



Public Works and Government Services Canada

Requisition No: _____

DRAWINGS & SPECIFICATIONS
for

Slope Stabilization Pacific Agri-food Research Centre Summerland, BC

Project#: R080303.001

APPROVED BY:

Regional Manager, AES

Date

Construction Safety Coordinator

Date

TENDER:

Project Manager

Date



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Part 1 General

1.1 PRECEDENCE

- .1 For Federal Government projects, Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 SUMMARY OF WORK

- .1 Work under this contract consist of:
 - .1 Earthworks
- .2 Site of Work is located at: Agri-Food Research Centre, Summerland, BC.

1.3 TAXES

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

1.4 EXISTING SERVICES

- .1 Establish location and extent of service lines in area of work before starting Work and notify Departmental Representative of findings.
- .2 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .3 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .4 Record locations of maintained, re-routed and abandoned service lines.

1.5 REMOVED MATERIALS

- .1 Unless otherwise specified, materials for removal become Contractor's property. Remove materials promptly.

1.6 MEASUREMENT FOR PAYMENT

- .1 Notify Departmental Representative sufficiently in advance of operations to permit required measurements for payment.

1.7 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.

- .4 Reviewed Shop Drawings.
- .5 List of outstanding shop drawings.
- .6 Change Orders.
- .7 Other modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and other safety related documents.
- .11 Other documents as specified.

1.8 PROJECT MEETINGS

- .1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording minutes.
- .2 Schedule and administer project meetings, held weekly, for entire duration of work and as directed by Departmental Representative.
- .3 Prepare agenda for meetings.
- .4 Notify participants in writing at least 4 days in advance of meeting date.
 - .1 Ensure attendance of subcontractors.
 - .2 Departmental Representative will provide list of other attendees to be notified.
- .5 Hold meetings at project site or where approved by Departmental Representative.
- .6 Chair meetings and record minutes.
 - .1 Indicate significant proceedings and decisions. Identify action items by parties.
 - .2 Distribute to participants by mail, FAX or e-mail within 3 calendar days after each meeting.
 - .3 Make revisions as directed by Departmental Representative.
 - .4 Ensure e-mail is acceptable to affected parties prior to distributing minutes using that media.

1.9 SCHEDULING

- .1 On award of contract submit construction schedule for work, indicating anticipated progress stages within time of completion. When schedule has been reviewed by Departmental Representative, take necessary measures to complete work within scheduled time.
- .2 All works are to be completed within 6 weeks or less (filling the gully should be completed in a maximum 5 consecutive days) of contract award.
- .3 Do not change schedule without notifying Departmental Representative.

1.10 ASBESTOS DISCOVERY

- .1 Should asbestos be encountered in course of work, stop and notify Departmental Representative immediately. Do not proceed until written instructions have been received from Departmental Representative.

1.11 SIGNS

- .1 No advertising is permitted on this project.

1.12 DUST CONTROL

- .1 Access Road(s) to be watered as required.

1.13 EXAMINATION

- .1 Examine site and conditions likely to affect work and be familiar and conversant with existing conditions.
- .2 Provide photographs of surrounding properties, objects and structures liable to be damaged or be subject of subsequent claims.

1.14 CLEAN UP

- .1 Clean areas under contract to condition at least equal to that previously existing and to approval of Departmental Representative.

1.15 RECORDS

- .1 As work progresses, maintain accurate records to show deviations from contract drawings. Just prior to Departmental Representative's inspection for issuance of final certificate of completion, supply to Departmental Representative one (1) set of white prints with all deviations neatly inked in. Departmental Representative will provide two sets of clean white prints for this purpose.

1.16 HAZARDOUS MATERIALS

- .1 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and the provision of Material Safety Data Sheets (MSDS) acceptable to Human Resources and Social Development Canada (HRSDC), Labour program.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

- .1 Departmental Representative/Contractor Agreement

1.2 APPLICATIONS FOR PROGRESS PAYMENT

- .1 Make applications for payment on account as provided for in the Agreement on a monthly basis as Work progresses.
- .2 Date applications for payment on the last day of agreed monthly payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.
- .3 Submit to Departmental Representative, at least 14 days before first application for payment Schedule of values for parts of Work, aggregating total amount of Contract Price, to facilitate evaluation of applications for payment.
- .4 Support claims for products delivered to place of Work but not yet incorporated into work by such evidence as the Departmental Representative may reasonably require to establish value and delivery of products.

1.3 SCHEDULE OF VALUES

- .1 Provide schedule of values supported by evidence as the Departmental Representative may reasonably direct and when accepted by the Departmental Representative, be used as basis for applications for payment.
- .2 Include statement based on schedule of values with each application for payment.
- .3 Support claims for products delivered to Place of Work but not yet incorporated into Work by such evidence as Departmental Representative may reasonably require to establish value and delivery of products.

1.4 PROGRESS PAYMENT

- .1 Departmental Representative will issue to Departmental Representative, no later than ten (10) days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Departmental Representative determines to be due. If Departmental Representative amends application, Departmental Representative will give notification in writing giving reasons for amendment.

1.5 SUBSTANTIAL PERFORMANCE OF WORK

- .1 Prepare and submit to Departmental Representative comprehensive list of items to be completed or corrected and apply for a review by Departmental Representative to establish Substantial Performance or Interim Completion of Work when Work is substantially performed, if permitted by lien legislation applicable to Place of Work designated portion which Departmental Representative agrees to accept separately is substantially performed. Failure to include items on list does not alter responsibility to complete Contract.
- .2 No later than 10 days after receipt of list and application, Departmental Representative will review Work to verify validity of application, and no later than 7days after completing review, will notify Contractor if Work or designated portion of Work is substantially performed.
- .3 Departmental Representative shall state the date of Substantial Performance of Work or designated portion of Work in certificate.

- .4 Immediately following issuance of certificate of Substantial Performance of Work, in consultation with Departmental Representative, establish a reasonable date for finishing Work.

1.6 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF WORK

- .1 After issuance of certificate of Substantial Performance of Work:
 - .1 Submit application for payment of holdback amount.
 - .2 Submit sworn statement that accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred in Substantial Performance of Work and for which Departmental Representative might be held responsible have been paid in full, except for amounts properly retained as holdback or as identified amount in dispute.
- .2 After receipt of application for payment and sworn statement, Departmental Representative will issue certificate for payment of holdback amount.

1.7 PROGRESSIVE RELEASE OF HOLDBACK

- .1 Where legislation permits, if Departmental Representative has certified that Work of subcontractor or supplier has been performed prior to Substantial Performance of Work, Departmental Representative shall pay holdback amount retained for such subcontract Work, or products supplied by such supplier, on day following expiration of holdback period for such Work stipulated in lien legislation applicable to Place of Work.
- .2 In addition to provisions of preceding paragraph, and certificate wording, ensure that such subcontract Work or products is protected pending issuance of final certificate for payment and be responsible for correction of defects or Work not performed regardless of whether or not such was apparent when such certificates were issued.

1.8 FINAL PAYMENT

- .1 Submit application for final payment when Work is completed.
- .2 Departmental Representative will, no later than ten (10) days after receipt of application for final payment, review Work to verify validity of application. Departmental Representative will give notification that application is valid or give reasons why it is not valid, no later than 7 days after reviewing Work.
- .3 Departmental Representative will issue final certificate for payment when application for final payment is found valid.

END OF SECTION

Part 1

General

1.1 SECTION INCLUDES

- .1 Site fires.
- .2 Site Drainage.
- .3 Site clearing and plant protection.
- .4 Work adjacent to waterways.
- .5 Pollution control.

1.2 RELATED SECTIONS

- .1 WSP Site Plan and Cross Section Drawings.
- .2 Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017.
- .3 Section 01 00 10 – General Instructions.
- .4 Section 01 29 00 – Payment Procedures.
- .5 Section 31 00 00 – Earthwork.
- .6 Section 31 11 00 – Clearing and Grubbing.
- .7 Section 31 14 13 – Soil Stripping and Stockpiling.
- .8 Section 31 25 05 – Erosion and Sediment Control.
- .9 Section 32 91 19.13 – Topsoil Placement and Grading.
- .10 Section 32 92 19.13 – Mechanical Seeding.
- .11 Section 32 92 19.16 – Hydraulic Seeding.

1.3 FIRES

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

1.4 DRAINAGE

- .1 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements and Section 31 25 05 – Erosion and Sediment Control.

1.5 SITE CLEARING AND PLANT PROTECTION

- .1 Prior to Site clearing or Site disturbance a preclearing survey should be completed by the Departmental Representative to ensure sensitive and species-at-risk are not present. Preclearing surveys should be completed less than three (3) days prior to the start of works.

- .2 Site clearing to be completed in accordance with Section 31 11 00 Clearing and Grubbing.

1.6 WORK ADJACENT TO WATERWAYS

- .1 Work adjacent to waterways in accordance with Section 31 25 05 – Erosion and Sediment Control.
- .2 Do not operate construction equipment in waterways.
- .3 Do not use waterway beds for borrow material without Departmental Representative's approval.
- .4 Do not dump excavated fill, waste material or debris in waterways.

1.7 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

END OF SECTION

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- 1. References**
- .1 Government of Canada.
 - .1 Canada Labour Code - Part II
 - .2 Canada Occupational Health and Safety Regulations.
 - .2 National Building Code of Canada (NBC):
 - .1 Part 8, Safety Measures at Construction and Demolition Sites.
 - .3 Canadian Standards Association (CSA) as amended:
 - .1 CSA Z1006-10 Management of Work in Confined Spaces.
 - .4 Province of British Columbia:
 - .1 Workers Compensation Act Part 3-Occupational Health and Safety.
 - .2 Occupational Health and Safety Regulations
- 2. Related Sections**
- .1 Refer to the following current NMS sections as required:
 - .1 Environmental Protection: Section [013526]
- 3. Workers' Compensation Board Coverage**
- .1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.
 - .2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.
- 4. Compliance with Regulations**
- .1 PSPC may terminate the Contract without liability to PSPC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.
 - .2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.
- 5. Submittals**
- .1 Submit the following:
 - .1 Site Specific Health and Safety Plan.
 - .2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
 - .3 Copies of incident and accident reports.
 - .4 Complete set of current Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .5 Emergency Procedures.
-

5. Submittals
(continued)

- .2 The Departmental Representative will review the Contractor's Site Specific 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.
- .3 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.
- .4 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:
 - .1 Be construed to imply approval by the Departmental Representative.
 - .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
 - .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

6. Responsibility

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

7. Health and Safety
Coordinator

- .1 The Health and Safety Coordinator:
 - .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.
 - .2 Be responsible for implementing, revising, daily enforcing, and monitoring the Site Specific Health and Safety Plan.
 - .3 Be on site during execution of work.

8. General Conditions

- .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.
- .2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.
 - .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
 - .2 Secure site at night time [or provide security guard] as deemed necessary to protect site against entry.

9. Project/Site Conditions

- .1 Work at site will involve contact with:
 - .1 Multi-employer work site.
 - .2 Federal employees and general public.
 - .3 See Pre-construction Hazard Assessment Form Appendix D

10. Utility Clearances

- .1 The Contractor is solely responsible for all utility detection and clearances prior to starting the work
- .2 The Contractor will not rely solely upon the Reference Drawings or other information provided for utility locations.

11. Regulatory Requirements

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

12. Filing of Notice

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

13. Health and Safety Plan

- .1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.
- .2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:
 - .1 Primary requirements:
 - .1 Contractor's safety policy.

13. Health and Safety

Plan

(continued)

- .2 Identification of applicable compliance obligations.
 - .3 Definition of responsibilities for project safety/organization chart for project.
 - .4 General safety rules for project.
 - .5 Job-specific safe work procedures.
 - .6 Inspection policy and procedures.
 - .7 Incident reporting and investigation policy and procedures.
 - .8 Occupational Health and Safety Committee/Representative procedures.
 - .9 Occupational Health and Safety meetings.
 - .10 Occupational Health and Safety communications and record keeping procedures.
-
- .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.
 - .3 List hazardous materials to be brought on site as required by work.
 - .4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.
 - .5 Identify personal protective equipment (PPE) to be used by workers.
 - .6 Identify personnel and alternates responsible for site safety and health.
 - .7 Identify personnel training requirements and training plan, including site orientation for new workers.
-
- .3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.
 - .4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.
 - .5 Departmental Representative's review: the review of Site Specific Health and Safety Plan by Public Service and Procurement Canada (PSPC) shall not relieve the Contractor of responsibility for errors or omissions in final Site Specific Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

14. Emergency

Procedures

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

15. Hazardous Products

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

16. Confined Spaces

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

17. Powder-Actuated Devices

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

18. Fire Safety and Hot Work

- .1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.
- .2 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.

19. Fire Safety Requirements

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

20. Unforeseen Hazards

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

21. Posted Documents

- .1 Post legible versions of the following documents on site:
 - .1 Site Specific Health and Safety Plan.
 - .2 Sequence of work.
 - .3 Emergency procedures.
 - .4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
 - .5 Notice of Project.
 - .6 Floor plans or site plans.
 - .7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
 - .8 Workplace Hazardous Materials Information System (WHMIS) documents.
 - .9 Material Safety Data Sheets (MSDS).
 - .10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.

21. Posted Documents
(continued)

- .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.
- .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.

22. Meetings .1

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

23. Correction of
Non-Compliance .1

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

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Perform clearing and grubbing as indicated and as necessary to prepare site for the specified grading as described in Contract Documents and Section 31 11 00 Clearing and Grubbing.
- .2 Fill as shown on drawings and described in specifications.
- .3 Contact Departmental Representative for additional recommendations if conditions encountered during construction differ in any way from those described in their reports referenced below.
- .4 The existing aggregate materials on site are not suitable for re-use as fill.
- .5 Soils that contain silt or organics are not suitable for use as fill.
- .6 Imported granular aggregate as described in Section 2.1.2 shall be supplied to the site.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM D6913-04(2009)e1, Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.
 - .2 ASTM D698-[12e1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort 600kN-m/m³ - Method A.
 - .3 ASTM D1557-07, Standard Test Methods for Laboratory Compaction Characteristics of Soil.
- .2 Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017.

1.3 RELATED SECTIONS

- .1 WSP Site Plan and Cross Section Drawings.
- .2 Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017.
- .3 Section 01 00 10 – General Instructions.
- .4 Section 01 29 00 – Payment Procedures.
- .5 Section 01 35 26 – Environment Protection
- .6 Section 31 11 00 – Clearing and Grubbing.

- .7 Section 31 14 13 – Soil Stripping and Stockpiling.
- .8 Section 31 25 05 – Erosion and Sediment Control.
- .9 Section 32 91 19.13 - Topsoil Placement and Grading
- .11 Section 32 92 19.13 - Mechanical Seeding.
- .12 Section 32 92 19.16 - Hydraulic Seeding.

1.4 SOIL REPORT

- .1 Examine Geotechnical letter Report: Description of Project Scope- Pacific Agri-Food Research Centre, Summerland, B.C., File No. 161-16669-00 dated June 6, 2017.

1.5 REGULATIONS

- .1 All work shall be executed in accordance with the requirements of WorkSafe BC regulations.
- .2 Comply also with the Master Municipal Construction Documents as appropriate for all work.
- .3 General Materials testing in conformance to ASTM standards: ASTM D6913-04(2009)e1, ASTM D698-12e1 and ASTM D1557-07.

1.6 DEFINITIONS

- .1 Borrow: Satisfactory material imported from off-site for use as fill, acceptable to the Departmental Representative.
- .2 Excavation: Remove all sod with topsoil and organics fallen into the scarp. Do not remove the loose silt at the bottom of the scarp.
- .3 Unauthorized Excavation: No excavation is permitted without direction by the Departmental Representative. Unauthorized excavation and associated remedial work directed by the Departmental Representative, shall be with no added compensation.
- .4 Fill Definition:
 - .1 Fill: Soil materials used for infilling the scarp area.
 - .2 Unauthorized Fill: Fill not approved by Departmental Representative.
 - .3 Grades: This would involve filling the scarp as needed to achieve an overall slope not steeper than 2.7 Horizontal to 1 Vertical and side slopes of about 2 Horizontal to 1 Vertical as shown on geotechnical drawings.
 - .4 SPMDD: Standard Proctor Maximum Dry Density.

1.7 TESTS AND INSPECTIONS

- .1 WSP Canada Inc. is designated by Departmental Representative, to provide field review of the fill placement and grading of slope and to check general conformance with the Geotechnical Drawings and Specifications including compaction testing of the fill/grading areas. Notify the Departmental Representative when the compacted and graded fills are ready for review and testing.
- .2 The Departmental Representative will arrange for testing of fills by WSP. The cost of compaction testing shall be borne by the Departmental Representative.
- .3 Do not begin backfilling or filling operations until material has been approved for use by Departmental Representative.
- .4 Before commencing work, conduct, with Departmental Representative, condition survey of existing structures, trees and other plants, lawns, fencing, service poles, wires, survey bench marks and monuments which may be affected by work.
- .5 All fill materials shall be tested and approved for use by the Departmental Representative.
- .6 Contractor will coordinate with the Departmental Representative for quality assurance testing during earthwork operations.
- .7 Quality Assurance Testing during Construction: Allow for the Departmental Representative to inspect and approve fill layers before further construction work is performed.

1.8 QUALITY ASSURANCE

- .1 Compaction of fills to Proctor Density Standards as noted.
- .2 Comply with municipal bylaws and applicable building codes. Comply also with the Master Municipal Construction Documents as appropriate for all subsurface work.
- .3 General Materials testing in conformance to ASTM standards.

1.9 PROJECT CONDITIONS

- .1 Visit the site prior to tender closing to ascertain existing conditions which may affect the proper and accurate completion of the work.
- .2 Examine the site and make every enquiry deemed necessary to determine the character of materials to be encountered, and allow in the Bid Price for the cost of excavation and filling to produce the stated finished grades as indicated on the drawings and specified herein.
- .3 Existing Utilities: Do not interrupt utilities serving facilities occupied by Departmental Representative unless permitted in writing by Departmental Representative and then only after arranging to provide temporary utility services according to requirements indicated.

- .4 Notify Departmental Representative not less than two days in advance of proposed utility interruptions.
- .5 Contact utility-locator service for area where Project is located before excavating
- .6 Do not proceed with utility interruptions without Departmental Representative's written permission
- .7 Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult Departmental Representative immediately for directions. Cooperate with Departmental Representative and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of Departmental Representative.

1.10 BURIED SERVICES

- .1 Before commencing work establish the location of all buried services on and adjacent to the scarp area.

1.11 PROTECTION

- .1 Take all precautions to prevent collapse or caving of the scarp area. Contractor is responsible for all aspects of stability during construction activities, in accordance with WordSafe BC requirements.
- .2 Provide access barriers and signs as required.
- .3 Workers shall not enter the gully before backfilling due to possible cavities and loose conditions.
- .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees, sensitive areas and species-at-risk from damage.
- .5 Protect buried services that are required to remain undisturbed.
- .6 Dispose of cleared and grubbed material off site daily to disposal areas acceptable to authority having jurisdiction.
- .7 Contractor is to ensure proposed construction activities do not impact Agri-food Research Centre activities and / or operations. Speeding up and down the roads on the Research Centre grounds will not be tolerated.

Part 2 Products

2.1 MATERIALS

- .1 The existing aggregate materials on site are not suitable for re-use.

- .2 Imported granular aggregate shall be supplied to the site as required and shall be composed of free draining sand fill (100% passing the #10 sieve, no more than 5% should pass the #200 sieve). The aggregate particles shall be free of all organic, unsuitable aggregates or other deleterious materials. Gradation and dry unit weight for each proposed source of the imported fill shall be submitted, reviewed and accepted by the Departmental Representative prior to use on the project.

Part 3 Execution

3.1 PREPARATION/EXAMINATION

- .1 Examine site prior to start of work to determine extent of scope.
- .2 Ensure survey monuments are marked and protected.
- .3 Set out lines and levels for slope grades as detailed. Maintain stakes, bench marks and witness points during construction.
- .4 Within three (3) days prior to clearing and grubbing inspect site for species-at-risk and sensitive flora and fauna as outlined in Section 01 35 26 – Environmental Protection and the Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017.

3.2 EXCAVATION

- .1 Topsoil stripping:
 - .1 Remove all sod with attached topsoil and organics which may have fallen into the scarp.
 - .2 Dispose of sod, topsoil and organics off site immediately; stockpiling not permitted on site.

3.3 PLACEMENT OF FILL

- .1 Refer to the geotechnical letter File No. 161-16669-00 dated June 6, 2017 for a general description of fill requirements.
- .2 All fill materials shall be placed only with an excavator from the top of the scarp. Onsite stockpiling of fill will not be permitted.
- .3 The upper 600 mm of the fill layer within the scarp zone shall be compacted with a hoe-pac in lifts of 300 mm thickness to a minimum 95% Standard Proctor Maximum Dry Density (SPMDD). Any new fill shall be overbuilt so that final grading of the flat area and the slopes is in compacted fill.
- .4 All fill below 600 mm of final grade must be compacted in discrete lifts a maximum of 600 mm in thickness using a hoe-pac to a minimum 90% SPMDD).
- .5 The fill below 600 mm of the final grade shall be compacted with a lightweight compaction equipment.

- .6 Do not place further work on fills until receipt of test results and Departmental Representative approval.
- .7 Hydro-seed all the filled areas, where slopes exceed 10%, after approval of the compaction test results and grading.
- .8 Mechanically seed slopes 10% and flatter.

3.4 COMPACTION

- .1 Compact fill materials in lifts appropriate for the size and type of compaction equipment used and to meet minimum requirements specified herein.
- .2 Compact soil to not less than the percentages of Standard Proctor Maximum Dry Density in accordance with requirements.
- .3 Fill material should be imported to site and maintained at an appropriate moisture content to achieve the specified compaction requirement. Water should not be added to fill on site.

3.5 GRADING

- .1 General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - .1 Provide a smooth transition between adjacent existing grades and new grades.
 - .2 Fill low spots to comply with required surface tolerances.
- .2 Grading: Finish flat area and slope grades to a tolerance of 60 mm when tested with a 3 m straight edge.

3.6 PROTECTION

- .1 Protect newly graded areas from traffic. Keep free of trash and debris.
- .2 Repair and re-establish grades in settled, eroded and rutted areas to specified tolerances.
- .3 Reconditioning compacted areas: Where completed compacted areas are disturbed by subsequent construction operations, scarify surface, re-shape, refill as required and compact to required density prior to further construction.

3.7 SHORTAGE AND SURPLUS

- .1 Supply all necessary fill to meet backfilling and grading requirements and with minimum and maximum rough grade variance.

3.8 CLEANING

- .1 Remove from site waste materials.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 WSP Site Plan and Cross Section Drawings.
- .2 Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017.
- .3 Section 01 00 10 – General Instructions.
- .4 Section 01 29 00 – Payment Procedures.
- .5 Section 01 35 26 – Environmental Protection.
- .6 Section 31 00 00 – Earthwork.
- .7 Section 31 11 00 – Clearing and Grubbing.
- .8 Section 31 14 13 – Soil Stripping and Stockpiling.
- .9 Section 31 25 05 – Erosion and Sediment Control.
- .10 Section 32 91 19.13 – Topsoil Placement and Grading.
- .11 Section 32 92 19.13 – Mechanical Seeding.
- .12 Section 32 92 19.16 – Hydraulic Seeding.

1.2 MEASUREMENT PROCEDURES

- .1 Measure following items in hectares within limits as indicated:
 - .1 Clearing.
 - .2 Grubbing.

1.3 DEFINITIONS

- .1 Clearing consists of cutting off trees and brush vegetative growth to not more than specified height above ground and disposing of felled trees, previously uprooted trees and stumps, and surface debris.
- .2 Grubbing consists of excavation and disposal of stumps and roots, boulders and rock fragments of specified size to not less than specified depth below existing ground surface.

1.4 QUALITY ASSURANCE

- .1 Do construction occupational health and safety in accordance with WorkSafe BC regulations.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling, reuse and disposal.
- .2 Remove from site waste materials.

Part 2 Execution

2.1 EROSION AND SEDIMENTATION CONTROL

- .1 Provide erosion and sedimentation control measures as described in Section 31 25 05 – Erosion and Sediment Control.

2.2 PREPARATION

- .1 Inspect site and verify with Departmental Representative, items designated to remain.
- .2 Within three (3) days prior to clearing and grubbing inspect site for species-at-risk and sensitive flora and fauna as outlined in Section 01 35 26 – Environmental Protection and the Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017.
- .3 Locate and protect utility lines: preserve in operating condition active utilities traversing site.
 - .1 Notify Departmental Representative immediately of damage to or when unknown existing utility line[s] are encountered.
- .4 Notify utility authorities before starting works.
- .5 Keep roads and walks free of dirt and debris.

2.3 CLEARING

- .1 Clearing includes trimming, felling, cutting of trees into sections and satisfactory disposal of trees and other vegetation designated for removal, including downed timber, brush, and snags occurring within cleared areas.
- .2 Clear as directed by Departmental Representative.
- .3 Protect trees and plants on site and adjacent properties where indicated.
- .4 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 1.2 m.
- .5 Protect roots of designated trees to drip-line during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .6 Minimize stripping of topsoil and vegetation.
- .7 Restrict tree removal to areas indicated, or as designated by Departmental Representative.

2.4 GRUBBING

- .1 Fill depressions made by grubbing with suitable material and to make new surface conform to existing adjacent surface of ground.

2.5 REMOVAL AND DISPOSAL

- .1 Remove grubbed and cleared materials off site to disposal area approved by Departmental Representative.

2.6 FINISHED SURFACE

- .1 Leave ground surface in condition suitable for approval of Departmental Representative.

2.7 CLEANING

- .1 Remove from site waste materials.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 WSP Site Plan and Cross Section Drawings.
- .2 Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017.
- .3 Section 01 00 10 – General Instructions.
- .4 Section 01 29 00 – Payment Procedures.
- .5 Section 01 35 26 – Environment Protection
- .6 Section 31 00 00 – Earthwork.
- .7 Section 31 11 00 – Clearing and Grubbing.
- .8 Section 32 91 19.13 - Topsoil Placement and Grading
- .9 Section 32 92 19.13 - Mechanical Seeding.
- .10 Section 32 92 19.16 - Hydraulic Seeding.

1.2 REFERENCES

- .1 Local erosion and sediment control guidelines. (Best Management Practices for Erosion and Sediment Control – Upland Works, City of Kelowna, 1998)

Part 2 Execution

2.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to Best Management Practices.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

2.2 STRIPPING OF TOPSOIL

- .1 Remove topsoil before construction procedures commence to avoid compaction of topsoil.

- .2 Handle topsoil only when it is dry and warm.
- .3 Remove vegetation and brush from targeted areas by non-chemical means and dispose of offsite.
- .4 Strip topsoil to depths as directed by Departmental Representative.
 - .1 Avoid mixing topsoil with subsoil.
- .5 Dispose of sod, topsoil and organics off site immediately, stockpiling is not permitted on site.

2.3 PREPARATION OF GRADE

- .1 Verify that grades are correct and notify Departmental Representative if discrepancies occur. Do not begin work until instructed by Departmental Representative.
 - .1 Grade area only when soil is dry to lessen soil compaction.
 - .2 Grade soil establishing natural contours and eliminating uneven areas and low spots, ensuring positive drainage.

2.4 PLACING OF TOPSOIL

- .1 Place topsoil only after Departmental Representative has accepted subgrade.
- .2 Spread topsoil during dry conditions in uniform layers not exceeding 150 mm, over unfrozen subgrade free of standing water.
- .3 Establish traffic patterns for equipment to prevent driving on topsoil after it has been spread to avoid compaction.

2.5 CLEANING

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Permanent erosion and sediment control devices.

1.2 RELATED SECTIONS

- .1 WSP Site Plan and Cross Section Drawings.
- .2 Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017.
- .3 Section 01 00 10 – General Instructions.
- .4 Section 01 29 00 – Payment Procedures.
- .5 Section 01 35 26 – Environment Protection
- .6 Section 31 00 00 – Earthwork.
- .7 Section 31 11 00 – Clearing and Grubbing.
- .8 Section 31 14 13 – Soil Stripping and Stockpiling.
- .9 Section 32 91 19.13 - Topsoil Placement and Grading
- .10 Section 32 92 19.13 - Mechanical Seeding.
- .11 Section 32 92 19.16 - Hydraulic Seeding.

1.3 REFERENCES

- .1 Local erosion and sediment control guidelines. (Best Management Practices for Erosion and Sediment Control – Upland Works, City of Kelowna, 1998)

1.4 PERFORMANCE REQUIREMENTS

- .1 Design erosion and sediment control system to eliminate erosion of soil, prevent ponding or build-up of water that may lead to erosion of soil, prevent sedimentation of storm sewers and receiving streams and prevent air borne dust and particulate matter.

1.5 SUBMITTALS FOR REVIEW

- .1 Provide within thirty (30) days of date established for commencement of the Work.
 - .1 Erosion and Sediment Control Plan (ESCP):
 - .1 Provide Drawings and specifications with erosion and sediment control highlighted.

1.6 QUALITY ASSURANCE

- .1 Design Erosion and Sediment Control Plan conforming to applicable erosion and sedimentation control codes and standards under direct supervision of a Professional

Engineer or Biologist experienced in design of this Work and licensed at the place where the Project is located.

Part 2 Products

2.1 SILT FENCING

- .1 Geotextile: Woven polypropylene filter fabric, resistant to ultra-violet degradation.
- .2 Posts: Galvanized steel T-bar or Hardwood, 915 mm minimum length.
- .3 Ties: Heavy duty plastic.

2.2 MULCHING

- .1 Straw and Hay Mulches: Clean, free of seeds and noxious weeds, non-compacted.
- .2 Hydraulic Mulches:
 - .1 Moisture content (total weight basis) should be minimized and not to exceed 10%.
- .3 Tackifier: Organic tackifier.

2.3 EROSION CONTROL BLANKET

- .1 Straw Blanket: Weed free 100% wheat straw on surface with a slope of less than ten (10) percent and 100% fibre sewn to one (1) layer netting, and biodegradable on slopes greater than ten (10) percent.

2.4 ACCESSORIES

- .1 Staples: U-shaped ungalvanized wire, minimum 3.0 mm x 200 mm long x 25 mm wide.

Part 3 Execution

3.1 PREPARATION

- .1 Prepare Erosion and Sediment Control Plan (ESCP) conforming to local erosion and sediment control codes and standards, designed to meet the following:
 - .1 Prevent ponding or build-up of water that may lead to erosion of soil.
 - .2 Prevent loss of soil by wind erosion and storm water runoff.
 - .3 Prevent sedimentation in receiving streams.
 - .4 Prevent air pollution by dust and particulate matter.

3.2 INSTALLATION

- .1 Install silt fences as indicated on ESCP.

3.3 SILT FENCES

- .1 Place silt fences at right angles of flow.

- .2 Install successive, parallel fences to achieve required degree of control.
- .3 Height: Minimum 1100 mm, but not exceeding 1000 mm above ground surface.
- .4 Posts: Position posts downstream at maximum 1.5 m on centre and extending minimum 400 mm into the ground. Secure or brace posts to prevent overturning due to sediment loading.
- .5 Bury geotextile at bottom of silt fence minimum 50 mm. Compact ground to prevent pullout.
- .6 Secure top of geotextile using wire or plastic ties.
- .7 Splice geotextile at support post locations by wrapping fabric around each of two (2) abutting support posts.

3.4 MULCHING

- .1 Tackifier:
 - .1 Apply tackifier on berms and landscape embankments.
 - .2 Apply tackifier to manufacturer's written instructions.
- .2 Hydro-Mulching:
 - .1 Place mulch and tackifier in purpose-made equipment.
 - .2 Mix materials with fresh, potable water to form homogeneous slurry.
 - .3 Unless approved by Departmental Representative, apply hydro-mulch evenly, in multiple layers, at the minimum component material rates specified:
 - .1 Wood Cellulose Mulch:
 - .1 Mulch: 470 kg/hectare dry weight.
 - .2 Tackifier: 5 to 10% by weight.
 - .2 Bonded Fiber Matrix: 3,500 to 4,000 kg/hectare dry weight.
 - .3 Mechanically Bonded Fiber Matrix: 3,500 to 4,000 kg/hectare.
 - .4 Retain and count empty bags of mulch to ensure final application rate.

3.5 EROSION CONTROL BLANKETS

- .1 Surface Preparation:
 - .1 Seed surface as specified in Section 32 91 19 13 Topsoil Placement and Grading prior to blanket placement.
- .2 Erosion Control Blankets:
 - .1 Install where indicated on ESCP over permanently seeded topsoil.
 - .2 Install blankets to manufacturer's written instructions, anchor with stakes or staples with recommended pattern to resist loads.
 - .3 Duration: Twelve (12) months.

3.6 MUNICIPAL STORM WATER

- .1 Protect catch basins, drains, culverts and other points of entry into municipal storm water collection systems.
- .2 Each Week: Inspect for erosion and sediment control measures, to ensure proper functions are not damaged.

3.7 MONITORING AND MAINTENANCE

- .1 Comply with maintenance requirements specified.
- .2 Silt Fences:
 - .1 Maintain integrity of silt fences.
 - .2 Inspect silt fences within twenty-four (24) hours of heavy rainfall (greater than 25 mm during a 24 hour period), and snow melt, and during prolonged rainfall or storm. Correct deficiencies.
 - .3 Repair or replace damaged products within twenty-four (24) hours.
 - .4 Remove sediment deposits when deposit reaches approximately one-third the height of silt fence. Dispose of sediment in location where sediment will not erode into construction areas, offsite properties or watercourses.
 - .5 Do not remove silt fences until directed by Department Representative.
- .3 Erosion Control Blankets:
 - .1 Monitor erosion control blanket for secure anchorage.
 - .2 Replace damaged erosion control blankets.
 - .3 Reseed surface as required prior to replacement. Repair installation and anchoring as required.
- .4 Tackifier: Reapply tackifier when erosion and disturbance has occurred on embankments, as required.
- .5 Seeding: Reseed and repair seeded areas that have become bare or damaged as specified in Sections 32 92 19 13 and 32 92 19 16.

3.8 CLEAN-UP AND REMOVAL

- .1 Remove and dispose of materials, salvage to contractor.
- .2 Remove accumulated sediment or spread to match finished grade; ensure proper drainage.
- .3 Stabilize area disturbed by removal operations.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 WSP Site Plan and Cross Section Drawings.
- .2 Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017 Section 01 00 10 – General Instructions.
- .3 Section 01 00 10 – General Instructions.
- .4 Section 01 29 00 – Payment Procedures.
- .5 Section 01 35 26 – Environment Protection.
- .6 Section 31 00 00 – Earthwork.
- .7 Section 31 11 00 – Clearing and Grubbing.
- .8 Section 31 14 13 – Soil Stripping and Stockpiling.
- .9 Section 31 25 05 – Erosion and Sediment Control.
- .10 Section 32 92 19.13 – Mechanical Seeding.
- .11 Section 32 92 19.16 – Hydraulic Seeding.

1.2 MEASUREMENT PROCEDURES

- .1 Measure finish grading in square metres from actual surface measurements as determined by Departmental Representative.

1.3 REFERENCE STANDARDS

- .1 Agriculture and Agri-Food Canada
 - .1 The Canadian System of Soil Classification, Third Edition, 1998.
 - .2 ASTM D7322 Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Ability to Encourage Seed Germination and Plant Growth Under Bench-Scale Conditions

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse, recycling or disposal.
- .2 Divert unused soil amendments from landfill to official hazardous material collections site approved by Departmental Representative.
- .3 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

Part 2 Products

2.1 TOPSOIL

- .1 Topsoil for seeded areas: 100 mm to 150 mm of topsoil mixture of particulates, microorganisms and organic matter which provides suitable medium for supporting intended plant growth.
 - .1 Top soil texture based on The Canadian System of Soil Classification, to consist of 10 to 25 % organics.
 - .2 Contain no toxic elements or growth inhibiting materials.

2.2 SOIL AMENDMENTS

- .1 Fertilizer:
 - .1 Phosphorus (P): 115 kg/ ha.

2.3 SOURCE QUALITY CONTROL

- .1 Advise Departmental Representative of sources of topsoil to be utilized with sufficient lead time for testing.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control plan.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 STRIPPING OF TOPSOIL

- .1 Dispose of sod, topsoil and organics offsite immediately. Stockpiling will not be permitted onsite.
- .2 Disposal of unused topsoil is to be in an environmentally responsible manner but not used as landfill.

3.3 PREPARATION OF EXISTING GRADE

- .1 Verify that grades are correct.
 - .1 If discrepancies occur, notify Departmental Representative and do not commence work until instructed by Departmental Representative.
- .2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
- .3 Cultivate entire area which is to receive topsoil to minimum depth of 25 mm.

3.4 PLACING AND SPREADING OF TOPSOIL

- .1 Place topsoil after Departmental Representative has accepted fill surface.
- .2 Spread topsoil in uniform layers not exceeding 150 mm.
- .3 Spread topsoil to following minimum depths after settlement.
 - .1 100 to 150 mm for seeded areas
 - .2 Topsoil must be compacted to allow seed germination (85% Standard Proctor Maximum Dry Density (SPMDD)).

3.5 COMPACTION

- .1 Compact topsoil materials in lifts appropriate for the size and type of light weight compaction equipment used and to meet minimum requirements specified herein.
- .2 Compact topsoil to not less than the percentages of Standard Proctor Maximum Dry Density in accordance with requirements.
- .3 Topsoil material should be imported to site and maintained at an appropriate moisture content to achieve the specified compaction requirement. Water should not be added to fill on site.

3.6 FINISH GRADING

- .1 Grade to eliminate rough spots and low areas and ensure positive drainage.
 - .1 Prepare loose friable bed by means of cultivation and subsequent raking.
- .2 Consolidate topsoil to required bulk density using equipment approved by Departmental Representative.
 - .1 Leave surfaces uniform and firm.

3.7 ACCEPTANCE

- .1 Departmental Representative will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

3.8 SURPLUS MATERIAL

- .1 Dispose of materials except topsoil not required where directed by Departmental Representative.

3.9 CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 WSP Site Plan and Cross Section Drawings.
- .2 Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017.
- .3 Section 01 00 10 – General Instructions.
- .4 Section 01 29 00 – Payment Procedures.
- .5 Section 01 35 26 – Environment Protection
- .6 Section 31 00 00 – Earthwork.
- .7 Section 31 11 00 – Clearing and Grubbing.
- .8 Section 31 14 13 – Soil Stripping and Stockpiling.
- .9 Section 31 25 05 – Erosion and Sediment Control.
- .10 Section 32 91 19.13 – Topsoil Placement and Grading.
- .11 Section 32 92 19.16 – Hydraulic Seeding.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for seed, and fertilizer.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements:
 - .1 Labelled bags of seed and fertilizer identifying mass in kg, mix components and percentages, date of bagging, supplier's name and lot number.
 - .2 Seed and fertilizer must be dry.
- .2 Storage and Handling Requirements:
 - .1 Store seed and fertilizer in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .3 Packaging Waste Management: remove for reuse, recycling or disposal as specified in Construction Waste Management Plan.

1.4 WARRANTY

- .1 For seeding, 12 months warranty period.

- .2 Contractor hereby warrants that seeding will remain free of defects for 12 months.
- .3 End-of-warranty inspection will be conducted by Departmental Representative.

Part 2 Products

2.1 GRASS SEED

- .1 Canada Certified seed in accordance with Government of Canada "Seeds Act" and "Seeds Regulations".
 - .1 Native grass seed mixture for a 20 kg bag.
 - .1 Mixture composition by seed weight:
 - .1 35 % bluebunch wheatgrass (*Pseudoroegneria spicatum*).
 - .2 35 % slender wheatgrass (*Elymus trachycaulum*).
 - .3 10 % rocky mountain fescue (*Festuca saximontana*).
 - .4 10 % sheep fescue (*Festuca ovina*).
 - .5 10 % perennial ryegrass (*Lolium perenne*).
 - .6 Seed mix to be inoculated with native legumes.
 - .2 In packages individually labelled in accordance with "Seeds Regulations" and indicating name of supplier.
 - .3 Grass seed mixture composition percentage may be adjusted by percentage ($\pm 10\%$) based on seed availability.
 - .4 Substitution for grass seed mixture species must be approved by a Departmental Representative.

2.2 WATER

- .1 Free of impurities that would inhibit germination and growth.
- .2 Water for required irrigation should be supplied from offsite such as a water truck.
- .3 Any water required for irrigation requires application control such as lowering pressure and water quantity using low pressure water spray nozzles to prevent ponding or runoff that may result in erosion of soils.

2.3 FERTILIZER

- .1 To Canada "Fertilizers Act" and Regulations.
- .2 Broadcast application of phosphorous fertilizer at 115 kg/ha. of P_2O_5 to help germination/root growth is recommended.

Part 3 Execution

3.1 EXAMINATION

- .1 Mechanical seeding can be used where the slope is less than 10% and it is safe to use equipment as determined by the Departmental Representative.
- .2 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for mechanical seeding installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 SEED BED PREPARATION

- .1 Do not perform work under adverse field conditions as determined by Departmental Representative.
- .2 Remove and dispose of weeds; debris; soil contaminated by oil, gasoline and other deleterious materials; to a licensed contaminated soils disposal site in location as directed by Departmental Representative.
- .3 Verify that grades are correct. If discrepancies occur, notify Departmental Representative and commence work when instructed by Departmental Representative.
- .4 Cultivate fine graded surface approved by Departmental Representative to 25 mm depth immediately prior to seeding.

3.3 SEED PLACEMENT

- .1 Ensure seed is placed under supervision of certified Landscape Planting Supervisor.
- .2 For mechanical seeding:
 - .1 Mechanical landscape drill seeder which accurately places seed at specified depth and rate and rolls in single operation.
 - .2 Use equipment and method acceptable Departmental Representative.
- .3 For manual seeding:
 - .1 Use manually operated drop seeder.
 - .2 Use equipment and method acceptable to Departmental Representative.
- .4 On cultivated surfaces, sow seed uniformly at rate of:
 - .1 30 kg/hectare.
- .5 Blend applications 100 mm into adjacent grass areas to form uniform surfaces.
- .6 Sow half of required amount of seed in one direction and remainder at right angles, wherever space allows.

- .7 Incorporate seed by light raking in cross directions.
- .8 Consolidate mechanically seeded areas immediately after seeding.
- .9 Apply blanket: Weed free 100% wheat straw on surface with a slope of less than ten (10) percent and 100% fibre loosely weaved to one (1) layer netting, and biodegradable on slopes greater than ten (10) percent.

3.4 CLEANING

- .1 Progress Cleaning:
 - .1 Leave Work area clean at end of each day.
 - .2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
 - .1 Clean and reinstate areas affected by Work.
 - .2 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
 - .3 Divert unused fertilizer from landfill to official hazardous material collections site approved by Departmental Representative.

3.5 PROTECTION

- .1 Erect fence around newly seeded areas sufficient to protect against deterioration due to pedestrian or other traffic.
- .2 Remove protection devices as directed by Departmental Representative.

3.6 FERTILIZING PROGRAM

- .1 Fertilize during establishment to the following program:
 - .1 Phosphorus (P): 115 kg/ ha.

3.7 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Ensure maintenance is carried out under supervision of certified Landscape Maintenance Supervisor.
- .2 Perform following operations from time of seed application until acceptance by Departmental Representative:
 - .1 Water seeded area to maintain optimum soil moisture level for germination and continued growth of grass. Control watering to prevent washouts.
 - .2 Repair and reseed dead or bare spots (greater than 1m²) to allow establishment of seed prior to acceptance.
 - .3 Control weeds by mechanical means utilizing acceptable integrated pest management practices.
 - .4 Adjust protection barrier as necessary to protect against deterioration due to pedestrian or other traffic as needed.

3.8 FINAL ACCEPTANCE

- .1 Seeded areas will be accepted by Departmental Representative provided that:
 - .1 Areas are uniformly established free of rutted, eroded, bare or dead spots and extent of weeds apparent in grass is acceptable.
 - .2 Areas have been fertilized.
- .2 Areas seeded in fall will be accepted within 12 months, not before one month after start of growing season provided acceptance conditions are fulfilled.

3.9 MAINTENANCE DURING WARRANTY PERIOD

- .1 Perform following operations from time of acceptance until end of warranty period.
 - .1 Water seeded area from offsite water source to maintain optimum soil moisture level for continued growth of grass.
 - .2 Any water required for irrigation requires application control such as lowering pressure and water quantity using low pressure water spray nozzles to prevent washouts, ponding or runoff that may result in erosion of soils.
 - .3 Repair and reseed dead or bare spots (greater than 1 m²) to satisfaction of Departmental Representative.
 - .4 Control weeds by mechanical means utilizing acceptable integrated pest management practices.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 WSP Site Plan and Cross Section Drawings.
- .2 Environmental Assessment Pacific Agri-Food Research Centre Slope Stabilization Project. January 2017.
- .3 Section 01 00 10 – General Instructions.
- .4 Section 01 29 00 – Payment Procedures.
- .5 Section 01 35 26 – Environment Protection
- .6 Section 31 00 00 – Earthwork.
- .7 Section 31 11 00 – Clearing and Grubbing.
- .8 Section 31 14 13 – Soil Stripping and Stockpiling.
- .9 Section 31 25 05 – Erosion and Sediment Control.
- .10 Section 32 91 19.13 – Topsoil Placement and Grading.
- .11 Section 32 92 19.13 – Mechanical Seeding.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for seed, mulch, tackifier, fertilizer, liquid soil amendments and micronutrients.
 - .2 Submit [2] copies of WHMIS MSDS.
- .2 Submit in writing seven (7) days prior to commencing work:
 - .1 Volume capacity of hydraulic seeder in litres.
 - .2 Amount of material to be used per tank based on volume.
 - .3 Number of tank loads required per hectare to apply specified slurry mixture per hectare.
- .3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements:
 - .1 Labelled bags of seed and fertilizer identifying mass in kg, mix components and percentages, date of bagging, supplier's name and lot number.
 - .2 Seed and fertilizer must be dry.

- .2 Storage and Handling Requirements:
 - .1 Store seed and fertilizer in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .3 Packaging Waste Management: remove for reuse, recycling or disposal as specified in Construction Waste Management Plan.

1.4 WARRANTY

- .1 For seeding, 12 months warranty period.
- .2 Contractor hereby warrants that seeding will remain free of defects for 12 months.
- .3 End-of-warranty inspection will be conducted by Departmental Representative.

Part 2 Products

2.1 GRASS SEED

- .1 Canada Certified seed in accordance with Government of Canada "Seeds Act" and "Seeds Regulations".
 - .1 Native grass seed mixture for a 20 kg bag.
 - .1 Mixture composition by seed weight:
 - .1 35 % bluebunch wheatgrass (*Pseudoroegneria spicatum*).
 - .2 35 % slender wheatgrass (*Elymus trachycaulum*).
 - .3 10 % rocky mountain fescue (*Festuca saximontana*).
 - .4 10 % sheep fescue (*Festuca ovina*).
 - .5 10 % perennial ryegrass (*Lolium perenne*).
 - .6 Seed mix to be inoculated with native legumes.
 - .2 In packages individually labelled in accordance with "Seeds Regulations" and indicating name of supplier.
 - .3 Grass seed mixture composition percentage may be adjusted by percentage ($\pm 10\%$) based on seed availability.
 - .4 Substitution for grass seed mixture species must be approved by a Departmental Representative.

2.2 WATER

- .1 Free of impurities that would inhibit germination and growth.
- .2 Water for required irrigation should be supplied from offsite such as a water truck.
- .3 Any water required for irrigation requires application control such as lowering pressure and water quantity using low pressure water spray nozzles to prevent ponding or runoff that may result in erosion of soils.

FERTILIZER

- .4 To Canada "Fertilizers Act" and Regulations.
- .5 Broadcast application of phosphorous fertilizer at 115 kg/ha. of P₂O₅ to help germination/root growth is recommended.

2.3 MULCH

- .1 Tackifier:
 - .1 Apply tackifier on berms and landscape embankments.
 - .2 Apply tackifier to manufacturer's written instructions.
- .2 Hydro-Mulching:
 - .1 Place mulch and tackifier in purpose-made equipment.
 - .2 Mix materials with fresh, potable water to form homogeneous slurry.
 - .3 Unless approved by Departmental Representative, apply hydro-mulch evenly, in multiple layers, at the minimum component material rates specified:
 - .1 Wood Cellulose Mulch:
 - .1 Mulch: 2,250 kg to 3,500 /hectare dry weight.
 - .2 Tackifier: 5 to 10% by weight.
 - .2 Bonded Fiber Matrix: 2,250 kg to 3,500 kg/hectare dry weight.
 - .3 Mechanically Bonded Fiber Matrix: 2,250 kg to 3,500 kg/hectare.
 - .4 Retain and count empty bags of mulch to ensure final application rate.

Part 3 Execution

3.1 EXAMINATION

- .1 Hydraulic seeding should be used throughout the Site, but may be substituted where the slope is less than 10% and machine access is allowed as determined by the Departmental Representative. Hydraulic seeding should be used on all slopes within the fill area and adjacent side slopes as indicated on the Survey Drawings and Geotechnical Drawings.
- .2 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for hydraulic seeding in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PROTECTION OF EXISTING CONDITIONS

- .1 Protect structures, signs, guide rails, fences, plant material, utilities and other surfaces not intended for spray.
- .2 Immediately remove any material sprayed where not intended as directed by Departmental Representative.

3.3 PREPARATION OF SURFACES

- .1 Do not perform work under adverse field conditions such as wind speeds over 15 km/h, frozen ground or ground covered with snow, ice or standing water.
- .2 Fine grade areas to be seeded free of humps and hollows.
 - .1 Ensure areas are free of deleterious and refuse materials.
- .3 Cultivated areas identified as requiring cultivation to depth of 25 mm.

3.4 FERTILIZING PROGRAM

- .1 Fertilize during establishment to the following program:
 - .1 Phosphorus (P): 115 kg/ ha.

3.5 PREPARATION OF SLURRY

- .1 Measure quantities of materials by weight or weight-calibrated volume measurement satisfactory to Departmental Representative. Supply equipment required for this work.
- .2 Charge required water into seeder. Add material into hydraulic seeder under agitation. Pulverize mulch and charge slowly into seeder.
- .3 After materials are in seeder and well mixed, charge tackifier into seeder and mix thoroughly to complete slurry.

3.6 SLURRY APPLICATION

- .1 Hydraulic seeding equipment:
 - .1 Slurry tank.
 - .2 Agitation system for slurry to be capable of operating during charging of tank and during seeding, consisting of recirculation of slurry and/or mechanical agitation method.
 - .3 Capable of seeding by hand operated hoses and appropriate nozzles.
 - .4 Tank volume to be certified by certifying authority and identified by authorities "Volume Certification Plate".
 - .5 Application control such as lowering pressure and water quantity using low pressure water spray nozzles to prevent ponding or runoff that may result in erosion of soils.
- .2 Slurry mixture applied per hectare.
 - .1 Seed: Native grass seed mixture 20 kg/ha.
Mulch: to be determined based on 2.3.2.3 and application rate.

- .2 Tackifier: 5 to 10% by weight.
- .3 Apply slurry uniformly, at optimum angle of application for adherence to surfaces and germination of seed.
 - .1 Using correct nozzle for application.
 - .2 Using hoses for surfaces difficult to reach and to control application.
- .4 Blend application 100 mm into adjacent grass areas or sodded areas to form uniform surfaces.
- .5 Re-apply where application is not uniform.
- .6 Remove slurry from items and areas not designated to be sprayed.

3.7 CLEANING

- .1 Progress Cleaning:
 - .1 Leave Work area clean at end of each day.
 - .2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
 - .1 Clean and reinstate areas affected by Work.
 - .2 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
 - .3 Divert unused fertilizer from landfill to official hazardous material collections site approved by Departmental Representative.

3.8 PROTECTION

- .1 Erect fence around newly seeded areas sufficient to protect against deterioration due to pedestrian or other traffic.
- .2 Remove protection devices as directed by Departmental Representative.

3.9 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Ensure maintenance is carried out under supervision of certified Landscape Maintenance Supervisor.
- .2 Perform following operations from time of seed application until acceptance by Departmental Representative:
 - .1 Water seeded area to maintain optimum soil moisture level for germination and continued growth of grass.
 - .2 Any water required for irrigation requires application control such as lowering pressure and water quantity to prevent washouts, ponding or runoff that may result in erosion of soils.
 - .3 Repair and reseed dead or bare spots (greater than 1m²) to allow establishment of seed prior to acceptance.

- .4 Control weeds by mechanical means utilizing acceptable integrated pest management practices.
- .5 Adjust protection barrier as necessary to protect against deterioration due to pedestrian or other traffic as needed.

3.10 ACCEPTANCE

- .1 Seeded areas will be accepted by Departmental Representative provided that:
 - .1 Areas are uniformly established free of rutted, eroded, bare or dead spots and extent of weeds apparent in grass is acceptable.
 - .2 Areas have been fertilized.
- .2 Areas seeded in fall will be accepted within 12 months, not before one month after start of growing season provided acceptance conditions are fulfilled.

3.11 MAINTENANCE DURING WARRANTY PERIOD

- .1 Perform following operations from time of acceptance until end of warranty period:
 - .1 Water seeded area to maintain optimum soil moisture level for continued growth of grass. Control watering to prevent washouts.
 - .2 Repair and reseed dead or bare spots (greater than 1 m²) to satisfaction of Departmental Representative.
 - .3 Control weeds by mechanical means utilizing acceptable integrated pest management practices.

END OF SECTION

APPENDIX A

Geotechnical Assessment Report



Date: June 06, 2017

WSP File No: 161-16669-00

Public Works & Government Services Canada
219 – 800 Burrard Street
Vancouver, BC V6Z 0B9

Attention: Mr. Tom Dunphy, Senior Project Manager

**Subject: Description of Project Scope
Geotechnical Engineering Assessment- Phase 2
Slope Stability Assessment- Pacific Agri-Food Research Centre,
Summerland, B.C. Project # R.080303.001 Under PWGSC SOA EZ
899-141238**

This letter presents our comments and recommendations pertaining to infilling of the scarp area plus a portion of the gully at the above referenced site located at 4200 Highway 97 in Summerland. It is understood that the watermain break in October 2015 at the Pacific Agriculture and Food Research Centre (PARC) resulted in erosion on the adjacent slope and the water and soil washed down and discharged through an existing culvert passing below Highway 97. The failure left steep side slopes at the scarp and the gully, indicating the high strength of the remaining material, which is in a dry state.

To reduce the risk of scarp retrogressing into the orchard, infilling of the scarp area plus a portion of the gully is recommended. The fill should consist of free draining sand fill placed with an excavator from the top of the slope. The upper 600 mm of the fill should be compacted with a hoe-pac in lifts of 300 mm thickness to a minimum 95% Standard Proctor Maximum Dry Density (SPMDD), then hydro-seeded or covered with a geo-synthetic rolled mats. Since the existing silt bluff is sensitive to water, no water should be added on site. Workers should not enter the gully due to possible cavities and loose conditions.

A topographic survey of the scarp area has been completed by McElhanney Associates Land Surveying Ltd. on December 23, 2016 (Drawing, 3386-00-TOPO).

The geometry of the unfilled area can be considered in three components.

- The area within about 6 m of the scarp at the head of the gully will be filled to be flat and level with the adjacent ground.
- South of this flat area, closer to the centre line of the gully the fill is to slope down at 2.7H:1V.
- Additional fill will slope up at 2H:1V from the 2.7H:1V filled centre line to intersect the sides of the gully.

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Richmond, BC V6V 2H9

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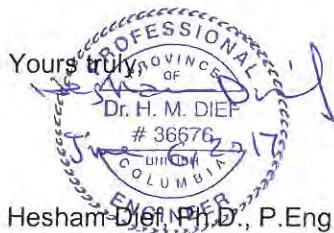
The general geometry of the fill is shown on Dwgs. 101, 202 & 303. The Earthwork Contractor will need to examine and interpolate these sections, in conjunction with field observations and measurements, in order to establish the extent of the earthwork required.

Following infilling of the slope by the Contractor, a Post-Construction topographic survey should be completed by the Owner to document the graded slope across the fill embankment. A copy of the survey should be forwarded to WSP for review in order to advise of areas (if any) which could require remedial work at which time the Contractor should undertake the work accordingly.

WSP technical personnel will be on site intermittently to observe the work performed by the Contractor, including completion of density tests to check the compaction of the filled areas.

For your information, WSP has prepared the Technical Specification (Excavation and Fill) for the recommended slope infill, and this letter must be read in conjunction with the Project Specifications prepared by WSP.

Yours truly,



Hesham Dief Ph.D., P.Eng.
Senior Engineer, Geotechnical

Reviewed by: Douglas Wallis, M. A. Sc., P.Eng.
Senior Engineer, Geotechnical

HMD/mg

*Encl. Terms of Reference
Appendix A Drawings*



TERMS OF REFERENCE FOR GEOTECHNICAL REPORTS ISSUED BY WSP CANADA INC.

1 STANDARD OF CARE

WSP Canada Inc. ("WSP") prepared and issued this geotechnical report (the "Report") for its client (the "Client") in accordance with generally-accepted engineering consulting practices for the geotechnical discipline. 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 geotechnical 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 site, development, building, design or building assessment 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. **Nature and Exactness of Descriptions:** The classification and identification of soils, rocks and geological units, as well as engineering assessments and estimates have been based on investigations performed in accordance with the standards set out in Paragraph 1 above. The classification and identification of these items are judgmental in nature and even comprehensive sampling and testing programs, implemented with the appropriate equipment by experienced personnel,



may fail to locate some conditions. All investigations or assessments utilizing the standards of Paragraph 1 involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and all persons making use of such documents or records should be aware of, and accept, this risk. Some conditions are subject to changes over time and the parties making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. Where special concerns exist, or when the Client has special considerations or requirements, the Client must disclose them to WSP so that additional or special investigations may be undertaken, which would not otherwise be within the scope of investigations made by WSP or the purposes of the Report.

- 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 engineering findings and to review the geotechnical aspects of the plans, drawings and specifications of other professionals relative to the engineering issues pertaining to the geotechnical consulting services provided by WSP. To ensure compliance and consistency with the applicable building 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.



5		
4		
3		
2		
1	Issued for tender	2017/06/06
0	Issued for client review	2017/02/23
Revisions/Revisions	Description/Description	Date/Date

Client/Client
AGRICULTURE AND AGRI-FOOD CANADA
 219 - 800 BURRARD STREET VANCOUVER, BC V6Z 0B9

Project title/Titre du projet
 4200 HWY 97 SUMMERLAND, BC
PACIFIC AGRI-FOOD RESEARCH CENTER SLOPE STABILIZATION

Consultant Signature Only
WSP CANADA INC.

Designed by/Concept par
HESHAM DIEF, P.Eng

Drawn by/Drawn par
KTD / 2016-01-24

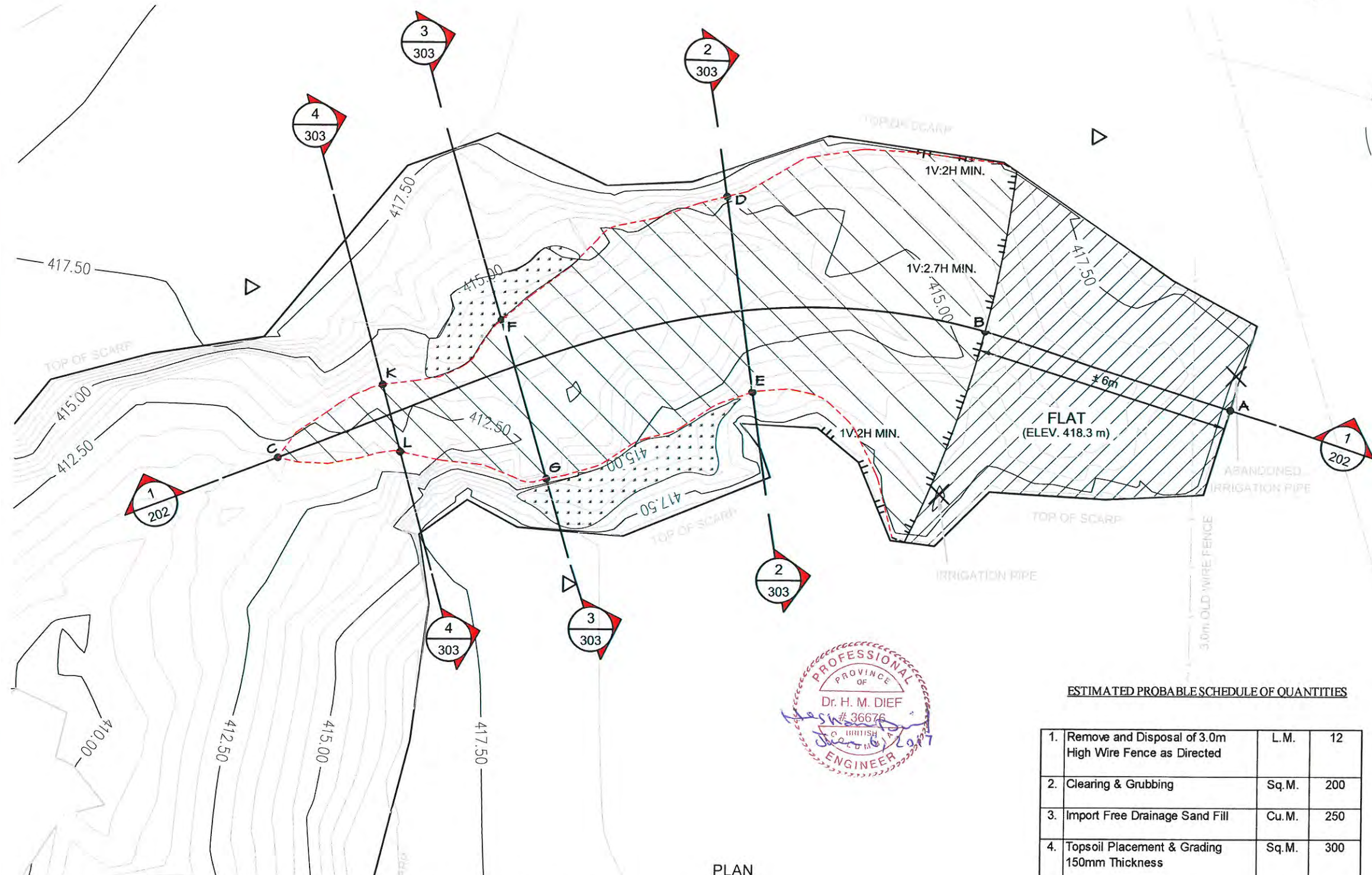
PWOSC Project Manager/Administrateur de Projets TPSC
TOM DUNPHY

PWOSC, Regional Manager, Architectural and Engineering Services/
 Gestionnaire régional, Services d'architecture et de génie, TPSC
PREETIPAL PAUL

Drawing title/Titre du dessin
SITE PLAN

SITE PLAN

Project No./No. du projet R.080303.001	Sheet/Feuille 101 1 OF 3	Revision no./ La Révision no. 1
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ESTIMATED PROBABLE SCHEDULE OF QUANTITIES

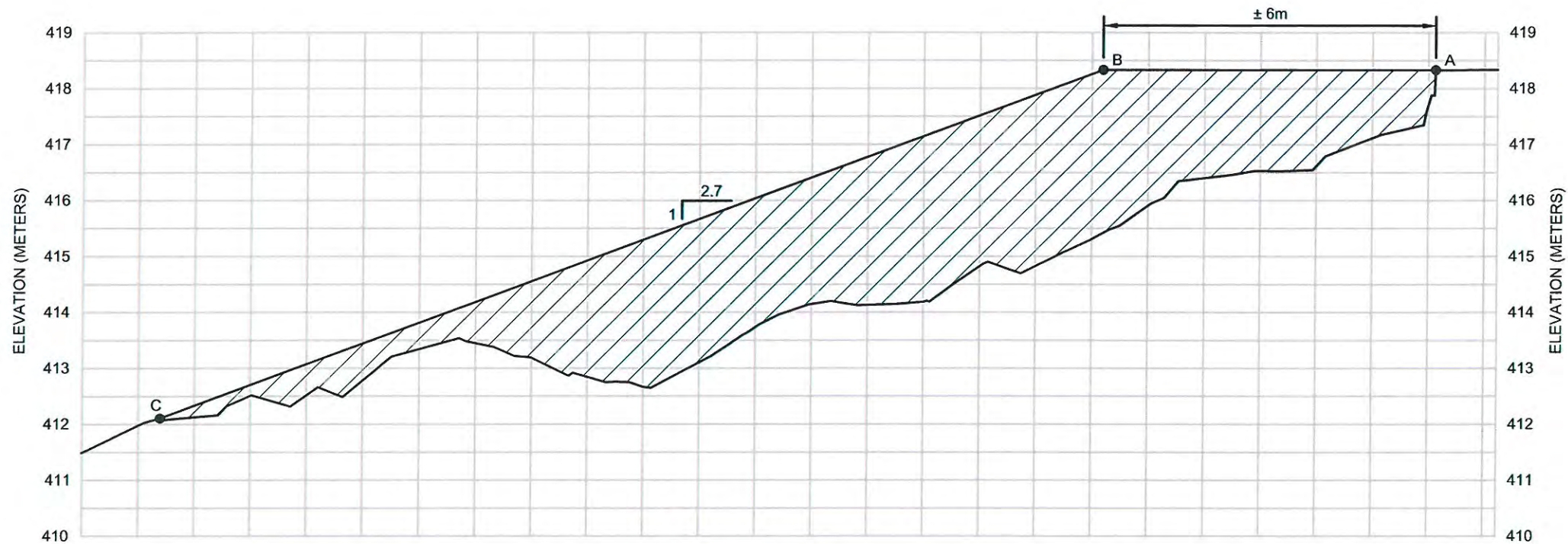
1. Remove and Disposal of 3.0m High Wire Fence as Directed	L.M.	12
2. Clearing & Grubbing	Sq.M.	200
3. Import Free Drainage Sand Fill	Cu.M.	250
4. Topsoil Placement & Grading 150mm Thickness	Sq.M.	300
5. Mechanical Seeding	Sq.M.	200
6. Hydraulic Seeding	Sq.M.	100

NOTE: The above is to be reviewed by contractor and adjusted accordingly to suit proposed works.

- FILL TO ELEV. 418.3m (COVERED BY TOPSOIL AND MECHANICAL OR HYDRAULIC SEEDING)
- FILL AS SHOWN IN SECTIONS 1, 2, 3, AND 4 AT SLOPE 2.7H:1V (COVERED BY TOPSOIL AND HYDRAULIC SEEDING)
- HYDROSEED NON-VEGETATED AREAS (SIDE SLOPES < 60%)

PLAN
SCALE: 1:100

Base plan referenced from McElhanney Survey Drawing No. 3386-00-TOPO.DWG Rev. 0



SECTION 1-1
SCALE: H=1:100, V=1:100

FILL AREA



Revision/	Description/Description	Date/Date
5		
4		
3		
2		
1	Issued for tender	2017/06/06
0	Issued for client review	2017/02/20

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Project title/Titre du projet
4200 HWY 97
SUMMERLAND, BC
PACIFIC AGRI-FOOD RESEARCH CENTER SLOPE STABILIZATION

Consultant Signature Only
WSP CANADA INC.

Designed by/Conçue par
HESHAM DIEF, P.Eng

Drawn by/Dessiné par
KTD / 2016-01-24

PM/SC Project Manager/Administrateur de Projets TP/SC
TOM DUNPHY

PM/SC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régional, Services d'architecture et de génie, TP/SC
PREETIPAL PAUL

Drawing title/Titre du dessin
CROSS SECTION 1-1

Project No./No. du projet R.080303.001	Sheet/Feuille 202 2 OF 3	Revision no./La Révision no. 1
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Revisions	Description/Description	Date/Date
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4		
3		
2		
1	Issued for tender	2017/06/06
0	Issued for client review	2017/02/20

Client/Client

AGRICULTURE AND AGRI-FOOD CANADA

219 - 800 BURRARD STREET
VANCOUVER, BC V6Z 0B9

Project title/Titre du projet
**4200 HWY 97
SUMMERLAND, BC**

**PACIFIC AGRI-FOOD RESEARCH CENTER
SLOPE STABILIZATION**

Consultant Signature Only
WSP CANADA INC.

Designed by/Concept par
HESHAM DIEF, P.Eng

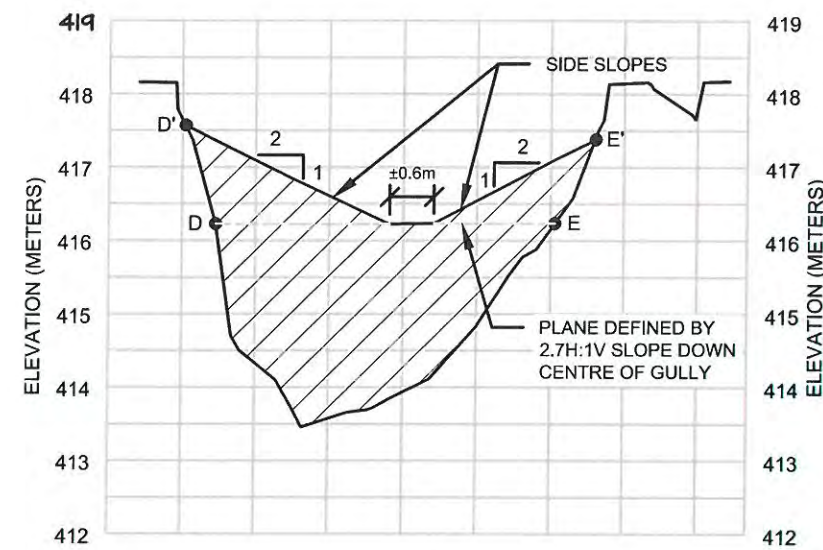
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KTD / 2016-01-24

PWSSC Project Manager/Administrateur de Projets TPSSC
TOM DUNPHY

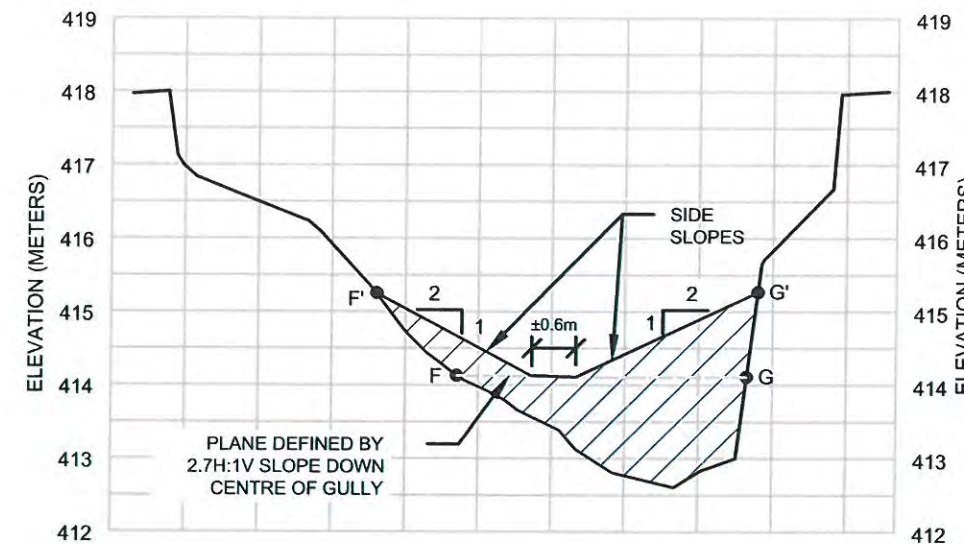
PWSSC, Regional Manager, Architectural and Engineering Services/
Généraliste régionale, Services d'architecture et de génie, TPSSC
PREETIPAL PAUL

Drawing title/Titre du dessin
CROSS SECTIONS 2-2, 3-3, 4-4

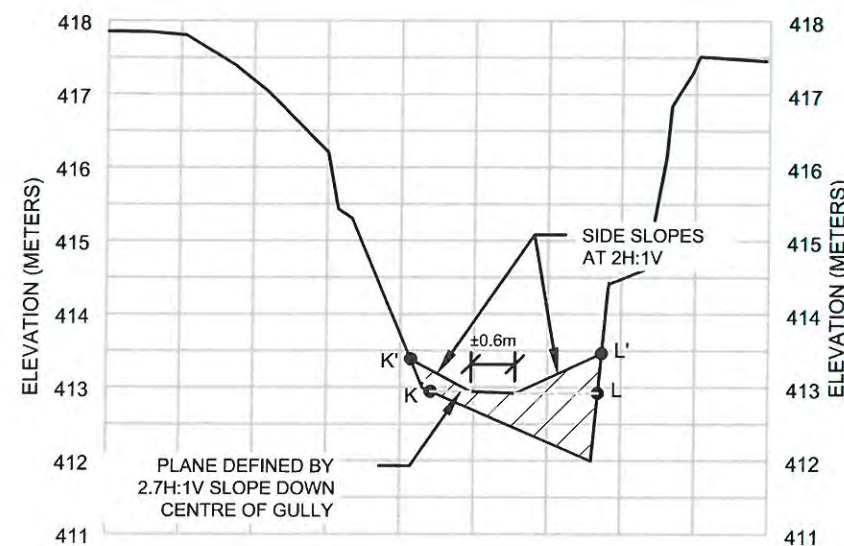
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R.080303.001	303 3 OF 3	1



SECTION 2-2
SCALE: H=1:100, V=1:100



SECTION 3-3
SCALE: H=1:100, V=1:100



SECTION 4-4
SCALE: H=1:100, V=1:100

FILL AREA

