476	DWJC	
16-SCorr-04	6107477	DWJC	
16-SCorr-05	6107478	DWJC	
16-SCorr-06	6107479	DWJC	
16-SCorr-07	6107480	DWJC	
16-SCorr-08	6107481	Skim Coat on Concrete	
16-SCorr-09	6107482	DWJC	
16-SCorr-10	6107483	DWJC	
16-SCorr-11	6107484	Skim Coat on Concrete	
16-NCorr-01	6107485	DWJC	
16-NCorr-02	6107486	DWJC	
16-NCorr-03	6107487	DWJC	
16-NCorr-04	6107488	DWJC	
16-NCorr-05	6107489	DWJC	

DWJC = Drywall Joint Compound.

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	iATL #	Location/Description	Notes
16-NCorr-06	6107490	DWJC	
16-CSCorr-01	6107491	DWJC	
16-CSCorr-02	6107492	DWJC	
16-CSCorr-03	6107493	DWJC	
16-CSCorr-04	6107494	DWJC	
16-CSCorr-05	6107495	Skim Coat on Concrete	
16-1200-01	6107496	DWJC	
16-1200-02	6107497	DWJC	
16-1202-01	6107498	DWJC	
16-1202-02	6107499	DWJC	
16-1202a-03	6107500	DWJC	
16-1202a-04	6107501	DWJC	
16-1215b-01	6107502	DWJC	
16-1215b-02	6107503	DWJC	
16-1215b-03	6107504	Vinyl Wall Paneling	
16-1215b-04	6107505	Vinyl Wall Paneling	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	**iATL #**	**Location/Description**	**Notes**
16-1215d-01	6107506	DWJC	
16-1216-01	6107507	DWJC	
16-1216-02	6107508	DWJC	
16-1217-01	6107509	Suspended Ceiling Tile	
16-1217-02	6107510	Red Duct Mastic	
16-1217-03	6107511	DWJC	
16-1217-04	6107512	DWJC	
16-1218-01	6107513	DWJC	
16-1218-02	6107514	DWJC	
16-1218-03	6107515	DWJC	
16-1219-01	6107516	DWJC	
16-1219-02	6107517	DWJC	
16-1219-03	6107518	DWJC	
16-1222a-01	6107519	DWJC	
16-1222a-02	6107520	DWJC	
16-1222a-03	6107521	Vinyl Wall Paneling	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	iATL #	Location/Description	Notes
16-1222c-01	6107522	Vinyl Wall Paneling	
16-1222c-02	6107523	DWJC	
16-1224-01	6107524	DWJC	
16-1224-02	6107525	DWJC	
16-1225-01	6107526	DWJC	
16-1227-01	6107527	DWJC	
16-1227-02	6107528	DWJC	
16-1233-01	6107529	DWJC	
16-1233-02	6107530	DWJC	
16-1233-03	6107531	DWJC	
16-1234-01	6107532	DWJC	
16-1234-02	6107533	DWJC	
16-1236-01	6107534	DWJC	
16-1238-01	6107535	DWJC	
16-1238-02	6107536	DWJC	
16-1238-03	6107537	DWJC	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	iATL #	Location/Description	Notes
16-1239-01	6107538	Vinyl Wall Paneling	
16-1239-02	6107539	DWJC	
16-1239-03	6107540	DWJC	
16-1240-02	6107541	DWJC	
16-1240-03	6107542	DWJC	
16-1240-04	6107543	DWJC	
16-1242-01	6107544	DWJC	
16-1242-02	6107545	DWJC	
16-1242-03	6107546	DWJC	
16-1242-04	6107547	DWJC	
16-1243-01	6107548	DWJC	
16-1243-02	6107549	DWJC	
16-1243-03	6107550	DWJC	
16-1246-01	6107551	Suspended Ceiling Tile	
16-1246-02	6107552	DWJC	
16-1246-03	6107553	DWJC	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	iATL #	Location/Description	Notes
16-1239-01	6107538	Vinyl Wall Paneling	
16-1239-02	6107539	DWJC	
16-1239-03	6107540	DWJC	
16-1240-02	6107541	DWJC	
16-1240-03	6107542	DWJC	
16-1240-04	6107543	DWJC	
16-1242-01	6107544	DWJC	
16-1242-02	6107545	DWJC	
16-1242-03	6107546	DWJC	
16-1242-04	6107547	DWJC	
16-1243-01	6107548	DWJC	
16-1243-02	6107549	DWJC	
16-1243-03	6107550	DWJC	
16-1246-01	6107551	Suspended Ceiling Tile	
16-1246-02	6107552	DWJC	
16-1246-03	6107553	DWJC	

Start

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	**iATL #**	**Location/Description**	**Notes**
16-1246-04	6107554	DWJC	
16-1246-05	6107555	Yellow Small Dia/TPI Hard Mud Elbow	
16-1246-06	6107556	DWJC	
16-1248-01	6107557	12" Green Floor Tile & Black Mastic	
16-1248-02	6107558	DWJC	
16-1248-03	6107559	DWJC	
16-1249-01	6107560	DWJC	
16-1249-02	6107561	DWJC	
16-1250-01	6107562	DWJC	
16-1250-02	6107563	DWJC	
16-1250-03	6107564	DWJC	
16-1251-01	6107565	DWJC	
16-1251-02	6107566	DWJC	
16-1252-00	6107567	Caqui Medium Dia/TPI Hard Mud Elbow	
16-1252-01	6107568	DWJC	
16-1252-02	6107569	DWJC	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton)
Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	iATL #	Location/Description	Notes
16-1253-01	6107570	Canvas Texture Wall Paneling	
* 16-1252-02	6107571	DWJC	
16-1254-01	6107572	DWJC	
16-1254-02	6107573	DWJC	
16-1255-01	6107574	Leather Texture Wall Paneling	
16-1255-02	6107575	DWJC	
16-1255-03	6107576	DWJC	
16-1256-01	6107577	DWJC	
16-1257-01	6107578	DWJC	
16-1257-02	6107579	DWJC	
16-1257-03	6107580	DWJC	
16-1258-01	6107581	DWJC	
16-1259-01	6107582	DWJC	
16-1259-02	6107583	DWJC	
16-1259-03	6107584	DWJC	
16-1260-01	6107585	DWJC	

* Bag labeled 16-1253-02 W/121916

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Bulk Asbestos –

Client: WSP Canada Inc. (Levelton) Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Bulk Asbestos Sample Log			
Client Sample #	**iATL #**	**Location/Description**	**Notes**
16-1260-02	6107586	DWJC	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107474 **Client No.:** 16-SCorr-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107475 **Client No.:** 16-SCorr-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3
Lab No.: 6107476 **Client No.:** 16-SCorr-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 6107477 **Client No.:** 16-SCorr-04	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.6
Lab No.: 6107478 **Client No.:** 16-SCorr-05	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.1
Lab No.: 6107479 **Client No.:** 16-SCorr-06	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.8

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107480 **Client No.:** 16-SCorr-07	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 6107481 **Client No.:** 16-SCorr-08	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107481(L2) **Client No.:** 16-SCorr-08	**Description:** Grey Plaster **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107482 **Client No.:** 16-SCorr-09	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107483 **Client No.:** 16-SCorr-10	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107484 **Client No.:** 16-SCorr-11	**Description:** White Plaster **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107484(L2)
Client No.: 16-SCorr-11
Description: Grey Plaster
Facility:
Location:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6107485
Client No.: 16-NCorr-01
Description: White Joint Compound
Facility:
Location:

Percent Asbestos:
PC 2.2 *Chrysotile*

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
97.8

Lab No.: 6107486
Client No.: 16-NCorr-02
Description: White Joint Compound
Facility:
Location:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6107487
Client No.: 16-NCorr-03
Description: White Joint Compound
Facility:
Location:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6107488
Client No.: 16-NCorr-04
Description: White Joint Compound
Facility:
Location:

Percent Asbestos:
PC 1.5 *Chrysotile*

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
98.5

Lab No.: 6107489
Client No.: 16-NCorr-05
Description: White Joint Compound
Facility:
Location:

Percent Asbestos:
PC 1.2 *Chrysotile*

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
98.5

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107490 **Client No.:** 16-NCorr-06	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.6
Lab No.: 6107491 **Client No.:** 16-CSCorr-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107492 **Client No.:** 16-CSCorr-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107493 **Client No.:** 16-CSCorr-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.6
Lab No.: 6107494 **Client No.:** 16-CSCorr-04	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107495 **Client No.:** 16-CSCorr-05	**Description:** White Plaster **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107496 **Client No.:** 16-1200-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 1 Fibrous Glass	Percent Non-Fibrous Material: 99
Lab No.: 6107497 **Client No.:** 16-1200-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107498 **Client No.:** 16-1202-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107499 **Client No.:** 16-1202-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 6107500 **Client No.:** 16-1202a-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.4
Lab No.: 6107501 **Client No.:** 16-1202a-04	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107502 **Client No.:** 16-1215b-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 6107503 **Client No.:** 16-1215b-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107504 **Client No.:** 16-1215b-03	**Description:** Grey/Tan Sheetrock **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 35 Cellulose	Percent Non-Fibrous Material: 65
Lab No.: 6107505 **Client No.:** 16-1215b-04	**Description:** Grey/Tan Sheetrock **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 40 Cellulose	Percent Non-Fibrous Material: 60
Lab No.: 6107506 **Client No.:** 16-1216-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107507 **Client No.:** 16-1216-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.6

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107508 **Client No.:** 16-1216-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.8
Lab No.: 6107509 **Client No.:** 16-1217-01	**Description:** Grey/White Ceiling Tile **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 45 Fibrous Glass 40 Cellulose	Percent Non-Fibrous Material: 15
Lab No.: 6107510 **Client No.:** 16-1217-02	**Description:** Red Mastic **Facility:**	**Location:**
Percent Asbestos: ***PC 6.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: 25 Cellulose	Percent Non-Fibrous Material: 68.7
Lab No.: 6107511 **Client No.:** 16-1217-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3
Lab No.: 6107512 **Client No.:** 16-1217-04	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.6
Lab No.: 6107513 **Client No.:** 16-1218-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.4

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107514 **Client No.:** 16-1218-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.5
Lab No.: 6107515 **Client No.:** 16-1218-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.0*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98
Lab No.: 6107516 **Client No.:** 16-1219-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.7
Lab No.: 6107517 **Client No.:** 16-1219-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 6107518 **Client No.:** 16-1219-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 6107519 **Client No.:** 16-1222a-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.9

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107520
Client No.: 16-1222a-02

Description: White Joint Compound
Facility:

Location:

Percent Asbestos:
PC 2.3 *Chrysotile*

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
97.7

Lab No.: 6107521
Client No.: 16-1222a-03

Description: Grey/Tan Sheetrock
Facility:

Location:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
40 Cellulose

Percent Non-Fibrous Material:
60

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Becky Hargrove
Analyst: Rebecca Hargrove

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107522 **Client No.:** 16-1222c-01	**Description:** Off-White Non-Fibrous **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107523 **Client No.:** 16-1222c-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.2
Lab No.: 6107524 **Client No.:** 16-1224-01	**Description:** Off-White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.8
Lab No.: 6107525 **Client No.:** 16-1224-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.4
Lab No.: 6107526 **Client No.:** 16-1225-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.0*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97
Lab No.: 6107527 **Client No.:** 16-1227-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.6

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Vane Smith III
Analyst: Vane Smith

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107528 **Client No.:** 16-1227-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.3
Lab No.: 6107529 **Client No.:** 16-1233-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.5
Lab No.: 6107530 **Client No.:** 16-1233-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.9
Lab No.: 6107531 **Client No.:** 16-1233-03	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.2
Lab No.: 6107532 **Client No.:** 16-1234-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.1
Lab No.: 6107533 **Client No.:** 16-1234-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.1

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Vane Smith III
Analyst: Vane Smith

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107534 **Client No.:** 16-1236-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.7
Lab No.: 6107535 **Client No.:** 16-1238-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.0*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98
Lab No.: 6107536 **Client No.:** 16-1238-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.8
Lab No.: 6107537 **Client No.:** 16-1238-03	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 6107538 **Client No.:** 16-1239-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.4*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.6
Lab No.: 6107539 **Client No.:** 16-1239-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.7

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Vane Smith III
Analyst: Vane Smith

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107540 **Client No.:** 16-1239-03	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.1
Lab No.: 6107541 **Client No.:** 16-1240-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 3.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 96.7
Lab No.: 6107542 **Client No.:** 16-1240-03	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.3
Lab No.: 6107543 **Client No.:** 16-1240-04	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.5
Lab No.: 6107544 **Client No.:** 16-1242-01	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.4
Lab No.: 6107545 **Client No.:** 16-1242-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.7

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Vane Smith III
Analyst: Vane Smith

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107546 **Client No.:** 16-1242-03	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107547 **Client No.:** 16-1242-04	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.1
Lab No.: 6107548 **Client No.:** 16-1243-01	**Description:** Grey/Brown Fibrous **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 90 Cellulose	Percent Non-Fibrous Material: 10
Lab No.: 6107549 **Client No.:** 16-1243-02	**Description:** Grey Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.0*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature: Vane Smith III
Analyst: Vane Smith

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107550 **Client No.:** 16-1243-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107551 **Client No.:** 16-1246-01	**Description:** White Ceiling Tile **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 50 Cellulose 30 Fibrous Glass	Percent Non-Fibrous Material: 20
Lab No.: 6107552 **Client No.:** 16-1246-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5
Lab No.: 6107553 **Client No.:** 16-1246-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3
Lab No.: 6107554 **Client No.:** 16-1246-04	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.9*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.1
Lab No.: 6107555 **Client No.:** 16-1246-05	**Description:** White Insulation **Facility:**	**Location:**
Percent Asbestos: ***PC 5.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: 10 Fibrous Glass	Percent Non-Fibrous Material: 84.9

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Randy Caran

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107556 **Client No.:** 16-1246-06	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 0.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 99.5
Lab No.: 6107557 **Client No.:** 16-1248-01	**Description:** Grey Floor Tile; 12" **Facility:**	**Location:**
Percent Asbestos: ***PC Trace*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107557(L2) **Client No.:** 16-1248-01	**Description:** Black Mastic **Facility:**	**Location:**
Percent Asbestos: ***PC 4.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 95.2
Lab No.: 6107558 **Client No.:** 16-1248-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 6107559 **Client No.:** 16-1248-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 2.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 97.9
Lab No.: 6107560 **Client No.:** 16-1249-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC Trace*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Randy Caran

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107561 **Client No.:** 16-1249-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3
Lab No.: 6107562 **Client No.:** 16-1250-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.4
Lab No.: 6107563 **Client No.:** 16-1250-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.8*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.2
Lab No.: 6107564 **Client No.:** 16-1250-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107565 **Client No.:** 16-1251-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3
Lab No.: 6107566 **Client No.:** 16-1251-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.5*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.5

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Randy Caran

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107567 **Client No.:** 16-1252-00	**Description:** White Insulation **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 2 Cellulose 10 Fibrous Glass	Percent Non-Fibrous Material: 88
Lab No.: 6107568 **Client No.:** 16-1252-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.6*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.4
Lab No.: 6107569 **Client No.:** 16-1252-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.7*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.3

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Randy Caran

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107570 **Client No.:** 16-1253-01	**Description:** White/Tan Ceiling Tile **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 50 Cellulose 10 Fibrous Glass	Percent Non-Fibrous Material: 40
Lab No.: 6107571 **Client No.:** 16-1252-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107572 **Client No.:** 16-1254-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.9
Lab No.: 6107573 **Client No.:** 16-1254-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107574 **Client No.:** 16-1255-01	**Description:** White/Brown Sheetrock **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: 10 Cellulose Trace Fibrous Glass	Percent Non-Fibrous Material: 90
Lab No.: 6107575 **Client No.:** 16-1255-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Rachel McQuiggan

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107576 **Client No.:** 16-1255-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: *None Detected*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 100
Lab No.: 6107577 **Client No.:** 16-1256-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107578 **Client No.:** 16-1257-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107579 **Client No.:** 16-1257-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.9
Lab No.: 6107580 **Client No.:** 16-1257-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107581 **Client No.:** 16-1258-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Rachel McQuiggan

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6107582 **Client No.:** 16-1259-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107583 **Client No.:** 16-1259-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.3*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.7
Lab No.: 6107584 **Client No.:** 16-1259-03	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.9
Lab No.: 6107585 **Client No.:** 16-1260-01	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.2*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.8
Lab No.: 6107586 **Client No.:** 16-1260-02	**Description:** White Joint Compound **Facility:**	**Location:**
Percent Asbestos: ***PC 1.1*** *Chrysotile*	Percent Non-Asbestos Fibrous Material: None Detected	Percent Non-Fibrous Material: 98.9

Analytical Method -**US EPA 600, R93-116**. Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Rachel McQuiggan

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

Appendix to Analytical Report

Customer Contact:
Analysis: US EPA 600, R93-116

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Shirley Clark
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Bulk Building Materials
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by US EPA 600 93-116: Determination of Asbestos in Bulk Building Materials by Polarized Light Microscopy (PLM).

Certifications:

- NIST-NVLAP No. 101165-0
- NY-DOH No. 11021
- AIHA-LAP, LLC No. 100188

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analytical Methodology Alternatives: Your initial request for analysis may not have accounted for recent advances in regulatory requirements or advances in technology that are routinely used in similar situations for other qualified projects. You may have the option to explore additional analysis for further information. Below are a few options, listed as the matrix followed by the appropriate methodology. Also included are links to more information on our website.

Bulk Building Materials that are Non-Friable Organically Bound (NOB) by Gravimetric Reduction techniques employing PLM and TEM: ELAP 198.6 (PLM-NOB), ELAP 198.4 (TEM-NOB)

Loose Fill Vermiculite Insulation, Attic Insulation, Zonolite (copyright), etc.: US EPA 600 R-4/004 (multi-tiered analytical process)
Sprayed On Insulation/Fireproofing with Vermiculite (SOF-V): ELAP 198.8 (PLM-SOF-V)>

Soil, sludge, sediment, aggregate, and like materials analyzed for asbestos or other elongated mineral particles (ex. erionite, etc.): ASTM D7521, CARB 435, and other options available

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525855 - PLM
Project: DFO Physics Bld, Sidney, BC
Project No.: 161-17554-00

Asbestos in Surface Dust according to one of ASTM's Methods (very dependent on sampling collection technique – by TEM): ASTM D 5755, D5756, or D6480

Various other asbestos matrices (air, water, etc.) and analytical methods are available.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a list with highlighted disclaimers that may be pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com**.

1) Note: No mastic provided for analysis.
2) Note: Insufficient mastic provided for analysis.
3) Note: Insufficient material provided for analysis.
4) Note: Insufficient sample provided for QC reanalysis.
5) Note: Different material than indicated on Sample Log / Description.
6) Note: Sample not submitted.
7) Note: Attached to asbestos containing material.
8) Note: Received wet.
9) Note: Possible surface contamination.
10) Note: Not building material. 1% threshold may not apply.
11) Note: Recommend TEM-NOB analysis as per EPA recommendations.
12) Note: Asbestos detected but not quantifiable.
13) Note: Multiple identical samples submitted, only one analyzed.
14) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.080%.
15) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.125%.

Recommendations for Vermiculite Analysis:

Several analytical protocols exist for the analysis of asbestos in vermiculite. These analytical approaches vary depending upon the nature of the vermiculite mineral being tested (e.g. un-processed gange, homogeneous exfoliated books of mica, or mixed mineral composites).Please contact your client representative for pricing and turnaround time options available.

iATL recommends initial testing using the EPA 600/R-93/116 method. This method is specifically designed for the analysis of asbestos in bulk building materials. It provides an acceptable starting point for primary screening of vermiculite for possible asbestos.

Results from this testing may be inconclusive. EPA suggests proceeding to a multi-tiered analysis involving wet separation techniques in conjunction with PLM and TEM gravimetric analysis (EPA 600/R-04/004).

Further information on this method and other vermiculite and asbestos issues can be found at the following: Agency for Toxic Substances and Disease Registry (ATSDR) www.atsdr.cdc.gov, United States Geological Survey (USGS) www.minerals.usgs.gov/minerals/, US EPA www.epa.gov/asbestos. The USEPA also has an informative brochure "Current Best Practices for Vermiculite Attic Insulation" EPA 747F03001 May 2003, that may assist the health and remediation professional.

The following is a summary of the analytical process outlines in the EPA 600/R-04/004 Method:

1)**Analytical Step/Method:** Initial Screening by PLM, EPA 600R-93/116
Requirements/Comments: Minimum of 0.1 g of sample. ~0.25% LOQ for most samples.

2)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

3)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Floats" only.

4)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

5)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Suspension" only.

LOQ, Limit of Quantitation estimates for mass and volume analyses.
*With advance notice and confirmation by the laboratory.
**Approximately 1 Liter of sample in double-bagged container (~9x6 inch bag of sample).

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Chain of Custody

– Environmental Lead –

Contact Information

Client Company:	WSP Canada Inc.	**Project Number:**	161-17554-00
Office Address:	760 Enterprise Crescent	**Project Name:**	DFO Physics Bld, Sidney, BC
City, State, Zip:	Victoria, BC, Canada V8Z 6R4	**Primary Contact:**	Gordon Philippe
Fax Number:	250-475-2211	**Office Phone:**	250-475-1000
Email Address:	Gordon.Philippe@WSPgroup.com	**Cell Phone:**	250-360-6537

iATL is accredited by the National Lead Laboratory Accreditation Program (NLLAP) to perform analytical testing of environmental samples for lead (Pb). The accreditation is through AIHA-LAP, LLC and several other nationally recognized state programs.

Matrix/Method:

- [x] Paint by AAS: ASTM D3335-85a, 2009
- [ ] Wipe/Dust by AAS: SW 846: 3050B: 700B, 2010
- [ ] Air by AAS: NIOSH 7082, 1994
- [ ] Soil by AAS: EPA SW 846 (Soil)
- [ ] Water by AAS-GF: ASTM D3559-03D, US EPA 200.9
- [ ] Other Metals (Cd, Zn, Cr) by AAS
- [ ] Toxicity Characteristic Leaching Procedure (TCLP) by AAS: US EPA 1311
- [ ] Other _____

Special Instructions:

_____

_____

Turnaround Time

Preliminary Results Requested Date: _____ (Specific date / time) ☐ Verbal ■ Email ☐ Fax

☐ 10 Day ■ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day* ☐ 12 Hour** ☐ 6 Hour** ☐ RUSH**

* End of next business day unless otherwise specified. ** Matrix Dependent. ***Please notify the lab before shipping***

Chain of Custody

Relinquished (Name/Organization):	Gordon / WSP	Date: 18 Nov 2106	Time: 15:30
Received (Name / iATL):		Date:	Time:
Sample Login (Name / iATL):	WMK 12/15/16	Date:	Time:
Analysis(Name(s) / iATL):	MS 12/20/16	Date:	Time:
QA/QC Review (Name / iATL):	ML 12/20/16	Date:	Time:
Archived / Released: _____	QA/QC InterLAB Use: _____	Date:	Time:

RECEIVED DEC 14 2016

iATL - By

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway, Suite B • Mount Laurel, NJ 08054
Phone: 877-428-4285/856-231-9449 • Fax: 856-231-9818

Sample Log

–Environmental Lead –

Client: WSP Canada Inc. Project: 161-17554-00 / DFO Physics Bld, Sidney, BC

Sampling Date/Time: 6 - 8 Dec 2016

Client Sample #	iATL #	Location/ Description	Flow Rate	Start / End	Sampling time (min)	Area (ft2) Volume (L)	Results ( )
16-1236-02	6103828	Walls & Doors/Tan Paint					
16-1236-03	6103829	Structural Steel/Layered Red Paint					
16-1236-04	6103830	Ceiling Q-Decking/Cream Paint					

* = *Insufficient Sample Provided to Perform QC Reanalysis (<200mg)*
** = *Insufficient Sample Provided to Analyze (<50mg) ***= Matrix / Substrate Interference Possible*
FB = Method Requires the submittal of blank(s). ML = Multi Layered Sample. May result in inconsistent results.
These **preliminary results** are issued by iATL to expedite procedures by clients based upon the above data. iATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificate of Analysis will follow these preliminary results. The signed COA is to be considered the official results. All EPA, HUD, and NJDEP conditions apply.

IATL International Asbestos Testing Laboratories

9000 Commerce Parkway, Suite B, Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818
INFO@IATL.COM

DAILY QUALITY CONTROL DATA

LEAD SAMPLE ANALYSIS

(DATE: 12 / 20 / 16)

Standard	Total Lead (mg)	Percent Recovery **
Reagent Blank	0.000	< LOQ
Blank Spike	0.500	99
Lab Control Std	1.280	99
Matrix Spike - LBP *	0.35	97
Matrix Spike - Wipe *	0.37	98
Matrix Spike - Soil *	0.243	89
Matrix spike - Air *		
2.5 ppm Standard	0.25	96
10.0 ppm Standard	1.0	101
40.0 ppm Standard	4.0	102

AIHA-LAP, LLC No. 100188 **NYSDOH-ELAP No. 11021**

Analysis Method: ASTM D3335-85A
NIOSH 7082
EPA SW846 3050B 7000B

Comments: IATL assumes that all sampling complies with accepted methods.
All client supplied sampling data is assumed to be correct when calculating results.
Detection limit based upon 0.2 mg/L reporting limit and sample size.
* NIST Traceable.
** 80-120% acceptable limits.

Analyzed By: M. Stewart
Date: 12/20/16

Approved By: Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525897 - Lead Paint
Project: DFO Physics Bld., Sidney, BC
Project No.: 161-17554-00

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6103828
Client No.: 16-1236-02
Description: Tan
Location: Walls And Doors, 6-8 Dec 2016
Result (% by Weight): 0.12
Result (ppm): 1200
Comments:

Lab No.: 6103829
Client No.: 16-1236-03
Description: Red
Location: Structural Steel, 6-8 Dec 2016
Result (% by Weight): 0.23
Result (ppm): 2300
Comments:

Lab No.: 6103830
Client No.: 16-1236-04
Description: Cream
Location: Ceiling Q-Decking, 6-8 Dec 2016
Result (% by Weight): 0.11
Result (ppm): 1100
Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 12/14/2016
Date Analyzed: 12/20/2016
Signature:
Analyst: Mark Stewart

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: WSP Canada -786
760 Enterprise Crescent
Victoria BC V8Z 6R4

Client: WSP786

Report Date: 12/20/2016
Report No.: 525897 - Lead Paint
Project: DFO Physics Bld., Sidney, BC
Project No.: 161-17554-00

Appendix to Analytical Report:

Customer Contact:
Analysis: ASTM D3335-85a

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Shirley Clark
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Paint
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:
- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation.
All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.
Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B.
Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.
LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com.**

* Insufficient sample provided to perform QC reanalysis (<200 mg)

** Not enough sample provided to analyze (<50 mg)

*** Matrix / substrate interference possible.

APPENDIX III
REGULATORY FRAMEWORK

REGULATORY FRAMEWORK

1. Occupational Health and Safety Regulation (Including amendments up to B.C. Reg. 195/2015),
2. Safe Work Practices for Handling Asbestos, WorkSafeBC, (Publication Date January 15, 2013).
3. Hazardous Waste Regulation, BC Ministry Of Environment. (Including amendments up to B.C. Reg. 179/2016, July 19, 2016).
4. Environmental Management Act (As Current to August 24, 2016).
5. Transportation of Dangerous Goods Regulations (Including amendments up to SOR / 2016-95).
6. Canadian Occupational Health and Safety Regulations (Including amendments up to SOR / 86-304).
7. Canada Labour Code, Part II, - R.S.C., 1985, c. L-2
8. Lead-Containing Paint and Coatings, Preventing Exposure in the Construction Industry, WorkSafeBC, June 2011.
9. BC Ministry of Environment Technical Guidance 4, Environmental Management Act Applications, Guideline To Managing Lead-Containing Construction and Demolition Waste In BC, Version 1.0, January 2015
10. Federal Register, 40 CFR Part 745 Lead; Identification of Dangerous Levels of Lead; Final Rule, Environmental Protection Agency, January 5, 2001
11. Ozone Depleting Substances and other Halocarbons Regulation. (Including amendments up to B.C. Reg. 317/2012, November 9, 2012).
12. Regulations, SOR / 2008-273, Canadian Environmental Protection Act.

APPENDIX IV
STANDARD LIMITATIONS

TERMS OF REFERENCE FOR HAZARDOUS MATERIALS AND OCCUPATIONAL HEALTH AND SAFETY REPORTS ISSUED BY WSP CANADA INC.

1. STANDARD OF CARE

WSP Canada Inc. ("WSP") prepared and issued this report (the "Report") for its client (the "Client") in accordance with generally-accepted consulting practices for the hazardous materials and occupational health and safety disciplines. No other warranty, expressed or implied, is made. Unless specifically stated in the Report, the Report does not address environmental issues.

The terms of reference for hazardous materials and occupational health and safety reports issued by WSP (the "Terms of Reference") contained in the present document provide additional information and caution related to standard of care and the use of the Report. The Client should read and familiarize itself with these Terms of Reference.

2. COMPLETENESS OF THE REPORT

All documents, records, drawings, correspondence, data, files and deliverables, whether hard copy, electronic or otherwise, generated as part of the services for the Client are inherent components of the Report and, collectively, form the instruments of professional services (the "Instruments of Professional Services"). The Report is of a summary nature and is not intended to stand alone without reference to the instructions given to WSP by the Client, the communications between WSP and the Client, and to any other reports, writings, proposals or documents prepared by WSP for the Client relative to the specific site described in the Report, all of which constitute the Report.

TO PROPERLY UNDERSTAND THE INFORMATION, OBSERVATIONS, FINDINGS, SUGGESTIONS, RECOMMENDATIONS AND OPINIONS CONTAINED IN THE REPORT, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. WSP CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT AND ITS VARIOUS COMPONENTS.

3. BASIS OF THE REPORT

WSP prepared the Report for the Client for the specific objectives and purpose that the Client described to WSP. The applicability and reliability of any of the information, observations, findings, suggestions, recommendations and opinions contained in the Report are only valid to the extent that there was no material alteration to or variation from any of the said descriptions provided by the Client to WSP unless the Client specifically requested WSP to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information, observations, findings, suggestions, recommendations and opinions contained in the Report, or any component forming the Report, are for the sole use and benefit of the Client and the team of consultants selected by the Client for the specific project that the Report was provided. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION OR COMPONENT WITHOUT THE WRITTEN CONSENT OF WSP. WSP will consent to any reasonable request by the Client to approve the use of this Report by other parties designated by the Client as the "Approved Users". As a condition for the consent of WSP to approve the use of the Report by an Approved User, the Client must provide a copy of these Terms of Reference to that Approved User and the Client must obtain written confirmation from that Approved User that the Approved User will comply with these Terms of Reference, such written confirmation to be provided separately by each Approved User prior to beginning use of the Report. The Client will provide WSP with a copy of the written confirmation from an Approved User when it becomes available to the Client, and in any case, within two weeks of the Client receiving such written confirmation.

The Report and all its components remain the copyright property of WSP and WSP authorises only the Client and the Approved Users to make copies of the Report, but only in such quantities as are reasonably necessary for the use of the Report by the Client and the Approved Users. The Client and the Approved Users may not give, lend, sell or otherwise disseminate or make the Report, or any portion thereof, available to any party without the written permission of WSP. Any use which a third party makes of the Report, or any portion of the Report, is the sole responsibility of such third parties. WSP accepts no responsibility for damages suffered by any third party resulting from the use of the Report. The Client and the Approved Users acknowledge and agree to indemnify and hold harmless WSP, its officers, directors, employees, agents, representatives or sub-consultants, or any or all of them, against any claim of any nature whatsoever brought against WSP by any third parties, whether in contract or in tort, arising or related to the use of contents of the Report.

5. INTERPRETATION OF THE REPORT

a. **Hidden Conditions**: The Client acknowledges that subsurface and concealed conditions may vary from those encountered or reviewed. WSP can only comment on the conditions observed on the date(s) the assessment is performed. The work is limited to those areas of concern identified by the Client and/or outlined in our proposal. Other areas of concern may exist but were not investigated within the scope of this assessment.

b. **Reliance on information**: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site investigation and field review and on the basis of information provided to WSP. WSP has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, WSP cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations or fraudulent acts of persons providing information.

c. **Additional Involvement by WSP**: To avoid misunderstandings, WSP should be retained to assist other professionals to explain relevant hazardous materials and occupational health and safety findings and to review the hazardous materials and occupational health and safety aspects of the plans, drawings and specifications of other professionals relative to the services provided by WSP. To ensure compliance and consistency with the applicable hazardous materials and occupational health and safety codes, legislation, regulations, guidelines and generally-accepted practices, WSP should also be retained to provide field review services during the performance of any related work. Where applicable, it is understood that such field review services must meet or exceed the minimum necessary requirements to ascertain that the work being carried out is in general conformity with the recommendations made by WSP. Any reduction from the level of services recommended by WSP will result in WSP providing qualified opinions regarding adequacy of the work.

6. ALTERNATE REPORT FORMAT

When WSP submits both electronic and hard copy versions of the Instruments of Professional Services, the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding upon WSP. The hard copy versions submitted by WSP shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions; furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed and sealed versions of the Instruments of Professional Services maintained or retained, or both, by WSP shall be deemed to be the overall originals for the Project.

The Client agrees that the electronic file and hard copy versions of Instruments of Professional Services shall not, under any circumstances, no matter who owns or uses them, be altered by any party except WSP. The Client warrants that the Instruments of Professional Services will be used only and exactly as submitted by WSP.

The Client recognizes and agrees that WSP prepared and submitted electronic files using specific software or hardware systems, or both. WSP makes no representation about the compatibility of these files with the current or future software and hardware systems of the Client, the Approved Users or any other party. The Client further agrees that WSP is under no obligation, unless otherwise expressly specified, to provide the Client, the Approved Users and any other party, or any or all of them, with specific software and hardware systems that are compatible with any electronic submitted by WSP. The Client further agrees that should the Client, an Approved User or a third party require WSP to provide specific software or hardware systems, or both, compatible with the electronic files prepared and submitted by WSP, for any reason whatsoever included but not restricted to an order from a court, then the Client will pay WSP for all reasonable costs related to the provision of the specific software or hardware systems, or both. The Client further agrees to indemnify and hold harmless WSP, its officers, directors, employees, agents, representative or sub-consultant, or any or all of them, against any claim or any nature whatsoever brought against WSP, whether in contract or in tort, arising or related to the provision or use or any specific software or hardware provided by WSP.

Government of Canada
Gouvernement du Canada

Canadian General Standards Board
Office des normes générales du Canada

CAN/CGSB-1.205-2003

Supersedes CAN/CGSB-1.205-94

Sealer for Application to Asbestos-Fibre-Releasing Materials

ICS 87.040

National Standard of Canada

Canada

Experience and excellence
Expérience et excellence
CGSB ONGC

The CANADIAN GENERAL STANDARDS BOARD (CGSB), under whose auspices this National Standard of Canada has been developed is a government agency within Public Works and Government Services Canada. CGSB is engaged in the production of voluntary standards in a wide range of subject areas through the media of standards committees and the consensus process. The standards committees are composed of representatives of relevant interests including producers, consumers and other users, retailers, governments, educational institutions, technical, professional and trade societies, and research and testing organizations. Any given standard is developed on the consensus of views expressed by such representatives.

CGSB has been accredited by the Standards Council of Canada as a national standards-development organization. The standards that it develops and offers as National Standards of Canada conform to the criteria and procedures established for this purpose by the Standards Council of Canada. In addition to standards it publishes as national standards, CGSB produces standards to meet particular needs, in response to requests from a variety of sources in both the public and private sectors. Both CGSB standards and CGSB national standards are developed in conformance with the policies described in the CGSB Policy Manual for the Development and Review of Standards.

CGSB standards are subject to review and revision to ensure that they keep abreast of technological progress. Suggestions for their improvement, which are always welcome, should be brought to the notice of the standards committees concerned. Changes to standards are issued either as separate amendment sheets or in new editions of standards.

An up-to-date listing of CGSB standards, including details on latest issues and amendments, and ordering instructions, is found in the CGSB Catalogue, which is published annually and is available without charge upon request. An electronic version, ECAT, is also available. More information is available about CGSB products and services at our Web site — www.ongc-cgsb.gc.ca.

Although the intended primary application of this standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

The testing and evaluation of a product against this standard may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this standard has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any applicable regulatory requirements prior to its use. CGSB neither assumes nor accepts any responsibility for any injury or damage that may occur during or as the result of tests, wherever performed.

Attention is drawn to the possibility that some of the elements of this Canadian standard may be the subject of patent rights. CGSB shall not be held responsible for identifying any or all such patent rights. Users of this standard are expressly advised that determination of the validity of any such patent rights are entirely their own responsibility.

Further information on CGSB and its services and standards may be obtained from:

The Manager
Strategic Standardization Division
Canadian General Standards Board
Gatineau, Canada
K1A 1G6

The STANDARDS COUNCIL OF CANADA is the co-ordinating body of the National Standards System, a federation of independent, autonomous organizations working towards the further development and improvement of voluntary standardization in the national interest.

The principal objectives of the Council are to foster and promote voluntary standardization as a means of advancing the national economy, benefiting the health, safety and welfare of the public, assisting and protecting the consumer, facilitating domestic and international trade, and furthering international co-operation in the field of standards.

A National Standard of Canada is a standard which has been approved by the Standards Council of Canada and one which reflects a reasonable agreement among the views of a number of capable individuals whose collective interests provide, to the greatest practicable extent, a balance of representation of producers, users, consumers and others with relevant interests, as may be appropriate to the subject in hand. It normally is a standard that is capable of making a significant and timely contribution to the national interest.

Approval of a standard as a National Standard of Canada indicates that a standard conforms to the criteria and procedures established by the Standards Council of Canada. Approval does not refer to the technical content of the standard; this remains the continuing responsibility of the accredited standards-development organization.

Those who have a need to apply standards are encouraged to use National Standards of Canada whenever practicable. These standards are subject to periodic review; therefore, users are cautioned to obtain the latest edition from the organization preparing the standard.

The responsibility for approving National Standards of Canada rests with the:

Standards Council of Canada
270 Albert Street
Suite 200
Ottawa, Ontario
K1P 6N7

NATIONAL STANDARD OF CANADA

CAN/CGSB-1.205-2003

Supersedes CAN/CGSB-1.205-94

SEALER FOR APPLICATION TO ASBESTOS-FIBRE -RELEASING MATERIALS

Prepared by the

Canadian General Standards Board

Approved by the

Standards Council of Canada

Published September 2003 by the
Canadian General Standards Board
Gatineau, Canada K1A 1G6

CANADIAN GENERAL STANDARDS BOARD

COMMITTEE ON CONSTRUCTION AND MAINTENANCE COATINGS

(Membership at date of approval)

Benner, H.	*Chairman*	Consultant
Balmer, S.		ICI Paints (Canada)
Boyer, A.		Public Works and Government Services Canada
Braund, V.		Cloverdale Paint Inc.
Buchanan, I.		Buchanan Consulting
Currie, C.		Home Hardware Stores Ltd.
Graham, C.		Triodem Technical Services Ltd.
Hood, S.		Bodycote ORTECH Inc.
Janssen, M.		National Defence
Korpan, M.		Health Canada
Lidstone, S.		International Paints (A division of Akzo Nobel Coatings Ltd.)
Mills, G.		Mills Paint and Wallcoverings
Patterson, J.		Precision 2000 Ltd.
Philipp, H.		Consultant
Raine, R.		Trans Canada Coatings Consultants Ltd.
Simpson, G.		Sico Inc.
Toniello, J.		National Defence
Wiezoreck, G.		Independant Painting Industry Consultants
Williams, R.		Sherwin-Williams Co.
Craig, W.	*Secretary*	Canadian General Standards Board

Acknowledgment is made for the translation of this National Standard of Canada by the Translation Bureau of Public Works and Government Services Canada.

CANADIAN GENERAL STANDARDS BOARD

SEALER FOR APPLICATION TO ASBESTOS-FIBRE-RELEASING MATERIALS

1. SCOPE

1.1 This standard applies to a sealer used to prevent the release of asbestos fibres from asbestos-containing materials. This sealer is not suitable for highly friable materials.[1]

1.2 This standard helps the user to select a specific type and class of sealer, described in par. 3.1. It does not address concerns about any change in properties or characteristics of the material, including fire resistance, that could be attributed to the sealing process, nor does it address the decision of whether or not to use a sealer.

1.3 The testing and evaluation of a product against this standard may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this standard has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any applicable regulatory requirements prior to its use.

2. REFERENCED PUBLICATIONS

2.1 The following publications are referenced in this standard:

2.1.1 Canadian General Standards Board (CGSB)

CAN/CGSB-1.57 — Interior Alkyd Semigloss Enamel

1-GP-71 — Methods of Testing Paints and Pigments

CAN/CGSB-1.195 — Interior Latex Semigloss Paint.

2.1.2 Health Canada

Surface Coating Materials Regulations

Consumer Chemicals and Containers Regulations, 2001

Controlled Products Regulations (WHMIS)[2].

2.1.3 Underwriters' Laboratories of Canada (ULC)

CAN/ULC-S102 — Surface Burning Characteristics of Building Materials and Assemblies.

2.1.4 ASTM International

E 96 — Standard Test Methods for Water Vapor Transmission of Materials.

2.2 A dated reference in this standard is to the issue specified. An undated reference in this standard is to the latest issue, unless otherwise specified by the authority applying this standard. The sources are given in the Notes section.

---

[1] *It is the responsibility of the user to determine whether the material is friable or highly friable as this standard is only intended to define the quality requirements for the sealer.*

[2] *WHMIS: Workplace Hazardous Materials Information System.*

3. CLASSIFICATION

3.1 The sealer shall be supplied in the following types and classes, as specified (par. 8.1):

3.1.1 ***Types***

Type 1 — Penetrating

Type 2 — Surface-film-forming.

3.1.2 ***Classes***

Class A — Water-based

Class B — Solvent-based.

4. GENERAL REQUIREMENTS

4.1 The sealer shall be capable of preventing the release of fibres from friable asbestos-containing surfaces.

4.2 The sealer shall be suitable for application with spray equipment when reduced, in accordance with the manufacturer's instructions. It shall readily mix to a uniform consistency by stirring.

4.3 When stored at temperatures between 5 and 40°C the sealer shall not skin, gel, thicken excessively or cake in the original unopened container for one year from date of shipment At the end of this time, it shall be readily mixed to a uniform consistency by stirring and shall meet the requirements for applicability and appearance (par. 5.8). The container shall not show signs of deterioration or rust, except around the rim where some rust is permissible.

4.4 The sealer shall not have any objectionable odour.

4.5 **Toxic Elements** — This paint shall conform to the requirements of the *Surface Coating Materials Regulations*, the *Consumer Chemicals and Containers Regulations*, 2001, and the *Controlled Products Regulations* (WHMIS), for designated toxic elements.

5. DETAILED REQUIREMENTS

The sealer shall comply with the following detailed requirements when tested in accordance with the specified test methods.

5.1 **Non-volatile Matter** — The non-volatile matter content of the sealer shall not be less than 45% by mass when tested in accordance with CGSB standard 1-GP-71, Method 17.1.

5.2 **Surface Burning Characteristics** — When applied to reinforced, inorganic cement-board to the required thickness (500 ± 50 μm), the sealer shall have a maximum flame spread classification of 25 and a maximum value of 50 for the smoke developed when tested in accordance with par. 7.2.1.

5.3 **Water Vapour Permeance** — A 75 ± 5 μm dry film thickness of the sealer shall have a water vapour permeance of not less than 9.0 perms when tested in accordance with par. 7.2.2.

5.4 **Impact Resistance** — When subjected to direct impact, the energy required to cause 15 mm penetration into the test matrix shall, for both types, increase at least 100% above that needed to penetrate the unsealed matrix when tested in accordance with par. 7.2.3. For Type 2 sealers only, the film shall not flake or crack around the impact area.

5.5 **Penetration Depth** (Type 1 only) — Upon spray application, the sealer shall penetrate the fibrous matrix to a depth not less than 15 mm. After water immersion, the sealer shall not show undue softening when tested in accordance with par. 7.2.4.

5.6 **Surface Film-Forming Property** (Type 2 only) — The sealer shall spray evenly over the entire surface of the fibreglass cloth mat and shall fill all the voids when tested in accordance with par. 7.2.5.

5.7 **Flexibility** — A 75 ± 5 μm dry film thickness of the sealer shall show no cracking when subjected to the bending test at 23°C, using a 3.2 mm mandrel in accordance with CGSB standard 1-GP-71, Method 119.5. After bending, the film shall be examined under 10X magnification.

5.8 **Applicability and Appearance** — When applied by spraying, the sealer shall comply with the following requirements when tested in accordance with par. 7.2.6.

5.8.1 It shall have satisfactory drying time, and there shall be no lifting, wrinkling, lack of uniformity or other film defects.

5.8.2 The enamel conforming to CAN/CGSB-1.57 or CAN/CGSB-1.195 applied over the sealed wallboard shall be uniform in appearance. There shall not be any significant difference in gloss between the first and second coats of enamel.

5.9 **Resistance to Accelerated Aging** — After ten complete cycles, each consisting of exposure first to a temperature of $23 \pm 2°C$ for 24 h and then $70 \pm 2°C$ for 24 h, the dried sealer film shall show no visible defects and shall comply with the requirements for flexibility (par. 5.7) when tested in accordance with par. 7.2.7.

6. PREPARATION FOR DELIVERY

6.1 Unless otherwise specified (par. 8.1), preparation for delivery shall conform to normal commercial practice.

6.2 **Labelling** — In addition to complying with labelling requirements of any relevant Acts or Regulations, each container shall be suitably labelled to show the following information:

Type and class of sealer

Standard number: CAN/CGSB-1.205-2003

Manufacturer's name and address

Manufacturer's batch number

Manufacturer's code number

Date of manufacture

Percent solids by volume

Instructions for use:

— Thinning instructions for spraying

Coverage rate for sealer to meet the requirements of this standard

Cautionary notes:

— The sealer should not be intermixed with other paints without prior approval of the manufacturer,

— Class A sealer should be kept from freezing.

7. INSPECTION

7.1 **Sampling** — Sampling shall be carried out in accordance with CGSB standard 1-GP-71, Method 1.1.

7.2 **Testing**

7.2.1 ***Surface Burning Characteristics*** — For test panels, use reinforced inorganic cement-board, at least 4.5 mm thick. Spray sealer on the board to the dry film thickness required to conform to the requirements of the impact test (par. 5.4) or to obtain a minimum dry film thickness of 500 ± 50 µm, whichever is greater. After application of the sealer, test the sealed reinforced inorganic cement-board in accordance with CAN/ULC-S102 and calculate the flame spread classification rating. Testing requirements, as described, relate to the material (sealer) for which classification is required and not to the assembly.

7.2.2 ***Water Vapour Permeance*** — Prepare a free film for measuring water vapour permeance as follows: Use a Gardner Mechanical Drive equipped with a perforated metal plate in the application of the coating to release paper #RPIK. Place a sheet of white bond paper on the metal plate while a vacuum is being applied. Smooth the sheet, apply tape on three sides, and place a second sheet on the first. Two sheets of bond paper are normally required to prevent the formation of dimples at the perforations in the plate. While the vacuum is still being applied, roll the release paper onto the paper with firm pressure on the roll to reduce wrinkle formation. Finally, make the release paper completely smooth by wiping it with a tissue. Apply the coating on the release paper with the doctor blade mechanically driven

at a uniform speed to provide a dry film thickness of 75 ± 5 µm. When the blade clears the end of the release paper, release the vacuum and transfer the coated release paper (together with the second bond sheet) to a piece of hardboard kept level to prevent flow of the wet coating. Place the board in a conditioned room maintained at 23 ± 2°C and 50 ± 5% RH for 7 d. Then obtain the free film by amalgamating the release paper substrate. After stripping, place the film on a sheet of waxed paper with the original upper surface facing down and allow to dry for an additional two days. Determine the water vapour permeance of the free film in accordance with ASTM E 96, Procedure B.

7.2.3 ***Impact Resistance*** — Perform the test on the Gardner Variable Impact Tester with the sample holder and anvil removed. Place the mineral wool fibre test matrix[3] directly under the impacter and determine the impact in joules required for the impacter to penetrate 15 mm into the test matrix. The density of the test matrix shall be such that the impact is 1.0 ± 0.2 J. Apply the sealer to three panels of this test matrix to achieve with Type 1 sealer a penetration of at least 15 mm and, with Type 2 sealer a dry-film thickness of 500 ± 50 µm or in accordance with the manufacturer's instructions, whichever is greater. Determine the impact energy required to cause 15 mm penetration at each of five locations on each panel. Discard divergent values and calculate the mean percent increase in energy over that of the test matrix alone. After testing the sealed test-matrix, examine the impact areas for any flaking and cracking of Type 2 sealers.

7.2.4 ***Penetration Depth*** — Apply Type 1 sealer by spray to mineral wool panels at the same coverage required to meet the impact resistance test (par. 7.2.3). After a 7 d minimum drying period, take two core samples with a large cork borer and place into vials of the appropriate size (slightly larger in diameter and taller than the core samples). Add water to the vials until full, cap the vials and allow them to stand at ambient temperature for 24 h. Remove the samples from the vials and measure the penetration of the sealer into the mineral wool, noting the demarcation line between the soft wet insulation and the solid, non-friable sealed insulation. Examine the sealer in the core sample for excessive softening. See also par. 8.2.3.

7.2.5 ***Surface Film Forming Property*** — Spray Type 2 sealer onto a 1.5 mm fibreglass cloth mat backed by fibreglass insulation to the dry-film thickness used in par. 7.2.3. After allowing the fibreglass cloth mat to dry for 48 h at 23 ± 2°C and 50 ± 5% RH, examine the surface to determine if the voids are filled.

7.2.6 ***Applicability and Appearance*** — Mount a 1.2 × 1.2 m panel of laminated fibreboard or of cream-faced gypsum plasterboard vertically. Spray a coat of the sealer at a wet film thickness of 150 ± 10 µm on the entire face of the panel. Allow the plasterboard to dry 16 h and examine the applied area for conformance to the requirements in par. 5.8.1. Immediately after the examination, brush a coat of white semigloss enamel conforming to CAN/CGSB-1.57 on the entire face of the panel. Cross brush the whole panel using diagonal strokes and finish off with light horizontal strokes. At the end of 24 h, brush a second coat of enamel on the lower half of the panel. After 24 h drying, examine the panel again for conformance to the requirements in par. 5.8.2.

7.2.7 ***Resistance to Accelerated Aging*** — Prepare coated panels in accordance with par. 5.7. Then subject the panels to ten complete cycles, each cycle consisting of exposure first to a temperature of 23 ± 2°C for 24 h, followed by a temperature of 70 ± 2°C for 24 h. Examine the film for any visible defects and subject the panels to the flexibility test.

8. NOTES

8.1 **Options** — The following options must be specified in the application of this standard:

a. Type and class (par. 3.1)

b. Preparation for delivery, if other than as specified (par. 6.1).

8.2 **Recommended Practice**

8.2.1 The sealer should be applied in accordance with the safety regulations of the authority having jurisdiction. The use of Class B sealer requires additional precautions to meet the safety and health regulations of the authority having jurisdiction.

---

[3] *Type D-C/F (Cafco Products Ltd., Etobicoke, Ont.) and A/D Type FP (Double A/D Distributors Ltd., Toronto, Ont.) have been found satisfactory for this test.*

8.2.2 The surface burning characteristics test is carried out on reinforced inorganic cement-board under controlled laboratory conditions. The test results may differ in the field because of wide variations in the conditions of the installation.

8.2.3 The penetration test for Type 1 sealer is carried out under controlled laboratory conditions. Because of the product construction, adequate field inspections are recommended to ensure resin penetration.

8.3 **Sources of Referenced Publications**

8.3.1 The publications referred to in par. 2.1.1 may be obtained from the Canadian General Standards Board, Sales Centre, Gatineau, Canada K1A 1G6. Telephone (819) 956-0425 or 1-800-665-2472. Fax (819) 956-5644.

8.3.2 The publication referred to in par. 2.1.2 may be obtained from Health Canada, Consumer Product Safety Bureau, MacDonald Building, 4th Floor, 123 Slater Street, Ottawa, Ontario K1A 1B9. Telephone (613) 954-0104. Fax (613) 952-1994.

8.3.3 The publication referred to in par. 2.1.3 may be obtained from the Underwriters' Laboratories of Canada, 7 Crouse Road, Scarborough, Ontario, M1R 3A9.

8.3.4 The publication referred to in par. 2.1.4 may be obtained from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, U.S.A., or from IHS Canada, 1 Antares Drive, Suite 200, Ottawa, Canada K2E 8C4. Telephone (613) 237-4250 or 1-800-267-8220. Fax (613) 237-4251.

Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

PRELIMINARY HAZARD ASSESSMENT FORM

Project Number:	R.086555.009
Location:	Fisheries and Oceans Canada, Sydney, B.C.
Date:	October 26, 2017
Name of Departmental Representative:	
Name of Client:	Fisheries and Oceans Canada (FOC)

Site Specific Orientation Provided at Project Location ☐ **Yes**

Notice of Project Required ☐ **Yes**

NOTE:
PWGSC REQUIRES A Notice of Project FOR ALL CONSTRUCTION WORK RELATED ACTIVITIES

NOTE:
OHS law is made up of many municipal, provincial, and federal acts, regulations, bylaws and codes. There are also many other pieces of legislation in British Columbia that impose OHS obligations.

Important Notice: This hazard assessment has been prepared by PSPC for its own project planning process, and to inform the service provider of actual and potential hazards that may be encountered in performance of the work. PSPC does not warrant the completeness or adequacy of this hazard assessment for the project and the paramount responsibility for project hazard assessment rests with the service provider.

TYPES OF HAZARDS TO CONSIDER	Potential Risk for:				COMMENTS
Examples: Chemical, Biological, Natural, Physical, and Ergonomic Listed below are common construction related hazards. Your project may include pre-existing hazards that are not listed. Contact the Regional Construction Safety Coordinator for assistance should this issue arise.	**PWGSC, OGD's, or tenants**		**General Public or other contractors**		Note: When thinking about this pre-construction hazard assessment, remember a **hazard** is anything that may cause harm, such as chemicals, electricity, working from heights, etc; the **risk** is the chance, high or low, that somebody could be harmed by these and other hazards, together with an indication of how serious the harm could be.
	Yes	**No**	**Yes**	**No**	

Typical Construction Hazards					
Concealed/Buried Services (electrical, gas, water, sewer etc)	yes				
Slip Hazards or Unsound Footing	yes				
Working at Heights	yes				Scaffolding and ladders
Working Over or Around Water	yes				
Heavy overhead lifting operations, mobile cranes etc.		no			
Marine and/or Vehicular Traffic (site	yes				

Canada

vehicles, public vehicles, etc.					
Fire and Explosion Hazards		no			
High Noise Levels	yes				
Excavations		no			
Blasting		no			
Construction Equipment		no			
Pedestrian Traffic (site personnel, tenants, visitors, public)	yes				
Multiple Employer Worksite	yes				Example: Contractor working in an occupied Federal Employee space.

Electrical Hazards					**Comments**
Contact With Overhead Wires		no			
Live Electrical Systems or Equipment	yes				
Other:					
Physical Hazards					
Equipment Slippage Due To Slopes/Ground Conditions		no			
Earthquake	yes				
Tsunami	yes				
Avalanche		no			
Forest Fires		no			
Fire and Explosion Hazards	yes				
Working in Isolation		no			
Working Alone		no			
Violence in the Workplace	yes				Federal facility
High Noise Levels	yes				
Inclement weather	yes				
High Pressure Systems		no			
Other:					
Hazardous Work Environments					
Confined Spaces / Restricted Spaces PSPC employees do not enter confined space.	TBD				If available, provide the contractor with the existing confined space assessment(s) for information only. Contractor must perform their own confined space assessment as per provincial regulations.
Suspended / Mobile Work Platforms		no			
Other:	yes				Scaffolding and working at heights
Biological Hazards					
Mould Proliferations		no			
Accumulation of Bird or Bat Guano		no			
Bacteria / Legionella in Cooling Towers / Process Water		no			
Rodent / Insect Infestation		no			
Poisonous Plants		no			
Sharp or Potentially Infectious Objects in Wastes	TBD				
Wildlife		no			

Chemical Hazards					
Asbestos Materials on Site	yes				If “yes” a pre-project asbestos survey report is required. Provide Contractor with ELF Form 16 “Contractor Notification and Acknowledgement”
Designated Substance Present	yes				If “yes” a pre-project designated substance survey report is required.
Chemicals Used in work	yes				Contractor must submit current Canadian MSDS sheets for all chemical products brought to the work place.
Lead in paint	yes				If “yes” a pre-project lead survey report is required.
Mercury in Thermostats or Switches	TBD				If “yes” a pre-project mercury survey report is required.
Application of Chemicals or Pesticides		no			
PCB Liquids in Electrical Equipment		no			
Radioactive Materials in Equipment		no			
Other: Reference Reports	yes				This pre-construction Hazard Assessment Form must be read in conjunction with the two WSP Reports (Pre-renovation Wall Surfacing Compound Survey, Dated Jan 20/17 and Assessment of Suspect Drywall Debris & Dust, Dated June 16, 17) which have been included with the project specifications package.
Contaminated Sites Hazards					
Hazardous Waste		no			
Hydrocarbons		no			
Metals		no			
Other:					

Security Hazards					Comments
Risk of Assault	yes				Federal facility
Other:					
Other Hazards					

Other Compliance and Permit Requirements[1]	YES	NO	Notes / Comments[2]
Is a Building Permit required?			
Is an Electrical permit required?			
Is a Plumbing Permit required?			
Is a Sewage Permit required?			
Is a Dumping Permit required?			
Is a Hot Work Permit required?			

Is a Permit to Work required?			Mandatory for ALL AFD managed work sites.
Is a Confined Space Entry Permit required?	**yes**		Mandatory
Is a Confined Space Entry Log required	**yes**		Mandatory for all Confined Spaces
Discharge Approval for treated water required			

Notes:

(1) Does not relieve Service Provider from complying with all applicable federal, provincial, and municipal laws and regulations.

(2) TBD means To Be Determined by Service Provider.

Service Provider Acknowledgement: We confirm receipt and review of this Pre-Project Hazard Assessment and acknowledge our responsibility for conducting our own assessment of project hazards, and taking all necessary protective measures (which may exceed those cited herein) for performance of the work.			
Service Provider Name			
Signatory for Service Provider		**Date Signed**	
RETURN EXECUTED DOCUMENT TO PSPC DEPARTMENTAL REPRESENTATIVE PRIOR TO ANY WORK COMMENCING			