



City of
Richmond

Report to Development Permit Panel

To: Development Permit Panel

Date: February 5, 2015


From: Wayne Craig
Director of Development

File: DP 14-676361

Re: **Application by the Greater Vancouver Sewerage & Drainage District for a
Development Permit at 1000 Ferguson Road**

Staff Recommendation

That a Development Permit be issued which would permit the Greater Vancouver Sewerage & Drainage District to construct a 550 m² screening & de grit building, a 20 m diameter thickener, 25 m² thickener Pump station & four 36 m² digester mixing pump buildings (one for each of the existing digesters) at 1000 Ferguson Road on a site designated an Environmentally Sensitive Area (ESA).


Wayne Craig
Director of Development

WC:dcb

Staff Report

Origin

Greater Vancouver Sewerage & Drainage District (aka Metro Vancouver) has applied to the City of Richmond for permission to construct a 550 m² screening & de grit building, a 20 m diameter thickener, 25 m² thickener Pump station & four 36 m² digester mixing pump buildings (one for each of the existing digesters). The site is designated an Environmentally Sensitive Area (ESA). The Iona Island Wastewater Treatment Plant (IIWWTP) is located at 1000 Ferguson Road on a site zoned “School and Institutional Use (SI)”.

The 119 acre site currently contains the main portion of the Iona Island Wastewater Treatment facility that provides primary sewage treatment facilities for approximately 600,000 residents in Vancouver, the UBC Endowment Lands and parts of Burnaby and Richmond.

Under current Provincial legislation, the Greater Vancouver Sewerage & Drainage District (GVS&DD) is not required to submit a Development Permit application to the City for the proposed works however the GVS&DD has voluntarily agreed to bring its proposal forward for formal review through this Development Permit application.

A rezoning is not required for the proposed works.

Development Information

Please refer to the attached Development Application Data Sheet (Attachment 1) for a comparison of the proposed development data with the relevant Bylaw requirements.

Surrounding Development:

- To the north, the North Arm of the Fraser River;
- To the east, is Canfor Point within the Iona Island Regional Park – zoned “School and Institutional Use (SI)”;
- To the south, the Iona Island causeway and lands under Port Metro Vancouver jurisdiction – both are zoned “School and Institutional Use (SI)”;
- To the west, Iona Beach, Iona Jetty and the North Arm Jetty. Iona Beach is zoned “School and Institutional Use (SI)”. The North Arm Jetty is not zoned.

With the exception of the Iona and North Arm Jetties, Iona Island is entirely designated as “Conservation” in Richmond’s Official Community Plan and is zoned “School and Institutional Use (SI)” under Zoning Bylaw 8500.

The GVS&DD advises that the intent of the upgrade project is to “better enable the existing plant to meet the effluent quality requirements specified in its Operating Certificate” (Tera Environmental submission dated October, 2014). Specifically the upgrade will provide grit removal from the primary sludge, minimize screening debris entering the digesters, increase sludge thickening capacity and improve digester mixing efficiency.

The upgrade will result in seven (7) new structures erected on-site through this project:

- one – 550 m² Screening and Degrit Building;
- one – 20 m diameter Thickener;
- one – 25 m² Thickener Pump Station; and
- four – 25 m² Digester Mixing Pump Buildings.

All the structures except the digester mixing pump buildings will be located off the east edge of the existing treatment facility. The four digester mixing pump buildings will be located adjacent to each of the four existing digesters currently on the site and will not impact any environmental features on the site.

The screening and degrit building, the thickener facility and the thickener pump station need to be located on a raised and stabilized base in close proximity to the existing treatment plant. The location selected will result environmental impacts which are further detailed in this report along with a proposed mitigation/compensation strategy.

Site preparation activities anticipated with this project include:

- Clearing of trees and vegetation;
- Grubbing and stripping to remove organics and overburden;
- Ground improvements, including placement of fill and ground densification;
- Removing biosolids stockpiles from some of the project footprint area;
- Paving and fencing installations.

The GVS&DD is hoping to undertake the upgrade construction commencing in June, 2015 and completing the work by December, 2016. Project management is being undertaken by CH2M Hill Energy Canada. Environmental studies (environmental impact assessment and mitigation / compensation plan) were undertaken by Tera Environmental Consultants. EDI Environmental Dynamics Inc. were retained to delineate both the extent of the natural boundary/high water mark of McDonald Slough and an upland wetland feature present in vicinity of the project site.

Background

The development site is located on Iona Island and is surrounded by portions of Metro Vancouver's Iona Beach Regional Park. The existing wastewater treatment plant opened in 1963 and has undergone 6 expansions since that time to accommodate growth and treatment upgrades. Metro Vancouver's web site notes that the facility is regulated through an Operational Certificate issued by the BC Ministry of Environment.

Related Policies and Bylaws

The site is designated "Conservation" in Richmond's Official Community Plan. The OCP also designates the property as a Development Permit area as an Environmentally Sensitive Area. The specific designation at the subject site acknowledges the presence of Intertidal, Shoreline and Freshwater Wetlands. The focus of the ESA DP guidelines within the OCP are intended to protect and enhance the environmental resources and ecosystem services.

Zoning Compliance

Under the “School and Institutional Use (SI)” zoning there are no maximums in terms of floor area ratio, site coverage or building/structure height (however Transport Canada maximum height regulations apply). The proposed development complies with the existing “School and Institutional Use (SI)” zone.

Advisory Design Panel Comments

This application was not referred to the Advisory Design Panel as the upgrade project does not involve design components and is primarily focused on the mitigation and compensation efforts related to the foreseeable environmental impacts.

Analysis

The proposed scheme attached to this report has satisfactorily addressed the significant urban design issues and other staff comments identified as part of the review of the subject Development Permit application. In addition, it complies with the intent of the applicable sections of the Official Community Plan and is generally in compliance with the “School and Institutional Use (SI)”. The environmental impacts and proposed Compensation Plan were reviewed by the City’s Environmental Review Panel (ERP) on December 10, 2014. The Compensation Plan elements outlined in this report reflect the changes recommended by the ERP.

An environmental assessment was undertaken by Tera Environmental (Compensation Plan final report dated January 2015). The assessment focuses on the anticipated impacts from the screening & dewatering facilities and the associated sludge thickener facilities that will be located to the east of the existing treatment plant since all the other building additions occur within the existing plant itself.

Mitigation Measures

Tera’s report states that the initial planning and design of the project incorporated measures to mitigate environmental impacts. Specifically;

- The majority of the Project footprint is situated on previously disturbed land, an old parking area and the existing biosolids storage site.
- The Project footprint has been selected to minimize potential disturbance to the adjacent wetland and the forested buffer on the north edge of the wetland.
- The existing row of trees along the western edge of the Project site, south of Area C, will not be removed.
- The existing berm surround the wetland (outlined in blue on the attached reference plan) will not be removed.

Environmental Surveys

Based on the addition requirements and site surveys, vegetation surveys were undertaken in four areas that would be impacted by the new addition. The survey areas are labelled A through D on Plan # 1.

Area A was found to be significantly vegetated with 68 trees (red alder, paper birch and cottonwood species) and a variety of understorey vegetation species (red elderberry, salmonberry, ivy, oceanspray, holly, etc.) The understorey was noted to include extensive areas were noted to include invasive species (Himalayan blackberry) and non-native species.

Area B is located adjacent to a cattail marsh associated with a freshwater wetland to the southeast of the proposed addition. Treed overstorey in this area includes semi-mature red alders (14 trees) and 3 mature black cottonwoods. Understorey within the treed area was dominated by Himalayan blackberry, pockets of Oregon grape and Sitka willow. EDI Environmental Dynamics categorized the wetland to the east of Area B as having medium ecological value with high bird use (EDI 2014a). The wetland was noted as having no apparent direct connection to McDonald Slough.

Area C is located along the west side of the proposed addition. Vegetation in this area will be eliminated by the project. The report notes that a stand of 188 black cottonwood trees had been previously removed from this area. The remaining understorey vegetation includes Himalayan blackberry, red elderberry, grasses and Canada thistle.

Area D is located on biosolids stockpiles previously generated by the treatment plant operations. No trees are present in this area and ground vegetation includes herbaceous species such as grasses, nightshade and cattails. Approximately half of Area D will be impacted by the project.

Bird Habitat

Field observations undertaken in August 2014 noted sixteen species of birds including spotted towhee, marsh wren, American robin, black-capped chickadee, cedar waxwing, American goldfinch, northwestern crow, song sparrow, common yellowthroat, Bewick's wren, Anna's hummingbird, willow flycatcher, barn swallow, glaucous-winged gull, Canada goose and a great horned owl. The breeding and non-breeding habitat of the observed bird species was used in determining which trees and shrub species would enhance the habitat in the area as part of the overall compensation strategy.

Environmental Assessment and Impacts

Tera's Compensation Plan notes that a total of 0.66 ha of native vegetation would be removed as a result of the project. Their assessment notes that the understory vegetation in the impacted area is poor and weedy, highly invasive species dominate the area. The existing site disturbance and invasive species pose limitations to native plant growth and the development of native ecosystems needed by bird and animal species with more specific habitat requirements.

Additionally, the existing treed areas are noted as being patchy and dominated by red alder and cottonwood which limit secure cover or buffer vegetation. Based on the relatively poor

condition of the habitat present, Tera proposes that a compensation ratio of 50% (i.e. 0.33 ha) is appropriate for compensation and enhancement.

Compensation Measures and Overall Approach to Compensation

Compensation measures proposed for this project are generally described in Tera's report as follows:

- Removal of invasive species from areas identified for planting.
- Riparian restoration – planting of native trees and shrubs on the wetland berm on the east side of the existing parking lot and the project site.
- Planting with native, fruit-producing shrubs adjacent to the wetland berm and along the west side of the existing parking area.
- Native grass seeding adjacent to the new access road at the southeast end of the project.
- Tree replacement with native trees valued by bird species in selected areas (e.g. along the wetland berm, around the sewage lagoons and west of the existing parking area).
- Bird habitat enhancement through planting native trees and shrubs adjacent to the sewage lagoons west of the existing treatment plant.

The Compensation Plan proposes a maximum of 3,300 trees and shrubs to be planted inclusive of a minimum 564 trees (3:1 compensation for the trees removed in Area C). Compensation trees will be a mix of sizes with two thirds being greater than 1.2 m in height dbh and one third being small stock (30-45 cm) – sizes found to have a better survival rate than larger trees in natural areas and are also more likely to be available from local providers. The tree sizes are generally consistent with the Riparian Restoration Guidelines provided by the Ministry of Environment's planting guidelines.

Plan # 2 shows the primary areas proposed to be cleared and the general areas for compensation measures outlined above.

Plan # 3a provides a summary of the compensation plan showing the tree and shrub species and quantities to be planted in each of the proposed compensation locations identified in Plan #2. An overall balance sheet summarizing the anticipated impacts and the objectives of compensation measures proposed is provided in Plan #3b.

Plan # 4 provides plan details of the proposed building additions and site modifications needed to accommodate the treatment plant upgrades.

The Compensation Plan strategy assesses the different species of birds using this area and outlines their specific habitat needs in relation to what the existing habitat currently provides. From this information tree, shrub and ground cover selections are proposed which will fill in gaps and enhance the usefulness of the area for these birds. The enhancement planting is proposed to be installed in areas where invasive vegetation or lower quality vegetation will be removed. This approach should result in both a higher quality and more productive habitat for the bird species using this area.

Landscape Securities and Commitments

As Metro Vancouver is a superior level of government they have indicated that they are not able to bond for the landscaping installations as normally required through a Development Permit. Metro Vancouver has agreed, however, to provide a letter of commitment to undertake the vegetation installation and the other works outlined in the Compensation Plan. Metro Vancouver will also commit to preparing and reviewing the final detailed planting plan with the City of Richmond prior to the landscaping installations which will not occur until the majority of the site construction works have been completed (i.e. in approximately 2 years time). Consideration for notification signage of the compensation areas as protected natural areas can also be reviewed with the City at that time.

The Compensation Plan includes provision for monitoring the vegetation installations for a period of 3 years with a target of at least 80% survival. Replanting for any shortfall less than this target will be undertaken by the installer.

Other Issues Associated With the Project

a.) Anticipated Traffic Impacts

CH2M Hill representatives have confirmed that the plant increase is expected to result in an increase of one truck every two days to the site. The City's Transportation staff have reviewed this from a traffic management perspective and advise that there are no transportation concerns with the expansion.

b.) Environmental Management Act Release

The BC Ministry of Environment has provided a release pursuant to the Local Government Act (section 946.2(2)(b)) allowing the City of Richmond to approve the Development Permit for this project.

c.) External approvals

CH2M Hill representatives have indicated that the project had been reviewed by Port Metro Vancouver in 2014 and the advice provided was that the project would not require notification to the BC Ministry of Forests, Lands and Natural Resource Operations as the shoreline will not be impacted by the expansion and the overall use is not changing.

Conclusions

The Greater Vancouver Sewerage & Drainage District has voluntarily agreed to submit an application for Development Permit to address their expansion project and respond to the environmental impacts arising from the proposal. They have worked with City staff to address concerns related to these impacts and achieve a solution that will result in a net benefit to wildlife and habitat enhancement in the area.

Staff recommend support for the Development Permit to permit construction of a 550 m² screening & de grit building, a 20 m diameter thickener, 25 m² thickener Pump station & four 36 m² digester mixing pump buildings (one for each of the existing digesters) and the implementation of the Compensation Plan as outlined in this report.



David Brownlee
Planner 2

DCB:cas

The following are to be met prior to forwarding this application to Council for approval:

- Receipt of a Letter of Commitment from Greater Vancouver Sewerage & Drainage District to:
 - Undertake and maintain the landscaping installations (outlined in the Compensation Plan from Tera Environmental Consultants (dated January 2015));
 - Implement the wetland mitigation measures outlined in the Memo from Tera Environmental Consultants (dated October 24, 2014); and,
 - Consult with the City of Richmond on the preparation of the detailed planting plan and consideration of the installation of Protected Natural Area signage prior to the landscaping installations as outlined in the Compensation Plan (Tera January 2015).

Prior to future Building Permit issuance, the developer is required to complete the following:

- The applicant is required to obtain a Building Permit for any construction hoarding associated with the proposed development. If construction hoarding is required to temporarily occupy a street, or any part thereof, or occupy the air space above a street or any part thereof, additional City approvals and associated fees may be required as part of the Building Permit. *For further information on the Building Permit, please contact Building Approvals Division at 604-276-4285.*
- Submission of a construction traffic and parking management plan to the satisfaction of the City's Transportation Division (<http://www.richmond.ca/services/ttp/special.htm>).
- If applicable, payment of latecomer agreement charges associated with eligible latecomer works.



DP 14-676361

Attachment 1

Address: 1000 Ferguson Road

Applicant: Greater Vancouver Sewerage & Drainage District Owner: Greater Vancouver Sewerage & Drainage District

Planning Area(s): Sea Island

	Existing	Proposed
Site Area:	48.35 ha (Approx. 119.5 acres)	Unchanged
Land Uses:	Park and Waste Water Treatment Facility	No Change
OCP Designation:	Conservation	No Change
Zoning:	School and Institutional Use (SI)	No Change

	Bylaw Requirement	Proposed	Variance
Floor Area Ratio:	No Maximum	Undetermined	none permitted
Lot Coverage:	No Maximum	Undetermined – aerial photo analysis conservatively estimates 6.5% of the site.	None
Setback – Front Yard:	Min. 6.0 m	Greater than 6.0 m	None
Setback – Interior Side and Rear Yards:	Min. 3.0 m	Greater than 3.0 m	None
Height (m):	Max. 12 m within 10 m of a residential zone. Elsewhere No Maximum	18.68 m including the support base.	None
Lot Size:	No Minimum	48.35 ha (Approx. 119.5 acres)	None



City of Richmond

Development Permit

No. DP 14-676361

To the Holder: Greater Vancouver Sewerage & Drainage District

Property Address: 1000 Ferguson Road

Address: 4330 Kingsway,
Burnaby BC V5H 4G8

1. This Development Permit is issued subject to compliance with all of the Bylaws of the City applicable thereto, except as specifically varied or supplemented by this Permit.
2. This Development Permit applies to and only to those lands shown cross-hatched on the attached Schedule "A" and any and all buildings, structures and other development thereon.
3. Subject to Section 692 of the Local Government Act, R.S.B.C.: buildings and structures; off-street parking and loading facilities; roads and parking areas; and landscaping and screening shall be constructed generally in accordance with Plans #1 to #4k attached hereto.
4. Sanitary sewers, water, drainage, highways, street lighting, underground wiring, and sidewalks, shall be provided as required.
5. If the Holder does not commence the construction permitted by this Permit within 24 months of the date of this Permit, this Permit shall lapse and the security shall be returned in full.
6. The land described herein shall be developed generally in accordance with the terms and conditions and provisions of this Permit and any plans and specifications attached to this Permit which shall form a part hereof.

This Permit is not a Building Permit.

AUTHORIZING RESOLUTION NO.
DAY OF

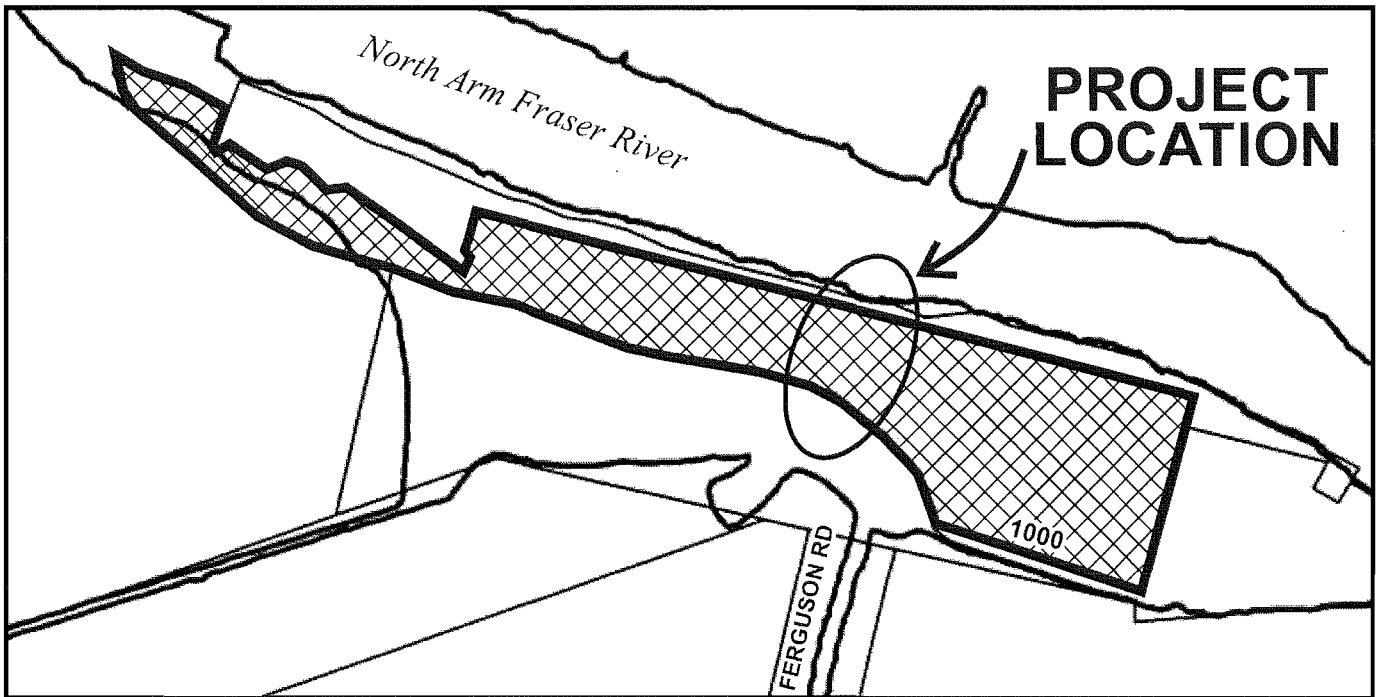
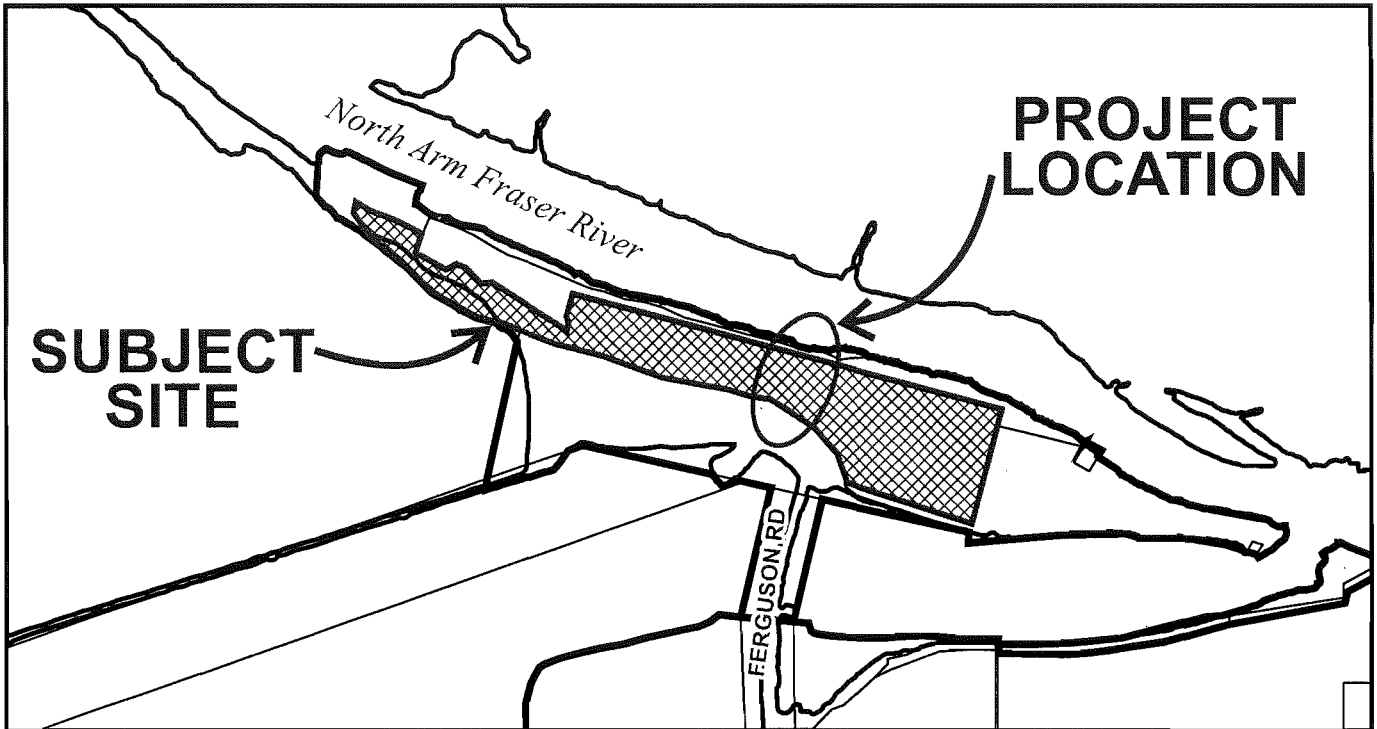
ISSUED BY THE COUNCIL THE

DELIVERED THIS DAY OF

MAYOR



City of
Richmond



DP 14-676361
SCHEDULE "A"

Original Date: 11/18/14

Revision Date: 02/05/15

Note: Dimensions are in METRES



City of
Richmond



DP 14-676361

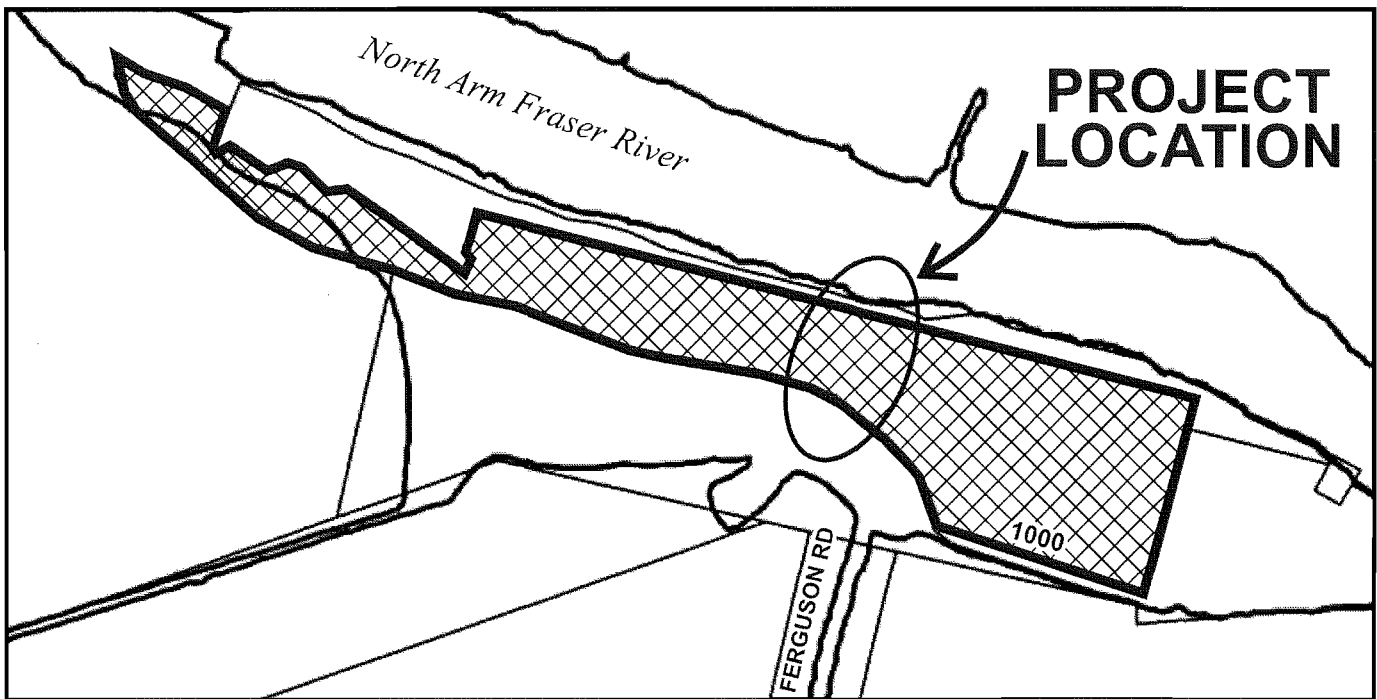
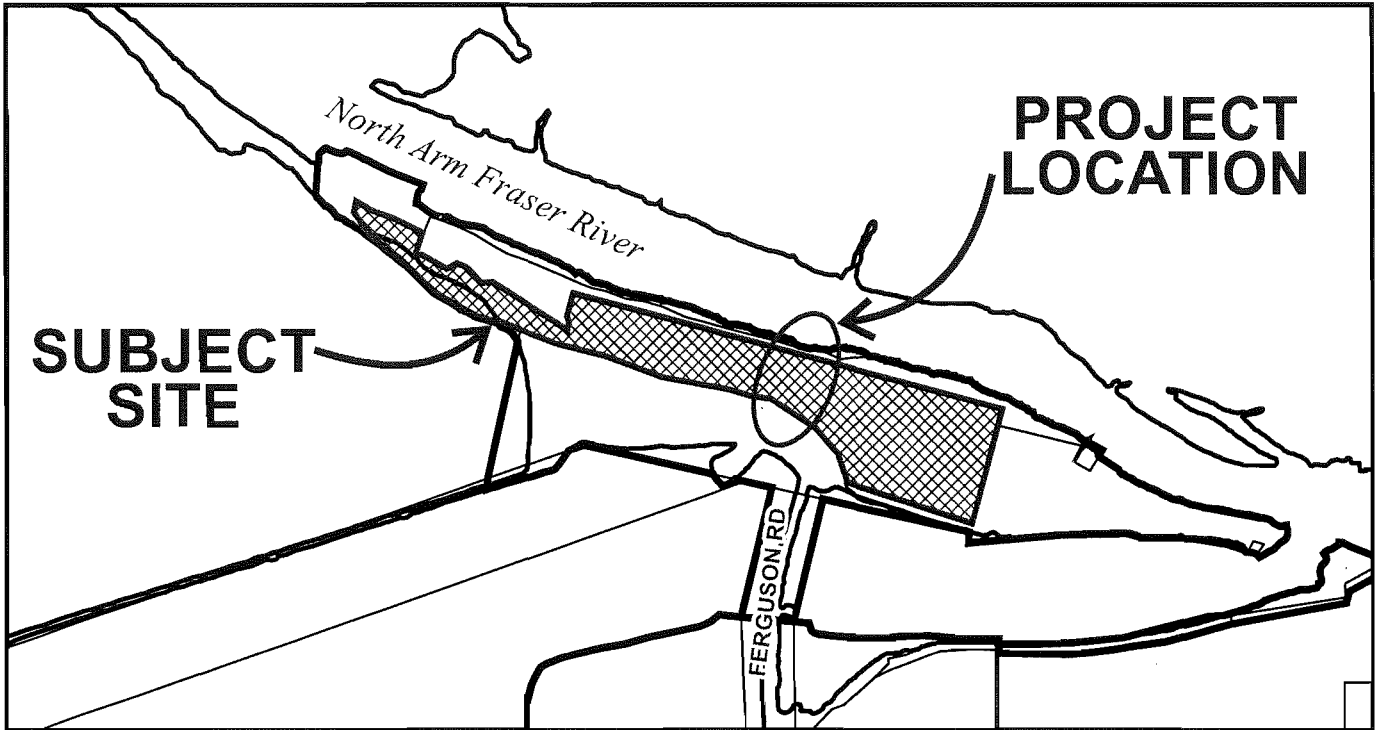
Original Date: 11/19/14

Revision Date

Note: Dimensions are in METRES



City of
Richmond



DP 14-676361

Original Date: 11/18/14

Revision Date: 02/05/15

Note: Dimensions are in METRES



Service Layer Credits: National Geographic, Esri, DeLorme, NAVTEQ, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, IPC



Iona Island Wastewater Treatment Plant	
Map 1 : Solids Handling System Upgrade Wetland and Project Jurisdiction	
Drawn: P. Jost	Checked: J. Prive
Date: 20/08/2014	Data Sources: See References Section
EDI Project Number: 14V0537	

Legend

- Project Footprint- Approximate
- - - Port Metro Vancouver
- Metro Parks Boundary
- Wetland

0 25 50 100 150 200
Meters

Map scale 1:5,000 (printed at 8.5x11)
Map Projection: NAD 1983 UTM Zone 10N



Reference



January 2015

FIGURE 2

VEGETATION SURVEY AREAS (BAAK AND LOVERIDGE 2014)

IJWWTP SOLIDS HANDLING SYSTEM UPGRADE PROJECT

462523

- Survey Area A
- Survey Area B
- Survey Area C
- Survey Area D

SCALE: 1:2,500



(All Locations Approximate)

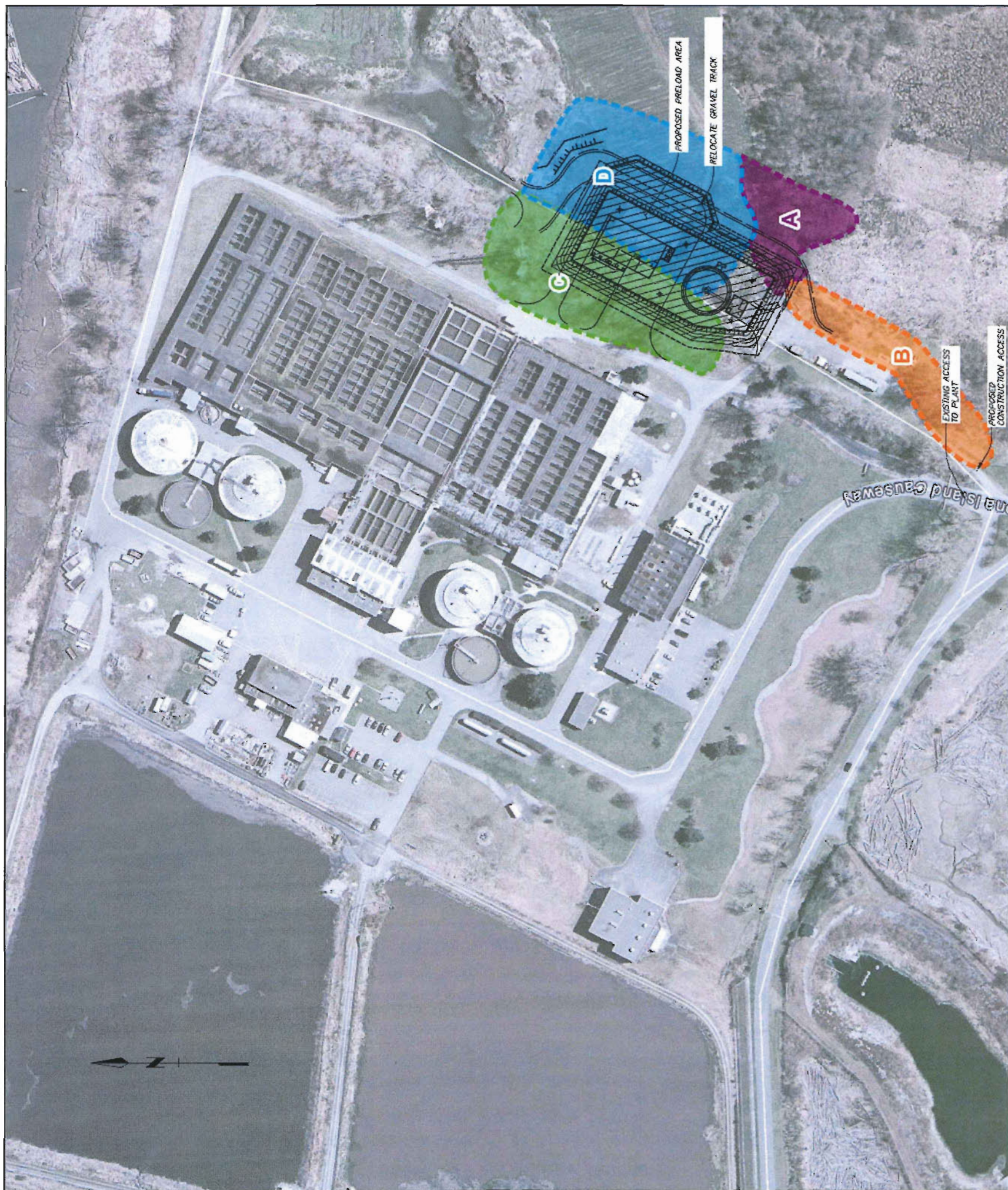


A CH2M HILL Company

UTM Zone 10N
CAD Drawing and Images: CH2M HILL, Burnaby, Image by Google Earth 2014 (©2014 Province of British Columbia)

Although there is no reason to believe that there are any errors associated with the data used to generate this drawing or that the drawing is a true and accurate representation of the data used to generate it, the user should verify the accuracy of the data used to generate this drawing.

Mapped By: DN Checked By: LA





January 2015

FIGURE 3
PROJECT AREAS THAT
WILL BE CLEARED
AND AREAS TO RECEIVE
COMPENSATION
PLANTINGS

IWWTP SOLIDS
HANDLING SYSTEM
UPGRADE PROJECT

462523

- To be Cleared
- Compensation Areas

SCALE: 1:5,000



(All Locations Approximate)



UTM Zone 10N

CAD Drawing: CH2M HILL Burmaby 2014; Imagery: Sources: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aergrid, IGN, IGP, Swisstopo, and the GIS User Community

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the geospatial users of these data we warrant that errors in the data may be present.

Mapped By: DN Checked By: LA



TABLE 2

COMPENSATION PLAN SUMMARY

Compensation Location	Total Planting Area (ha)*	Total Number of Plants for the Location	Tree Species ^	No. of Tree Species ≥ 1.2 m	No. of Tree Species ≥ 30 cm	Shrub Species ^	No. of Shrub Species
A Wetland Berm	0.211	2110	• black cottonwood	30	10	• salmonberry	350
			• red alder	30	10	• thimbleberry	350
			• Pacific crabapple	20	5	• red elderberry	350
			• western redcedar	26	10	• willow	272
			• Sitka spruce	20	5	• hardhack	272
Plant totals				126	40		1944
B Western Fenceline	0.04	400	• Sitka spruce	25	20	• salmonberry	70
			• western redcedar	50	25	• thimbleberry	70
Plant totals				75	45		280
C Sewage Lagoons	0.08	800	• Sitka spruce	25	13	• salmonberry	200
			• Douglas fir	25	15	• thimbleberry	122
			• black hawthorn	125	75	• Nootka rose	200
Plant totals				175	103		522
Grand Total				376	188		2746

Note: * planting area may differ from the total Location area (Map 2) because of planting patterns.

"A, B, C" correspond to the locations shown on Plan # 2.

FEB 14 2015

14-676361

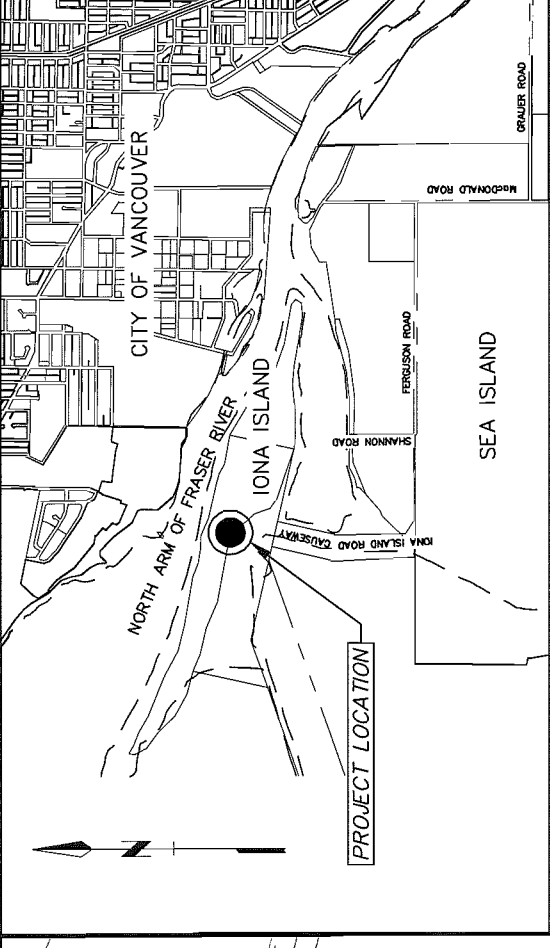
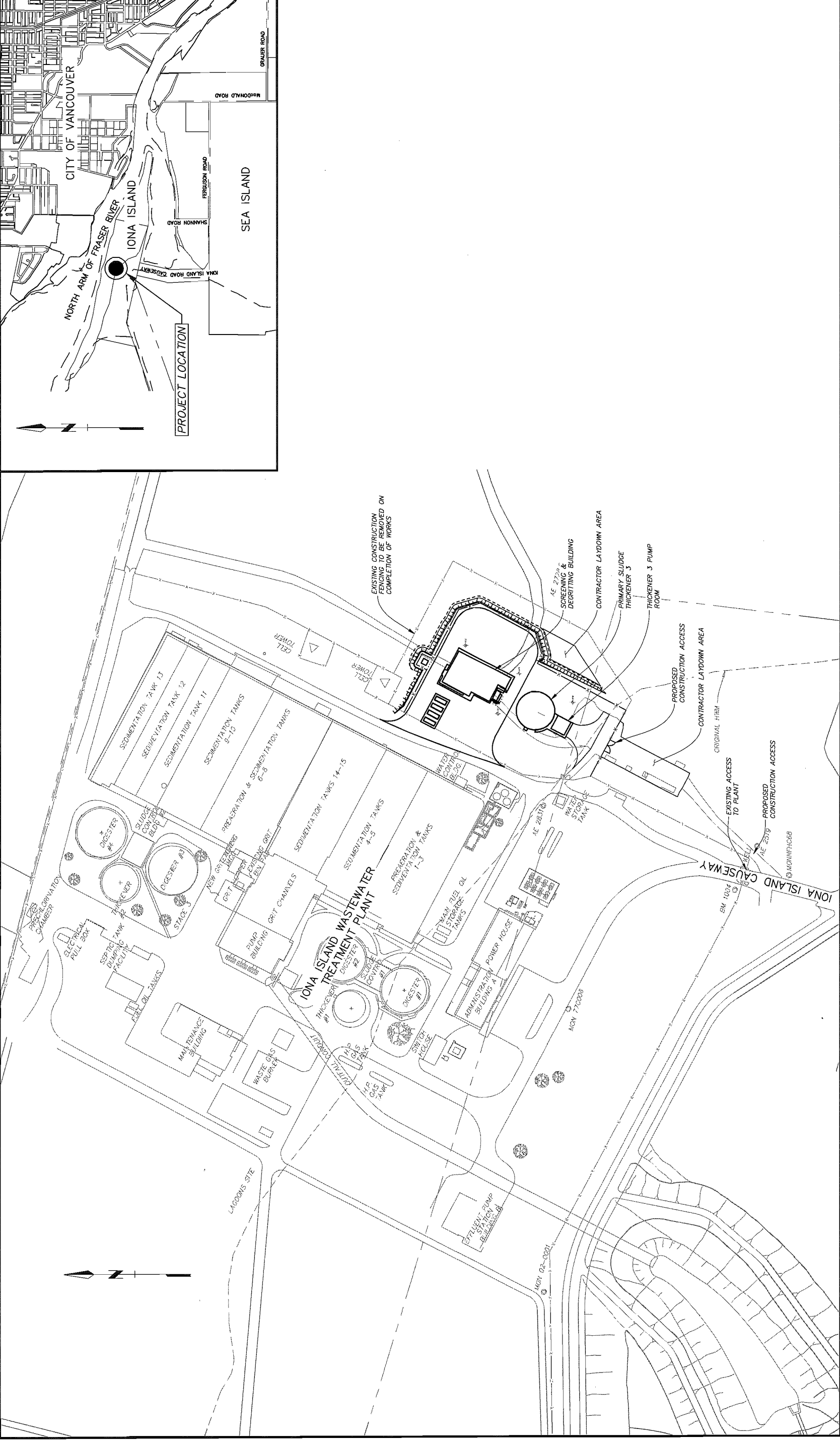
DP


Plan # 3A


TABLE 3
BALANCE SHEET

Impacts of Expansion Project	Compensation Measures	Plant Species (+ Identifies Berry Producing Species)	Plant Ratios (% of Planted Stock)
<p>Permanent loss of highly disturbed and weedy native vegetation.</p>	<p>Improve the quality of wildlife habitat in three other areas of the site, the wetland berm, western fenceline and sewage lagoons. Methods include:</p> <ul style="list-style-type: none"> • Removal of invasive plants on the wetland berm and along the western fenceline. • Replanting native shrub and tree species with wildlife value including berry producing shrubs and trees and conifer and broadleaf trees that provide thermal cover and nesting and perching sites. • Increase habitat structure. 	<p>Areas will be replanted with native shrubs and trees following the removal of invasive plants. Plant species are listed below.</p> <ul style="list-style-type: none"> • thimbleberry+ 15% • salmonberry+ 21% • red elderberry+ 12% • Nootka rose+ 21% • western redcedar 1% • red alder; 1% • black cottonwood; 1% • Pacific crabapple 1% • Sitka spruce 3% • Douglas-fir 1% • red alder 1% • black cottonwood 1% • black hawthorn+ 6% • willow 8% • hardhack 8% 	
<p>Loss of large black cottonwoods and red alders in the construction site. These trees were cut down earlier and the downed trees remain on site.</p>	<p>Use the large stems to stabilize the wetland berm after invasive plant removal. The stems will provide microsites for shrub and tree planting, habitat for amphibians and small mammals and perch sites for birds.</p>	<p>Black cottonwood and red alder.</p>	<p>The number of stems used in the berm will depend on tree length and diameter. Trees that are ≥ 30 cm breast height diameter (dbh) will be placed in two rows on either side of the berm.</p>
<p>Establishment of invasive plants in disturbed soils</p>	<p>Seed disturbed soils with coastal sod-forming grasses and legumes. Mulch planted areas with wood chips.</p>	<p>NA</p>	<p>NA</p>

Note: Berry producing species account for 77% of the planting stock.







Associated Engineering
AE PROJECT No. 20122262

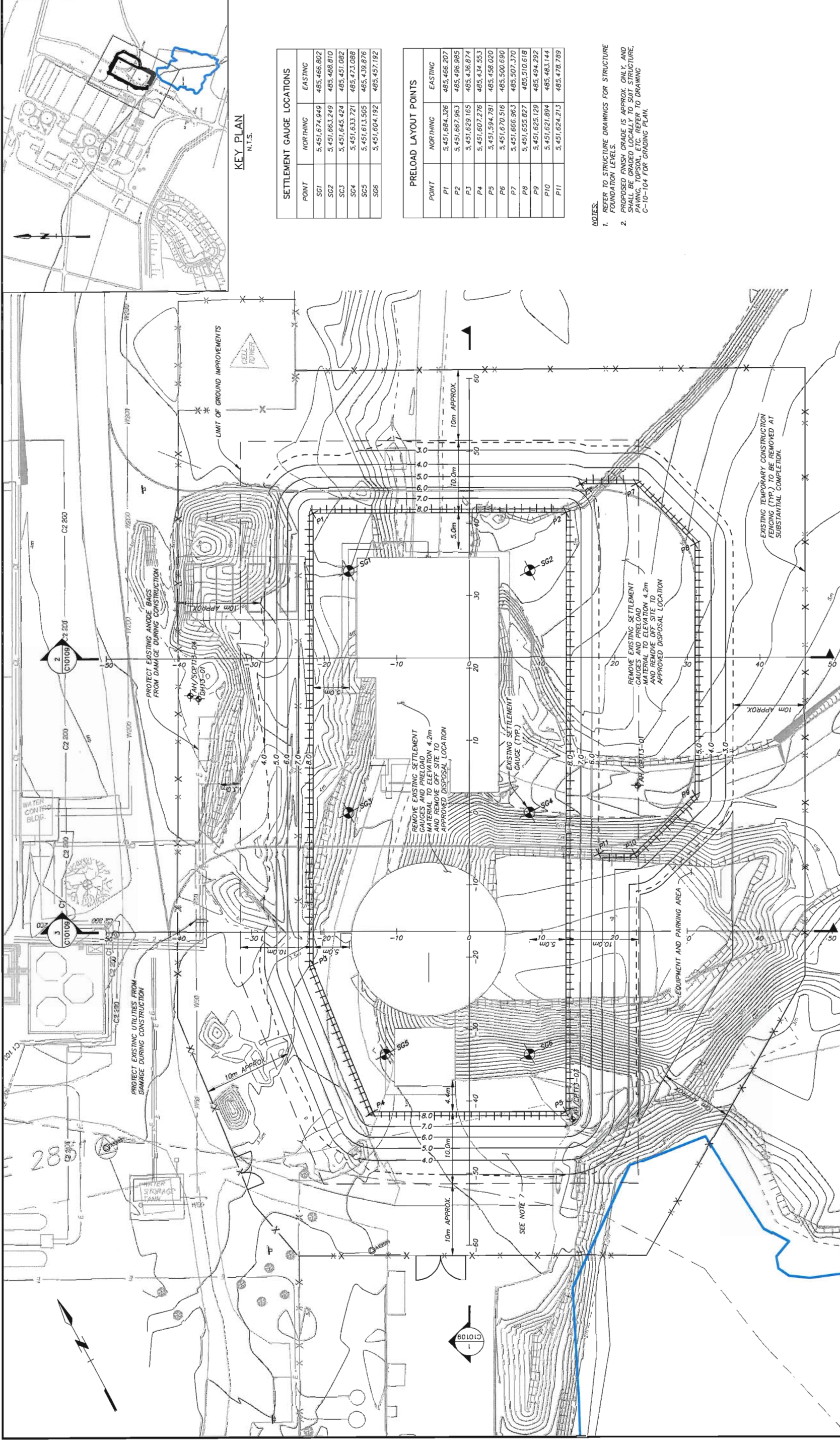
CHECK PRINT

THIS DRAWING HAS NOT BEEN APPROVED AND MAY CONTAIN ERRORS AND OMISSIONS.

Professional Seal

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT IONA ISLAND WWTP SOLIDS HANDLING UPGRADE PACKAGE 2 - SCREENING, DEGRIT AND THICKENER 3 AREA 10 - GENERAL SITEWORKS LOCATION AND VICINITY MAP	
Design: P.Y. Drawn: L.Y. Checked: SEM Approved: [Signature] Manager: [Signature]	SCALE: 1:1000 DISTRICT FILE: AC-XXXX SHT.\SK.#: [Blank] DRAWING NUMBER: C-10-107
P2 MAY 2013 P.Y. L.Y. SFM L.M. P1 MAY 2013 P.Y. L.Y. SFM L.M.	ISSUED FOR 90% DETAILED DESIGN ISSUED FOR 60% DETAILED DESIGN Issue Date Description
0 20 40 Bar is 20mm on Original Drawing. If Not on This Sheet, Adjust Scales Accordingly.	SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO P1 P1

xref file: C000A.dwg C000A.dwg



KEY PLAN
N.T.S.

SETTLEMENT GAUGE LOCATIONS		
POINT	NORTHING	EASTING
SG1	5,451,674.949	485,466.802
SG2	5,451,661.249	485,468.810
SG3	5,451,645.424	485,451.082
SG4	5,451,633.721	485,473.088
SG5	5,451,611.505	485,439.876
SG6	5,451,604.192	485,457.192

PRELOAD LAYOUT POINTS		
POINT	NORTHING	EASTING
P1	5,451,684.326	485,466.207
P2	5,451,667.963	485,496.985
P3	5,451,629.165	485,436.874
P4	5,451,607.276	485,434.553
P5	5,451,594.781	485,458.020
P6	5,451,670.516	485,500.690
P7	5,451,666.963	485,507.370
P8	5,451,555.827	485,510.618
P9	5,451,625.129	485,494.292
P10	5,451,621.694	485,483.144
P11	5,451,624.213	485,478.789

- NOTES:
- REFER TO STRUCTURE DRAWINGS FOR STRUCTURE FOUNDATION LEVELS.
 - PROPOSED FINISH GRADE IS APPROX. ONLY, AND SHALL BE GRADED LOCALLY TO SUIT STRUCTURE, PAVING, TOPSOIL, ETC. REFER TO DRAWING C-10-104 FOR GRADING PLAN.

NOTES:
1. EXISTING UTILITY LOCATIONS WERE TAKEN FROM RECORD DRAWINGS AND MAY NOT BE COMPLETELY ACCURATE. NOT ALL STRUCTURES AND UTILITIES ARE NECESSARILY SHOWN.

Associated Engineering
AE PROJECT No. 2012282



CH2MHILL

CHECK PRINT
THIS DRAWING HAS NOT BEEN APPROVED, AND MAY CONTAIN ERRORS AND OMISSIONS.

Issue	Date	Design	Dr'n	Chkd	App'd	Description
P2	MAY 2013	PY	LY	SFM	LM	ISSUED FOR 90% DETAILED DESIGN
P1	MAY 2013	PY	LY	SFM	LM	ISSUED FOR 60% DETAILED DESIGN

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
IONA ISLAND WWTP
SOLIDS HANDLING UPGRADE
PACKAGE 2 - SCREENING, DEGRIT AND THICKENER 3
AREA 10 - GENERAL SITES
PRELOAD REMOVAL / SITE PREPARATION PLAN
DRAWING NUMBER C-10-109

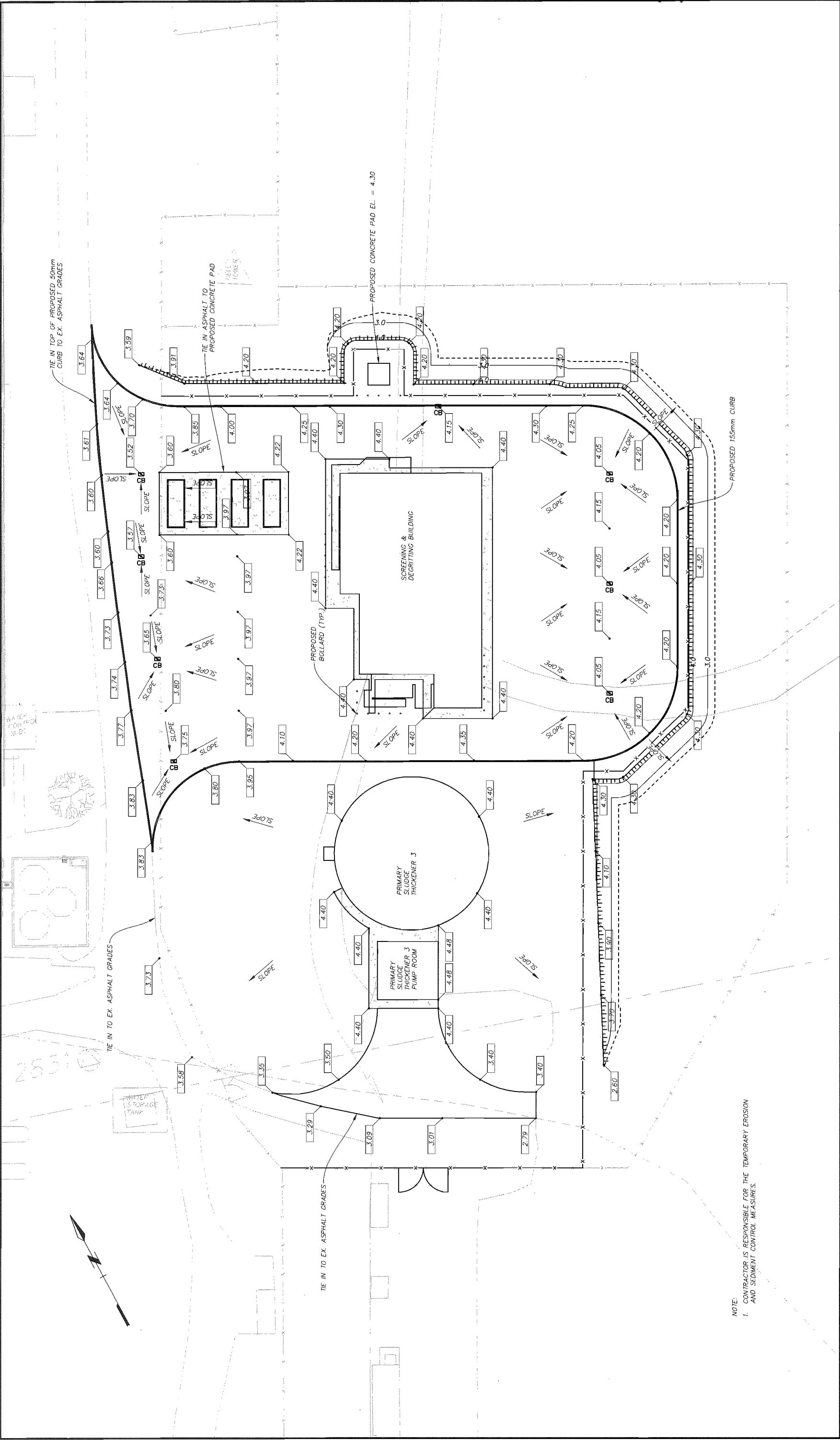
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DRAWING NUMBER C-10-109

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SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO P1

Plan #416

FEB 4 2015

14-676361 DP



NOTE:
 1. CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES.



AE PROJECT No. 2012262

CHECK PRINT
 THIS DRAWING HAS NOT BEEN APPROVED, AND MAY CONTAIN ERRORS AND OMISSIONS.

Issue	Date	Design	Description
P2	AUG 2014	LY SFM LM	ISSUED FOR 90% DETAILED DESIGN
P1	MAY 2013	PY LY SFM LM	ISSUED FOR 60% DETAILED DESIGN

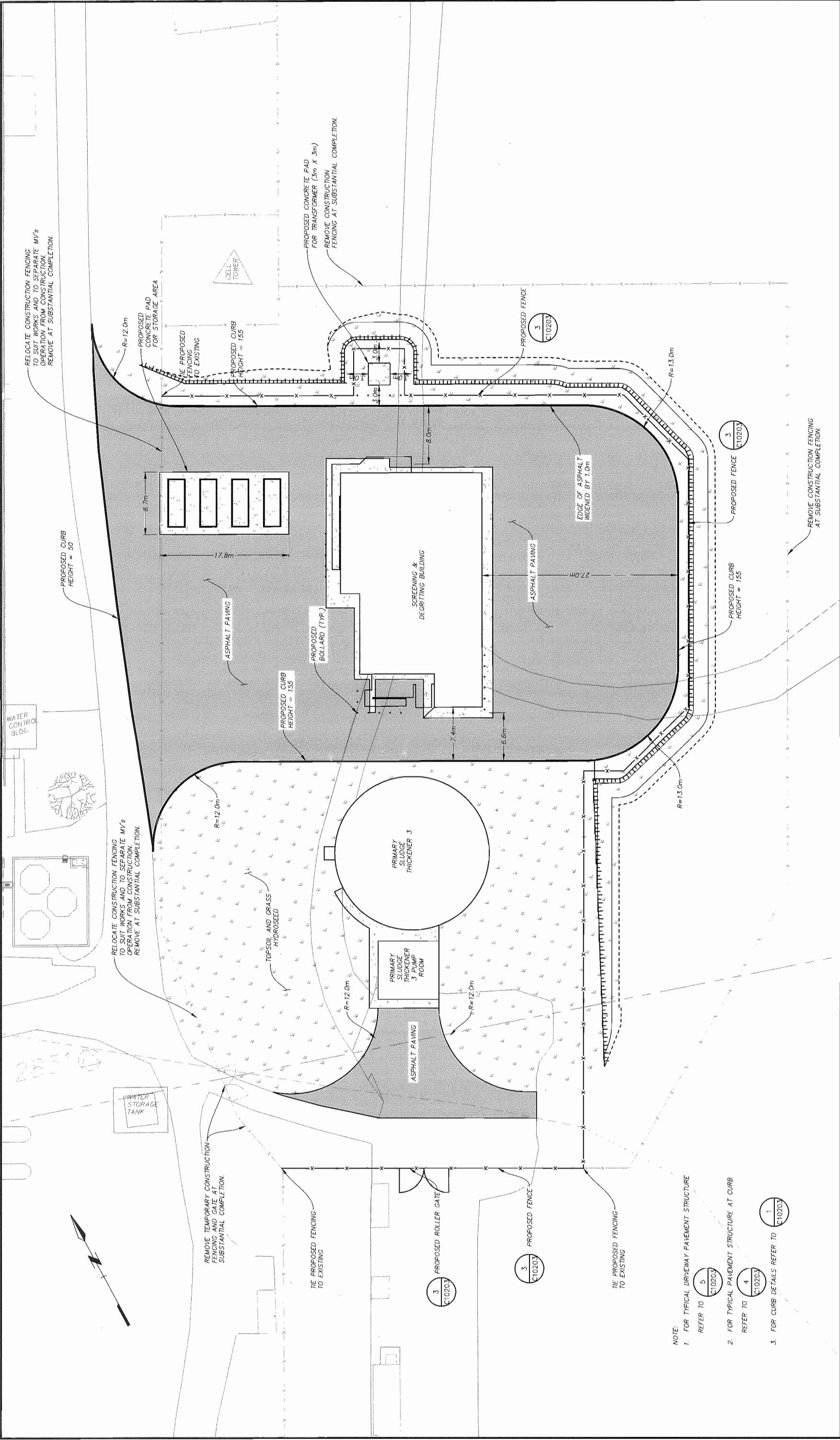
Design: SFM	Checked: LY	Approved: [Signature]	Manager: [Signature]
Drawn: LY	Checked: [Signature]	Approved: [Signature]	Manager: [Signature]

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
 IONA ISLAND WWT
 SOLIDS HANDLING UPGRADE
 PACKAGE 2 - SCREENING, DEGRITTING AND THICKENER 3
 AREA 10 - GENERAL SITES
 GRADING AND DRAINAGE PLAN

SCALE: 1:250
 DISTRICT FILE: XX-XXXX
 SHT. YSK. #: C-10-104
 DRAWING NUMBER: C-10-104
 SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO P1
 Plan #45

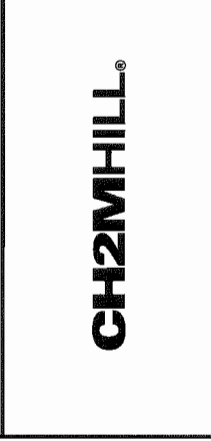
FEB 14 2015

14-676361 DP



- NOTE:
- FOR TYPICAL DRIVEWAY PAVEMENT STRUCTURE REFER TO 5 C10203
 - FOR TYPICAL PAVEMENT STRUCTURE AT CURB REFER TO 4 C10203
 - FOR CURB DETAILS REFER TO 1 C10203

CHECK PRINT
 THIS DRAWING HAS NOT BEEN APPROVED, AND MAY CONTAIN ERRORS AND OMISSIONS.

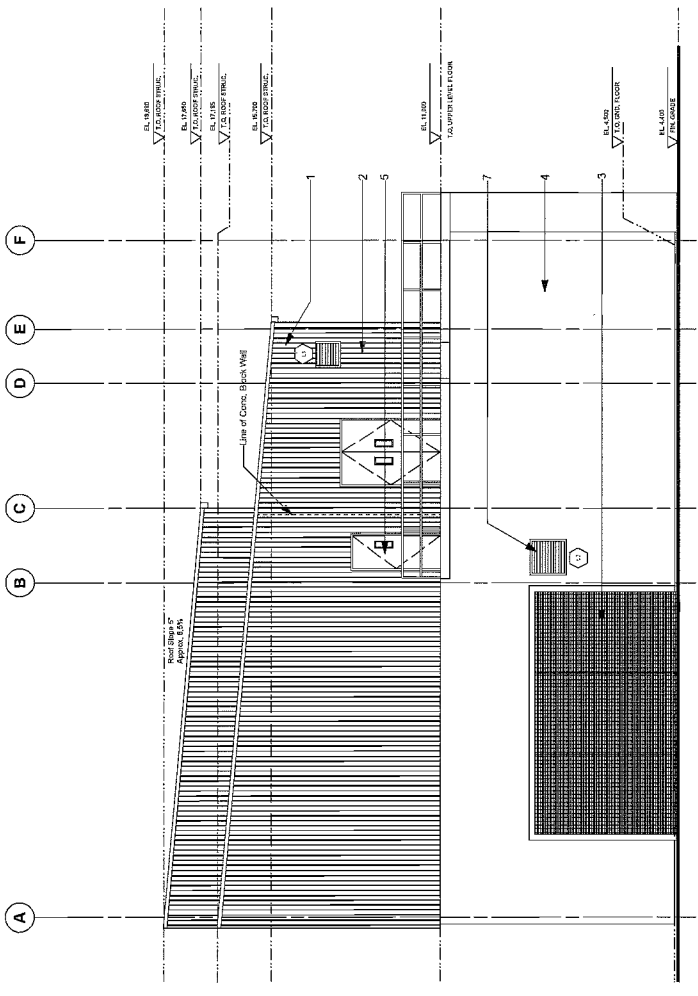


DESIGN		DRAWN		CHECKED		APPROVED		MANAGER	
Design: SFM	Drawn: LY	Checked:	Approved	Manager					
SCALE: 1:250 DISTRICT FILE: XX-XXXX SHEET NO. # DRAWING NUMBER: C-10-103									
GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT IONA ISLAND WWTP SOLIDS HANDLING UPGRADE PACKAGE 2 - SCREENING, DEGRIT AND THICKENER 3 AREA 10 - GENERAL SITES - PART SITE PLAN - SCREENING AND DEGRIT BUILDING AND SLUDGE THICKENER NO. 3									
SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO P1 Bar is 20mm On Original Drawing. If Not On This Sheet, Adjust Scales Accordingly.									

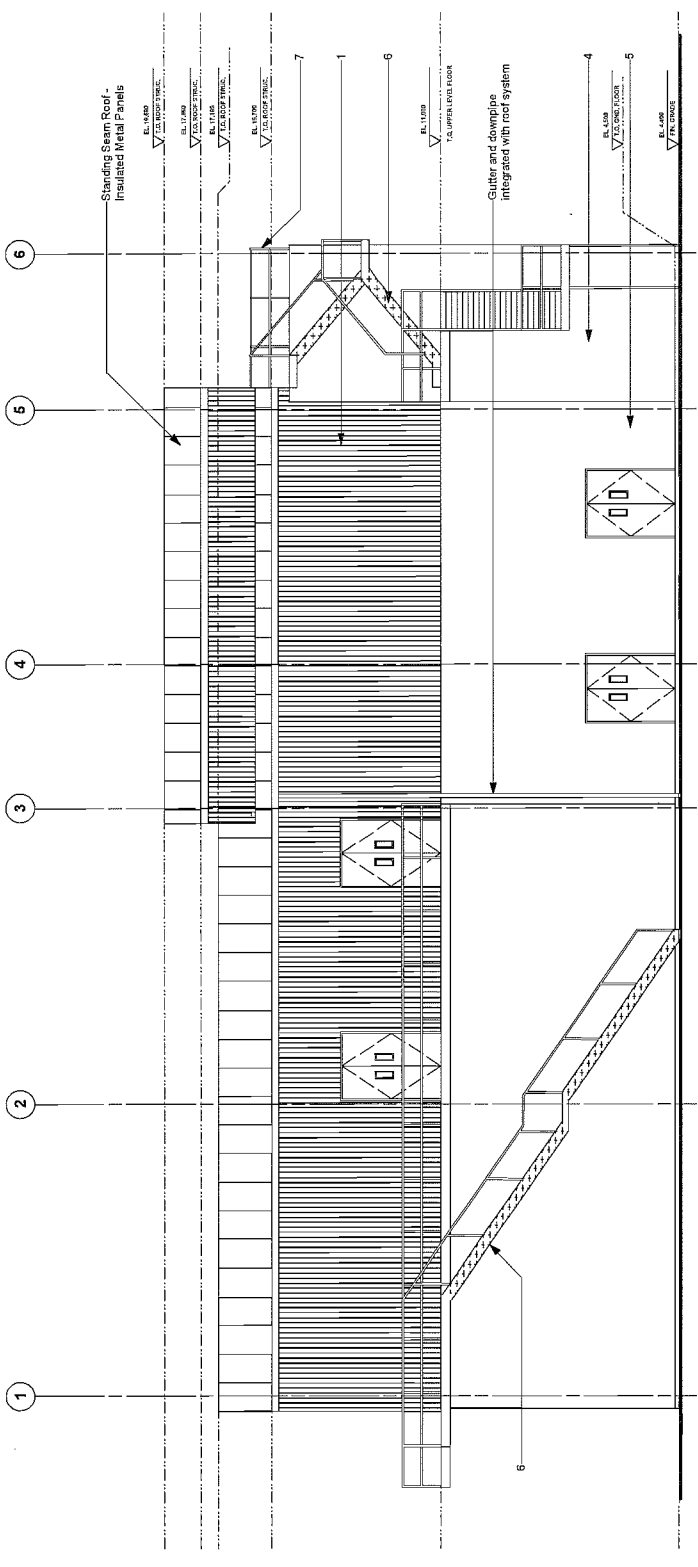
Professional Seal

Plan # 44

FEB 14 2015
 DP 17-676361



2 NORTH ELEVATION
A-21-104 SCALE: 1:100



1 WEST ELEVATION
A-21-104 SCALE: 1:100

CHECK PRINT
THIS DRAWING HAS NOT BEEN REVIEWED FOR ANY ERRORS OR OMISSIONS.

DIALOG

CH2MHILL

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT		IONA ISLAND WWTP	
Design:	BH	Scale:	AS NOTED
Drawn:	DS	District File #:	
Checked:	BH	Package:	SOLIDS HANDLING UPGRADE PACKAGE 2 - SCREENING, DEGRIT AND THICKENER 3
Approved:		Area:	AREA 21 - SCREENING AND DEGRITTING BUILDING EXTERIOR ELEVATIONS
Manager:		Drawing Number:	A-21-107
Professional Seal		SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO → P1	

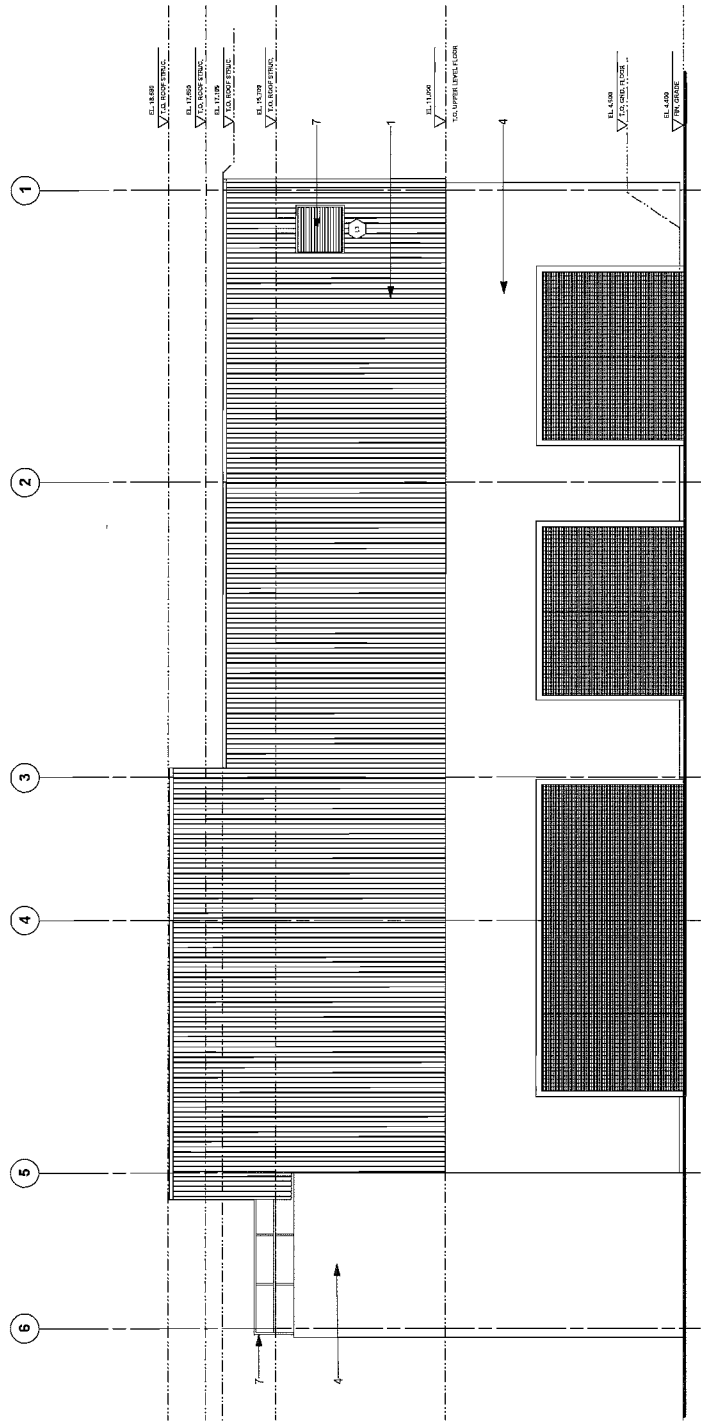
Plan # 4f

FEB 14 2015

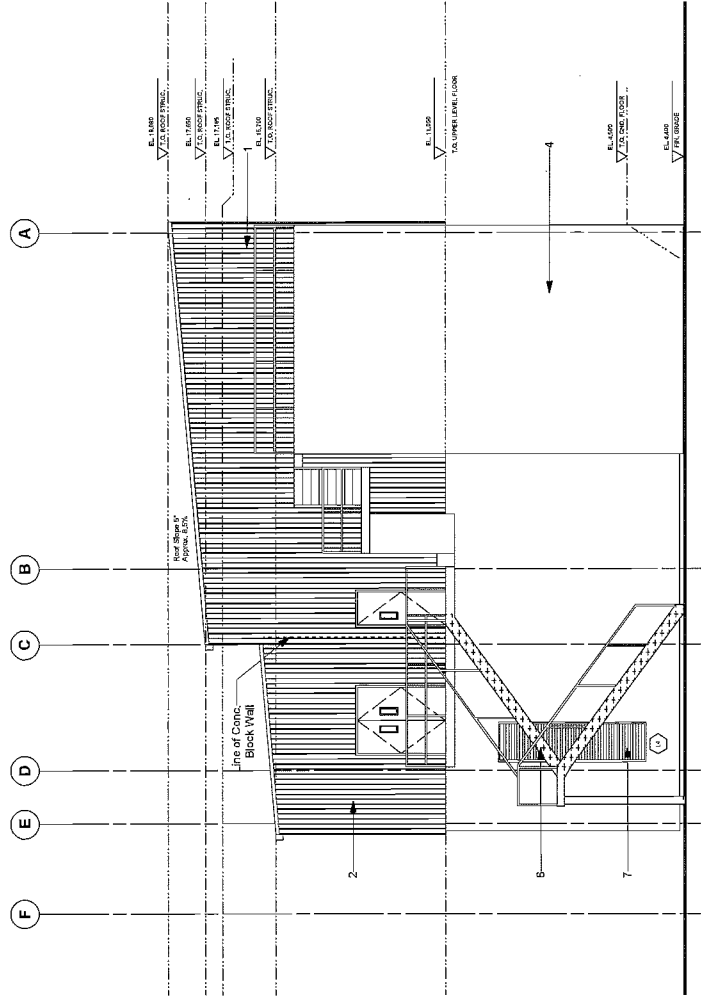
14-676361

DP

- LEGEND**
1. Metal Clad Rainscreen Insulated Metal Panel
 2. Metal Clad Rainscreen Conc. Block
 3. Galvanized Steel Flat-bar or Expanded Metal Mesh Gate (mesh size / bar spacing to provide bird protection)
 4. Architectural concrete, medium sand blast c/w sealant/graffiti coating
 5. Painted, galvanized steel door
 6. Galvanized Steel Flat Bar Stair
 7. Reinforced Louvers (see Mech)



2 WEST ELEVATION
SCALE: 1:100



1 SOUTH ELEVATION
SCALE: 1:100

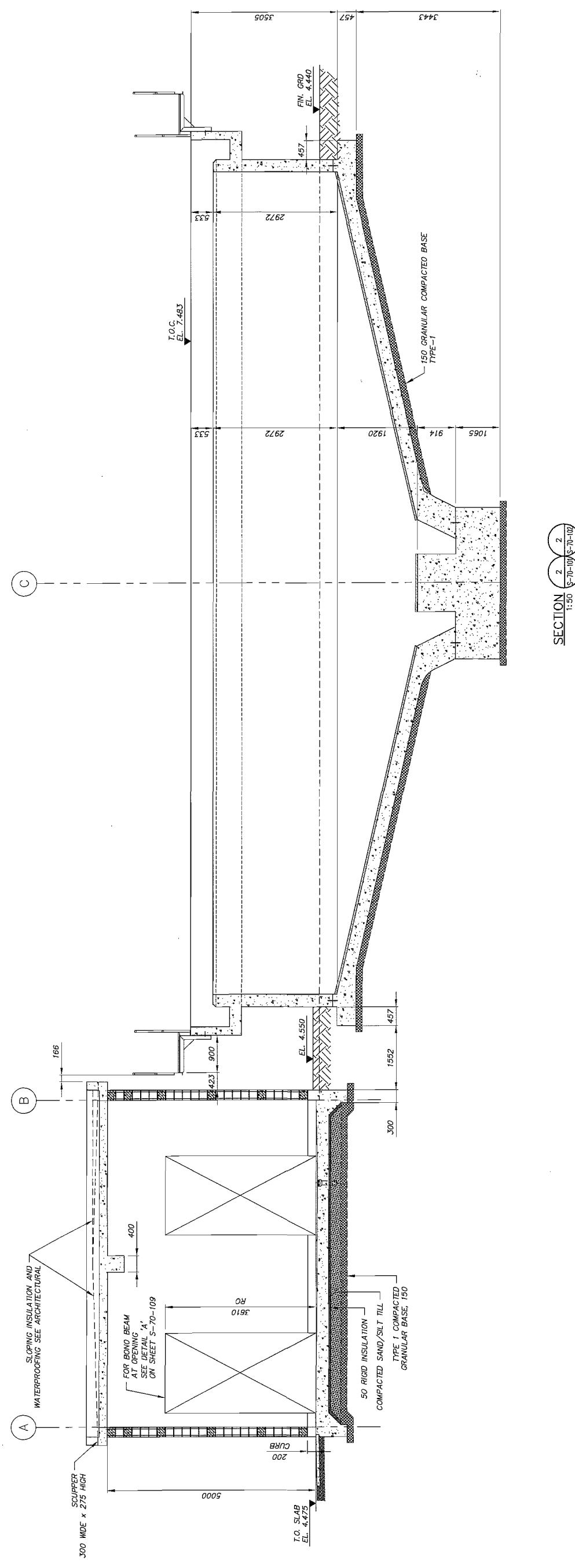
CHECK PRINT
THIS DRAWING HAS NOT BEEN REVISIONED AND MAY CONTAIN ERRORS AND OMISSIONS.

DIALOG

CH2MHILL

IONA ISLAND WWTP SOLIDS HANDLING UPGRADE PACKAGE 2 - SCREENING, DEGRIT AND THICKENER 3 AREA 21 - SCREENING AND DEGRITTING BUILDING EXTERIOR ELEVATIONS		Design: BH Drawn: DS Checked: BH Approved: [Signature] Manager: [Signature]	SCALE: AS NOTED DISTRICT FILE #:#-### SHT./SK # DRAWING NUMBER A-21-106
P2 AUG. 2014 BH BH P1 MAY 2014 BH BH Issue Date Desct Dwn Chkd Appd		ISSUED FOR 90% DETAILED DESIGN ISSUED FOR 60% DETAILED DESIGN	
0 20' Bar is 20mm On Original Drawing. If Not On This Sheet, Adjust Scales Accordingly.		SUPERSIDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO P1	

Plan # 49



- NOTES:**
1. SPLICES CLASS-B EXCEPT WHERE SPECIFIED DIFFERENT.
 2. REFER GENERAL NOTES ON SHEET S-21-100, AND CONTRACT SPECIFICATIONS.

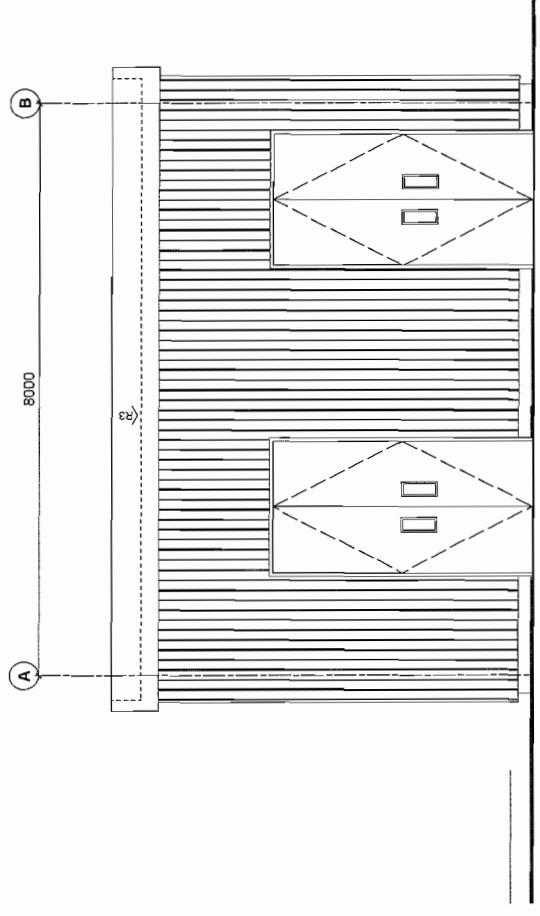
SECTION C
1:50 (S-70-100) (S-70-102)

CHECK PRINT
THIS DRAWING HAS NOT BEEN APPROVED, AND MAY CONTAIN ERRORS AND OMISSIONS.

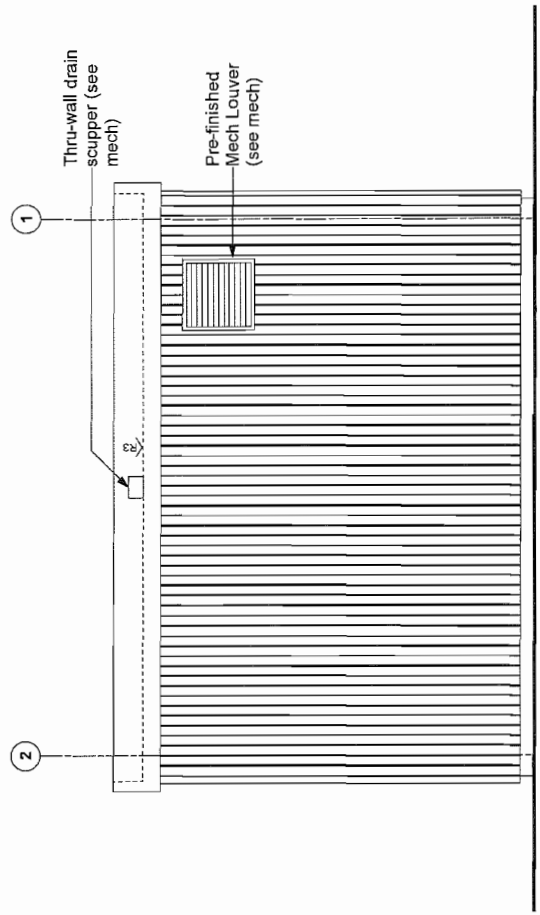
GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT				SCALE: AS NOTED		
IONA ISLAND WWTP PACKAGE 2				DISTRICT FILE #S-###		
SCREENING, DEGRITTING AND THICKENER 3				SHT./SK. #		
GRAVITY THICKENER 3 AND PUMP ROOM SECTION - SHEET 2				DRAWING NUMBER S-70-104		
Design:	GDR					
Drawn:	HD					
Checked:	MP					
Approved:	LM					
Manager:	KJM					
Issue	Date	Drawn	Checked	Approved	Description	
P2	AUG. 2014	GDR	HD	MP	LM	ISSUED FOR 90% DETAILED DESIGN
P1	MAY 2014	GDR	HD	MP	LM	ISSUED FOR 60% DETAILED DESIGN
0						Bar is 20mm On Original Drawing. If Not On This Sheet, Adjust Scales Accordingly.



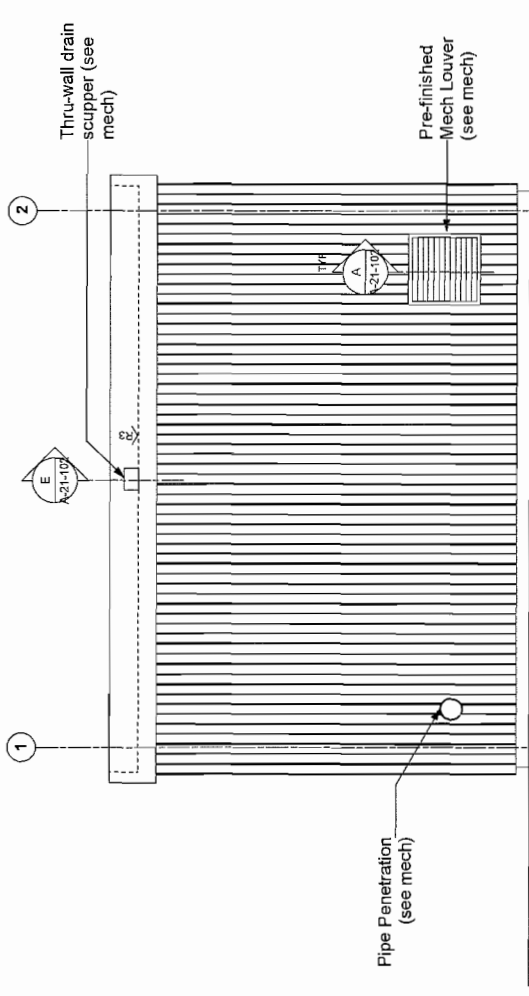
CH2MHILL®



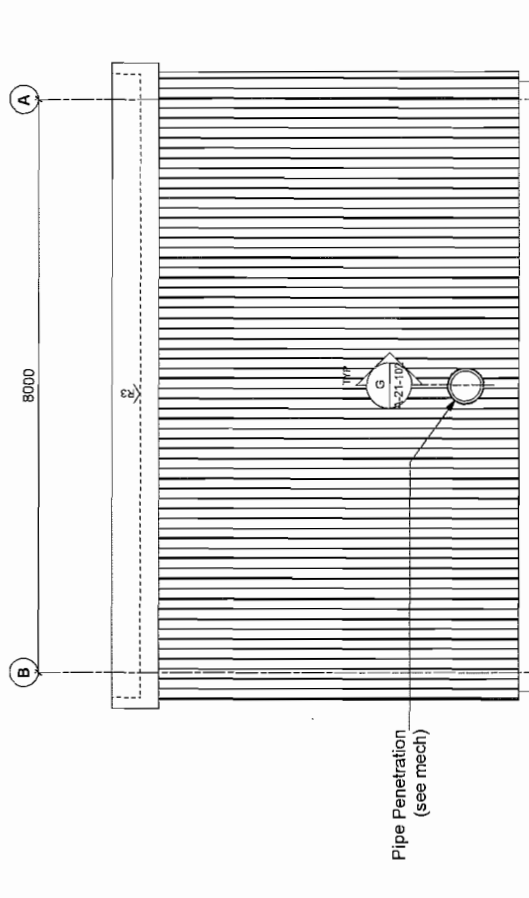
1 FRONT ELEVATION
SCALE: 1:50



2 SIDE ELEVATION
SCALE: 1:50



3 SIDE ELEVATION
SCALE: 1:50



4 BACK ELEVATION
SCALE: 1:50

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DIALOG®

CHECK PRINT
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Issue	Date	Desc'd	Dr'n	Chkd	App'd
P2	AUG 2014	BH	DS	BH	BH
P1	MAY 2014	BH	DS	BH	BH

20 Bar is 20mm On Original Drawing. If Not On This Sheet, Adjust Scales Accordingly.

Design:	BH	AS NOTED
Drawn:	DS	
Checked:	BH	
Approved:		
Manager:		

Professional Seal

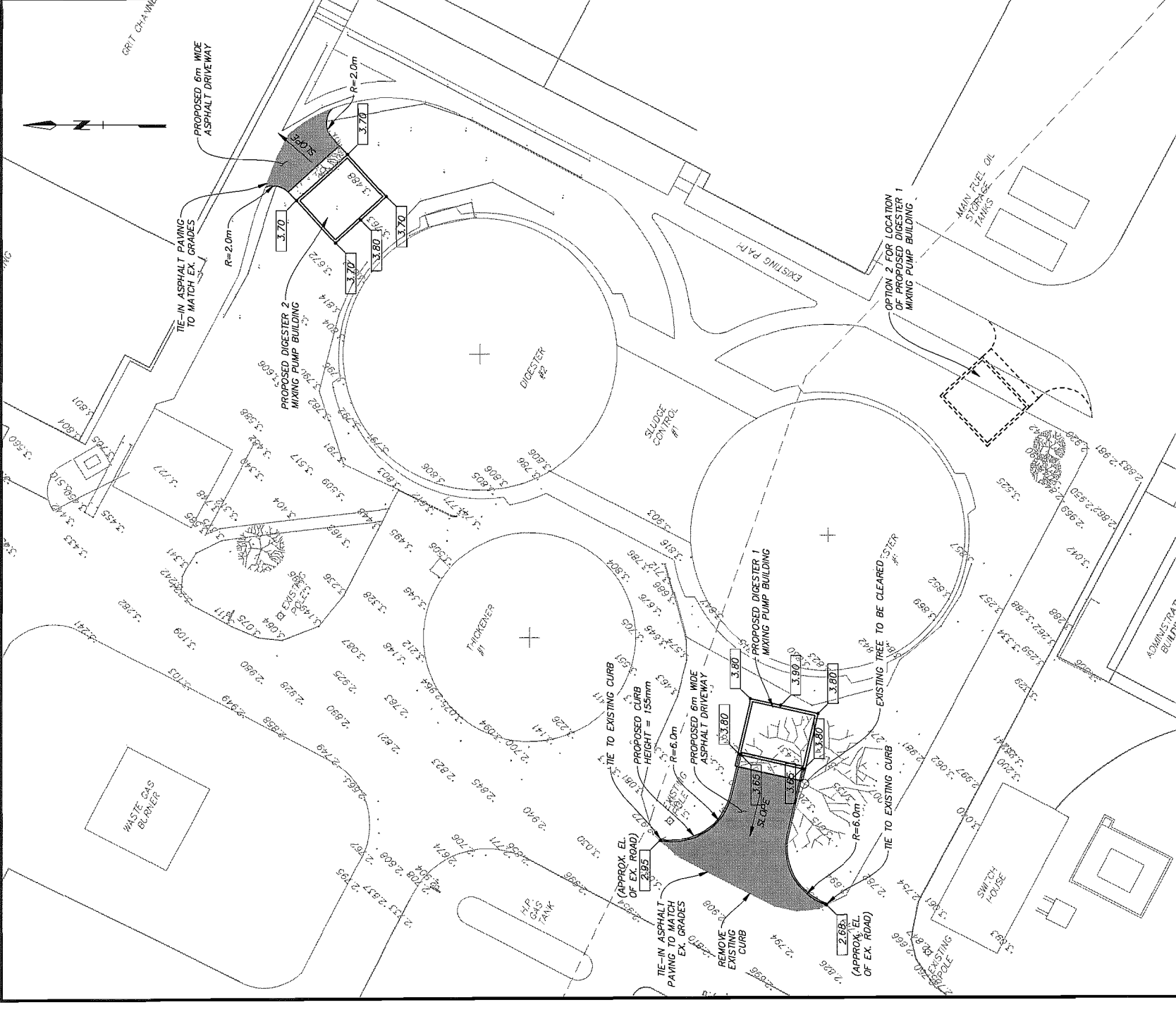
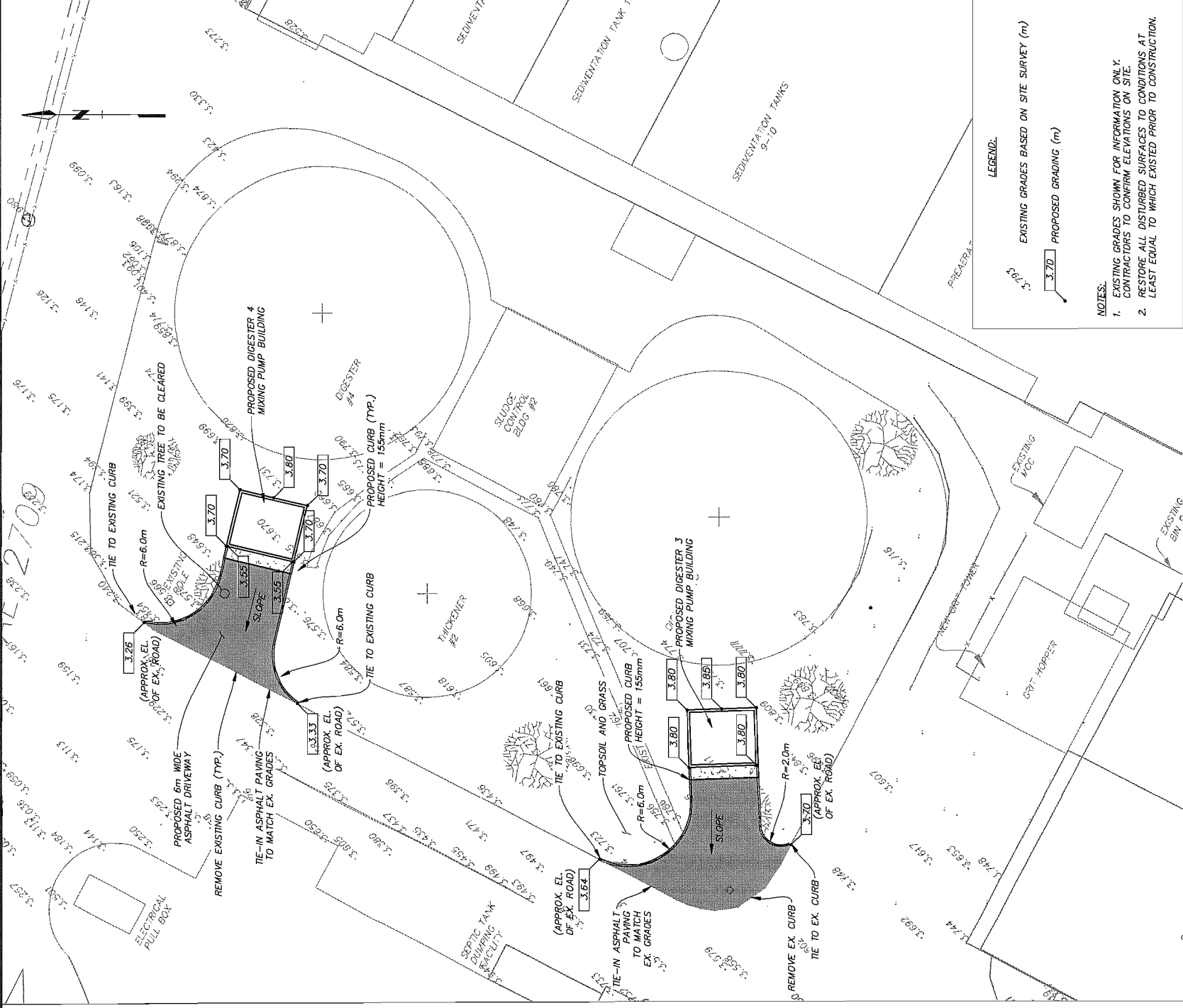
GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
IONA ISLAND WWTP
SOLIDS HANDLING UPGRADE
PACKAGE 2 - SCREENING, DEGRIT AND THICKENER 3
AREA 21 - THICKENER PUMP ROOM BUILDING ELEVATIONS
DRAWING NUMBER A-21-110

FEB 14 2015

14-676361

DP

Plan #41



LEGEND:
 EXISTING GRADES BASED ON SITE SURVEY (m)
 3.70
 PROPOSED GRADING (m)
 3.70

NOTES:
 1. EXISTING GRADES SHOWN FOR INFORMATION ONLY. CONTRACTORS TO CONFIRM ELEVATIONS ON SITE.
 2. RESTORE ALL DISTURBED SURFACES TO CONDITIONS AT LEAST EQUAL TO WHICH EXISTED PRIOR TO CONSTRUCTION.

CHECK PRINT		Professional Seal	
THIS DRAWING HAS NOT BEEN APPROVED, AND MAY CONTAIN ERRORS AND OMISSIONS.			
Design:	SFM	Drawn:	PY
Checked:		Approved:	
Issue:	Date	Issue:	Date
P2:	AUG 2014	PY	SFM
P1:	JULY 2014	PY	SFM
		Dr'n	Child
		App'd	
SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO P1			

CH2MHILL

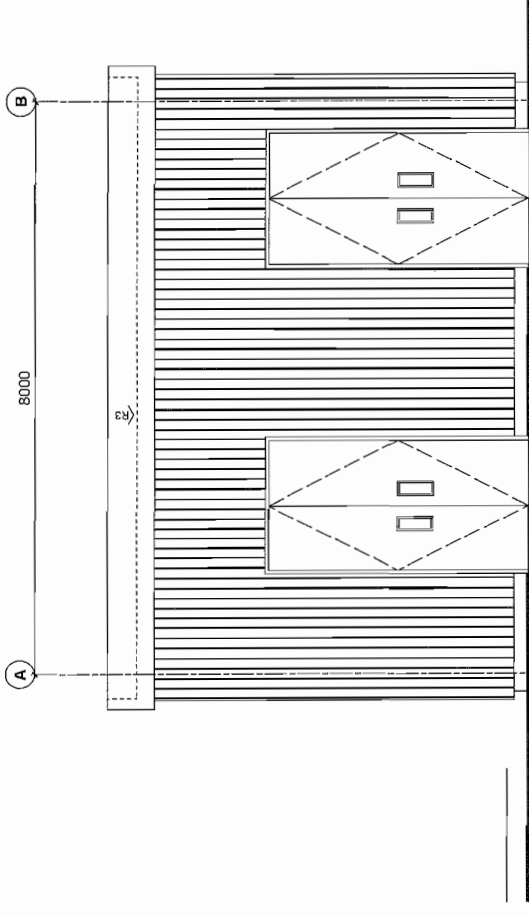
Associated Engineering
 AE PROJECT No. 2012262

CH2MHILL

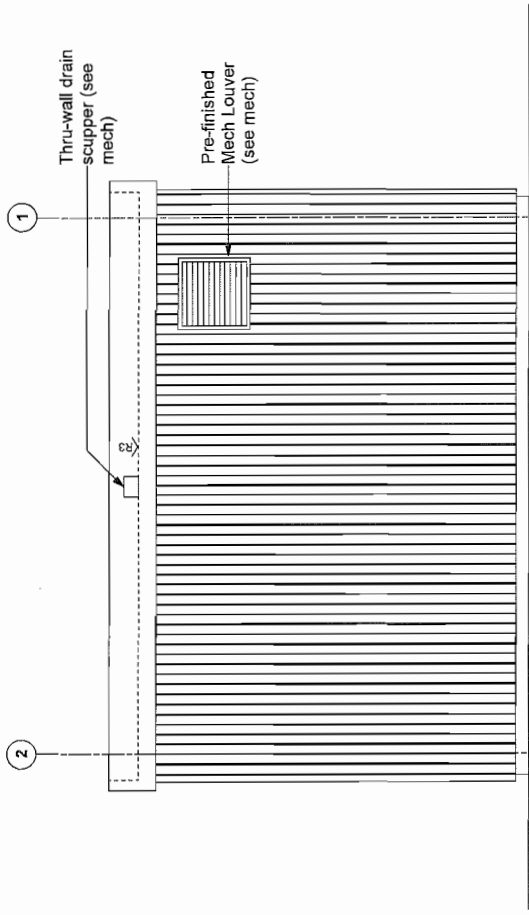
GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
 IONA ISLAND WWTP
 SOLIDS HANDLING UPGRADE
 PACKAGE 3 - DIGESTER MIXING
 AREA 10 - GENERAL SITES
 GRADING AND ROADWORKS

Scale: 1:250
 District File: AX-XXXX
 Sheet No.: C-71-103
 Drawing Number: C-71-103

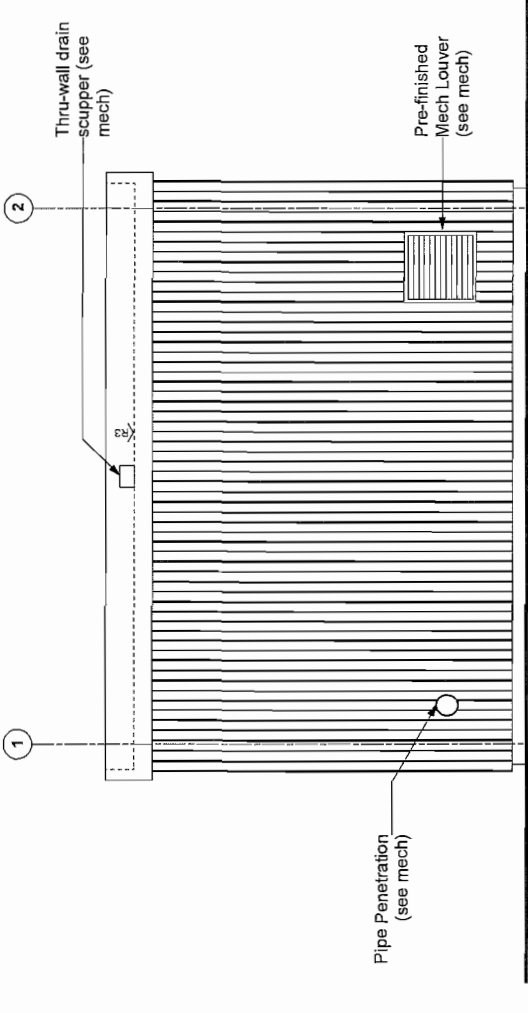
Professional Seal



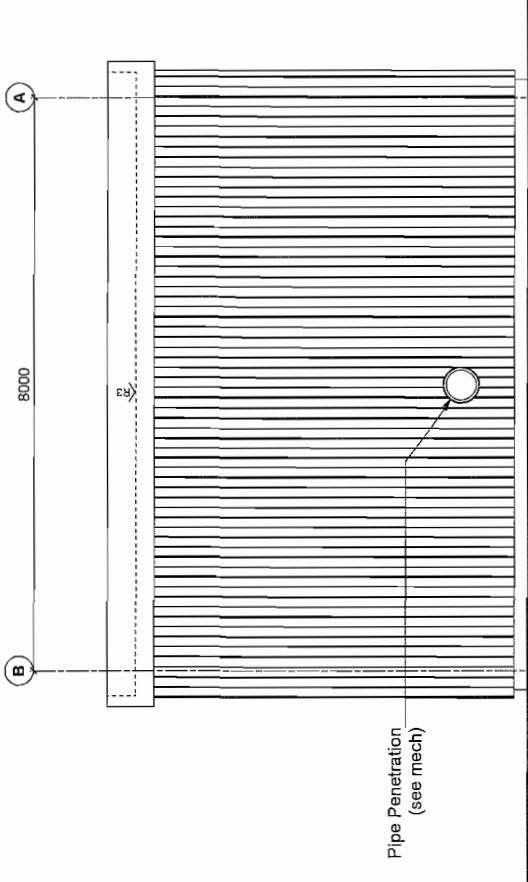
1 FRONT ELEVATION
SCALE: 1:50



2 SIDE ELEVATION
SCALE: 1:50



3 SIDE ELEVATION
SCALE: 1:50



4 BACK ELEVATION
SCALE: 1:50

N. GRADE

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CHECK PRINT
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Professional Seal

DIALOG®

Issue	Date	Drawn	Checked	Approved	Description
P2	AUG. 2014	BH	DS	BH	ISSUED FOR 80% DETAILED DESIGN
P1	JUN. 2014	BH	DS	BH	ISSUED FOR 60% DETAILED DESIGN

Design:	BH	AS NOTED
Drawn:	DS	DISTRICT FILE
Checked:	BH	###
Approved:		SHT./SK. #
Manager:		DRAWING NUMBER
		A-71-101

GREATER VANCOUVER SEWERAGE AND DRAINAGE DISTRICT
IONA ISLAND WWTP
SOLIDS HANDLING UPGRADE
PACKAGE 3 - DIGESTER MIXING
AREA 71 - MIXING PUMP BUILDING
EXTERIOR ELEVATIONS

SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO P1

Plan #4k