



Public Works and Government Services Canada

Requisition No. EZ899-161056

MERX I.D. No. _____

SPECIFICATIONS
for


Colwood 15 – Remediation

Victoria, BC

Project No. R.076983.001

Nov 2015


APPROVED BY:

A/ 

Regional Manager ES

2015 11 13

Date



Construction Safety Coordinator

2015-11-20

Date

TENDER:



Project Manager

12 NOV 2015

Date

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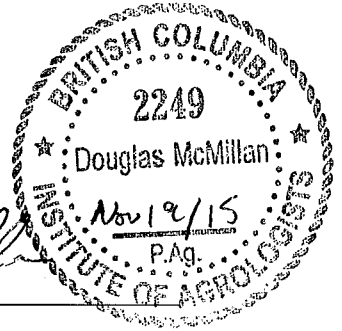


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END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 00.06 - Special Procedures for Traffic Control.
- .3 Section 01 35 29.06 - Health and Safety Requirements
- .4 Section 01 35 43 - Environmental Procedures.
- .5 Section 31 05 16 – Aggregate Materials.
- .6 Section 31 22 13 – Rough Grading.
- .7 Section 31 23 33.01 – Excavating, Trenching, Backfilling.

1.2 BACKGROUND

- .1 This document details remedial soil disposal and site restoration work to be completed at the Colwood Site #15 (COL 15) CFB Esquimalt, Colwood, BC (the Site). The Site is located at the terminus of Wilfert Road beside a turnaround and a boat launch, adjacent to the Esquimalt Harbour. A Site Location Plan is provided in Drawing 632733-001. The Site was formerly used for container storage and sediment dewatering and storage. The Site is surrounded, to the south and east, by a berm of mixed fill materials used to help contain sediment during dewatering. Sampling of the berm material has identified varying levels of metals contamination, so the berm material will be segregated and disposed of off-Site. The Site's north and west extents are bounded by a natural rock outcropping.

The Work specified by this document will be to remove the bermed material and to construct a laydown area for parking and storage. Vehicle access to the Site involves travel adjacent to weight-restricted jetties, and over a wooden surface. See Drawing 632733-002 for an Equipment Mobilization and Haul Route map.

1.3 WORK COVERED BY CONTRACT DOCUMENTS (PROJECT SCOPE)

- .1 Work of this Contract will occur at the Colwood Site #15 (COL 15) CFB Esquimalt, Colwood, BC (the Site). Specifically, the Contractor will be responsible for the following (the Work):
 - .1 Meet the requirements of all included specification sections, as listed in the Table of Contents (Section 00 01 10).
 - .2 Provide washroom facilities meeting the requirements of Worksafe BC's OHS Guideline Part 4.85.
 - .3 Locate all utility lines within and immediately surrounding the work area. Obtain the applicable "Dig Permit" from DND. Design drawings are included in Attachment 1 showing the work area and site boundary.
 - .4 Noise and dust control measures will be the responsibility of the contractor to meet PWGSC requirements.

- .5 Provide all materials, equipment, and manpower necessary to excavate from a berm, screen to a maximum 150 mm diameter aggregate size approximately 3,960 tonnes of soil.
- .6 Provide all materials, equipment, and manpower necessary to load from stockpiles, transport, and dispose of approximately 2,141 tonnes of metals impacted soil in exceedance of the BC Contaminated Sites Regulation (CSR) standards for Residential Land (RL). This material must be disposed of at a BC MoE permitted disposal facility.
- .7 Provide all materials, equipment, and manpower necessary to load from stockpiles, transport, and dispose of approximately 1,427 tonnes of metals impacted soil in exceedance of the BC Contaminated Sites Regulation (CSR) standards for Industrial Land (IL). This material must be disposed of at a BC MoE permitted disposal facility.
- .8 Provide all materials, equipment, and manpower necessary to load, transport, and recycle approximately 50 tonnes of concrete debris screened from the excavated berm soil.
- .9 Provide all materials, equipment, and manpower necessary to load, transport, and dispose of approximately 25 tonnes of wood debris screened from the excavated berm soil. Disposal location will be an approved general waste facility.
- .10 Allow time (up to 10 business days) for Consultant to collect, analyse and report results of confirmatory samples following removal of the berm soil prior to placement of import material or other obstruction or disturbance of ground surface beneath berm footprint. Contractor will not be paid standby rate during this time.
- .11 Provide all materials, equipment, and manpower necessary to prepare subgrade surfaces in accordance with SNC-Lavalin's Geotechnical Recommendation Memo, included as Attachment 2.
- .12 Provide all equipment and manpower necessary to cover exposed subgrade of the construction area with a woven geotextile fabric.
- .13 Provide all materials, equipment, and manpower necessary to procure, transport to Site, place, and compact approximately 5,095 tonnes of granular structural fill, 1,035 tonnes of 37.5 mm crushed aggregate base-course, and 1,020 tonnes of 19 mm crushed aggregate surface-course material complying with specifications outlined in Sections 31 05 16 – Aggregate Materials, 31 22 13 – Rough Grading, and 31 22 33.01 Excavating, Trenching, and Backfilling, in addition to Attachments 1 and 2.
- .14 Provide all materials, equipment, and manpower necessary to procure, transport, and place on-Site approximately 975 tonnes of rip-rap material complying with specifications outlined in Attachment 2.

- .15 All imported materials must meet applicable environmental standards and guidelines. Confirmation testing must be completed and submitted to the Departmental Representative to verify environmental quality of imported materials meets Canadian Council of Ministers of Environment (CCME) Residential and Park Land (RL/PL) standards. Import materials must be tested for a minimum of metals, polycyclic aromatic hydrocarbons (PAH), and extractable petroleum hydrocarbons (EPH). A letter, signed by a Qualified Environmental Professional, must accompany the testing results stating that the material to be imported meets the applicable standards.
- .16 Provide proof of compaction for each lift of material, proof of final grading, and allow for additional construction monitoring to be completed by the Departmental Representative.
- .17 Provide all materials, equipment, and manpower necessary to place rocks between 15 cm and 50 cm, screened from the berm soil, on south slope of construction area to protect the foreshore, as per geotechnical recommendations, and boulders greater than 50 cm in size at the south laydown area boundary to act as bollards. Approximately 317 tonnes of rocks and boulders are estimated to be separated during screening.
- .18 Provide all materials, equipment, and manpower necessary to install a *Schedule 40* Site perimeter fence with two vehicle gates, tying into existing fencing and northeast slope in accordance with Attachment 1. The fence will be 6' tall, chainlink, knuckle-twist, open top, with 3 ½" draining poles and 2 3/8" line poles, and finished with triple barbed wire on angled barbed wire arms.
- .19 Provide all materials, equipment, and manpower necessary to relocate approximately 45 interlocking concrete blocks, to be placed along the south construction area boundary, inside the perimeter fence. The blocks will be loaded and transported from Col-19, approximately 1.3 km from the Site. Actual block count required will be determined following separation and reuse of boulders from berm material.
- .20 Provide all materials, equipment, and manpower necessary to restore roads and features adjacent the Site to their original condition, to the satisfaction of the Departmental Representative. Time and materials to complete restoration activities will be the responsibility of the Contractor where damage to Site and surrounding area is considered by the Departmental Representative to be unreasonable.
- .21 Remove waste materials from Site at end of each work-day.
- .22 Provide a final survey, as-built drawings, and report confirmation of compaction of Site surface at the completion of the work.
- .23 Carry out work activities in compliance with all applicable federal and provincial standards and regulations.

1.4 CONTRACT METHOD

- .1 Construct Work under unit price / lump sum contract.
- .2 Employ suppliers and subcontractors approved by the Departmental Representative for the Work.

1.5 CONTRACTOR USE OF PREMISES

- .1 The site is located on property owned by DND where security restrictions for public access apply. Access for use of Site is to be coordinated with the Departmental Representative.
- .2 Access is available 7 am to 5 pm, Monday to Friday (5 days per week) unless permission is otherwise granted through PWGSC. Requests for changes to hours of work or Site access are subject to approval by the Departmental Representative. Requests will be made in writing to the Departmental Representative, and approved changes will take effect 48 hrs after receipt of Contractor request.
- .3 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .4 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by the Departmental Representative.

1.6 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to local traffic and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.7 EXISTING SERVICES

- .1 Notify the Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, allow PWGSC 72 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian and vehicular traffic.
- .3 Provide alternative routes for personnel, pedestrian and vehicular traffic and provide traffic control services (flag persons) to direct traffic, where impact to established roadways or walkways is possible.
- .4 Establish location and extent of service lines in area of work before starting Work and obtain the applicable "Dig Permit" from DND. Notify the Departmental Representative of findings.
- .5 Submit schedule to and obtain approval from the Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to PWGSC-approved schedule.
- .6 Where unknown services are encountered, immediately contact the Departmental Representative and confirm findings in writing.
- .7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by the Departmental Representative and authorities having jurisdiction.
- .8 Record locations of maintained, re-routed and abandoned service lines and provide to the Departmental Representative.

1.8 DOCUMENTS REQUIRED

- .1 Maintain at job Site, one copy each document as follows:
 - .1 DND Dig Permit
 - .2 Material Tracking Records for all material that has left and entered the Site to-date.
 - .3 WCB Notice of Project
 - .4 Contract Drawings
 - .5 Specifications
 - .6 Addenda
 - .7 Change Orders
 - .8 Other Modifications to Contract
 - .9 Field Test Reports
 - .10 Copy of Approved Work Schedule
 - .11 Health and Safety Plan and Other Safety Related Documents
 - .12 Fire Safety Plan
 - .13 Contractor Environmental Protection Plan, including all subsections in accordance with Section 01 35 43 Environmental Procedures.
 - .14 Import Soil Environmental Quality Reports
 - .15 Meeting Minutes
 - .16 Schedule Updates
 - .17 Near Miss and Incident Reports
 - .18 Other documents as specified

END OF SECTION

Approved: 2010-12-31

Part 1 General

1.1 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas in accordance with relevant municipal, provincial and other regulations.

1.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services and provide for personnel and vehicle access. Adjacent areas, including turnaround, boat ramp, and gated storage area, must be kept clear at all times. No parking will be permitted in the turnaround area.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Departmental Representative may assign additional parking space near worksite.

1.3 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted on DND property except in designated smoking areas, or in designated locations within the Contractor's worksite.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 35 43 – Environmental Procedures.
- .2 Section 31 05 16 - Aggregate Materials
- .3 Section 31 23 33.01 - Excavations, Trenching, and Backfilling

1.2 REQUIREMENTS

- .1 Unit prices may be used to vary Contract Price when authorised by Departmental Representative.

1.3 CONDITIONS OF UNIT PRICES

- .1 Unit prices will comply with requirements described in Section 01 35 43 - Environmental Procedures, Section 31 05 16 - Aggregate Materials, Section 31 23 33.01 - Excavations, Trenching, and Backfilling, and Attachment 2.
- .2 Unit price quantities will be checked and measured by Departmental Representative.
- .3 Unit prices entered on Tender Form and accepted by Canada will remain in force until Substantial Completion (issuance of Interim Certificate of Completion).
- .4 Unit prices do not include Value Added Taxes (GST).

1.4 UNIT PRICES

- .1 Berm Screening (Unit Price Table Line # 5)
 - .1 Purpose: to establish a unit price for excavating and screening to maximum 150 mm diameter material currently placed in berm on-Site, meeting requirements of Attachment 2.
 - .2 Unit price: Per tonne of material.
 - .3 Unit price includes:
 - .1 Excavating material from berm.
 - .2 Processing of berm material through soil screener.
- .2 Contaminated Soil Transport and Disposal: IL+ (Unit Price Table Line # 6)
 - .1 Purpose: to establish a unit price for transportation and disposal of screened soil containing concentrations of metals greater than the CSR IL standards.
 - .2 Unit price: Per tonne of soil.
 - .3 Unit price includes:
 - .1 Loading of trucks following screening of material for transportation off-site.
 - .2 Transportation of soil to an approved disposal facility.
 - .3 Disposal fees at a BC MoE approved disposal facility.

- .3 Contaminated Soil Transport and Disposal: IL- /RL+ (Unit Price Table Line # 7)
 - .1 Purpose: to establish a unit price for transportation and disposal of screened soil containing concentrations of metals less than the CSR IL standards and greater than the CSR RL standards.
 - .2 Unit price: Per tonne of soil.
 - .3 Unit price includes:
 - .1 Loading of screened material into trucks for transportation off-site.
 - .2 Transportation of soil to an approved disposal facility.
 - .3 Disposal fees at a BC MoE approved disposal facility.
- .4 Concrete Transport and Disposal (Unit Price Table Line # 8)
 - .1 Purpose: to establish a unit price for transportation and disposal of concrete debris separated in berm screening.
 - .2 Unit price: Per tonne of concrete.
 - .3 Unit price includes:
 - .1 Loading of trucks with concrete for transportation off-site.
 - .2 Transportation of concrete to an approved recycling facility.
 - .3 Recycling fees at an approved concrete recycling facility.
- .5 Wood Waste Transport and Disposal (Unit Price Table Line # 9)
 - .1 Purpose: to establish a unit price for transportation and disposal of wood debris separated in berm screening.
 - .2 Unit price: Per tonne of wood debris.
 - .3 Unit price includes:
 - .1 Loading of trucks with wood debris for transportation off-site.
 - .2 Transportation of wood debris to an approved general disposal facility.
 - .3 Recycling fees at an approved general disposal facility.
- .6 Granular Structural Fill Import and Placement (Unit Price Table Line # 13)
 - .1 Purpose: to establish a unit price for procuring, loading, transportation, placement, and compaction of granular structural fill meeting the specifications and requirements of Section 31 23 33.01 - Excavations, Trenching, and Backfilling, Section 31 05 16 - Aggregate Materials, Section 01 35 43 - Environmental Procedures, and Attachments 1 and 2. Placement and compaction of materials will be confirmed by a geotechnical engineer.
 - .2 Unit price: Per tonne of aggregate.
 - .3 Unit price includes:
 - .1 Procurement of suitable aggregate.
 - .2 Transportation of aggregate to Site.
 - .3 Spreading of aggregate to specified design parameters.
 - .4 Compaction of aggregate to specified design parameters.

- .7 Base Course Fill Import and Placement (37.5 mm minus)
 - .1 Purpose: to establish a unit price for procuring, loading, transportation, placement, and compaction of base course fill meeting the specifications and requirements of Section 31 23 33.01 - Excavations, Trenching, and Backfilling, Section 31 05 16 - Aggregate Materials, Section 01 35 43 - Environmental Procedures, and Attachments 1 and 2. Placement and compaction of materials will be confirmed by a geotechnical engineer.
 - .2 Unit price: Per tonne of aggregate.
 - .3 Unit price includes:
 - .1 Procurement of suitable aggregate.
 - .2 Transportation of aggregate to Site.
 - .3 Spreading of aggregate to specified design parameters.
 - .4 Compaction of aggregate to specified design parameters.
- .8 Surface Course Fill Import and Placement (19 mm minus)
 - .1 Purpose: to establish a unit price for procuring, loading, transportation, placement, and compaction of surface course fill meeting the specifications and requirements of Section 31 23 33.01 - Excavations, Trenching, and Backfilling, Section 31 05 16 - Aggregate Materials, Section 01 35 43 - Environmental Procedures, and Attachments 1 and 2. Placement and compaction of materials will be confirmed by a geotechnical engineer.
 - .2 Unit price: Per tonne of aggregate.
 - .3 Unit price includes:
 - .1 Procurement of suitable aggregate.
 - .2 Transportation of aggregate to Site.
 - .3 Spreading of aggregate to specified design parameters.
 - .4 Compaction of aggregate to specified design parameters.
- .9 Rip Rap Import and Placement
 - .1 Purpose: to establish a unit price for procurement, loading, transportation, and placement of rip rap material meeting the specifications and requirements of Section 31 23 33.01 - Excavations, Trenching, and Backfilling, Section 31 05 16 - Aggregate Materials, Section 01 35 43 - Environmental Procedures, and Attachment 2.
 - .2 Unit price: Per tonne of aggregate.
 - .3 Unit price includes:
 - .1 Procurement of suitable aggregate.
 - .2 Transportation of aggregate to Site.
 - .3 Placement of aggregate at Site, in accordance with specifications.

.10 Rock and Boulder Placement

- .1 Purpose: to establish a unit price for on-Site movement and placement of rock and boulder material in accordance with Attachments 1 and 2.
- .2 Unit price: Per tonne of rocks.
- .3 Unit price includes:
 - .1 Separation of >50 cm boulders from 15 cm – 50 cm rocks.
 - .2 On-Site transportation and placement of rocks (15 cm – 50 cm) as rip rap in accordance with design.
 - .3 On-Site transportation and placement of boulders (> 50 cm) as bollards in accordance with design.

1.5 PRICE AND PAYMENT PROCEDURES

- .1 Payment for berm screening (Part 1.4.1) will be made at the unit price shown in the Tender Form. Measurement will be by tonne, to be determined by calculating the sum of the measurements made in Part 1.5.2.
- .2 Payment for material transport and disposal (Parts 1.4.2 to 1.4.5) will be made at the unit prices shown in the Tender Form. Measurement will be by tonne to be measured using an approved truck scale and accounting for the truck gross vehicle weight. The Consultant will estimate material tonnages leaving the Site daily to provide verification of measured tonnages arriving at the disposal facility reported by the Contractor.
- .3 Payment for granular structural fill, base course fill, and surface course fill procurement, loading, transport, placement, and compaction (Parts 1.4.6 to 1.4.8) will be made at the unit prices shown in the Tender Form. Measurement will be by tonne to be measured using an approved truck scale and accounting for the truck gross vehicle weight. The Contractor will provide verification of delivered material by providing trucking receipts and weigh-scale slips to the Departmental Representative. Any fill materials imported to Site and not placed and compacted will be stockpiled, estimated by final topographic survey, and the estimated tonnage will be subtracted from the sum.
- .4 Payment for rip rap import and placement (Part 1.4.9) will be made at the unit prices shown in the Tender Form. Measurement will be by tonne to be measured using an approved truck scale and accounting for the truck gross vehicle weight. The Contractor will provide verification of delivered material by providing trucking receipts and weigh-scale slips to the Departmental Representative.
- .5 Payment for rock and boulder placement (Part 1.4.10) will be made at the unit price shown in the Tender Form. Measurement will be estimated by the Consultant to provide verification of tonnages reported by the Contractor.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 32 16.07 – Construction Progress Schedules – Bar (GANTT) Chart.
- .2 Section 01 52 00 – Construction Facilities

1.2 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative.
- .4 Provide physical space and make arrangements for meetings.
- .5 Preside at meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance Departmental Representative.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 PRECONSTRUCTION MEETING

- .1 Within 3 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Consultant, and Contractor will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 3 days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
 - .3 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .4 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

- .5 Monthly progress claims, administrative procedures, photographs, hold backs.
- .6 Appointment of inspection and testing agencies or firms.
- .7 Insurances, transcript of policies.

END OF SECTION

Approved: 2006-06-30

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures

1.2 DEFINITIONS

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

1.3 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

- .2 Work hours are limited to 7:00 AM to 5:00 PM Monday to Friday unless otherwise approved by the Departmental Representative. Requests for changes to hours of work or Site access are subject to approval by the Departmental Representative. Requests will be made in writing to the Departmental Representative, and approved changes will take effect 48 hrs after receipt of Contractor request.
- .3 Plan to complete Work in accordance with prescribed milestones and time frame.
- .4 Limit activity durations (between milestones) to maximum of approximately 10 working days, to allow for progress reporting.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit to the Departmental Representative submittals according to Section 01 33 00 - Submittals within 10 working days of Award of Contract Bar Chart as Master Plan for planning, monitoring and reporting of project progress.
- .2 Submit Project Schedule to the Departmental Representative within 10 working days of receipt of acceptance of Master Plan.

1.5 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart.
- .2 The Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.6 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Pre-Mobilization Submittals.
 - .3 Permits.
 - .4 Mobilization.
 - .5 Site Surface Prep and Grading
 - .6 Import of Materials.
 - .7 Site Grading and Compaction.

1.7 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

1.8 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular Site meetings with the Departmental Representative. Identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

END OF SECTION

Approved: 2009-12-31

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 35 43 - Environmental Procedures.

1.2 ADMINISTRATIVE

- .1 Submit to the Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete and approved.
- .3 Present information in SI Metric units.
- .4 Notify the Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .5 Ensure field measurements by quantity surveyor are coordinated with on-Site Work.
- .6 Contractor's responsibility for errors and omissions in submission is not relieved by the Departmental Representative review of submittals.
- .7 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by the Departmental Representative review.
- .8 Keep one reviewed copy of each submission on Site.

1.3 SUBMISSIONS

- .1 Submit the following reports and documentation within 5 days after date of Notice to Proceed and prior to mobilization to Site:
 - .1 Project Schedule.
 - .2 Health and Safety Plan.
 - .3 Contractor's Environmental Protection Plan, including all subsections in accordance with Section 01 35 43 Environmental Procedures.
- .2 Submit the following reports / documentation within 24 hours of occurrence.
 - .1 Incident and Accident Reports.
- .3 Allow 5 days for the Departmental Representative review of each submission.
- .4 Adjustments made on submissions by the Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Departmental Representative prior to proceeding with Work.
- .5 Make changes in submissions as the Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify the Departmental Representative in writing of revisions other than those requested.

- .6 Accompany submissions with transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each drawing, product data and sample.
 - .5 Other pertinent data.
- .7 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's signature of Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable.
- .8 The review of drawings by PWGSC is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PWGSC approves detail design inherent in drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job Site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 MANIFESTS

- .1 A copy of all manifests and/or truck weigh scale documents for material brought onto or removed from the site are to be provided to the Departmental Representative.
- .2 Manifest and/or weigh scale documents are to be completed in accordance with applicable federal and provincial regulations.

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Notice of Project submitted to PWGSC prior to mobilization.

1.6 PROGRESS PHOTOGRAPHS AND FINAL PHOTOGRAPHS

- .1 Provide digital photos in "Joint Photographic Experts Group" (.jpg) format for Progress Photographs and Final Photos.

- .2 Digital photographs to have a minimum of 2,592 x 1,944 pixel (5 Megapixel) resolution.
- .3 Progress and Final Photographs to be submitted on a compact disc (CD).
- .4 Quantity: Provide sufficient number of photographs to adequately describe the work activities carried out during the reporting period.
- .5 Submit progress photographs weekly with last weekly report or as directed by the Departmental Representative.
- .6 Submit final photographs prior to final progress payment request.
- .7 The Contractor must submit the documents outlined in the following Table to the Departmental Representative as indicated.

END OF SECTION

Approved: 2011-06-30

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 35 29.06 - Health and Safety Requirements.

1.2 REFERENCES

- .1 British Columbia Ministry of Transportation
 - .1 Traffic Control Manual for Work on Roadways - 99.

1.3 PROTECTION OF PUBLIC TRAFFIC

- .1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 Increased traffic during typical DND commuting hours (7:00 to 9:00 AM and 3:00 to 5:00 PM) must be allowed to proceed unencumbered.
- .3 Develop and submit a traffic control plan as part of the Health and Safety plan as stipulated in Section 01 35 29.06 - Health and Safety Requirements.
- .4 Provide traffic control services to manage safe pedestrian and vehicular traffic. Traffic control services will implement the traffic control plan and include the use of signage, barricades, and traffic control workers.
- .5 When working on travelled way:
 - .1 Place equipment in position to minimize interference and hazard to travelling public.
 - .2 Do not leave equipment on travelled way overnight.
- .6 Close lanes of road only after receipt of written approval from the Departmental Representative.

1.4 INFORMATIONAL AND WARNING DEVICES

- .1 Provide and maintain signs, warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices as required at the DND Colwood Facility.
- .3 Place signs and other devices in locations recommended by the Departmental Representative.
- .4 Meet with PWGSC prior to commencement of Work to prepare list of signs and other devices required for project. If situation on Site changes, revise list to approval of the Departmental Representative.
- .5 Continually maintain traffic control devices in use:

- .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
- .2 Remove or cover signs which do not apply to conditions existing from day to day.

END OF SECTION

Approved: 2013-06-30

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 00.06 - Special Procedures for Traffic Control.
- .3 Section 01 41 00 - Regulatory Requirements.
- .4 Section 02 81 01 - Hazardous Materials.

1.2 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 S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures.
- .4 Fire Protection Engineering Services, HRSDC:
 1. FCC No. 301, Standard for Construction Operations.
- .5 Province of British Columbia:
 1. Workers Compensation Act Part 3-Occupational Health and Safety.
 2. Occupational Health and Safety Regulation.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit to Departmental Representative Submittals listed for review.
- .2 Proceed with Work affected by Submittal after review is complete.
- .3 Submit the following:
 1. Health and Safety Plan.
 2. Copies of reports or directions issued by federal and provincial health and safety inspectors.
 3. Copies of incident and accident reports.
 4. Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
 5. Emergency Procedures.
 6. Notice of Project.

- .4 The Departmental Representative will review the Contractor's Site-specific project Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 5 Working Days after receipt of the plan.
- .5 If changes are required, revise the plan as appropriate and resubmit to Departmental Representative within 5 Working Days.
- .6 Submittal of the Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It will not:
 1. Be construed to imply approval by the Departmental Representative.
 2. Be interpreted as a warranty of being complete, accurate and legislatively compliant.
 3. Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.4 REGULATORY REQUIREMENTS

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

1.5 WORKER'S COMPENSATION BOARD COVERAGE

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

1.6 COMPLIANCE WITH REGULATIONS

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

1.7 RESPONSIBILITY

- .1 Assume responsibility as the Prime Contractor for Work under this Contract.
 1. 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.
 2. Comply with and enforce compliance by employees with safety requirements of Contract, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with Site-specific Health and Safety Plan.

1.8 HEALTH AND SAFETY COORDINATOR

- .1 The Health and Safety Coordinator requirements:
 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, daily enforcing, and monitoring the Site-specific Health and Safety Plan.
 3. Be on Site during execution of Work.

1.9 GENERAL CONDITIONS

- .1 Provide safety barricades and lights around 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 Site:
 1. Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

1.10 WORK PERMITS

- .1 Obtain specialty permits related to project before start of Work.

1.11 FILING OF NOTICE

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

1.12 HEALTH AND SAFETY PLAN

- .1 Conduct a Site-specific hazard assessment based on review of Contract, required Work, and project Site. Identify any known and potential health risks and safety hazards.
- .2 Prepare and comply with a Site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:
 1. Primary requirements:
 - .1 Contractor's safety policy.
 - .2 Identification of applicable compliance obligations.
 - .3 Definition of responsibilities for project safety/organization chart for project.
 - .4 General safety rules for project.
 - .5 Job-specific safe work procedures.
 - .6 Inspection policy and procedures.
 - .7 Incident reporting and investigation policy and procedures.
 - .8 Occupational Health and Safety Committee/Representative procedures.
 - .9 Occupational Health and Safety meetings.

- .10 Occupational Health and Safety communications and record keeping procedures.
 2. Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to Site tasks and operations which must be performed as part of the Work.
 3. List hazardous materials to be brought on Site as required by Work.
 4. Indicate engineering and administrative control measures to be implemented at the Site for managing identified risks and hazards.
 5. Identify personal protective equipment (PPE) to be used by workers.
 6. Identify personnel and alternates responsible for Site safety and health.
 7. Identify personnel training requirements and training plan, including Site orientation for new 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 Health and Safety Plan by PWGSC will not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract.

1.13 EMERGENCY PROCEDURES

- .1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:
 1. Designated personnel from own company.
 2. Regulatory agencies applicable to Work and as per legislated regulations.
 3. Local emergency resources.
 4. Departmental Representative and 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 and 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.
 - .5 Revise and update emergency procedures as required, and re-submit to the Departmental Representative.
 - .6 Copy of Health and Safety Plan and other emergency protocols to be kept at emergency muster location.

1.14 HAZARDOUS PRODUCTS

- .1 Comply with requirements of WHMIS regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of MSDS acceptable to the Departmental Representative and in accordance with the Canada Labour Code.
- .2 Where use of hazardous and toxic products cannot be avoided:
 1. Notify Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as required.
 2. In conjunction with Departmental Representative, schedule to carry out Work during "off hours" when tenants have left the building.
 3. Provide adequate means of ventilation as required.

1.15 UNFORSEEN HAZARDS

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

1.16 POSTED DOCUMENTS

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

- .2 Post all 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 accepted by the Departmental Representative.

1.17 MEETINGS

- .1 Attend health and safety preconstruction meeting and all subsequent meetings called by the Departmental Representative.
- .2 Ensure all Site personnel attend a health and safety toolbox meeting at the beginning of each shift, which must include:
 1. Sign-in of all attendees.
 2. Identify first aiders and their level on Site for that shift.
 3. Planned Work activities and environmental considerations for that shift.
 4. Hazards associated with these Work activities, including environmental hazards (eg. potential for hypothermia, heat exhaustion, heat stroke).
 5. Appropriate job-specific safe work procedures.
 6. Required PPE.
 7. Appropriate emergency procedures.
 8. Review recent accidents on Site, including near misses.
- .3 Retain records of all health and safety meetings on Site during Work, and retain as corporate records for a minimum of 7 years after Work is completed.

1.18 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.
- .3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time.
- .4 Correct non-compliance.

1.19 CRITICAL INCIDENT REPORTING

- .1 Critical Incident includes:
 1. An event resulting in death or serious injury to employees, client department personnel, contractors or the general public entering or occupying PWGSC facilities. This can include physically or psychologically traumatic events such as natural disasters, hostage takings, terrorism, rape, acts or threats of violence, accidents, suicides or homicides.
 2. A fire or explosion causing equipment or property damage or threat to another property.

3. Damage to a boiler or other pressure vessel resulting in fire or rupture of equipment.
 4. The free fall of or damage to an elevating device rendering it unserviceable.
 5. The uncontrolled release or spill of hazardous wastes or materials.
 6. The implementation of rescue, revival or other similar emergency procedures.
 7. A structural failure or collapse of a building, tower, crane, hoist, temporary construction support system or excavation.
 8. An electric shock, toxic or oxygen deficient atmosphere causing an employee to lose consciousness.
- .2 In the event of a Critical Incident, immediate actions include:
1. Contacting emergency services as required (ambulance, fire department, police, environment).
 2. Initiating urgently required corrective action appropriate to the incident (protect life, first-aid treatment, minimize property damage, etc.).
 3. Contacting the Regional Manager responsible for Safety and Health.
 4. Ensuring that evidence on the Site is not disturbed until investigations have been completed.
 5. Cooperating with officials authorized to investigate the incident.

1.20 UTILITY CLEARANCE

- .1 The Contractor is solely responsible for utility clearance.
- .2 The Contractor will not rely upon Drawings or other information provided with utility locations.

1.21 PERSONAL PROTECTIVE EQUIPMENT PROGRAM

- .1 Submit PPE program to the Departmental Representative addressing:
 1. Donning and doffing procedures.
 2. PPE selection based upon Site hazards.
 3. PPE use and limitations of equipment.
 4. Work mission duration, PPE maintenance and storage.
 5. PPE decontamination and disposal.
 6. PPE inspection procedures prior to, during, and after use.
 7. Evaluation of effectiveness of PPE program, and limitations during temperature extremes, and other appropriate medical considerations.
 8. Medical surveillance requirements for personnel assigned to work at Site.
 9. Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment.
 10. Site control measures employed at Site including Site map, Site work zones, use of 'buddy system', Site communications including Site security, alerting means for emergencies, standard operating procedures or safe work practices, and identification of nearest medical assistance.

11. Decontamination procedures for both personnel and equipment.
12. Emergency response requirements addressing: pre-emergency planning, personnel roles, lines of authority and communication, emergency recognition and prevention, safe distances and places of refuge, Site security and control, evacuation routes and procedures, decontamination procedures not covered under decontamination section, emergency medical treatment and first aid, emergency alerting and response procedures, critique of response and follow-up, PPE and emergency equipment, Site topography, layout, prevailing weather conditions, and procedures for reporting incidents to local, provincial, or federal agencies.
13. Written respiratory protection program for project activities.
14. Procedures dealing with heat and/or cold stress.
15. Spill containment program if waste material is generated, excavated, stored, or managed on Site.

1.22 OFF-SITE CONTINGENCY AND EMERGENCY RESPONSE PLAN

- .1 Prior to commencing Work involving handling of hazardous materials, develop off Site Contingency and Emergency Response Plan.
- .2 Plan must provide immediate response to serious Site occurrence such as explosion, fire, or migration of significant quantities of toxic or hazardous material from Site.

1.23 PERSONAL HEALTH, SAFETY, AND HYGIENE

- .1 Training: ensure personnel entering Site are trained in accordance with specified personnel training requirements. Training session must be completed by Health and Safety Officer.
- .2 Levels of Protection: establish levels of protection for each Work area based on planned activity and location of activity.
- .3 Personal Protective Equipment:
 1. Furnish Site personnel with appropriate PPE as specified above. Ensure that safety equipment and protective clothing is kept clean and maintained.
- .4 Develop protective equipment usage procedures and ensure that procedures are strictly followed by Site personnel; include following procedures as minimum:
 1. Ensure prescription eyeglasses worn are safety glasses and do not permit contact lenses on Site within work zones.
 2. Ensure footwear is steel-toed safety shoes or boots and is covered by rubber overshoes when entering or working in potentially contaminated work areas.
 3. Dispose of or decontaminate PPE worn on Site at end of each workday.
 4. Decontaminate reusable PPE before reissuing.
 5. Ensure Site personnel have passed respirator fit test prior to entering potentially contaminated work areas.
 6. Ensure facial hair does not interfere with proper respirator fit.

- .5 Respiratory Protection:
 1. Provide Site personnel with extensive training in usage and limitations of, and qualitative fit testing for, air purifying and supplied-air respirators in accordance with specified regulations.
 2. Develop, implement, and maintain respirator program.
 3. Monitor, evaluate, and provide respiratory protection for Site personnel.
 4. Ensure levels of protection as listed have been chosen consistent with Site-specific potential airborne hazards associated with major contaminants identified on Site.
 5. In absence of additional air monitoring information or substance identification, retain an industrial hygiene specialist to determine minimum levels of respiratory protection required.
 6. Immediately notify Departmental Representative when level of respiratory protection required increases.
 7. Ensure appropriate respiratory protection during Work activities. As minimum requirement, ensure that persons entering potentially contaminated work areas are supplied with and use appropriate respiratory protection.
- .6 Heat Stress/Cold Stress: implement heat stress or cold stress monitoring program as applicable and include in Site-specific Health and Safety Plan.
- .7 Personnel Hygiene and Personnel Decontamination Procedures. Provide minimum as follows:
 1. Suitable containers for storage and disposal of used disposable PPE.
 2. Potable water and suitable sanitation facility.
- .8 Emergency and First-Aid Equipment:
 1. Locate and maintain emergency and first-aid equipment in appropriate location on Site including first-aid kit to accommodate number of Site personnel; portable emergency eye wash; two 9 kg ABC type dry chemical fire extinguishers.
- .9 Site Communications:
 1. Post emergency numbers near Site telephones.
 2. Ensure personnel use of "buddy" system and develop hand signal system appropriate for Site activities.
 3. Provide employee alarm system to notify employees of Site emergency situations or to stop Work activities if necessary.
 4. Furnish selected personnel with 2-way radios.
 5. Safety Meetings: conduct mandatory daily safety meetings for personnel, and additionally as required by special or Work-related conditions; include refresher training for existing equipment and protocols, review ongoing safety issues and protocols, and examine new Site conditions as encountered. Hold additional safety meetings on as-needed basis.

END OF SECTION

Approved: 2005-12-31

Part 1 General

1.1 FIRE DEPARTMENT BRIEFING

- .1 The Departmental Representative will co-ordinate arrangements for contractor for briefing on Fire Safety at pre-work conference by Fire Chief, if required, before work is commenced. The Colwood Fire Department will respond to calls to the Colwood Base.

1.2 REPORTING FIRES

- .1 Know location of nearest fire alarm box and telephone, including emergency phone number.
- .2 Report immediately fire incidents to Fire Department as follows:
 - .1 Activate nearest fire alarm box.
 - .2 Telephone (911).
- .3 When reporting fire by telephone, give location of fire, name or number of building and be prepared to verify location.

1.3 INTERIOR AND EXTERIOR FIRE PROTECTION AND ALARM SYSTEMS

- .1 Fire protection and alarm system will not be:
 - .1 Obstructed.
 - .2 Shut-off.
 - .3 Left inactive at end of working day or shift without authorization from Fire Chief.
- .2 Fire hydrants, standpipes and hose systems will not be used for other than fire-fighting purposes unless authorized by Fire Chief.

1.4 FIRE EXTINGUISHERS

- .1 Supply fire extinguishers, as appropriate for quantities of equipment and fuel on-Site.

1.5 BLOCKAGE OF ROADWAYS

- .1 Advise Fire Chief of work that would impede fire apparatus response. This includes violation of minimum overhead clearance, as prescribed by Fire Chief, erecting of barricades and digging of trenches.

1.6 SMOKING PRECAUTIONS

- .1 Comply with smoking restrictions. Smoking is not permitted on DND property except in designated smoking areas, or in designated locations within the Contractor's worksite.

1.7 RUBBISH AND WASTE MATERIALS

- .1 Keep rubbish and waste materials at minimum quantities.

- .2 Burning of rubbish is prohibited.
- .3 Removal:
 - .1 Remove rubbish from work site at end of work day or shift or as directed.
- .4 Storage:
 - .1 Store oily waste in approved receptacles to ensure maximum cleanliness and safety.
 - .2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles and remove specified.

1.8 FLAMMABLE AND COMBUSTIBLE LIQUIDS

- .1 Handling, storage and use of flammable and combustible liquids governed by current National Fire Code of Canada.

1.9 QUESTIONS AND/OR CLARIFICATION

- .1 Direct questions or clarification on Fire Safety in addition to above requirements to the Departmental Representative.

1.10 FIRE INSPECTION

- .1 Co-ordinate site inspections by Fire Chief through the Departmental Representative.
- .2 Allow Fire Chief unrestricted access to work site.
- .3 Co-operate with Fire Chief during routine fire safety inspection of work site.
- .4 Immediately remedy unsafe fire situations observed by Fire Chief.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 74 11 – Cleaning.
- .3 Section 31 05 16 – Aggregate Materials.
- .4 Section 31 23 33.01 – Excavating, Trenching and Backfilling.

1.2 REFERENCES

- .1 Canadian Environmental Protection Act (CEPA), 1999.
- .2 British Columbia Environmental Management Act (EMA), 2004.
- .3 Canadian Council of Ministers of the Environment (CCME) – Canadian Environmental Quality Guidelines.

1.3 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.
- .3 Deleterious Substance: any substance that, if added to water, makes the water deleterious to fish or fish habitat or any water containing a substance in such quantity or concentration or has been changed by heat or other means, that if added to water makes that water deleterious to fish or fish habitat.

1.4 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prior to commencing construction activities or delivery of materials to site, submit a site-specific Environmental Protection Plan for review by the Departmental Representative.
- .3 The Departmental Representative will review the Contractor's Environmental Protection Plan and provide comments to the Contractor within 5 days of receipt of each plan. Revise plans as appropriate and resubmit plans to Departmental Representative within 5 days after receipt of comments from Departmental Representative.

- .4 Departmental Representative's review of Contractor's Environmental Protection Plan shall not be construed as approval and does not reduce the Contractor's overall responsibility for construction environmental protection.
- .5 The Environmental Protection Plan is to present comprehensive overview of known or potential environmental issues which must be addressed during construction. Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .1 Include in **Environmental Protection Plan**:
 - .1 Name[s] of person[s] responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Name[s] and qualifications of person[s] responsible for manifesting hazardous waste to be removed from site.
 - .3 Name[s] and qualifications of person[s] responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.
 - .5 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
 - .6 **Erosion and Sediment Control Plan** identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations. The erosion and sediment control plan should address (but is not limited to):
 - .1 Management of runoff from excavations, pits, trenches, stockpiled materials, roadways;
 - .2 Protection of marine environment and catchbasins from deleterious substances;
 - .3 Considerations for leave strips, vegetative buffers and phased excavation approaches;
 - .4 Temporary drainage ditches, if applicable;
 - .5 Dewatering procedures;
 - .6 Treatment facilities (e.g. flocculation tanks, settling basins, or other treatment facilities as required) and procedures to ensure that waste water (including potentially contaminated groundwater seepage from excavations) meets federal, provincial and municipal guidelines applicable to the method of disposal.
 - .7 Truck/equipment wash station, if applicable; and
 - .8 Cleaning of roadways.
 - .7 **Soil Management Plan** to address how all soils will be handled, stockpiled and disposed of. Refer to section on Soil Management for additional requirements. The Soil Management Plan shall include the following information:
 - .1 work title;
 - .2 work number;
 - .3 contact information;
 - .4 location of the excavation / soil storage area including site plan;

- .5 approximate volume of soil;
 - .6 a brief description of the contaminants (hydrocarbon, heavy metals, etc.);
 - .7 description of sampling plan;
 - .8 analytical results for proposed import materials;
 - .9 plan for soil storage, reburial, and/or disposal;
 - .10 all manifests/weight tickets/disposal certificates; and
 - .11 signature of person responsible for plan.
 - .8 **Traffic Control Plans** including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.
 - .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
 - .9 **Work Area Plan** showing proposed activity in each portion of area and identifying areas of limited use or non-use.
 - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
 - .10 **Spill Control Plan** to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .11 **Non-Hazardous Solid Waste Disposal Plan** identifying methods and locations for solid waste disposal including clearing debris.
 - .12 **Air pollution Control Plan** detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
 - .13 **Contaminant Prevention Plan** identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
 - .14 **Waste Water Management Plan** identifying methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.
- 1.5 Historical, Archaeological, Cultural Resources, Biological Resources and Wetlands Plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

FIRES

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

1.6 NOISE CONTROL

- .1 Work activities shall be limited to normal business hours to minimize noise disturbance to wildlife and humans.
- .2 Equipment and machinery shall be properly maintained to minimize unnecessary noise pollution. Where possible, noise control technology shall be applied on heavy machinery and equipment.
- .3 Work shall be completed in accordance with local municipal noise bylaws.

1.7 DISPOSAL OF WASTES

- .1 Do not discard or dispose of rubbish and waste materials on site unless approved by Departmental Representative.
- .2 Construction wastes must be stored securely and disposed of properly at an approved off-site location. Contractor is not permitted to use the Base waste collection system at CFB Esquimalt.
- .3 Contaminated soils will be disposed of at a facility permitted by the BC MoE to receive contaminated soil as characterized by the Consultant.
- .4 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .5 Provide on-site containers for collection of waste and recyclable materials. Divert recyclable materials from landfill. PWGSC may request documented proof of proper disposal and recycling.
- .6 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .7 Refer to individual specification sections noting hazardous and toxic waste materials.
 - .1 Handle and transport hazardous and toxic waste in accordance with Transportation and Dangerous Goods Act, 1999.
 - .2 Dispose of hazardous and toxic waste using facilities licensed to receive hazardous and toxic waste. Do not co-mingle hazardous and toxic waste with regular wastes or recyclable materials.
 - .3 Provide the Departmental Representative with the name and certification of such facilities upon request.
 - .4 Provide the Departmental Representative with shipping manifests and bills of lading to verify legal disposal of hazardous and toxic waste materials.

1.8 DRAINAGE, EROSION AND SEDIMENTATION

- .1 Provide Erosion and Sediment Control Plan as per above noted submittal requirements.

- .2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.9 WORK ADJACENT TO WATERWAYS

- .1 Do not operate construction equipment in waterways.
- .2 Do not dump excavated fill, waste material or debris in waterways.

1.10 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 sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .5 Protect the roadways from tracking mud, soil and debris throughout the work.

1.11 SPILLS OR RELEASE OF DELETERIOUS SUBSTANCES

- .1 Spills can happen at any time during construction, and there are specific times when the risk is higher such as during the use of paints, corrosive protective coatings, wood preservatives and while working with concrete. Sawdust and wood shavings can potentially enter the marine environment from cutting and drilling during repairs. Potential spills of deleterious substances could result in contamination of the local marine environment, which is a potential violation under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act.
- .2 Measures to be implemented to prevent, control, or mitigate spills or release of deleterious substances:
 - .1 Emergency response procedure for spills of deleterious substances must be in place. In the event of a Level I spill (easily contained and cleaned) the contractor will provide spill response and notify the Departmental Representative that a spill has occurred. In the event that there is a Level II spill (spill that cannot be easily contained or cleaned up), the Contractor shall call the BCEO Trouble Desk (250-363-2009) and 911, where HERT will respond to the spill.
 - .2 Notify Departmental Representative of all spills, regardless of severity. Submit within 24 hours of the spill, a written spill report containing the following minimum information:
 - .1 Date, time, location of spill;
 - .2 Substance spilled;
 - .3 Approximate volume spilled;
 - .4 Approximate area of spill;
 - .5 Type of surface at spill site;
 - .6 Circumstances resulting in the spill;
 - .7 Actions taken;
 - .8 Affected receptors; and

- .9 Weather conditions at the time of the spill.

- .3 Response equipment is to be on site at all times (i.e. spill kits) and workers trained in their location and use. The resources on hand must be sufficient to respond effectively and expediently to any spill that could occur onsite.
- .4 All construction equipment brought onto the site will be clean and properly maintained.
- .5 Equipment fuelling or lubricating shall occur in a designated area > 30m from the marine environment with proper controls to prevent the release of deleterious substances and shall be conducted away from any surface water drains or collection points.
- .6 Any equipment remaining on site overnight shall have appropriately placed drip pans.
- .7 The Contractor shall take due care to ensure no deleterious materials including sediment-laden runoff leave the worksite, or enter any surface water or storm water or sanitary sewer at or near the worksite.
- .8 Concrete wash water from cast-in-place concrete works (within the first 72 hours) shall not enter any surface water or storm water or sanitary sewer at or near the worksite. Concrete pouring should not be performed if significant precipitation events are expected within 72 hours.
- .9 The Contractor shall ensure that no sawdust or shavings enter the marine environment. In the event that sawdust and shavings enter the marine environment, they shall be collected promptly and disposed of appropriately.
- .10 The rinse, cleaning water or solvents for glues, paints, wood preservatives and other potentially harmful or toxic substances shall be controlled so as to prevent leakage, loss of discharge into the storm drain system or into the marine environment.
- .11 Prevent discharges containing asphalt, grout, concrete or other waste materials from reaching storm drains or the marine environment. This includes, but is not limited to:
 - .1 Minimizing the washing of sand or gravel from new asphalt, debris from drilling or cutting or other materials into storm drains and the marine environment by sweeping.
 - .2 Application of fog seals, tack coats or other coatings, if required, during periods when rainfall is unlikely to occur during application.
 - .3 Cleaning equipment off site.
 - .4 Protection of drainage structures with sediment controls as required.

1.12 HAZARDOUS MATERIALS

- .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 Labour Canada
- .2 Store hazardous or toxic substances in a designated area.
- .3 Manage transport and dispose of hazardous materials in an approved legal manner in accordance with hazardous waste regulations.
- .4 Provide Departmental Representative with waste manifest for disposal of hazardous materials.

1.13 SITE CLEARING, PLANT PROTECTION and RESTORATION

- .1 All disturbed areas are to be restored to their original condition or better after construction.
- .2 Disturbance of vegetated areas is to be minimized as much as possible.

1.14 SOIL MANAGEMENT

- .1 Provide Soil Management Plan in accordance with submittal requirements above.
- .2 All soil to be removed from the site must be characterized through representative sampling and analysis prior to removal and disposal. Where analytical data does not exist to characterize material slated for removal from Site, the Contractor shall inform the Departmental Representative, who will arrange the required sampling and analysis. All analytical results will be reviewed by the Departmental Representative prior to removal of any material from the site. When applicable, soil shall be disposed in BC MoE permitted facilities in accordance with applicable legislation.
- .3 The Departmental Representative will review all sampling results and will approve the disposal option based on the level of contamination found. All contaminated soils shall be disposed of as per the BC Contaminated Sites Regulation. The Contractor shall provide documented proof of proper disposal of contaminated soils to the Departmental Representative. Soils that are not contaminated will be transported and disposed of at the Contractor's disposal site, at no additional cost to the contract. The additional costs involved with the disposal of contaminated soils, which are over and above the included price of non-contaminated soils disposal, will be paid as an extra to the contract.
- .4 Contaminated soil removed from the site shall be transported and disposed in accordance with all applicable legislation. All materials shall be securely covered while in transport.
- .5 All stockpiled materials shall be:
 - .1 placed within the construction footprint, as illustrated in Attachment 1. Stockpiles of import or disposal material must not obstruct the roadway, turnaround, fenced storage area, or boat ramp adjacent to the work area.
 - .2 placed on an impermeable surface (i.e. use 6 mil poly under the stockpiles to prevent direct contact with the ground surface);
 - .3 covered and secured with 6-mil poly during precipitation events;
 - .4 covered and secured with 6 mil poly at the end of each work day; and
 - .5 covered and secured with 6 mil poly when not in use.
- .6 The Contractor shall minimize cross-contamination and mixing of individual stockpiles.
- .7 Contractor shall provide suitable equipment at the stockpile site to pile soil into individual stockpiles and for site maintenance.
- .8 All stockpiled areas shall be reinstated to original condition or better.

1.15 EXCAVATION

- .1 All utilities must be located prior to excavation through a BC One call and a private utility location company to ensure all underground utilities are properly located. A CFB Esquimalt

Base Construction Engineering Office (BCEO) dig permit must be obtained prior to any excavation.

1.16 IMPORT OF SOIL

.1 DEFINITIONS

- .1 Soil includes:
- (a) unconsolidated mineral or organic material;
 - (b) fill;
 - (c) aggregates; and,
 - (d) sediment deposited on land.

.2 SOIL CHARACTERIZATION AND DOCUMENTATION

- .1 All imported soil material, regardless of type, shall be tested for the level of contamination prior to arrival on-site. Contractor is responsible to arrange and pay for testing of import fill material.
- .2 After arrival onsite, the import material quality will be confirmed independently by the Departmental Representative, at the cost of PWGSC.
- .3 Environmental characterization of fill material must be conducted in accordance with the British Columbia, Ministry of Environment, Technical Guidance Document #1 – Site Characterization and Confirmation Testing.
- .4 Only soil meeting the CCME Canadian Soil Quality Guidelines for Residential/Parkland (RL/PL) Land Use may be used onsite.
- .5 Samples shall be tested at a minimum for Metals, PAH and Hydrocarbons.
- .6 The Contractor shall submit documented proof to the Departmental Representative that all imported fill material for this project meets the applicable guidelines prior to being brought onsite.
- .7 Documented proof shall be in the form of a signed cover letter and signed test analysis results, from an independent testing firm accredited according to the Standards Council of Canada, the Canadian Association of Laboratory Accreditation Inc. (ISO/IEC 17025), and British Columbia Ministry of Environment.
- .8 The cover letter shall:
- .1 Clearly state that all imported material meets the stated guidelines,
 - .2 Include the name and location of all material sources,
 - .3 Identify the nature of current and historic activities conducted at the source.
- .9 The test analysis reports shall:
- .1 Clearly show the test results for each type of material tested and compared against the applicable CCME Guidelines, as per the above-noted requirements, in an easily-read tabular format.
 - .2 Include tests results conducted within 3 months of the date of submittal.
 - .3 Include the name and location of all material sources.

- .3 All material brought to the Site that does not meet the above-noted CCME Guidelines will be removed from the property immediately at the Contractor's cost.

1.17 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection Plan.
- .2 Contractor: After receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Execution

2.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 1. Leave Work area clean at end of each day.
- .2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .4 Waste Management: separate waste materials for reuse or recycling as directed by Departmental Representative.
 1. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Approved: 2006-03-31

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 02 81 01 - Hazardous Materials.

1.2 REFERENCES AND CODES

- .1 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.3 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: Stop work immediately when material resembling asbestos is encountered during work. Notify the Departmental Representative.
- .2 HW soils are not suspected of being present at the Site. Should materials be suspected of being contaminated with concentrations exceeding HW standards, immediately advise the Departmental Representative.
- .3 Materials requiring off-Site disposal must be disposed of at an approved and appropriately licensed facility as approved by the Departmental Representative and in accordance with Provincial, and Federal regulations. Weigh scale tickets, shipping documents and certificates of disposal will be completed by the Contractor and copies will be made available according to Section 01 33 00 – Submittal Procedures.
- .4 Non Aqueous Phase Liquids (NAPL) are not suspected of being present at the Site, however, if encountered, they will be managed by the contractor under direction of the Departmental Representative.
- .5 Other materials discovered at the Site during the course of work, that are suspected to contain hazardous substances / materials will be managed by the contractor in accordance with provincial, and federal regulations and as required by the Departmental Representative.

1.4 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted on DND property except in designated smoking areas, or in designated locations within the Contractor's worksite.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 05 16 - Aggregate Materials.

1.2 INSPECTION

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

1.3 REJECTED WORK

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

1.4 REPORTS

- .1 Submit copies of inspection and test reports to Departmental Representative and Consultant.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 INSTALLATION AND REMOVAL

- .1 Prepare Site plan indicating proposed location of Site facilities (including washroom), including avenues of ingress/egress, muster areas, first aid stations, and spill kits.
- .2 Indicate use of supplemental or other staging area.
- .3 Provide construction facilities in order to execute work expeditiously.
- .4 Remove from Site all such work after use.

1.4 SITE STORAGE/LOADING

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

1.5 CONSTRUCTION OFFICE

- .1 Placement of a Site office or equipment storage unit is permitted only in the location indicated in Drawing 623733-002 and subject to approval by the Departmental Representative. The Site office will not be placed such that the roadway, turnaround, boat ramp, or fenced storage area are obstructed in any way. Two-way traffic must be maintained along the roadway.
- .2 Contractor will allow Consultant continued access and use of Site office.
- .3 Electricity will not be provided to Contractor for Site office or equipment. Contractor must provide portable generators for any electrical needs.

1.6 CONSTRUCTION PARKING

- .1 Parking will be permitted on Site within the footprint of the construction area provided it does not disrupt performance of Work. Contractor must allow clear access at all times to the roadway, turnaround, boat ramp, and fenced storage area adjacent to Site. Additional parking space may be requested from PWGSC. Parking will only be permitted in areas specifically designated by the Departmental Representative.
- .2 Provide and maintain adequate access to project Site.

1.7 SECURITY

- .1 The Contractor's movements shall be restricted to the Site and transportation corridors within Colwood, according to the requirements of the work and the limitations of the Contractor's security clearance. Other security requirements may be applied at the discretion of PWGSC.

1.8 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Locate materials, equipment, and tools that must be stored on-Site in a manner to cause least interference with work activities and normal Site activities.

1.9 SANITARY FACILITIES

- .1 Sanitary facilities may be made available to the work force near to the Contractor's work Site. The Contractor is solely responsible for providing any facilities required to maintain accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.10 CONSTRUCTION SIGNAGE

- .1 Provide and erect project sign, during mobilization, in a location designated by the Departmental Representative.
- .2 Indicate on sign, name and contact information of Contractor.
- .3 No other signs or advertisements, other than warning signs, are permitted on Site.
- .4 Signs and notices for safety and instruction to be posted as deemed necessary by the Departmental Representative.
- .5 Maintain approved signs and notices in good condition for duration of project, and dispose of off-Site on completion of project or earlier if directed by the Departmental Representative.

1.11 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by the Departmental Representative.
- .2 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs, if deemed necessary by the Departmental Representative.
- .3 Protect travelling public from damage to person and property.
- .4 Contractor's traffic on roads selected for hauling material to and from Site to interfere as little as possible with public traffic.
- .5 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic, as necessary.
- .6 Dust control: adequate to ensure safe operation at all times.

1.12 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from Site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable, under direction of Departmental Representative.

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 the Environmental Management Plan, or as requested by the Departmental Representative.
- .2 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 35 43 - Environmental Procedures.

1.2 PROJECT CLEANLINESS

- .1 All equipment must arrive on-Site in a clean condition, free of loose dirt and contaminants.
- .2 Provide and operate any cleaning equipment necessary to minimize tracking of soil, deconstruction materials and/or contaminants off of the Site and along haul routes.
- .3 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by sub-contractors.
- .4 Remove waste materials from Site (other than impacted soil or deconstructed materials) at regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on Site.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 Provide on-Site containers for collection of waste materials and debris.
- .7 Provide and use marked separate bins for recycling.
- .8 Ensure off-Site roadways are maintained in a clean condition so that off-Site tracking of soil / deconstruction materials from the Site is not evident.
- .9 Meet the requirements of Section 01 35 42 - Environmental Procedures.

1.3 FINAL CLEANING

- .1 Remove waste materials from the Site on a weekly basis (with the exception of deconstruction and excavated materials).
- .2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris including that caused by sub-contractors.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 Sweep and wash all paved areas.
- .7 Clean all equipment prior to leaving the Site to remove soil, deconstruction materials, and contaminants.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling where possible.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 35 29.06 – Health and Safety Requirements.
- .3 Section 01 35 35 – DND Fire Safety Requirements.
- .4 Section 01 35 43 – Environmental Procedures.
- .5 Section 01 41 00 – Regulatory Requirements.

1.2 REFERENCES

- .1 Definitions:
 - .1 Dangerous Goods: product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
 - .2 Hazardous Material: product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
 - .3 Hazardous Waste: hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .2 Reference Standards:
 - .1 Canadian Environmental Protection Act, 1999 (CEPA 1999)
 - .1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).
 - .2 Department of Justice Canada (Jus)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDG Act) 1992, (c. 34).
 - .2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).
 - .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
 - .4 National Research Council Canada Institute for Research in Construction (NRC-IRC)
 - .1 National Fire Code of Canada-2005.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

- .2 Product Data:
 - .1 Submit one copy of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements and Section 01 35 43 - Environmental Procedures to the Departmental Representative for each hazardous material required prior to bringing hazardous material on Site.
 - .2 Submit hazardous materials management plan to the Departmental Representative that identifies hazardous materials, usage, location, personal protective equipment requirements, and disposal arrangements.
 - .3 Submit photocopy of shipping documents and waste manifests to PWGSC, or its Consultant, when shipping toxic wastes off-Site.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
 - .1 When exporting hazardous waste to another country, ensure compliance with Export and Import of Hazardous Waste and Hazardous Recyclable Materials Regulations.
- .2 Storage and Handling Requirements:
 - .1 Co-ordinate storage of hazardous materials with the Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.
 - .2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
 - .3 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada requirements.
 - .4 Smoking is not prohibited at the Site.
 - .5 Storage requirements for quantities of hazardous materials and wastes:
 - .1 Store hazardous materials and wastes in closed and sealed containers.
 - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
 - .3 Store hazardous materials and wastes in containers compatible with that material or waste.
 - .4 Segregate incompatible materials and wastes.
 - .5 Ensure that different hazardous materials or hazardous wastes are stored in separate containers.
 - .6 Store hazardous materials and wastes in secure storage area with controlled access.
 - .7 Maintain clear egress from storage area.
 - .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.

- .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment as specified in Section 01 35 43 - Environmental Procedures.
- .10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
- .11 When hazardous waste is generated on Site:
 - .1 Co-ordinate transportation and disposal with the Departmental Representative.
 - .2 Comply with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.
 - .3 Use licensed carrier authorized by provincial authorities to accept subject material.
 - .4 Before shipping material obtain written notice from intended hazardous waste treatment or disposal facility it will accept material and it is licensed to accept this material.
 - .5 Label container(s) with legible, visible safety marks as prescribed by federal and provincial regulations.
 - .6 Only trained personnel handle, offer for transport, or transport dangerous goods.
 - .7 Provide photocopy of shipping documents and waste manifests to the Departmental Representative immediately upon request of PWGSC or within 48 hours of shipping material.
 - .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide photocopy of completed manifest to the Departmental Representative.
 - .9 Report discharge, emission, or escape of hazardous materials immediately to the Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.
- .12 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
- .13 Report spills or accidents immediately to the Departmental Representative. Submit a written spill report to the Departmental Representative within 24 hours of incident.

Part 2 Products

2.1 MATERIALS

- .1 Description:
 - .1 Bring on Site only quantities hazardous material required to perform Work.
 - .2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling where possible.

END OF SECTION

Approved: 2012-06-30

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 74 11 – Cleaning
- .3 Section 332333 – Excavating, Trenching and Backfilling

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM D4791-10, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for aggregate materials and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit samples.
 - .2 Provide Consultant with access to source and processed material for sampling.
 - .3 Supply new or clean sample bags or containers appropriate to aggregate materials.
 - .4 Pay cost of sampling and testing of aggregates which fail to meet specified requirements.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Transportation and Handling: handle and transport aggregates to avoid segregation, contamination and degradation.
- .3 Storage: store washed materials or materials excavated from underwater 24 hours minimum to allow free water to drain and for materials to attain uniform water content.

Part 2 Products

2.1 MATERIALS

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, free from adherent coatings and injurious amounts of disintegrated pieces or other deleterious substances.
- .2 Flat and elongated particles of coarse aggregate: to ASTM D4791.
 - .1 Greatest dimension to exceed 5 times least dimension.
- .3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
 - .1 Screenings produced in crushing of quarried rock, boulders, or gravel.
 - .2 Reclaimed concrete material.
- .4 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:
 - .1 Crushed rock.
 - .2 Gravel and crushed gravel composed of naturally formed particles of stone.
 - .3 Light weight aggregate.

2.2 SOURCE QUALITY CONTROL

- .1 Inform Departmental Representative of proposed source of aggregates and provide access to source materials for sampling 5 business days minimum before starting production.
- .2 If materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate alternative source.
- .3 Advise Departmental Representative 2 weeks minimum in advance of proposed change of material source.
- .4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions are acceptable for topsoil stripping.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with topsoil stripping. only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

- .1 Stockpiling:
 - .1 Stockpile aggregates on Site within footprint of construction area, as illustrated in Attachment 1, unless otherwise directed by Departmental Representative. Do not stockpile on completed gravel pavement surfaces.
 - .2 Stockpile aggregates in sufficient quantities to meet project schedules.
 - .3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
 - .4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.
 - .5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.
 - .6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Departmental Representative within 48 hours of rejection.
 - .7 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
 - .8 Do not cone piles or spill material over edges of piles.
 - .9 Do not use conveying stackers.
 - .10 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.
 - .11 Cover all stockpiles with securely anchored plastic sheeting (6 mm poly) during inclement weather conditions and during episodes of extended inactivity.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .4 Leave any unused aggregates in neat compact stockpiles as directed by Departmental Representative.
- .5 Waste Management: separate waste materials for reuse, and recycling
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .6 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.
- .7 Restrict public access to temporary or permanently abandoned stockpiles by means acceptable to Departmental Representative.

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END OF SECTION

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Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 45 00 – Quality Control.
- .3 Section 01 74 11 – Cleaning.
- .4 Section 31 23 33.01 – Excavating, Trenching, and Backfilling.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM D698-12e2, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m³).
 - .2 ASTM D 422-63 (2007), Standard Test Method for Particle-Size Analysis of Soils.
- .2 Underwriters' Laboratories of Canada (ULC)

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

1.4 EXISTING CONDITIONS

- .1 Examine the recommendations of the Geotechnical Memorandum provided in Attachment 2.
- .2 Contractor to confirm utilities in accordance with 31 23 33.01 Excavating, Trenching, and Backfilling.
- .3 Refer to dewatering in Section 31 23 33.01 - Excavating, Trenching and Backfilling.

Part 2 Products

2.1 MATERIALS

- .1 Fill material: Type 3 in accordance with of Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .2 Excavated or graded material existing on site is not suitable for use as fill for grading work, unless otherwise approved by Departmental Representative.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for rough grading installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Consultant.
 - .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 GRADING

- .1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated by the Grading and Design Plan, Attachment 1.
- .2 Slope rough grade as indicated by the Grading and Drainage Design Plan, Attachment 1.
- .3 Grade ditches to depth as indicated by the Grading and Drainage Design Plan, Attachment 1.
- .4 Prior to placing fill over existing ground scarify surface to depth of 150 mm minimum and re-compact material in accordance with Part 3.2.5 before placing fill over existing ground. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .5 Compact filled and disturbed areas to maximum dry density to ASTM D 698, as follows:
 - .1 95% Proctor.

3.3 TESTING

- .1 Inspection and testing of soil gradation and compaction will be carried out by the Consultant. Costs of tests will be paid by Departmental Representative in accordance with Section 01 45 00 - Quality Control.
- .2 Ensure proposed import material meets gradation specifications and make source material available to Consultant for testing a minimum of 5 business days before starting production.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse or recycling.

- .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

- .1 Maintain access roads to prevent accumulation of construction related debris on roads.

END OF SECTION

Approved: 2006-09-30

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 45 00 – Quality Control
- .3 Section 01 35 29.06 – Health and Safety Requirements
- .4 Section 01 35 43 – Environmental Procedures
- .5 Section 31 05 16 – Aggregate Materials

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C117-13, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-63(2007), Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698-12e2, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ;) (600 kN-m/m ;).
 - .5 ASTM D1557-12e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ;) (2,700 kN-m/m;).
 - .6 ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.3 DEFINITIONS

- .1 Excavation classes: one class of excavation will be recognized; common excavation.
 - .1 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3 Topsoil:
 - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
 - .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.

- .4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .6 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .7 Unsuitable materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136: Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
 - .2 Table:

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45 – 100
0.02 mm	10 – 80
0.005 mm	0 – 45
 - .3 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.
- .8 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality Control: in accordance with Section 01 45 00 - Quality Control:
 - .1 Submit for review by Departmental Representative proposed dewatering and heave prevention methods as described in PART 3 of this Section.
- .3 Preconstruction Submittals:
 - .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
 - .2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field clearance record from utility authority location plan of relocated and abandoned services, as required.
- .4 Import Material Samples:
 - .1 Inform Departmental Representative at least 5 business days prior to beginning Work of proposed source of fill materials and provide access to source material for sampling. Aggregate gradation and proctor sampling will be at the cost of PWGSC. Ensure material meets gradation and environmental specifications prior to sampling by Departmental Representative.

1.5 QUALITY ASSURANCE

- .1 Qualification Statement: submit proof of insurance coverage for professional liability.
- .2 Where Departmental Representative is employee of Contractor, submit proof that Work by Departmental Representative is included in Contractor's insurance coverage.
- .3 Submit design and supporting data at least 5 days prior to beginning Work.
- .4 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of British Columbia, Canada.
- .5 Keep design and supporting data on site.
- .6 Engage services of qualified professional Engineer who is registered or licensed in Province of British Columbia, Canada in which Work is to be carried out to design and inspect cofferdams, shoring, bracing and underpinning required for Work.
- .7 Do not use soil material until written report of soil test results are reviewed and approved by Departmental Representative.
- .8 Health and Safety Requirements:
 - .1 Construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse, recycling, and disposal.
- .2 Divert excess aggregate materials from landfill to local recycling facility for reuse as directed by Departmental Representative.

1.7 EXISTING CONDITIONS

- .1 Buried services:
 - .1 Before commencing work verify location of buried services on and adjacent to site.
 - .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
 - .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.
 - .4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
 - .5 Prior to beginning excavation Work, notify applicable Departmental Representative and authorities having jurisdiction establish location and state of use of buried utilities and structures. Departmental Representative and authorities having jurisdiction to clearly mark such locations to prevent disturbance during Work.
 - .6 Confirm locations of buried utilities by careful test excavations or soil hydrovac methods.
 - .7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.
 - .8 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative Consultant before removing or re-routing. Costs for such Work to be paid by Departmental Representative.
 - .9 Record location of maintained, re-routed and abandoned underground lines.

- .10 Confirm locations of recent excavations adjacent to area of excavation.
- .2 Existing buildings and surface features:
 - .1 Conduct, with Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.
 - .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Departmental Representative

Part 2 Products

2.1 MATERIALS

- .1 Type 1 and Type 2 fill: properties to Section 31 05 16 - Aggregate Materials and the following requirements:
 - .1 Crushed, pit run or screened stone, gravel or sand.
 - .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
 - .3 Table:

Sieve Designation	% Passing		
	Type 1	Type 2	Type 3
75 mm	-	-	100
50 mm	-	-	-
37.5 mm	-	100	-
25 mm	-	40 – 75	-
19 mm	100	-	-
12.5 mm	75 – 100	15 – 40	-
9.5 mm	60 – 90	-	-
4.75 mm	40 – 70	-	25 – 65
2.36 mm	27 – 55	10 – 25	-
1.18 mm	16 – 42	-	-
0.600 mm	8 – 30	-	-
0.300 mm	5 – 20	5 – 15	-
0.075 mm	2 – 8	0 – 5	≤ 5

- .2 Type 3 fill: selected material from excavation or other sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.
- .3 Unshrinkable fill: proportioned and mixed to provide:
 - .1 Maximum compressive strength of 0.4 MPa at 28 days.
 - .2 Maximum cement content of 25 kg/m ; with 40% by volume fly ash replacement: to CSA-A3001, Type GU.
 - .3 Minimum strength of 0.07MPa at 24 h.
 - .4 Concrete aggregates: to CSA-A23.1/A23.2.
 - .5 Cement: Type GU.
 - .6 Slump: 160 to 200 mm.

- .4 Shearmat: honeycomb type bio-degradable cardboard 100 mm thick, treated to provide sufficient structural support for poured concrete until concrete cured.

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, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- .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 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

3.3 PREPARATION/PROTECTION

- .1 Keep excavations clean, free of standing water, and loose soil.
- .2 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative approval.
- .3 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 from damage.
- .4 Protect buried services that are required to remain undisturbed.
- .5 If wet, fine grained soils are encountered in the subgrade, then geotextile such as Mirafi 600 X or equivalent should be placed on a smooth subgrade devoid of water puddles and organic material before any fill is placed. The geotextile must be placed in strict conformance with the manufacturer's specifications and should be devoid of any wrinkles or snags when placed and covered with fill.

3.4 STOCKPILING

- .1 Stockpile fill materials in areas designated by Departmental Representative.
 - .1 Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination. Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.
- .3 Cover all stockpiles with securely anchored plastic sheeting (6 mm poly) during inclement weather conditions and during episodes of extended inactivity.

3.5 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.
- .2 Provide for Departmental Representative's review details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs.
- .3 Avoid excavation below groundwater table if quick condition or heave is likely to occur.
 - .1 Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.
- .4 Protect open excavations against flooding and damage due to surface run-off.
- .5 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures to approved runoff areas and in manner not detrimental to public and private property, or portion of Work completed or under construction.
 - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

3.6 FILL TYPES AND COMPACTION

- .1 Use types of fill and compaction densities as indicated in Attachment 2 and as specified in PART 2. Compaction densities are percentages of maximum densities obtained from ASTM D698 testing.

3.7 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 Departmental Representative has inspected and approved subgrade for the proposed installations.
 - .2 Departmental Representative has inspected and approved of construction below finish grade.
 - .3 Inspection, testing, approval, and recording location of underground utilities.
 - .4 Removal of concrete formwork.
 - .5 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 200 mm in loose thickness (150 mm compacted thickness) up to grades indicated. The first lift placed on native soil subgrade may be placed in 300 mm loose thickness. Compact each layer to specified compaction before placing succeeding layer.
- .5 Consolidate and level unshrinkable fill with internal vibrators.

3.8 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects as directed by Departmental Representative.
- .2 Clean and reinstate areas affected by Work as directed by Departmental Representative.

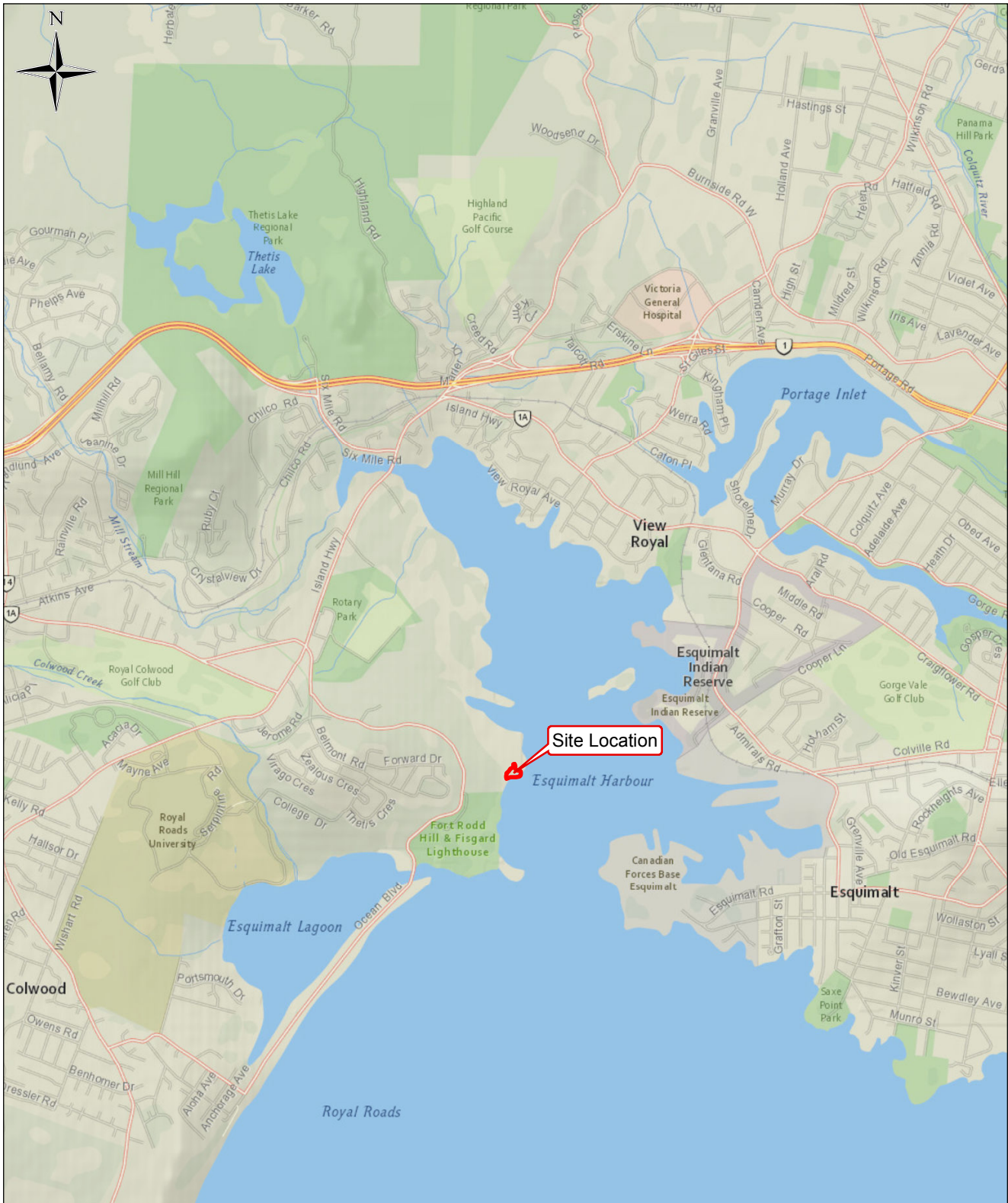
- .3 Reinststate pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.
- .4 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION

DRAWINGS

632733-001 - Site Location

632733-002 - Equipment Mobilization and Hauling Route Considerations



LEGEND

Site Location

NOTES

1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.



CLIENT NAME:
Public Works and Government
Services Canada

PROJECT LOCATION:
Col-15, CFB Esquimalt
Esquimalt, BC

Site Location



BY: PB
CHK'D: ME

DATE: 2015-11-19
SCALE: 1:40,000

REF No: REV: **0**
632733-001

MXD Path: \\S12606\projects\Current\Projects\PWGSC\632733 COL 15\4.0 Execution\4.5 GIS and Drawings\GISMapSeries\632733-001.mxd



NOTES

1. ORIGINAL DRAWING IN COLOUR.
2. LOCATION OF EXISTING UTILITIES SHOWN ARE APPROXIMATE ONLY AND SHOULD BE CONFIRMED PRIOR TO INTRUSIVE WORK. NOT ALL UTILITIES MAY BE SHOWN.

LEGEND	
	SUBJECT PROPERTY LIMITS
	MOBILIZATION AND HAULING ROUTE
	SITE
	WEIGHT RESTRICTED JETTY AREAS - NO TRAFFIC PERMITTED



REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION	BY	CHK
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0	2015-11-04	ISSUED AS DRAFT	PB	DM
REV.	DATE	DESCRIPTION	BY	CHK

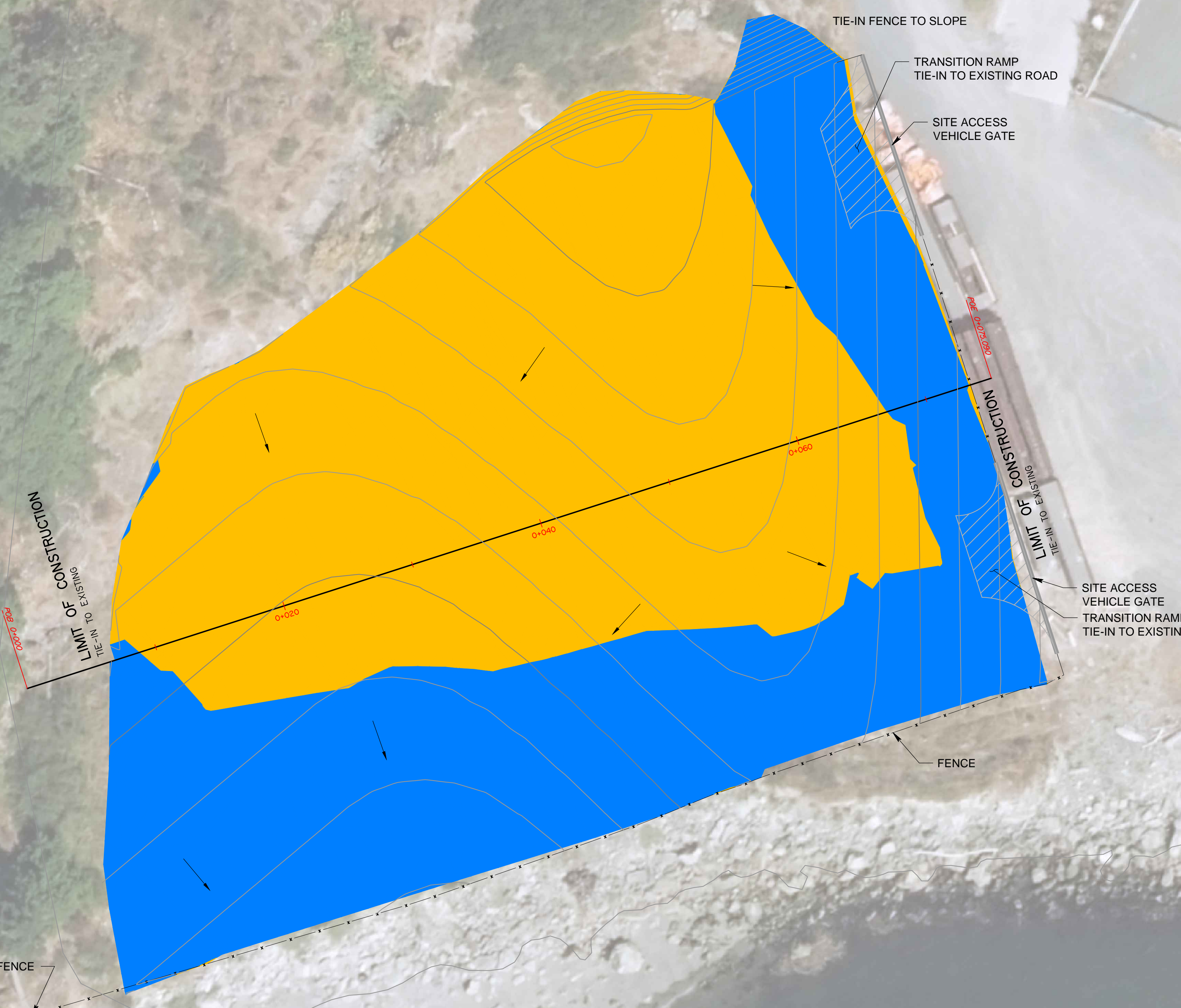
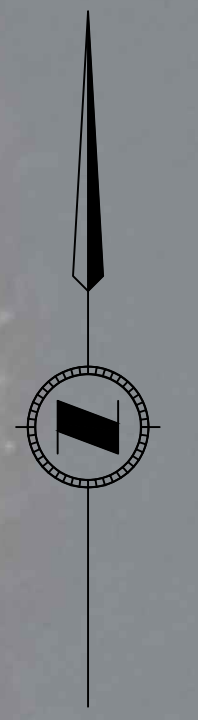
REVISIONS



CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA		PROJECT LOCATION: COL-15, CFB ESQUIMALT ESQUIMALT, BC	
TITLE: EQUIPMENT MOBILIZATION AND HAULING ROUTE CONSIDERATIONS			
DWN BY: PB	SCALE: 1:2,000	DATE: 2015-10-30	DWG No: REV.: 0
CHK'D: ME	PLOT: 20151119.1456	CADFILE: 632733R1	632733-002

ATTACHMENT I – GRADING AND DRAINAGE DESIGN

LAYOUT: PLAN 2015-11-02 4:44 PM STOYCHEV, KALOYAN
 PLOT DATE: 2015-11-02 4:44 PM STOYCHEV, KALOYAN
 FILE LOCATION: P:\CURRENT PROJECTS\PMSC\630547 COL 15\4.0 EXECUTION\4.2 ENGINEERING\C3D\CORR\COR-COL15.DWG



MATERIAL TABLE (VOLUMES):

GRAVEL - TOP (m3)	443.50
GRAVEL - BOTTOM (m3)	450.00
ENG. FILL (m3)	610.00
CUT (m3)	1,980.00
FILL (m3)	1,605.00

NOTES:

1. CUT VOLUME MATERIAL CANNOT BE RE-USED AS IT IS CONSIDERED GEOTECHNICALLY UNSOUND.
2. FILL MATERIAL TO BE IMPORTED.
3. STRIPPING AND SITE CLEARING (3,090 m2).
4. ROCKS AND BOULDERS TO BE MOVED ALONG THE COL15 SOUTH LIMITS.

GRADING / LEGEND:

Elevations Table			
Number	2D Area, m2	Volume, m3	Color
CUT	1336.78	1980.5	Blue
FILL	1752.21	1604.2	Yellow

CONFIDENTIAL

PRELIMINARY
 FOR INFORMATION ONLY
 2015-11-02

DESIGNED	K. STOYCHEV
DRAWN	A. AFANASEVA
CHECKED	S.S. DEEPAK
APPROVED	S. S. DEEPAK

REVISION HISTORY			
REV	DATE	DESCRIPTION	BY
PA	2015-10-30	ISSUED FOR INFORMATION	SSD

PROFESSIONAL SEAL

DESIGN FIRM

SNC-LAVALIN

CLIENT

DRAWING SCALE:

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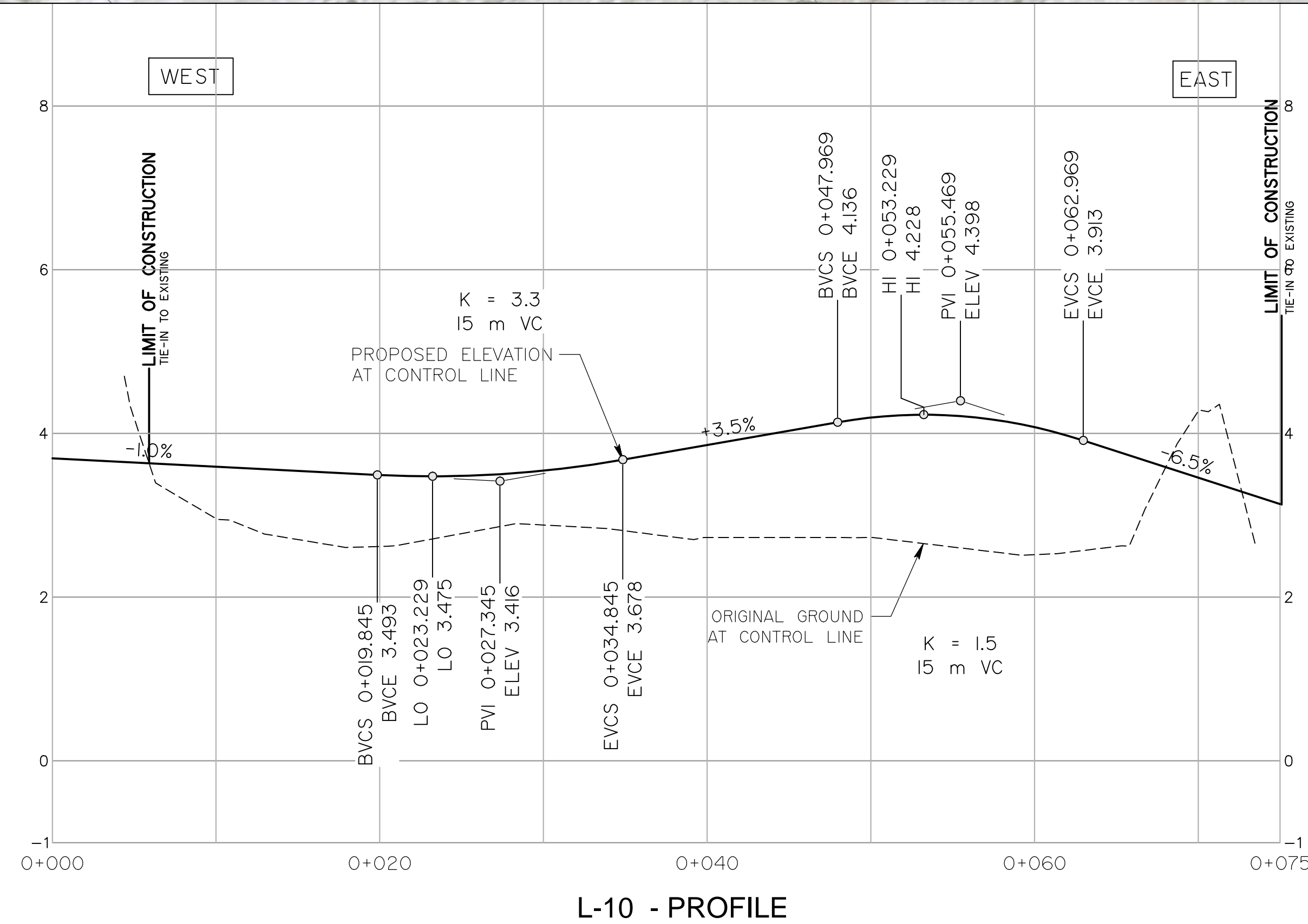
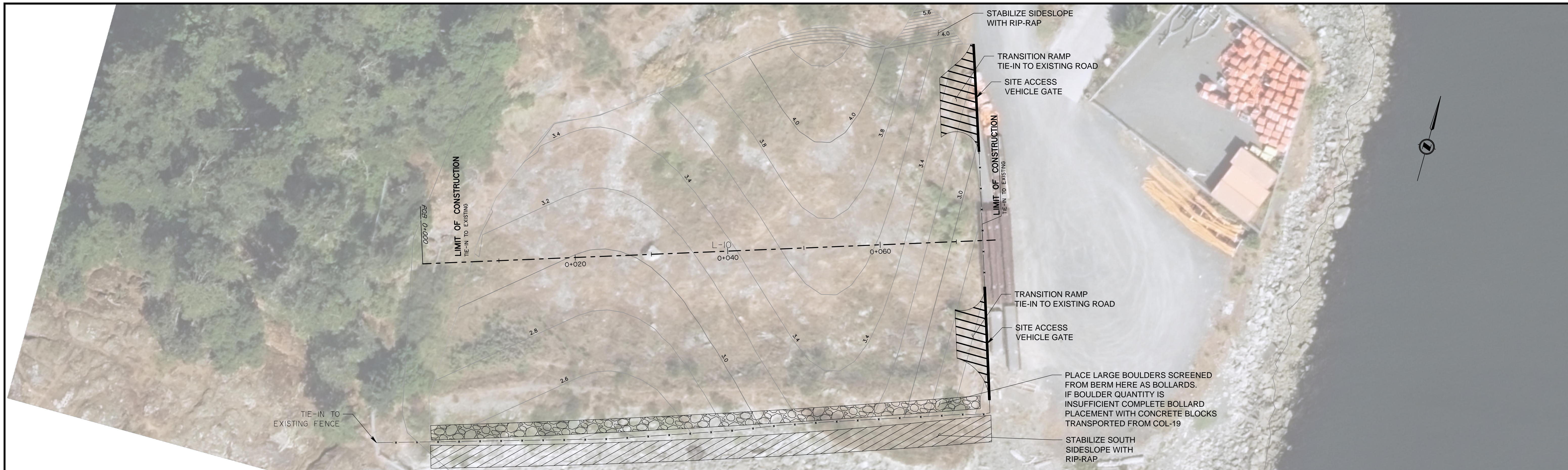
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DND COL 15 RESTORATION
 PLAN - GRADING

DRAWING No. 630547-41DK-101 PA

SCALE BAR AS PER 1:1 ANSI D-SIZE SHEET
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L-10 - PROFILE

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PRELIMINARY
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 2015-10-30

DESIGNED	K. STOYCHEV
DRAWN	A. AFANASEVA
CHECKED	S.S. DEEPAK
APPROVED	S. S. DEEPAK

REV	DATE	DESCRIPTION	BY
PA	2015-10-30	ISSUED FOR INFORMATION	SSD

PROFESSIONAL SEAL

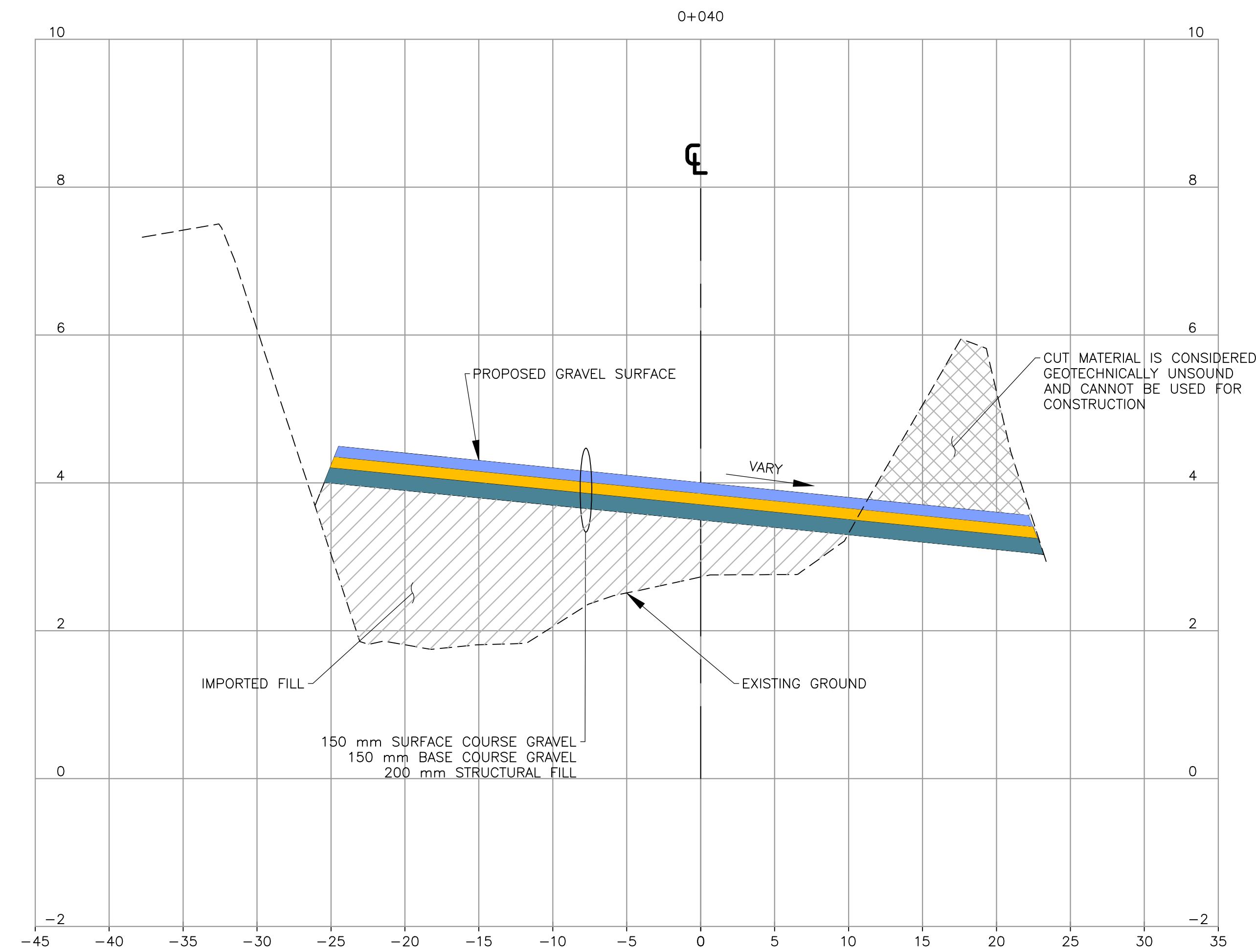
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CLIENT	
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VERTICAL	1:50 FULL SIZE 1:100 HALF SIZE

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DRAWING No.	630547-41DK-201
	PA

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TYPICAL SECTION - DND COL 15 RESTORATION
 STA 0+040.000
 LOOKING EAST

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PRELIMINARY
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 2015-10-30

DESIGNED	K. STOYCHEV
DRAWN	A. AFANASEVA
CHECKED	S.S. DEEPAK
APPROVED	S. S. DEEPAK

REVISION HISTORY			
REV	DATE	DESCRIPTION	BY
PA	2015-10-30	ISSUED FOR INFORMATION	SSD

PROFESSIONAL SEAL

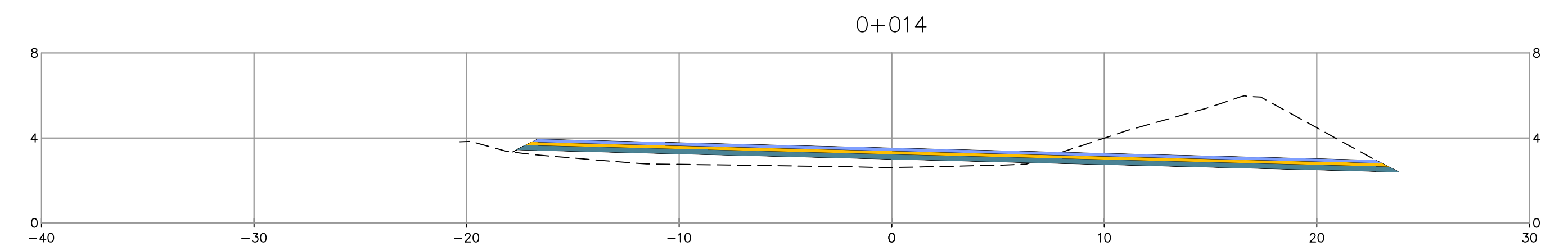
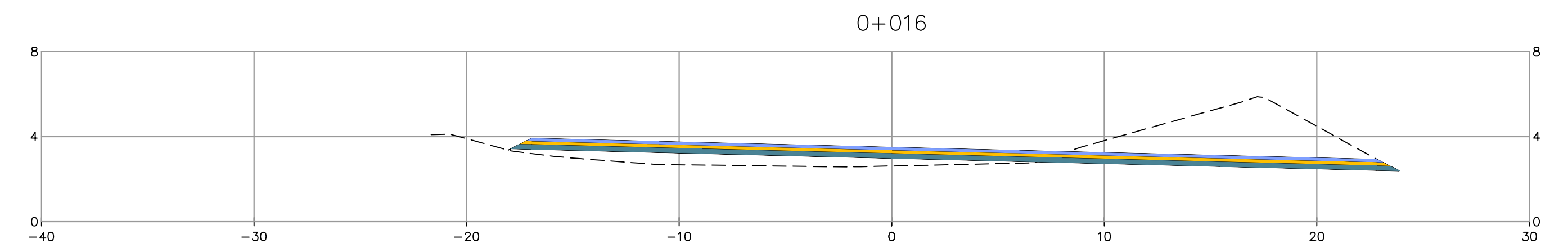
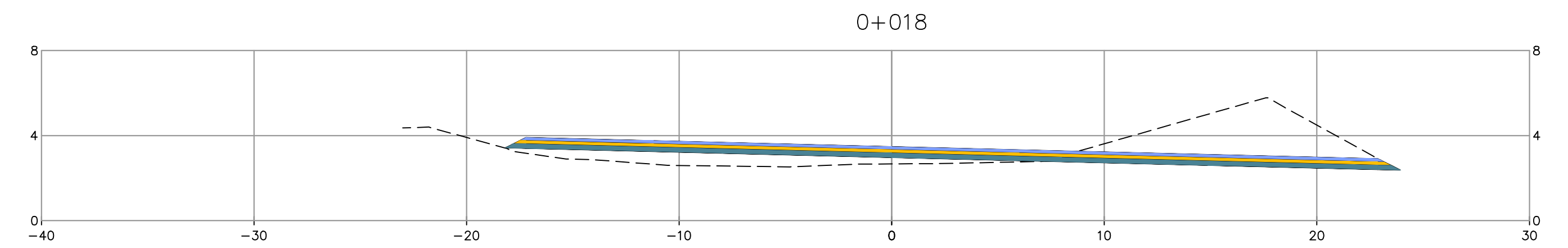
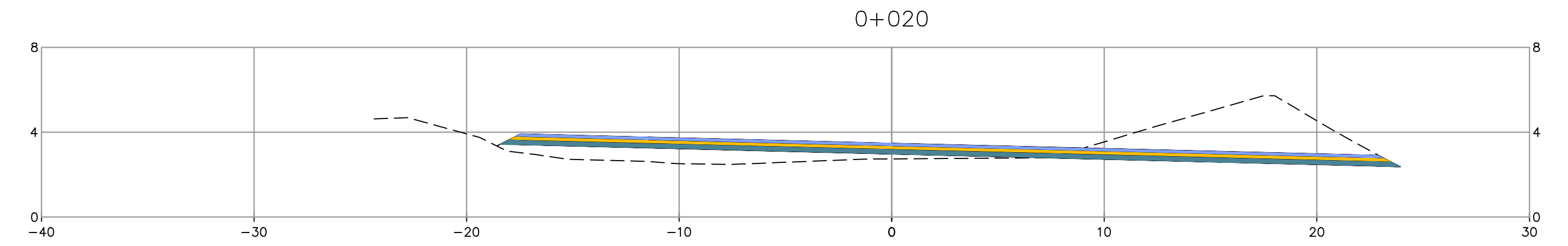
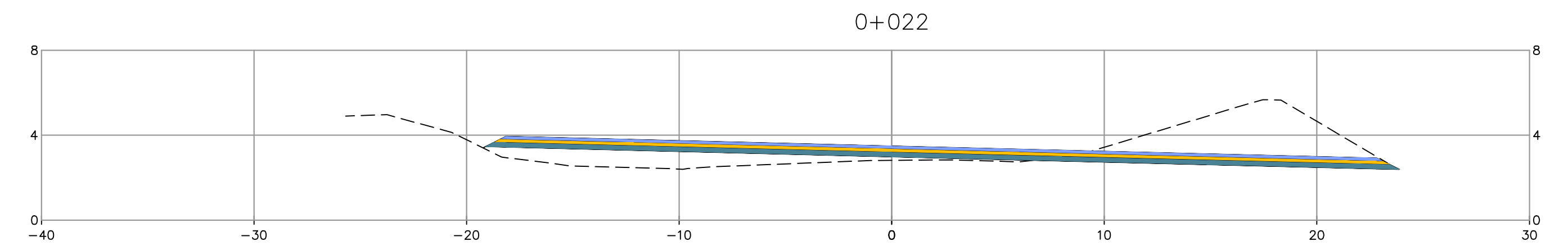
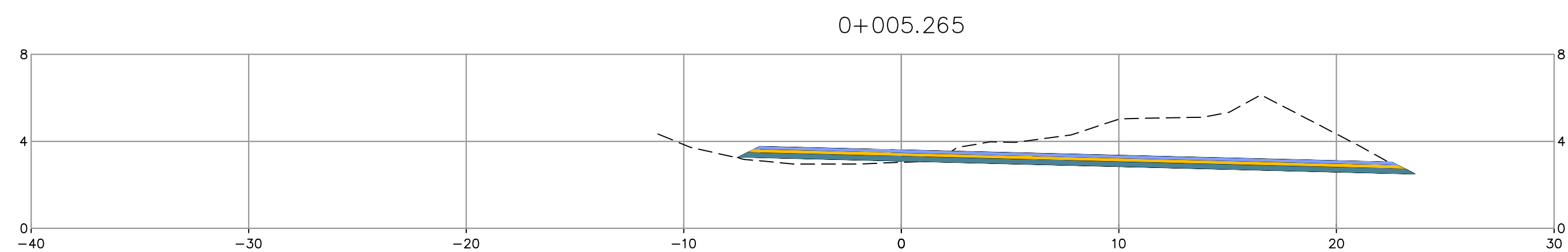
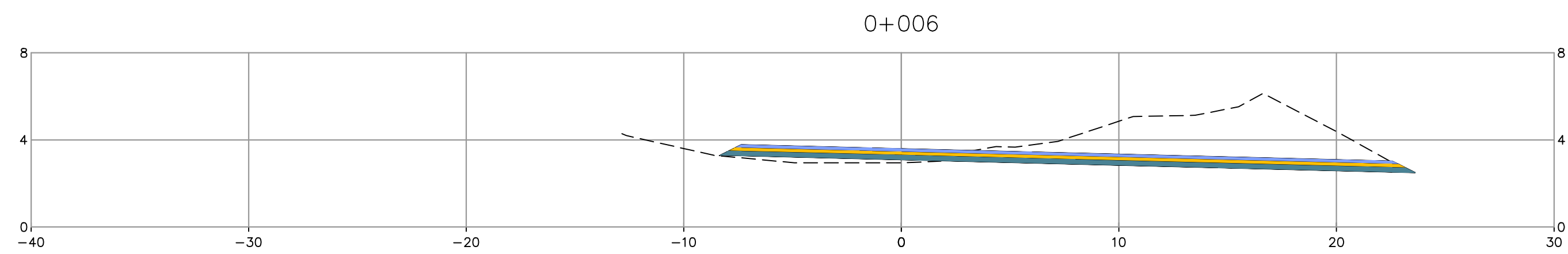
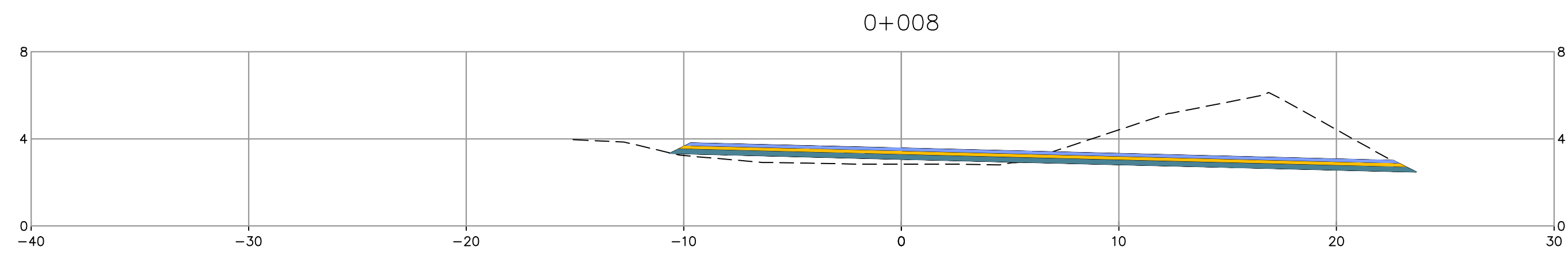
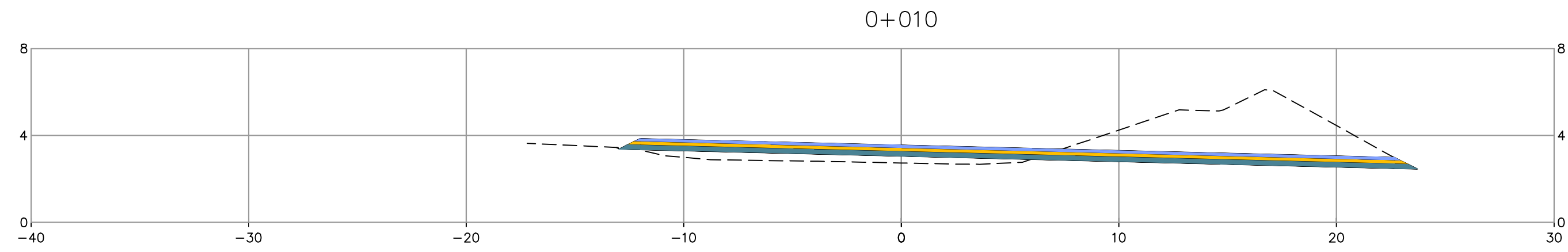
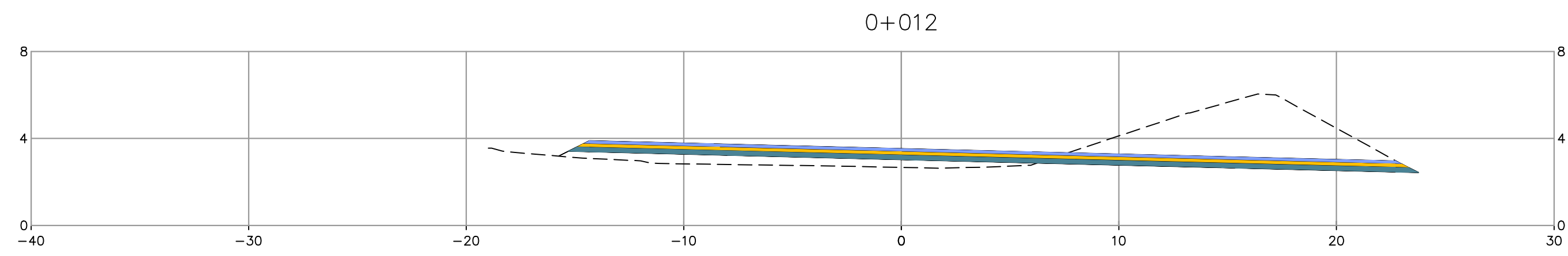
DESIGN FIRM

SNC-LAVALIN

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	1:100	HALF SIZE	

DND COL 15 RESTORATION TYPICAL SECTION	
DRAWING No.	630547-41DK-301
	PA

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PRELIMINARY
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 2015-10-29

DESIGNED K. STOYCHEV
 DRAWN A. AFANASEVA
 CHECKED S.S. DEEPAK
 APPROVED S. S. DEEPAK

REVISION HISTORY			
REV	DATE	DESCRIPTION	BY
PA	2015-10-27	ISSUED FOR INFORMATION	SSD

PROFESSIONAL SEAL

DESIGN FIRM

SNC-LAVALIN

CLIENT

DRAWING SCALE:

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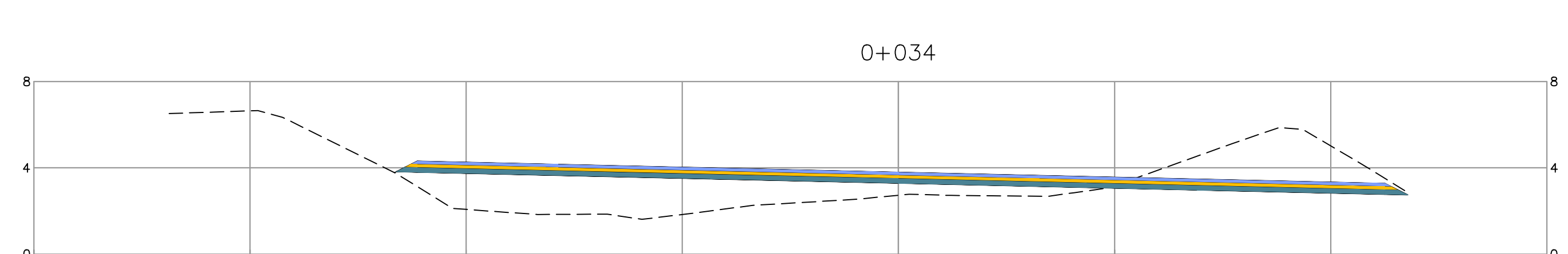
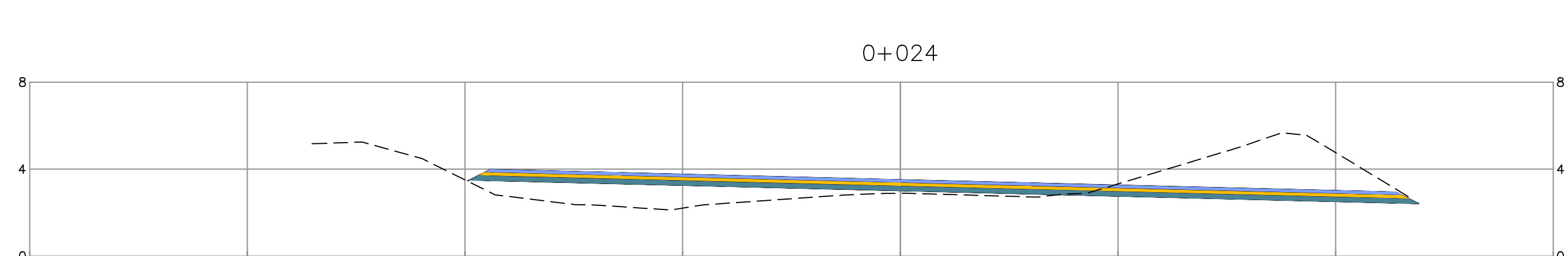
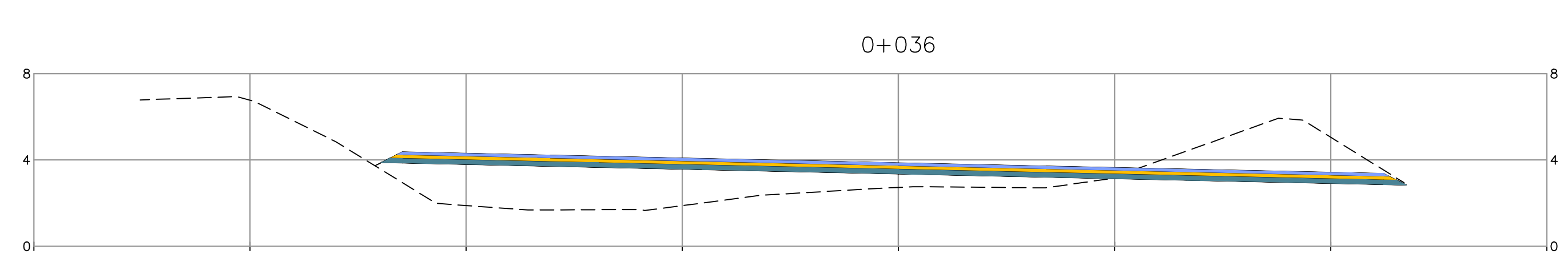
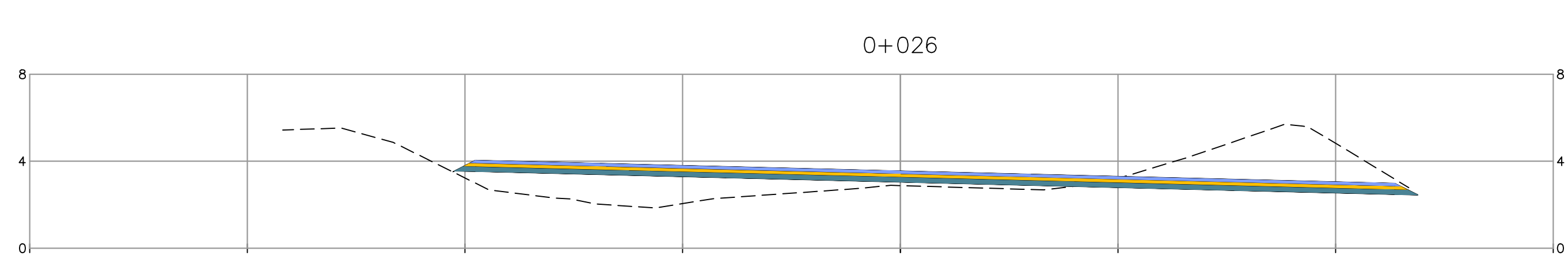
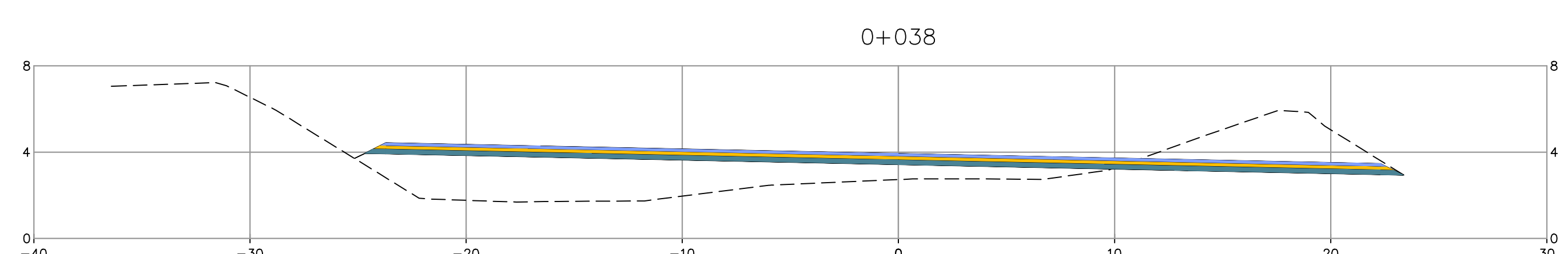
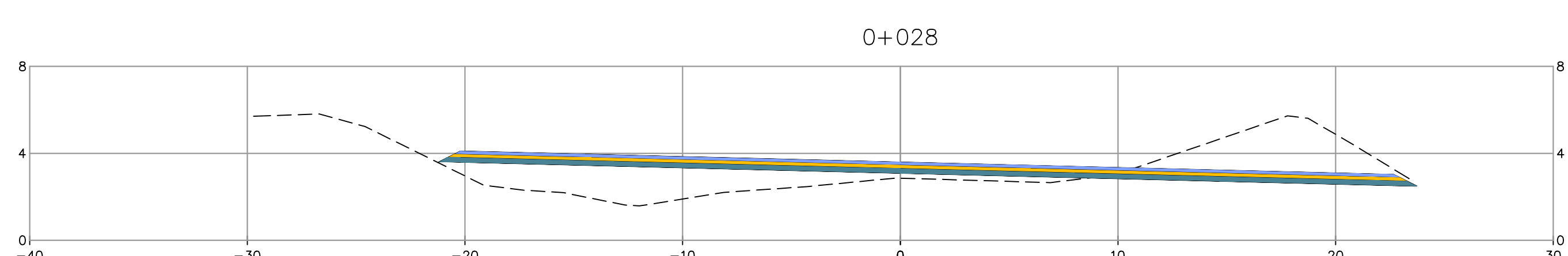
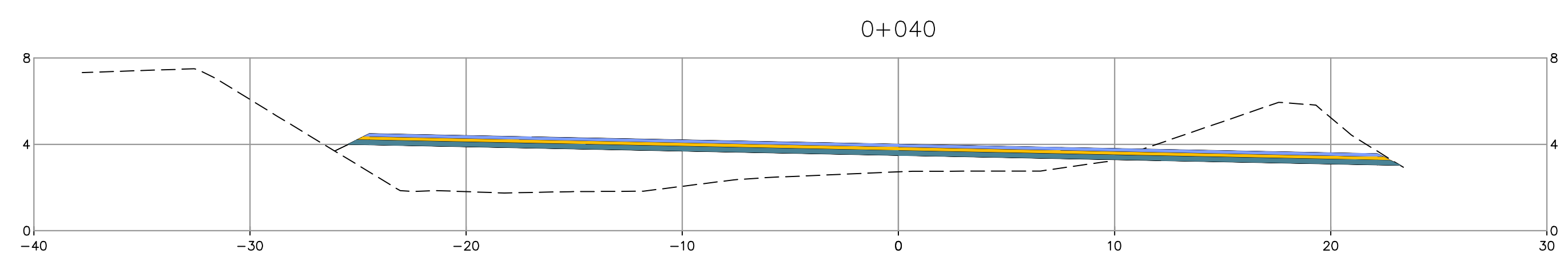
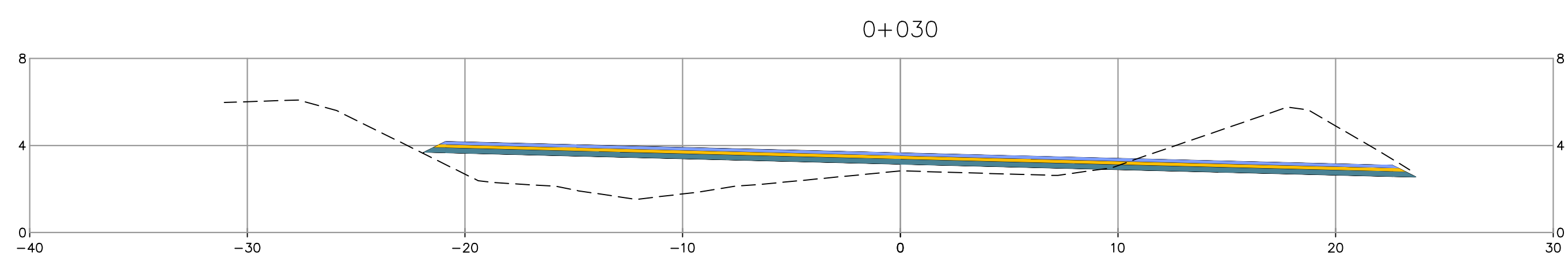
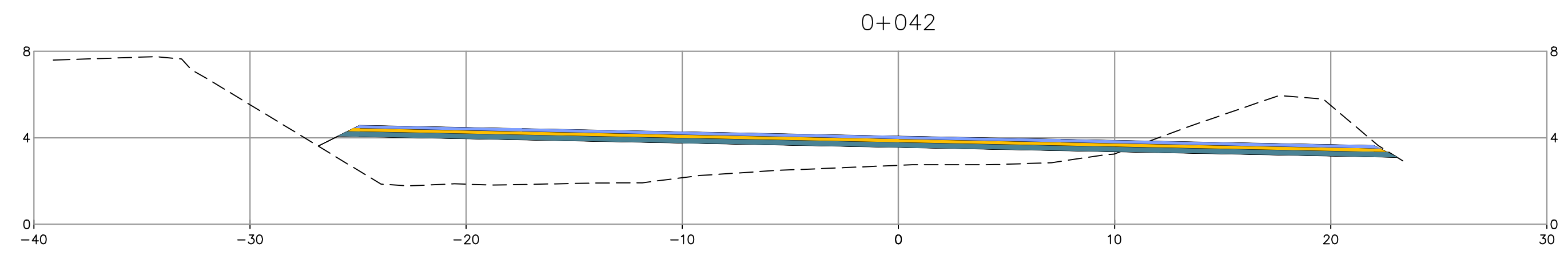
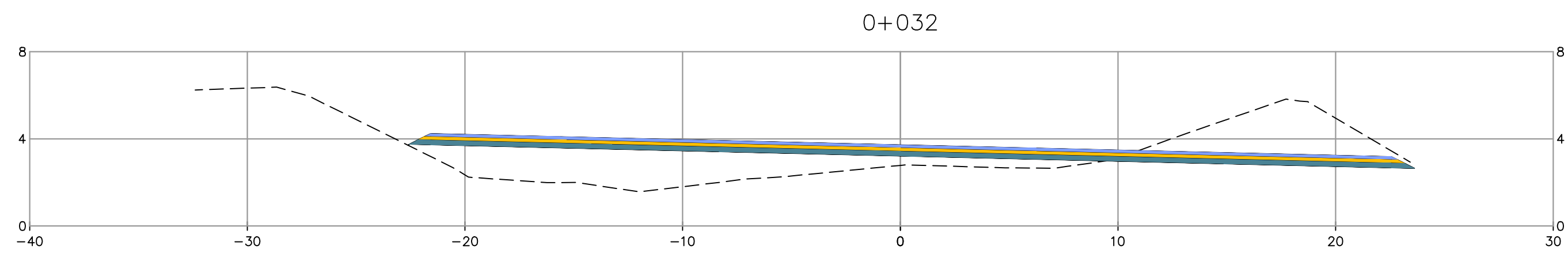
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 CHECKED S.S. DEEPAK
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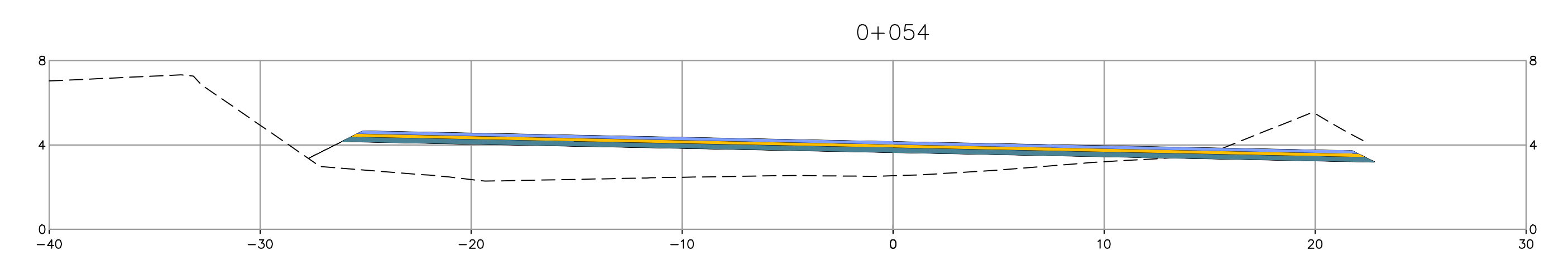
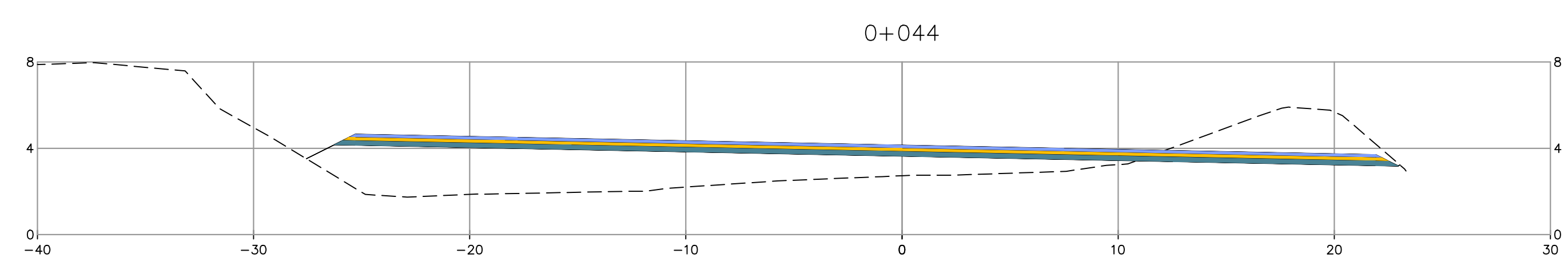
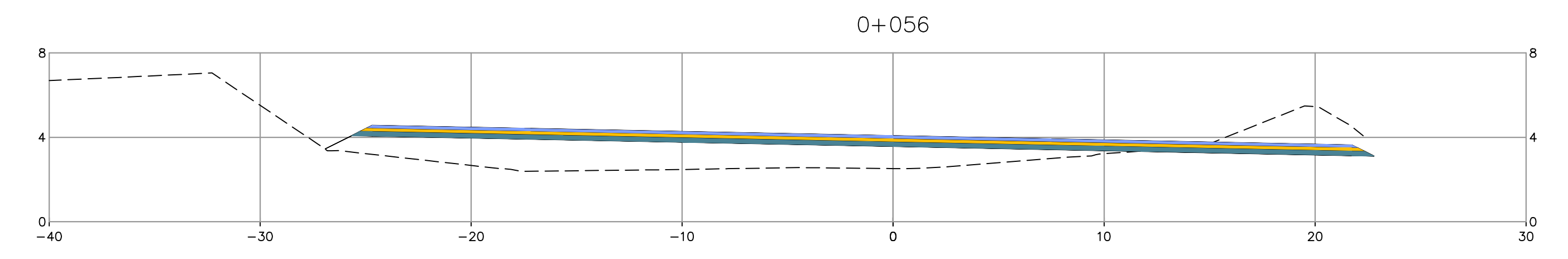
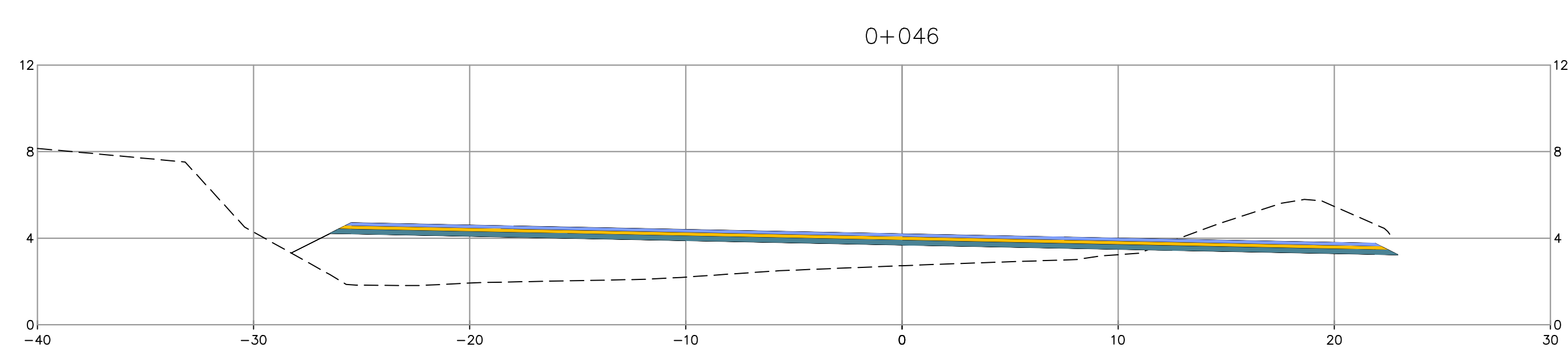
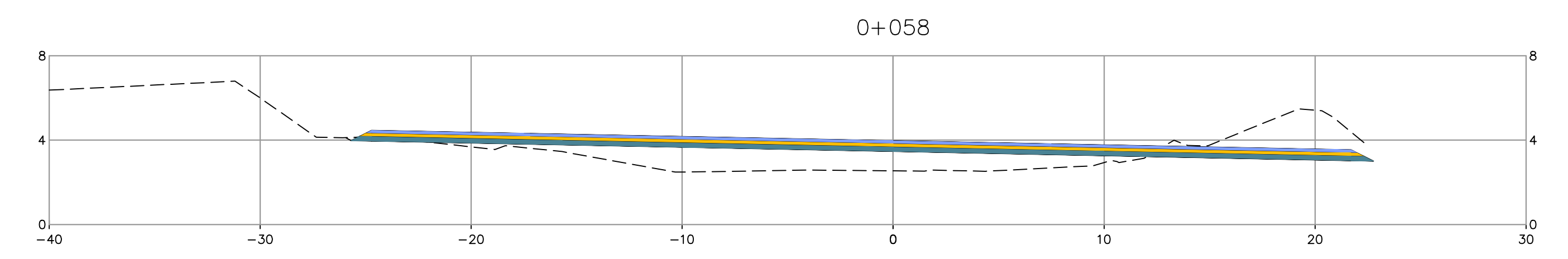
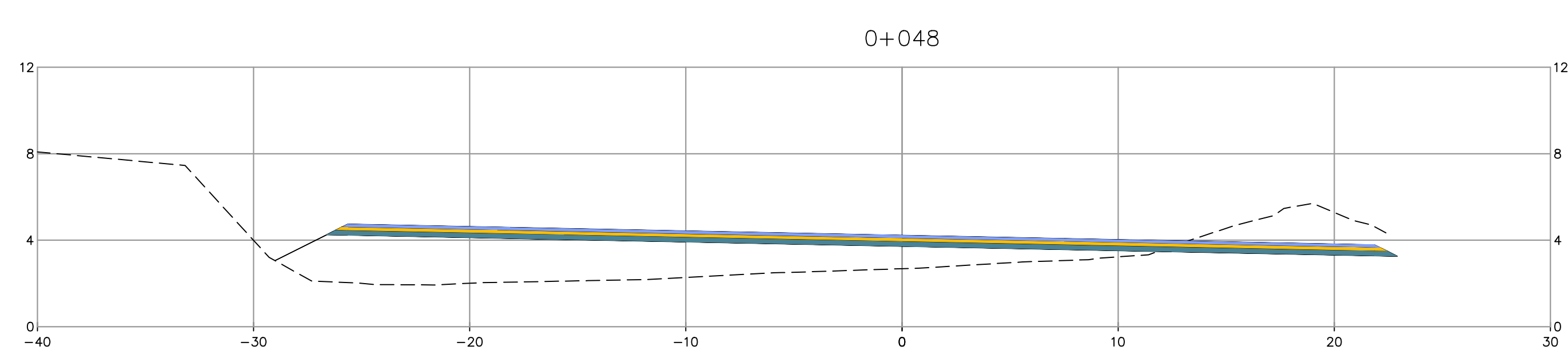
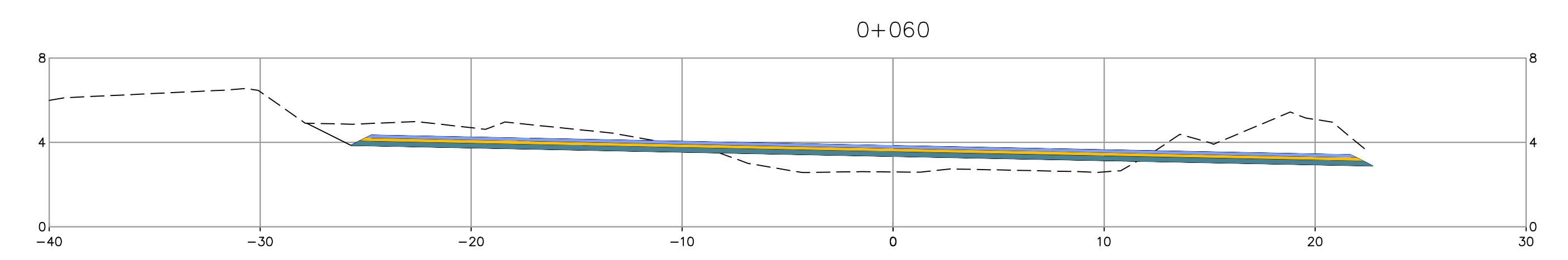
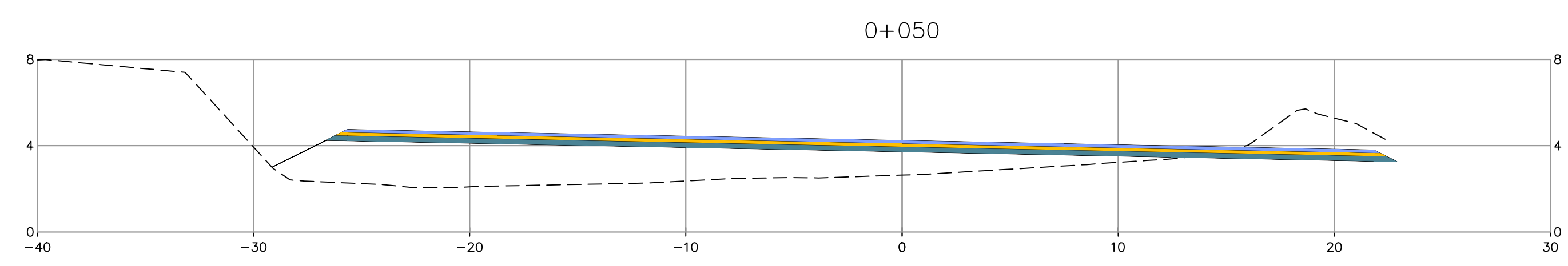
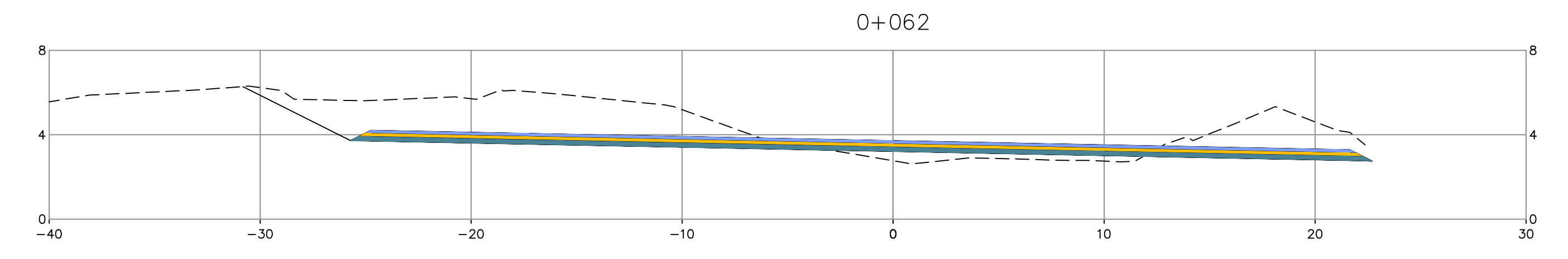
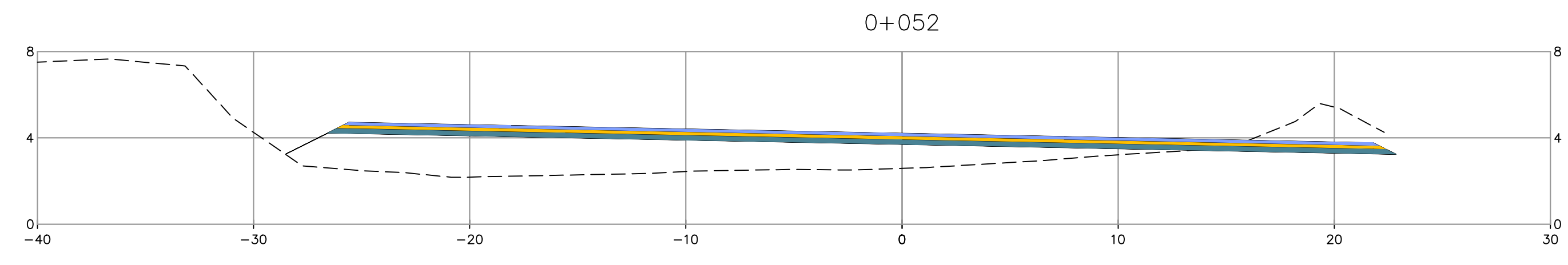


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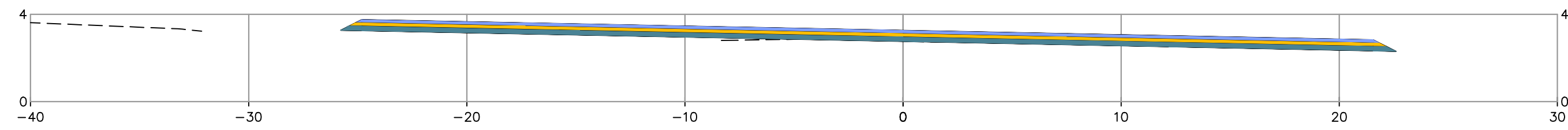
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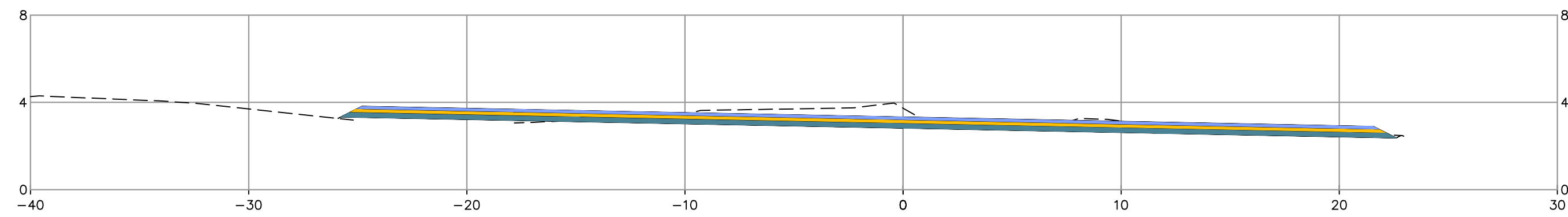
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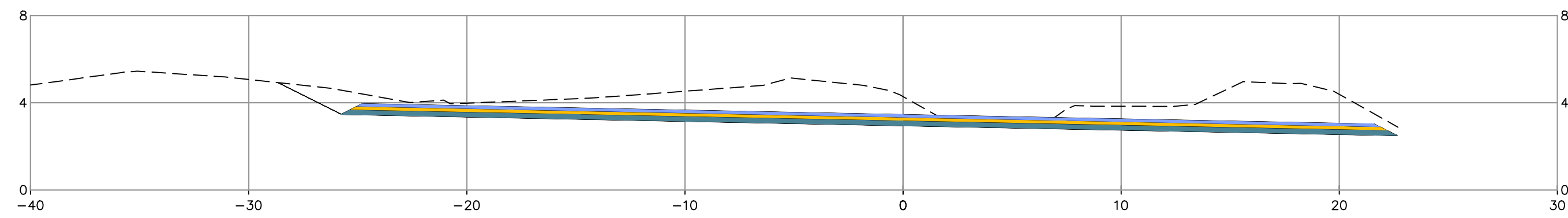
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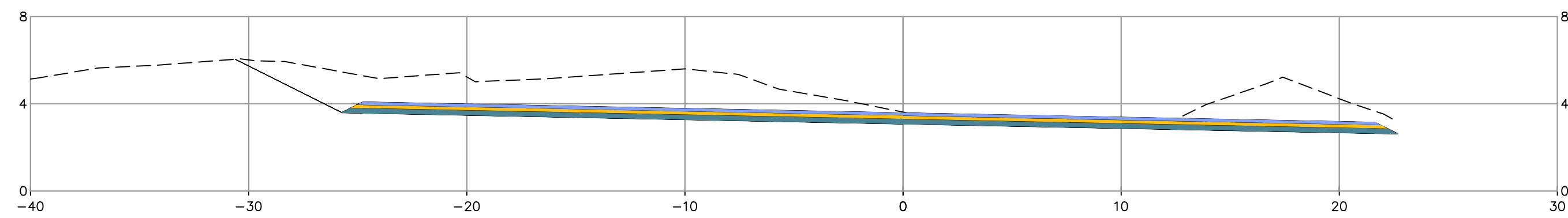
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ATTACHMENT II – GEOTECHNICAL RECOMMENDATION MEMO



To: Doug McMillan, Mark Edwards **Date:** 2015-11 -02
From: S. Garewal, P.Eng.
Reviewed: J. Zandbergen, P.Eng. **Reference:** 630457 – COL 15 (Geotechnical
Memo – 1)
Subject: Gravel Parking Pavement Design, Col-15, CFB Esquimalt, Colwood, BC

Introduction

This memorandum is a follow-up of a memorandum dated August 28, 2015, titled, “Site Soil Characterization in Support of a Remedial Action Plan.” The purpose of this memo is to provide recommendations for construction of a gravel parking lot which is being proposed at the Col 15 site.

The site is located at CFB Esquimalt in Colwood, BC, and is bounded by a berm on the east and south edges. Initially it was hoped to use the berm as a source of materials for construction of a parking area on the site. A geotechnical investigation and laboratory testing program was conducted for evaluating this possibility and the results are contained in the August 2015 memo referenced above. The conclusion of the investigation was that the soils within the berm are not ideal for use as structural fill for the parking areas due to a high silt content and high composition of deleterious materials.

Consequently the berm will need to be removed and replaced with an external source to construct the parking lot structural fills. It is understood that berm materials will be removed to the design grade and sent off-site for disposal at a licensed disposal facility.

Berm Material Screening

We understand that the berm material will be screened to remove large rocks and debris prior to removal from site for disposal. In order to balance optimization of cost savings with geotechnical needs, we recommend screening off cobbles and boulders greater than 150 mm diameter. Oversize material may be placed on the south embankment slope.

South and Northeast Slope Protection

Potentially unstable slopes will need to be addressed as part of the site construction. The south edge of the site slopes down to the ocean, and the northeast corner of the laydown area is cut into an embankment. We understand that larger boulders and concrete lock blocks or roadside barrier blocks will be installed at the slope crest to block vehicles from potentially driving over the edge. The exposed embankment slopes can be covered with oversize material derived from screening operations or imported fill (greater than 150 mm diameter). The embankments should be sloped no steeper than 2.5H:1V so that vegetation can become readily established and erosion potential is reduced.

Recommendations for Parking Areas

The following geotechnical recommendations are preliminary, as they are based on our current understanding of the proposed project.

- Any fill required at the site shall be placed on a subgrade that is free of any vegetation, top soil, loose, saturated or organic soils. Any deleterious materials such as wood, metal, or concrete, if encountered,



should also be removed. A geotechnical engineer shall inspect the exposed subgrade and verify whether further excavation is required.

- In areas where the subgrade consists of native, inorganic soils, the exposed subgrade should be scarified to a minimum depth of 150 mm during dry weather, and then recompacted to an unyielding state. If wet and loose fine-grained soils are encountered in localized areas, these soils should be overexcavated to a minimum depth of 300 mm and replaced with rail road ballast.
- We recommend that excavations through on-site, fine-grained soils (silts, etc) be conducted by means of a smooth edge on the excavator bucket/bulldozer to alleviate overly disturbing these moisture sensitive, fine-grained soils.
- The exposed soils at the subgrade elevation shall be proofrolled with a loaded dump truck or a 10 ton drum roller with rear rubber tires to identify any soft spots.
- If soft spots become evident during proof rolling and/or compaction, these areas shall be sub-excavated at least 300 mm and replaced with a railroad ballast, quarry spalls, crushed rock or clean granular fill conforming to the specification presented in Table 1, and compacted to at least 100 % of its SPMDD within 2 % of its optimum moisture content (OMC).
- In areas where fine-grained subgrade soils persist, the exposed subgrade should be covered with geotextile fabric such as Mirafi® 600X or equivalent. The geotextile should be stretched tight over the subgrade to remove any wrinkles in the geotextile. During placement, adjacent layers of geotextile must be overlapped by at least 450 mm. Prior to fill placement, the geotextile should be held in place using suitable means such as pins or piles of fill soil or other methods so that it does not shift or move around during fill placement. The geotextile should be placed and covered over in strict conformance with the manufacturer's specifications.
- Structural fill, defined below, should be placed over the geotextile in conformance with our recommendations, up to the gravel pavement subgrade elevation (see design drawings and grading plans). At a minimum, the total thickness of structural fill and paving layers presented in Table 2 (500 mm) must be placed above the geotextile.
- In areas where bedrock outcrops are present with an elevation higher than the design elevation of the bottom of pavement sub-base, these should be leveled or smoothed out by excavation to obtain a flat surface at the design sub-base elevation. Pavement base and sub-base aggregates may be placed on top of the excavated bedrock.
- Any material excavated from the existing surface during construction may need to be characterized for environmental quality and sent off-site for disposal at a licensed disposal facility.
- Based on the presence of moisture sensitive soils at the Site, the construction of temporary roadways using quarry spalls, compacted fill, or geotextile fabric, may become necessary to minimize the disturbance of the on-site soils and to provide a working surface for construction traffic, especially during wet weather conditions.
- We recommend that we be engaged to provide on-site recommendations during construction and observe subgrade preparation and excavation so that soil conditions can be continuously monitored.
- We recommend that all imported structural fill consist of material that conforms to the gradation presented in Table 1 (Type 3 Material):



TABLE 1

Recommended Gradation for Imported Soil, Including Type 3 Granular Structural Fill	
Sieve Size	Percent Passing
75 mm	100
#4	25-65
#200	5.0 maximum Based on the fraction passing the 19 mm sieve

- We recommend that we sample imported fill material prior to its placement for conducting appropriate laboratory testing to ensure compliance with our recommendations.
- All structural fill should be placed in maximum 200 mm thick loose lifts and compacted to 100 % of the Standard Proctor maximum dry density (SPMDD) as determined by ASTM D 698, with the exception of the first lift placed on native soil subgrade. This first lift may be placed in 300 mm loose thickness and compacted to 100% of the SPMDD. If it is observed (during construction) that the underlying native subgrade is not able to withstand the mechanical vibrations from the compactive effort, and is about to start pumping, then the requirement for compacting the first lift to 100% SPMDD may be relaxed to 95% of SPMDD at the discretion of the on-site geotechnical representative.
- Our analysis of pavement sections is based on design procedures outlined in the AASHTO Design Manual and our experience with pavement sections in this area subjected to similar traffic loads. We have been provided with some traffic frequency and design axle load ESALs (Equivalent Single Axle Loads) configurations for the gravel parking. Based on our experience with soils of similar gradation and consistency, and the use of geotextile fabric for subgrade strengthening, a California Bearing Ratio (CBR) value of three (3) has been assumed for the flexible pavement design. This CBR value corresponds to a resilient modulus (MR) value of approximately 30 MPa.
- Pavement design procedures are based on the strength properties of the subgrade and pavement materials, along with the design traffic conditions. Considering that the traffic mix will generally include passenger cars, vans, trucks, and trailers, the following gravel pavement section in Table 2 is recommended for the general parking and driveway areas for costing and preliminary design purposes.

TABLE 2

Pavement Section Design	
Materials	Minimum Compacted Thickness
19 mm Crushed Aggregate Surface Course (SC)	150 mm
37.5 mm Crushed Aggregate Base Course (BC)	150 mm
75 mm minus Granular Structural Fill	200 mm
Total Thickness	500 mm

- All granular surface and base course material shall be mechanically compacted to at least 100% of their SPMDD within 2 % of its Optimum Moisture Content as determined by ASTM D698. Granular structural fill should be used to attain the subgrade elevation (bottom of Base Course) as shown in design drawings



and grading plans. The base course and surface course paving layers should be placed uniformly across the constructed subgrade. All crushed aggregate shall conform to the gradations presented in Table 3.

TABLE 3

Sieve Size (mm)	Percent Passing (%) Sieve Size	
	Type 1 Fill 19 mm Crushed Aggregate SC	Type 2 Fill 37.5 mm Crushed Aggregate BC
37.5	-	100
25	-	40-75
19	100	-
12.5	75 – 100	15-40
9.5	60 – 90	-
4.75	40 – 70	-
2.36	27 – 55	10-25
1.18	16 – 42	-
0.600	8 – 30	-
0.300	5 -20	5-15
0.075	2 – 8	0-5

The following points provide gravel pavement construction recommendations:

- A proper drainage system is essential for the adequate performance of pavement. The drainage system should be designed for the rapid removal of water both from the pavement surface and from the pavement section below. A minimum cross-slope of 2% is recommended.
- Periodic maintenance such as re-leveling and grading of the gravel surface will be required.

Construction Monitoring

We recommend that we be engaged to observe grading activities during construction, observe the stability of excavations, observe the installation of drainage systems, geotextiles, and to observe and test the placement of structural fill in structural areas required for raising the grades to meet the pavement subgrade elevation as well as the pavement fills.

We recommend that we be engaged to confirm suitable bearing soil in pavement subgrade areas, and prior to placement of structural fill. We recommend that we be engaged to observe suitability of drive and parking area subgrades prior to placing of pavement sections. These recommendations are for engineering review and go beyond any testing agency involvement, which may be required for the project.