Request for Qualifications
Greater Nanaimo Pollution Control Centre
Secondary Treatment Upgrade Project

Information for Respondents

Advertised on the Regional District of Nanaimo's website (http://www.rdn.bc.ca) and BC Bid (www.bcbid.gov.bc.ca).

Information

The Regional District of Nanaimo (RDN) invites responses to this Request for Qualifications (RFQ) for the Greater Nanaimo Water Pollution Control Centre (GNPCC) Secondary Treatment Upgrade Project. The RDN's intent is to qualify Respondents (General Contractors) with a minimum bonding capacity of $70 million for the GNPCC Secondary Treatment Upgrade Project (Project).

SCOPE

The Project involves construction of a secondary treatment plant expansion to the existing GNPCC primary treatment plant. The work includes construction of a screening facility, grit removal, bioreactors, secondary clarifiers, RAS pump station, aeration and thickening building, gravity thickeners, odour control system, yard piping, operations and operator services buildings upgrade, sludge dewatering building upgrade, new maintenance and storage buildings, civil works including site dewatering, shoring, rock removal piling driving, installation of stone columns, ground improvements, site servicing, landscaping and roadworks, process mechanical equipment including pumps, valves and piping, new electrical service, electrical and instrumentation equipment and devices, HVAC and plumbing.

This RFQ may be downloaded directly from the BC Bid website http://www.bcbid.gov.bc.ca or RDN website at http://www.rdn.bc.ca.

Please return five (5) hard copies of your Response, including one unbound clearly-marked original, and 1 (one) electronic copy in a sealed package bearing the name of the Respondent, to the following location on or before end of business day on the 25th day of August, 2016:

Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, BC
V9T 6N2

Attention: Sean De Pol, Manager, Wastewater Services

Please note: Facsimile or email Responses will not be accepted.

The RDN reserves the right to accept, but is under no obligation to accept late submissions.

The RDN will endeavor to post the list of Respondents on the RDN's website by 10:00 a.m. the business day following the submission deadline. Only the short-listed Respondents will be contacted at the conclusion of the process. Unsuccessful Respondents wishing to be debriefed are encouraged to contact AECOM within 30 days of the RFQ closing. As only the successful Respondents will be contacted at the conclusion of this RFQ, the RDN wishes to thank all Respondents for their effort in responding to this tendering opportunity.

Please be sure to read the RFQ document in its entirety before submitting a response.

For further information, please contact Ken Moysiuk, P.Eng. at 604-444-6400 or ken.moysiuk@aecom.com.

REGIONAL DISTRICT OF NANAIMO

Greater Nanaimo Pollution Control Centre
Secondary Treatment Upgrade Project

Request for Qualifications (RFQ)
General Contractors
RFQ No. 101

Prepared by:

AECOM Canada Ltd.
3292 Production Way, 4th Floor, Burnaby, BC, Canada V5A 4R4
T 604.444.6400 F 604.294.8597
www.aecom.com

Prepared for:

Regional District of Nanaimo
6300 Hammond Bay Road
Nanaimo, B.C. V9T 6N2

Project Number:
60343972

Date:
July 2016

TABLE OF CONTENTS

APPENDICES

PART 1 INTENT

The intent of this Request for Qualification (RFQ) is to seek statements of qualifications (Responses) from parties (the Respondents) interested in providing general construction services (Work).

The RDN intends to qualify Respondents (General Contractors) with a minimum bonding capacity of $70 million for the GNPCC Secondary Treatment Upgrade Project (Project). For those respondents selected, tender documents are intended to be issued in October of 2016.

Responses for this Project will be sought from General Contractors who can best demonstrate the following:

- Experience as a general contractor with municipal wastewater facility projects that include civil, geotechnical, structural, process mechanical, building mechanical, electrical, instrumentation and control work similar in scope to this Project.
- Experience in construction of large concrete structures for wastewater treatment facilities.
- Experience in large civil projects including rock blasting, ground densification, excavation, site dewatering, shoring and roadworks.
- Experience in installing and commissioning wastewater process mechanical equipment.
- Experience in the installation of piping, pumps, valving, gates and ancillary equipment of all materials and sizes.
- Experience in large diameter buried pipe installation.
- Experience in major electrical work including substations, transformers, switch gear, diesel generators and electrical equipment.
- Experience with complex SCADA and instrumentation and control work.
- Timely completion of past projects with similar scope.
- Success in dealing with public impact issues including working in close proximity to residential and public use areas.
- Success in dealing with environmental issues.
- Experienced key personnel, including site manager, superintendent and general foreman.
- Established corporate programs pertaining to health and safety, quality assurance and quality control programs.
- Responsible claim management and dispute resolution practices.
- Record of superior performance by the Respondent as verified by references.

- Overall project management skill to successfully manage sub-contractors as verified by references.
- Experience in installation, testing, and commissioning of process equipment and activated sludge secondary treatment processes.
- Experience completing improvements within an existing fully operating wastewater treatment plant.
- Ability to maintain a positive, cooperative relationship with project team members (owners, engineers and operational staff) during projects

PART 2 PROJECT DESCRIPTION

2.1 SCOPE OF WORK

The GNPCC Secondary Treatment Upgrade Project (Project) includes the following work and as shown on the representative drawings included in Appendix A:

- Construction of new wastewater process structures including: screening building, three (3) bioreactors, three (3) secondary clarifiers, aeration and thickening building, RAS pump station, gravity thickeners, service tunnels and miscellaneous chambers.
- Construction of a new maintenance building and pre-engineered storage building.
- Modification, expansion and upgrade to existing structures including: dewatering building, Digester 3 electrical room, headworks, sludge dewatering building, Digester 2, operator services building and operations building.
- Siteworks including ground improvements for structural foundations, rock blasting and removal, excavating, backfilling, grading, drainage, landscaping, fencing and site dewatering.
- Roadworks including gravel roadway, curbing and asphalt paving.
- Site utilities including storm sewers, sanitary sewers, water, natural gas and underground electrical.
- Installation of yard process mechanical piping for interconnection of the proposed works.
- Process equipment supply and installation including: fine screens, screening washer compactor, grit washer classifiers, conveyors, aeration blowers and diffusers, secondary clarifiers, dissolved air flotation tanks, centrifuges, polymer and hypochlorite systems, pumps, mixers, gates, digester gas mixing system and other specified equipment.
- Supply and installation of foul air treatment systems including synthetic media biofilter carbon scrubbers, FRP ducting, fans and dampers.

- Installation of mechanical piping, valves, fittings and appurtenances to interconnect equipment and tie-into proposed works.
- Demolition of existing structures, equipment, piping and electrical devices, and tie-ins to existing structures and operations.
- New electrical service, substation, transformers, switchgear and standby diesel generator.
- Electrical and instrumentation work to service the new and upgraded facilities.
- HVAC, hydronic heating and plumbing systems.

The Work that will be tendered under a general contract includes, but is not limited to:

- Obtaining performance bonds, labour & material payment bonds, project insurance certificates, WCB notifications, and all paperwork necessary prior to the start of construction. The General Contractor will be designated Prime Contractor.
- Obtaining all trade permits (plumbing, electrical) and permits required for construction (road use permits, soil removal permits, etc), and preparing traffic management plans, construction mitigation plans, environmental plans and similar documentation required by Authorities having Jurisdiction.
- Temporary works including site dewatering and shoring for excavations.
- Bulk excavation, rock blasting and disposal of excavated material offsite.
- Ground improvements and piling beneath structures.
- Supply and installation of all materials and equipment required to construct the Project as described herein.
- Startup and commissioning of all equipment and the secondary treatment process including the preparation of the Commissioning Plan.
- Connections/tie-ins to existing works and processes;
- Development and implementation of complete health and safety and quality assurance and control programs;
- Coordination and cooperation with other contractors;
- Coordination with RDN's Operations personnel;
- Coordination with utilities including but not limited to BC Hydro, Fortis, City of Nanaimo, BC Hydro, TELUS; etc.
- Coordination with 3rd Party Stakeholders including but not limited to City of Nanaimo, MOE and DFO.

Additional Project Requirements and Known Construction Risks:

- The Project is located adjacent to Walley Creek which is an environmentally sensitive watercourse. Agencies such as the City of Nanaimo, DFO and MOE have a stake in the work.
- The water table is high on this site and is expected to stay relatively constant over the year. Dewatering will be required to construct and install deep foundations and process piping. The design and installation of the site dewatering system is the responsibility of the General Contractor.
- Given the depth of the excavations and soil and groundwater conditions, it may be necessary to use sheet piling or other similar shoring system. Shoring selection and design is the responsibility of the Contractor.
- The existing wastewater treatment plant must stay in operation at all times while the Work is being constructed. Short term shutdowns will be required to complete the Work and will require approval by and co-ordination with the RDN. Temporary works, measures and facilities will include bypass pumping, bulkheads, odour control, sludge dewatering, a portable laboratory and SCADA.
- All final tie-ins to existing piping and electrical systems will be carried out by the General Contractor and coordinated with the RDN's operations staff to minimize disruption to the existing operations. The tie-ins may or may not be carried out during normal business hours and will require an approved detailed plan.
- The General Contractor will be responsible for developing and working in accordance with a comprehensive quality assurance and quality control programs.
- Project completion is estimated to be within 30 months of construction contract award.
- Appendix A contains representative Construction Drawings (approximately 90% detailed design stage).

2.2 BACKGROUND

The Greater Nanaimo Pollution Control Centre (GNPCC) is located at 4600 Hammond Bay Road in the City of Nanaimo. It is located in a residential neighbourhood bordered by McGuffie Road to the west and Shores Drive to the east (Figure 1). The main entrance to the site is off of McGuffie Road. Adjacent to the south is Walley Creek that flows eastwards towards the ocean.

The GNPCC is a primary wastewater treatment plant operated by the Regional District of Nanaimo (RDN). The plant was originally constructed in 1975 and has undergone many upgrades and expansions. Recent upgrades include:

- Primary effluent line and bypass chamber (2014)

- Primary sedimentation tank (PST) 4 and scum pump station (2014)
- Digester 3 (2013)
- Cogeneration (2013)
- Operator services building (2009)
- Chemically enhanced primary treatment (CEPT) and gravity thickeners (2005)
- New boiler building (2004)

The GNPCC must be upgraded to secondary treatment by mid-2019 to meet the schedule commitment in the RDN's approved Liquid Waste Management Plan.

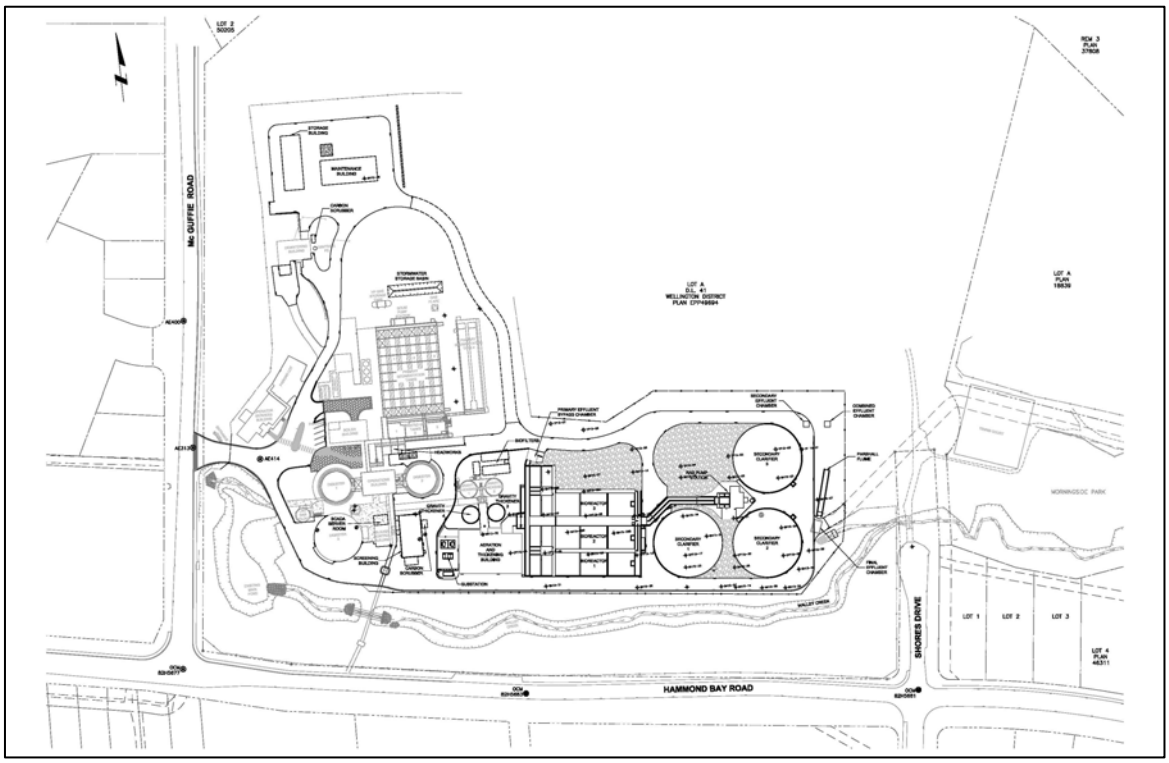


Figure 1. Overall site plan of proposed GNPCC Secondary Treatment Upgrade project

Figure 2. Rendering of proposed secondary treatment plant (west view)

Figure 3. East view of GNPCC site cleared for proposed secondary treatment plant construction

PART 3 FORMAT OF RESPONSE

A clear and concise presentation of information is encouraged. No assumption should be made that the information regarding a Respondent is known to the RDN except as provided in its Response. Each Response should be arranged as follows:

3.1 FORMAT OF THE RESPONSE

1. **Title Page:** Showing RFQ number, closing date and time, Respondent name, address, telephone number, e-mail address and contact person.
2. **Letter of Introduction:** One page introducing the Respondent and signed by the person(s) authorized to sign on behalf of the Respondent.
3. **Table of Contents:** Include page numbers.
4. **Statement of Qualifications**:

Section 1 – Respondent's Experience

Item 1 Corporate Qualifications: List the number of employees in company, number of branch offices, number of employees in the office that will support this Project, type of work the company specializes in and number of projects and value of work done by company in the last five (5) years. List the annual revenue by year, for the past three (3) years if that information is available.

Item 2 Projects: List at least five (5) relevant municipal wastewater and/or water facility construction projects, or equivalent and relevant industrial projects, the Respondent has successfully constructed in the last ten (10) years. Preference should be given to projects of similar size and scope to the project described herein or with a capital value of at least $25 million per project. Specify the scope of work the Respondent provided on the projects. List the project name, description of project, size of project (dollars) and reference names and phone numbers of the owner and Engineer of these projects. Specify whether the Respondent acted as the "Prime Contractor" as defined by WorkSafe BC for each project. The RDN reserves the right to obtain its own references in this regard.

Item 3 Quality Assurance and Quality Control: Demonstrate corporate quality control program and corporate quality control record as determined by up to three (3) references of prior successful Works of a similar nature to this Project and a submitted company quality program. Demonstrate relevant

certifications (e.g. ISO 9001). The RDN reserves the right to obtain its own references in this regard.

Item 4 Insurance / Bonding: Provide supporting evidence, from a surety licensed to transact the business of suretyship in the Province of British Columbia, confirming eligibility to be capable of bonding a minimum $70 million contract to the following limits: 50% Performance Bond; 50% Labour and Material Payment Bond, and Comprehensive General Liability Insurance of not less than $5,000,000.

Item 4 Subcontracts: Describe how the Respondent will complete the Process Mechanical, Electrical and Instrumentation Work. If work is being sub-contracted, describe how the subcontractors will be procured and managed.

Item 5 Health and Safety: Provide description of the Respondent's Health and Safety Program for relevant projects provided.

Section 2 – Respondent's Personnel

Item 1 Key Personnel: List the name (or names) of proposed key personnel (site manager, superintendent, general foreman) for the Project(s) of the Contractor. List the last three (3) large projects for these key personnel and value of projects. Preference should be given to projects of similar size and scope to the project described herein or with a capital value of at least $25 million per project. Provide a resume for each named key personnel, including at a minimum, the following information:

1) Name
2) Professional Qualifications/ Designations
3) Role and responsibility for the Project
4) Summary of education/ qualifications
5) Relevant experience in relation to the Project, and
6) Provide up to three (3) references of successful projects completed by the proposed key personnel.

Provide confirmation that the named persons will be committed to this project.

Provide an organization chart at the Project level, including key personnel, which show the relationships between the Responden's team members and any anticipated changes over the construction and commissioning period.

Section 3 – Respondent's Performance

Item 1 Schedule and Budget: Demonstrate the Respondent's experience and capability with meeting obligations including schedule, budget and plant performance for the reference projects provided in response to Section 1.

Item 2 Document Control: Demonstrate the Respondent's experience and capability with electronic document control including RFIs, shop drawings, etc. Indicate the document control system that would be used on this type of project.

Item 3 Contract Closeout: Demonstrate the Respondent's experience and capability with Contract Closeout. Describe how deficiencies are managed and how deficiencies are addressed in a timely manner. Describe a typical commissioning plan for a project of this scope. Indicate how timely submission of as-constructed drawings and Operation and Maintenance manuals are achieved.

PART 4 EVALUATION OF RESPONSES

The RDN will evaluate the Responses received and select Respondents who are deemed qualified at the sole discretion of the RDN to participate in the next phase of the process.

Selection for advancement to the next stage does not constitute the formation of a Contract between the RDN and the Respondent.

With respect to this evaluation process, the RDN, in its sole discretion, shall have the right to:

- accept any Response;
- reject any Response;
- reject all Responses;
- reject a Response even if it is the only one received.

The RDN reserves the right to request additional information and/or seek clarification from any Respondent, but shall not be obligated under any circumstance to do so and may request this of one Respondent without any obligation to request the same of any other Respondent.

All Responses received will be evaluated based on:

Respondents should meet a <u>minimum of 70 points to be advanced</u> to a short list of highest ranked contractors, who may be invited to submit a Tender for the Work of the Project. The RDN reserves the right to pre-qualify additional parties at its sole discretion.

1. Respondent's Experience (40 points):

1.1 Respondent's corporate qualifications and specialization of work as it applies to the Work of the Project, including sufficient size and available resources to support the Project.

1.2 The successful completion of relevant municipal water and/or wastewater facility construction projects (or equivalent) within the last ten (10) years, acting as the Prime Contractor, as determined by the Response and References. Respondents that can demonstrate projects of similar size and scope to the project described herein or with a capital value of at least $25 million per project will be preferred and ranked accordingly.

1.3 Respondent's demonstration of corporate quality assurance and quality control programs and records as determined by their Response and References for Work of a similar nature to that of the Project.

1.4 Respondent's capacity to provide sufficient insurance and bonding as specified.

1.5 Respondent's corporate health and safety program as determined by information provided.

2. Respondent's Personnel (40 points):

2.1 Respondent's organization of key personnel and the relationships between the team members.

2.2 Experience of the key personnel in projects of a similar scope proposed for this Project, including as a minimum, the Project Manager, Superintendent and Foremen, as evidenced by the provided experience and references.

2.3 Training, role and experience of support staff and technical staff as resource personnel.

3. Respondent's Performance (20 points)

3.1 Respondent's past record of superior performance and previous experience as determined by their Response and References.

3.2 Ability to meet schedules with a minimum of claim related disputes as determined by the Response and References.

3.3 Document control including RFIs, shop drawings, close out documentation and commissioning efficiency.

PART 5 ENQUIRIES

Any requests for explanations, interpretations or clarifications made by Respondents should be submitted in writing prior to the Response Closing. Any request for clarification or issues related to the RFQ must be submitted to AECOM.

All queries shall be made in writing and submitted via e-mail to AECOM as follows:

Ken Moysiuk, P.Eng.
AECOM
4th floor, 3292 Production Way
Burnaby, BC V5A 4R4
Telephone: 604-444-6400
Fax: 604-294-8597
ken.moysiuk@aecom.com

Note: The Contact named above (or designate) is the only valid contact for enquiries. No explanation, interpretation or clarification of the RFQ by any other person whatsoever shall bind the RDN in the interpretation of the RFQ.

PART 6 CONFLICT OF INTEREST

6.1 The Respondent declares that it has no pecuniary interest in the business of any third party that would cause a conflict of interest or be seen to cause a conflict of interest in carrying out the Services. Should such an interest be acquired during the term of the contemplated Agreement, the Respondent shall declare it immediately in writing to the RDN. If the Respondent does declare a conflict of interest the RDN may direct the Respondent to resolve the conflict of interest to the RDN's satisfaction.

6.2 Responses will not be evaluated if the Respondent's current or past corporate or other interests may, in the RDN's opinion, give rise to a conflict of interest in connection with this RFQ.

PART 7 SOLICITATION

7.1 The Respondent may not make any representations or solicitations to any director, officer or employee of the RDN with respect to the RFQ either before or after submission of the Response except as provided herein. If any director, officer, employee, agent sub-contractor, supplier or other representative of the Respondent communicates with

any director, officer or employee of the RDN or any consultant engaged by the RDN in connection with this Request for Qualifications about this Request for Qualifications, other than the person named under Part 5 – Enquiries, the RDN shall have the unfettered right, regardless of the nature of the communication, to reject the Response submitted by the Respondent.

PART 8 CONFIDENTIALITY AND SECURITY

It is the RDN's policy to maintain confidentiality with respect to all confidential information related to the Response, but the RDN is subject to the *Freedom of Information and Protection of Privacy Act*. If the Respondent considers that any of its information is confidential, the Respondent shall identify that confidential information and advise the RDN in its Response.

END OF SECTION

Regional District of Nanaimo

GREATER NANAIMO POLLUTION CONTROL CENTRE

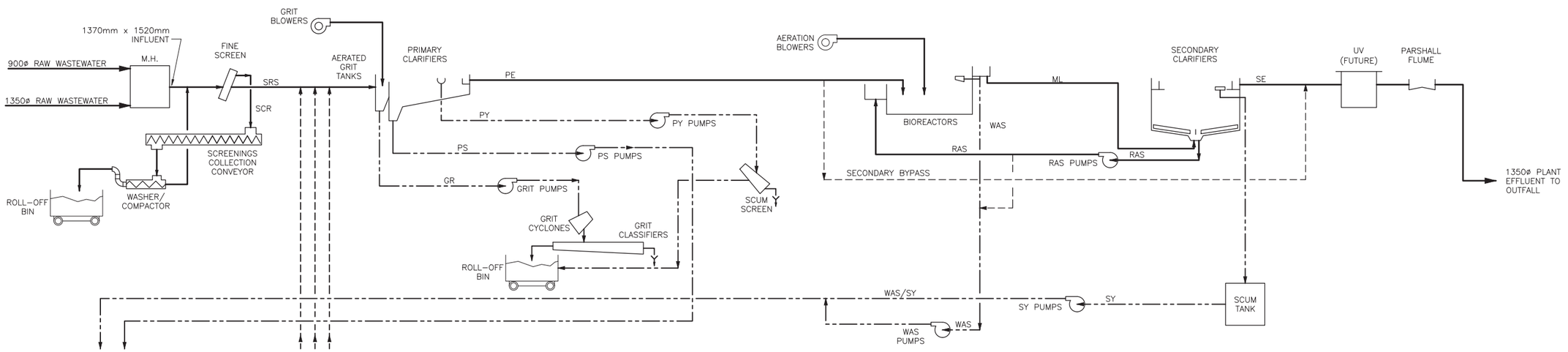
SECONDARY TREATMENT UPGRADE

APPENDIX A - REPRESENTATIVE DRAWINGS

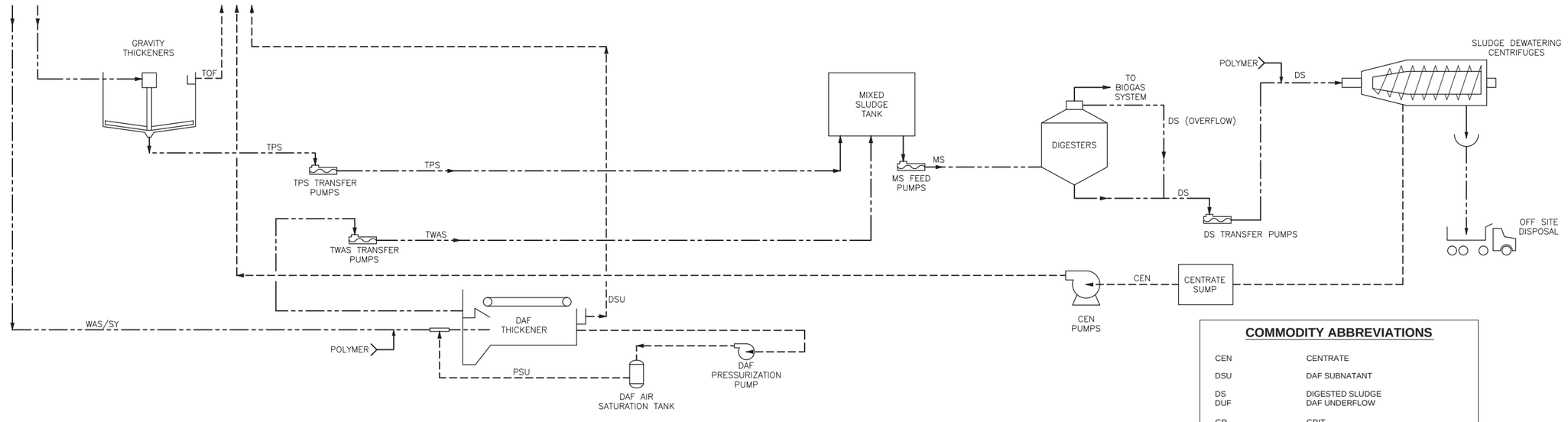
90% DETAILED DESIGN DRAWINGS
JUNE 2016

AECOM Project No. 60343972

LIQUID STREAM



SOLIDS STREAM



LEGEND:

- LIQUID STREAM
- SOLIDS/RESIDUALS STREAM
- RETURN STREAM

COMMODITY ABBREVIATIONS

CEN	CENTRATE
DSU	DAF SUBNATANT
DS	DIGESTED SLUDGE
DUF	DAF UNDERFLOW
GR	GRIT
ML	MIXED LIQUOR
MS	MIXED SLUDGE
PE	PRIMARY EFFLUENT
PS	PRIMARY SLUDGE
PY	PRIMARY SCUM
PSU	PRESSURIZED SUBNATANT
RAS	RETURN ACTIVATED SLUDGE
SCR	SCREENINGS
SE	SECONDARY EFFLUENT
SRS	SCREENED RAW SEWAGE
SY	SECONDARY SCUM
TOF	THICKENER OVERFLOW
TPS	THICKENED PRIMARY SLUDGE
TWAS	THICKENED WASTED ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	DDF	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	DDF	KM	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

DRN BY: DDF
DES BY: LN
CHK BY: KM
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

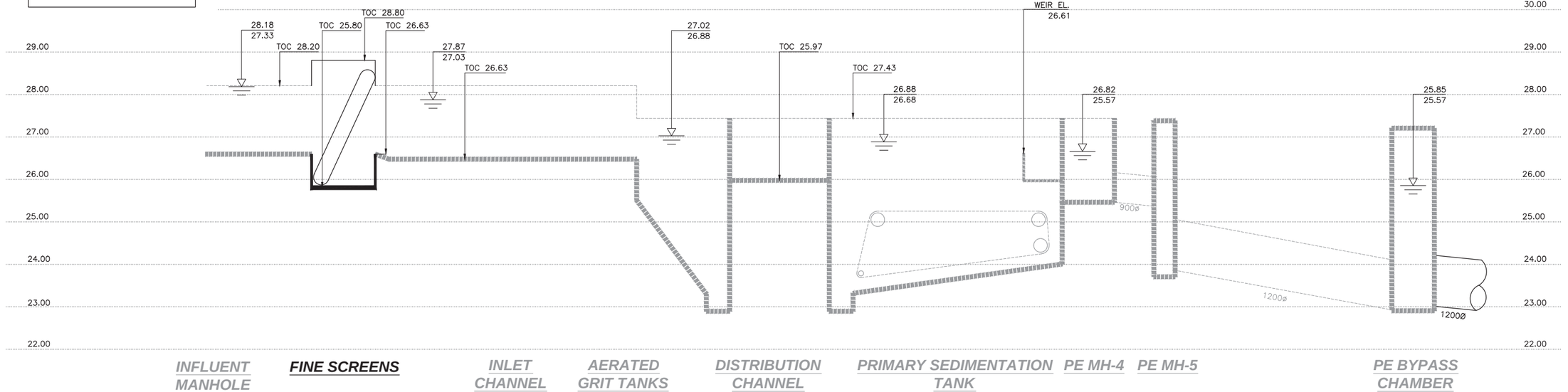
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
GENERAL
PROCESS FLOW DIAGRAM

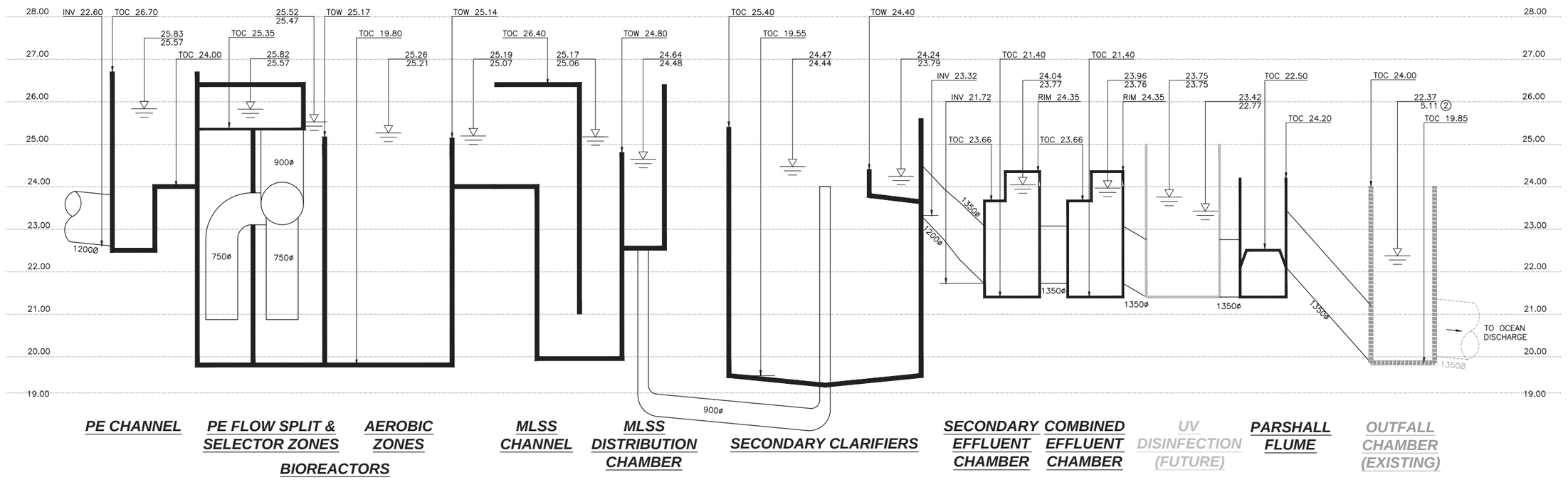
PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972-G-101.dwg
RDN DRAWING No.:
DRAWING No.: **G-101**

DESIGN FLOWS:

Q (PWWF) = 2.24 m^3/s (1)

Q (ADWF) = 39 ML/d





LEGEND

HGL AT PWWF
HGL AT ADWF
WATER LEVEL

HGL – HYDRAULIC GRADE LINE
ADWF – AVERAGE DRY WEATHER FLOW
PWWF – PEAK WET WEATHER FLOW
W/L – WATER LEVEL
INV. – INVERT
BOC – BOTTOM OF CONCRETE
TOC – TOP OF CONCRETE
TOW – TOP OF WEIR

ALL ELEVATIONS IN METRES AND ALL PIPE SIZES IN mm UNLESS OTHERWISE SHOWN.

PROPOSED STRUCTURE
FUTURE
EXISTING STRUCTURE

KEYNOTES:

(1) SECONDARY TREATMENT CAPACITY LIMITED TO MAX DAY FLOW OF 126 ML/d. REMAINING PRIMARY EFFLUENT FLOW IS CONVEYED AROUND SECONDARY TREATMENT AND MIXED AT THE COMBINED EFFLUENT CHAMBER

(2) ADWF AND PWWF HGL REFERENCED FROM OUTFALL DESIGN.

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	DDF	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	DDF	KM	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

DRN BY: DDF
DES BY: MC
CHK BY: KM
APP BY: RJK

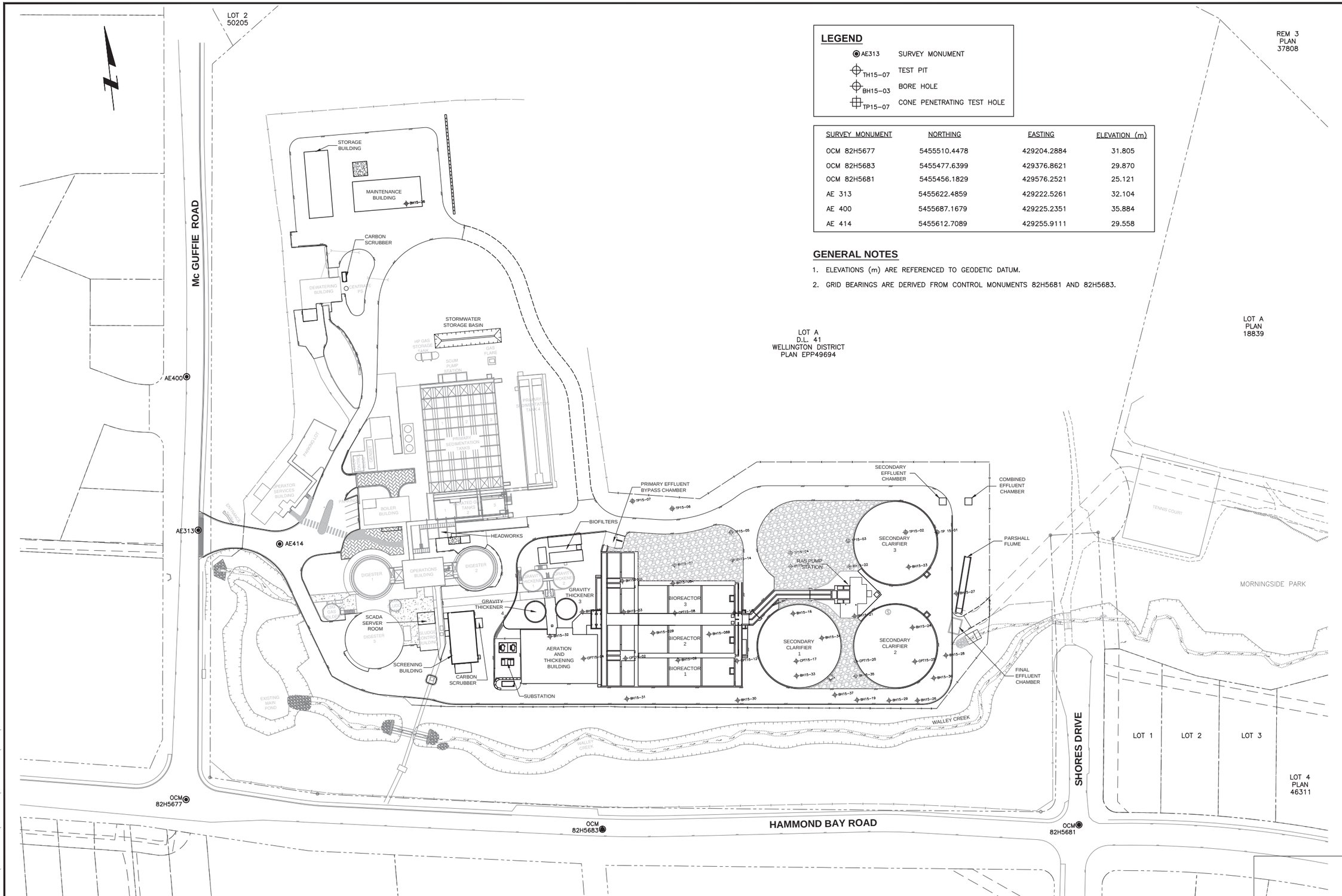
PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
GENERAL
HYDRAULIC PROFILE

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972-G-103.dwg
RDN DRAWING No.:
DRAWING No.: G-103

Project Management Initials: Designer: Checked: Approved:



LEGEND

AE313	SURVEY MONUMENT
TH15-07	TEST PIT
BH15-03	BORE HOLE
TP15-07	CONE PENETRATING TEST HOLE

SURVEY MONUMENT	NORTHING	EASTING	ELEVATION (m)
OCM 82H5677	5455510.4478	429204.2884	31.805
OCM 82H5683	5455477.6399	429376.8621	29.870
OCM 82H5681	5455456.1829	429576.2521	25.121
AE 313	5455622.4859	429222.5261	32.104
AE 400	5455687.1679	429225.2351	35.884
AE 414	5455612.7089	429255.9111	29.558

GENERAL NOTES

1. ELEVATIONS (m) ARE REFERENCED TO GEODETIC DATUM.
2. GRID BEARINGS ARE DERIVED FROM CONTROL MONUMENTS 82H5681 AND 82H5683.

0 18.75 37.5 m
SCALE IN METRES

OVERALL SITE PLAN

1:750

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	PTL	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2015/01/29

DRN BY: PTL
DES BY: KM
CHK BY: JTK
APP BY: RJK

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

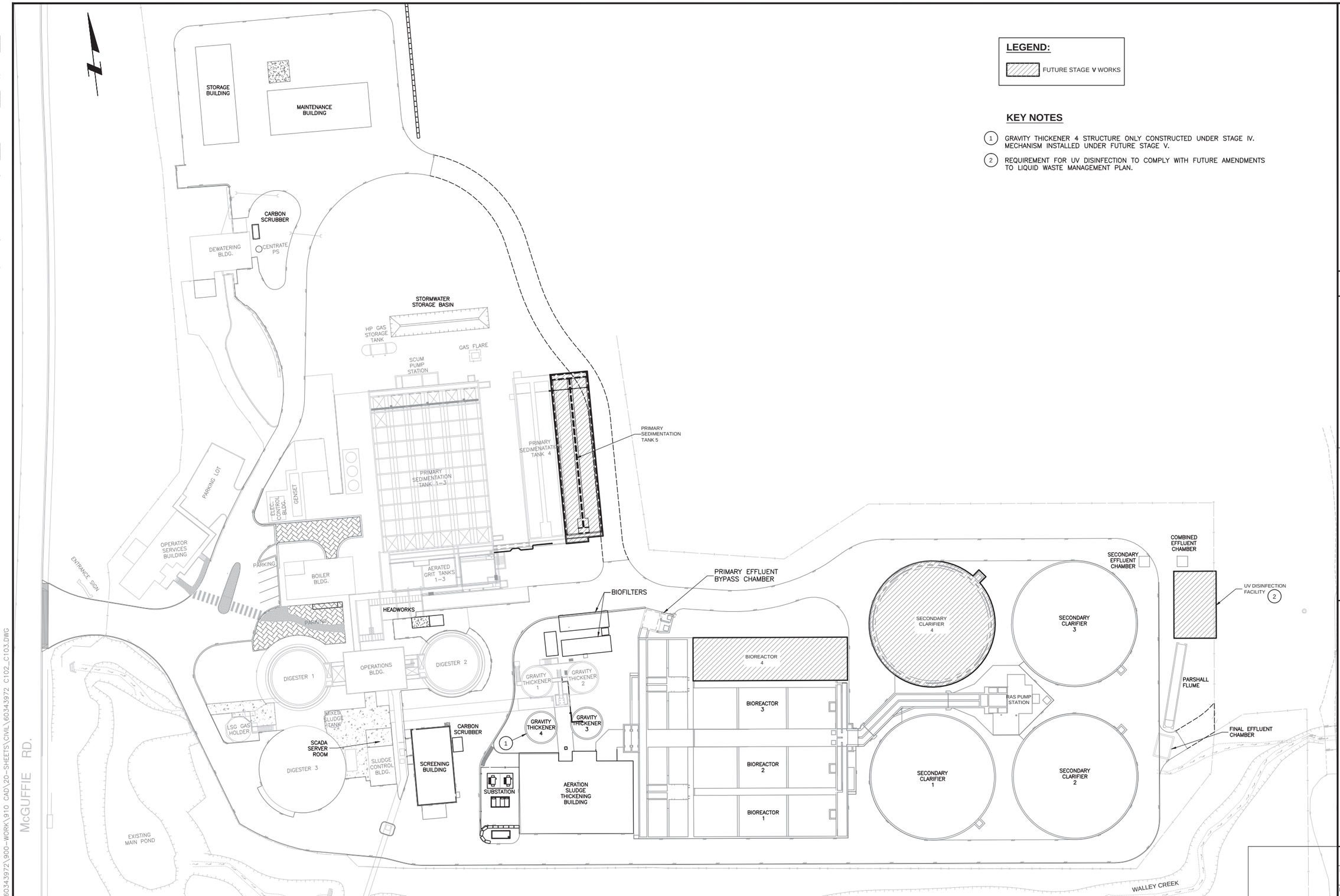
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

CIVIL
OVERALL SITE PLAN

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972 C101.dwg
RDN DRAWING No.:
DRAWING No.: **C-101**

Plotted By: leongp
Plot File Date Created: Jun/13/2016 2:20 PM
Layout-Sheet Name: C 101
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\CIVIL\60343972 C101.DWG

Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____



LEGEND:

FUTURE STAGE V WORKS

KEY NOTES

1. GRAVITY THICKENER 4 STRUCTURE ONLY CONSTRUCTED UNDER STAGE IV. MECHANISM INSTALLED UNDER FUTURE STAGE V.
2. REQUIREMENT FOR UV DISINFECTION TO COMPLY WITH FUTURE AMENDMENTS TO LIQUID WASTE MANAGEMENT PLAN.

0 12.5 25 m
SCALE IN METRES

PLAN
1:500

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	PTL	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

DRN BY: PTL
DES BY: KM
CHK BY: JTK
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4 604-444-6400

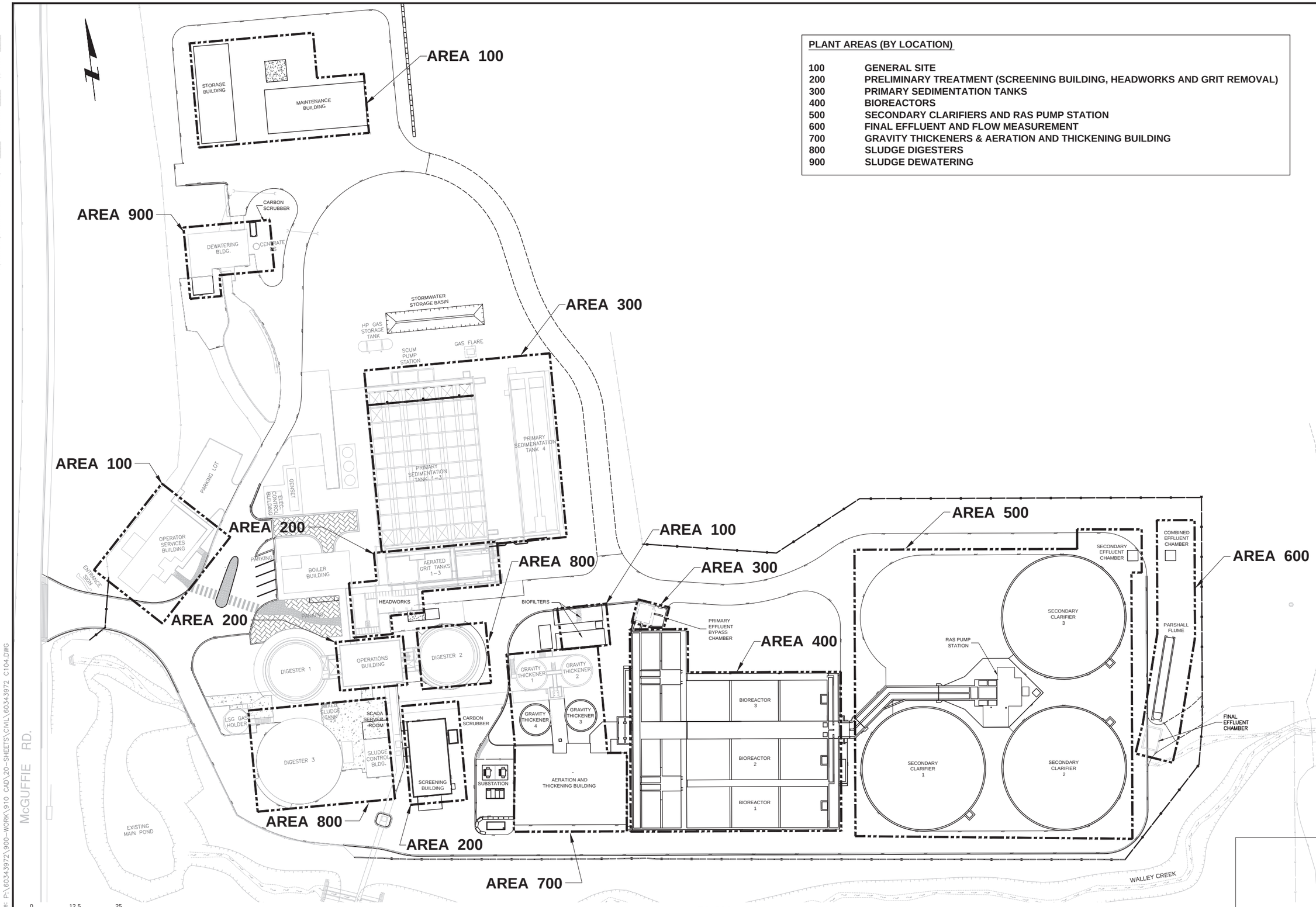
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

CIVIL
FUTURE SITE PLAN

PROJECT START DATE (M / Y): MAY / 2015
PROJECT NO.: 60343972
FILENAME: 60343972 C102_C103.dwg
RDN DRAWING No.:
DRAWING No.: **C-103**

Plotted By: leongp
Plot File Date Created: Jun/12/2016 1:04 PM
Layout–Sheet Name: C–103
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\CIVIL\60343972 C102_C103.DWG

Project Management Initials: Designer: Checked: Approved:



PLANT AREAS (BY LOCATION)

100	GENERAL SITE
200	PRELIMINARY TREATMENT (SCREENING BUILDING, HEADWORKS AND GRIT REMOVAL)
300	PRIMARY SEDIMENTATION TANKS
400	BIOREACTORS
500	SECONDARY CLARIFIERS AND RAS PUMP STATION
600	FINAL EFFLUENT AND FLOW MEASUREMENT
700	GRAVITY THICKENERS & AERATION AND THICKENING BUILDING
800	SLUDGE DIGESTERS
900	SLUDGE DEWATERING

PLAN
1:500

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	PTL	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

DRN BY: PTL
DES BY: KM
CHK BY: JTK
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

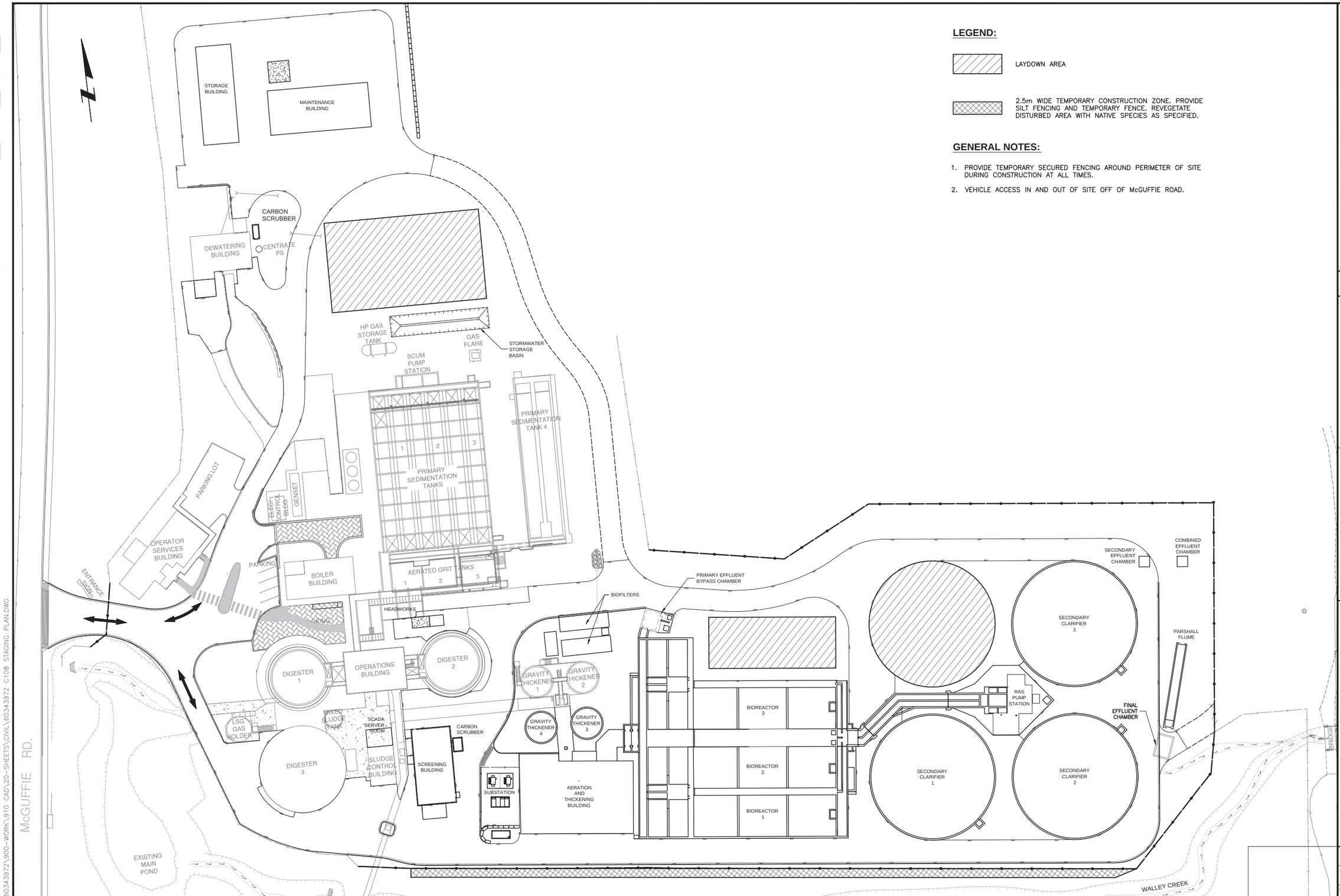
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

CIVIL
SITE AREA PLAN

PROJECT START DATE (M / Y): MAY / 2015
PROJECT NO.: 60343972
FILENAME: 60343972 C104.dwg
RDN DRAWING No.:
DRAWING No.: **C-104**

Plotted By: leongp
Plot File Date Created: Jun/12/2016 1:18 PM
Layout-Sheet Name: C-104
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\CIVIL\60343972 C104.DWG

Project Management Initials: Designer: ____ Checked: ____ Approved: ____



PLAN

LEGEND:

LAYDOWN AREA

2.5m WIDE TEMPORARY CONSTRUCTION ZONE. PROVIDE SILT FENCING AND TEMPORARY FENCE. REVEGETATE DISTURBED AREA WITH NATIVE SPECIES AS SPECIFIED.

GENERAL NOTES:

1. PROVIDE TEMPORARY SECURED FENCING AROUND PERIMETER OF SITE DURING CONSTRUCTION AT ALL TIMES.
2. VEHICLE ACCESS IN AND OUT OF SITE OFF OF McGUFFIE ROAD.

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	PTL	KM	2016/06/10

DRN BY: PTL
DES BY: KM
CHK BY: JTK
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

CIVIL
CONSTRUCTION STAGING AND LAYDOWN AREAS

PROJECT START DATE (M / Y)
MAY / 2015

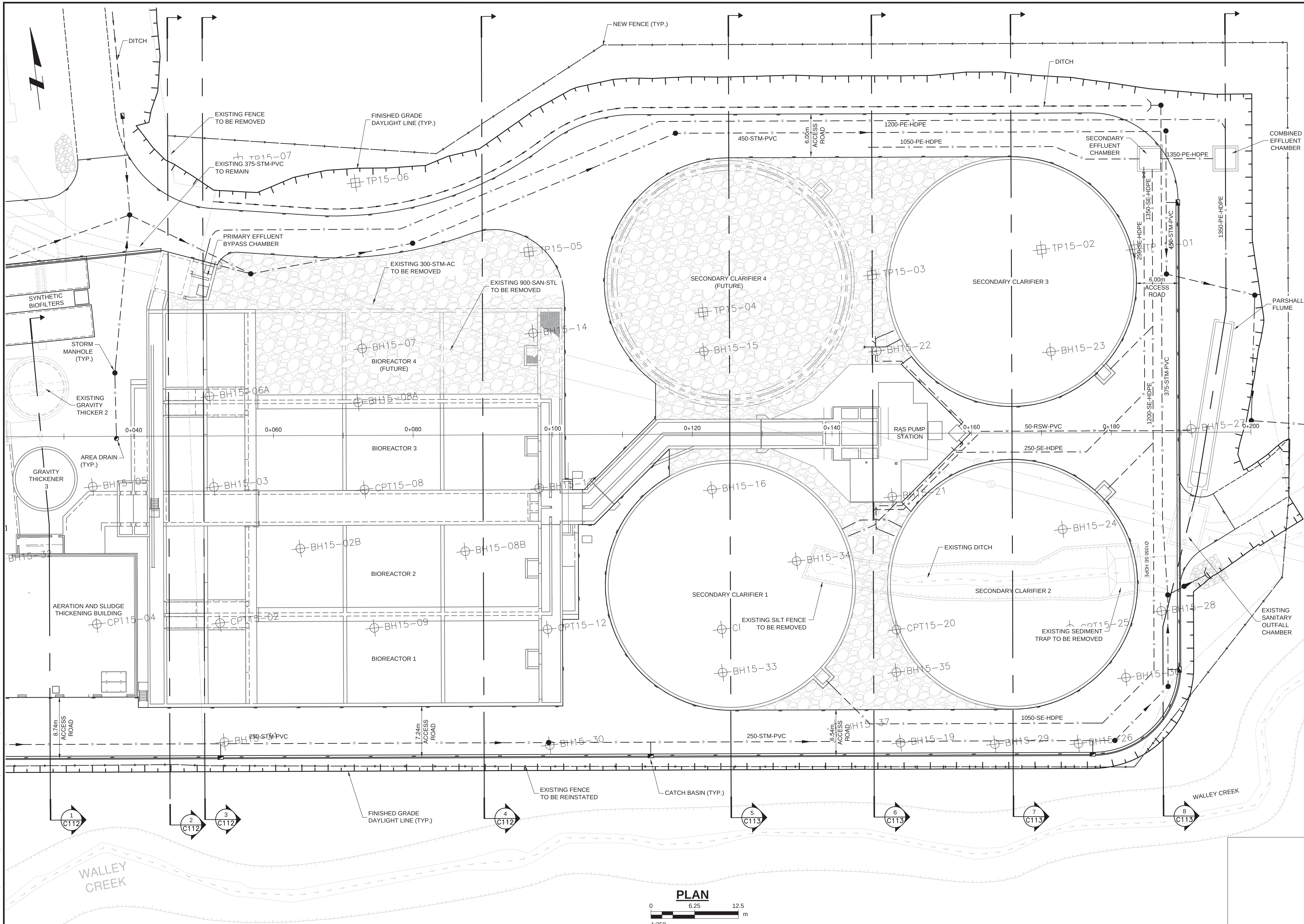
PROJECT NO.
60343972

FILENAME
60343972 C108 Staging Plan.dwg

RDN DRAWING No.

DRAWING No.
C-108

Plotted By: leongp
Plot File Date Created: Jun/12/2016 1:34 PM
Layout-Sheet Name: CONSTRUCTION STAGING PLAN
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\CIVIL\60343972 C108 STAGING PLAN.DWG



NEW FENCE (TYP.)
DITCH
EXISTING FENCE TO BE REMOVED
FINISHED GRADE DAYLIGHT LINE (TYP.)
EXISTING 375-STM-PVC TO REMAIN
PRIMARY EFFLUENT BYPASS CHAMBER
EXISTING 300-STM-AC TO BE REMOVED
EXISTING 900-SAN-STL TO BE REMOVED
SYNTHETIC BIOFILTERS
STORM MANHOLE (TYP.)
EXISTING GRAVITY THICKER 2
AREA DRAIN (TYP.)
GRAVITY THICKENER 3
AERATION AND SLUDGE THICKENING BUILDING
BIOREACTOR 4 (FUTURE)
BIOREACTOR 3
BIOREACTOR 2
BIOREACTOR 1
SECONDARY CLARIFIER 4 (FUTURE)
SECONDARY CLARIFIER 3
SECONDARY CLARIFIER 1
SECONDARY CLARIFIER 2
RAS PUMP STATION
SECONDARY EFFLUENT CHAMBER
COMBINED EFFLUENT CHAMBER
PARSHALL FLUME
EXISTING SANITARY OUTFALL CHAMBER
EXISTING DITCH
EXISTING SILT FENCE TO BE REMOVED
EXISTING SEDIMENT TRAP TO BE REMOVED
450-STM-PVC
1200-PE-HDPE
1050-PE-HDPE
1350-PE-HDPE
1350-SE-HDPE
450-STM-PVC
250-SE-HDPE
375-STM-PVC
1200-SE-HDPE
50-RSW-PVC
250-SE-HDPE
1050-SE-HDPE
250-STM-PVC
6.00m ACCESS ROAD
8.74m ACCESS ROAD
7.24m ACCESS ROAD
6.54m ACCESS ROAD
0+040
0+060
0+080
0+100
0+120
0+140
0+160
0+180
0+200
TP15-02
TP15-03
TP15-04
TP15-05
TP15-06
TP15-07
BH15-03
BH15-05
BH15-06A
BH15-07
BH15-08A
BH15-02B
BH15-08B
BH15-09
BH15-14
BH15-15
BH15-16
BH15-19
BH15-21
BH15-22
BH15-23
BH15-24
BH15-26
BH15-27
BH15-28
BH15-29
BH15-30
BH15-32
BH15-33
BH15-34
BH15-35
BH15-37
CPT15-02
CPT15-04
CPT15-08
CPT15-12
CPT15-20
CPT15-25
EXISTING FENCE TO BE REINSTATED
CATCH BASIN (TYP.)
WALLEY CREEK
1 C112
2 C112
3 C112
4 C112
5 C113
6 C113
7 C113
8 C113
PLAN
0
6.25
12.5
m
1:250

Plotted By: leongp
Plot File Date Created: Jun/13/2016 9:31 AM
Layout-Sheet Name: C111
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\CIVIL\60343972_C111 TO C114.DWG

Project Management Initials: Designer: Checked: Approved:

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	EYU	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

30 mm — VERIFY SCALE IF PLAN SHEET IS REDUCED

DRN BY: PTL
DES BY: KM
CHK BY: KM
APP BY: RJK

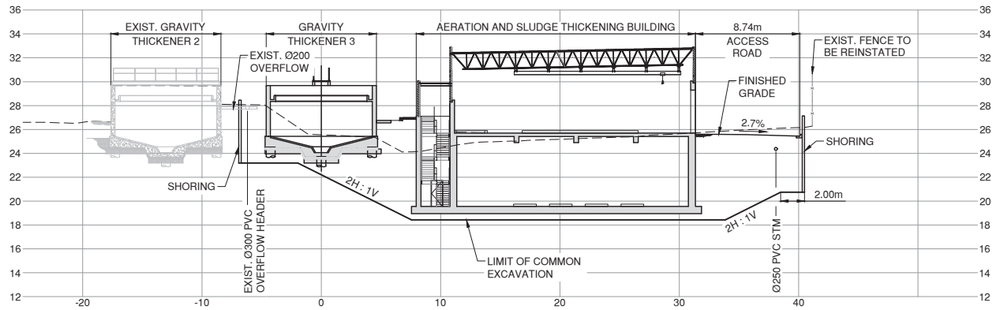
PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

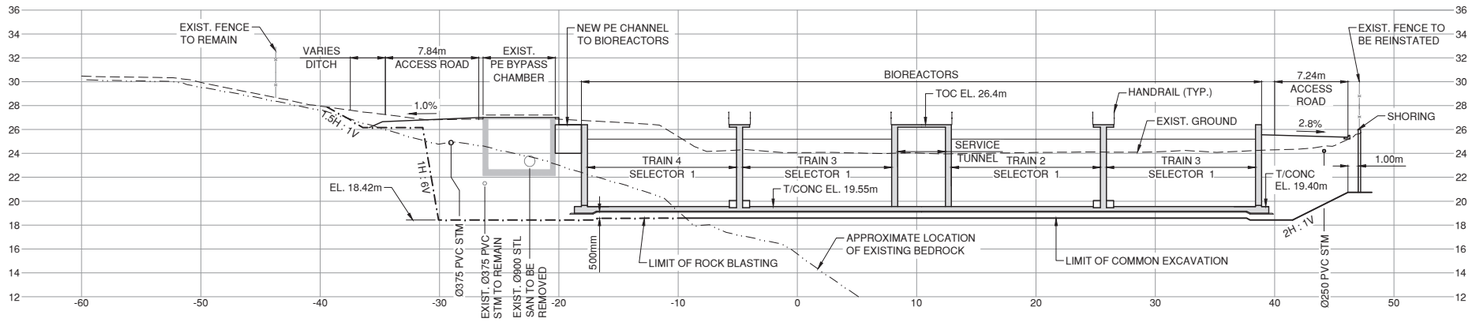
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE SECONDARY TREATMENT UPGRADE

CIVIL EXCAVATION PLAN

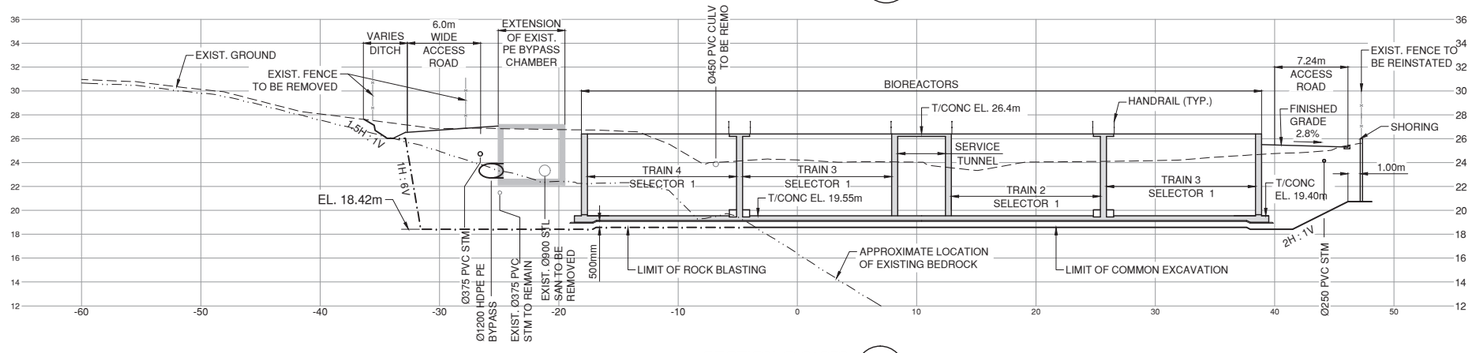
PROJECT START DATE (M / Y): MAY / 2015
PROJECT NO.: 60343972
FILENAME: 60343972 C111 to C114.dwg
RDN DRAWING No.:
DRAWING No.: C-111



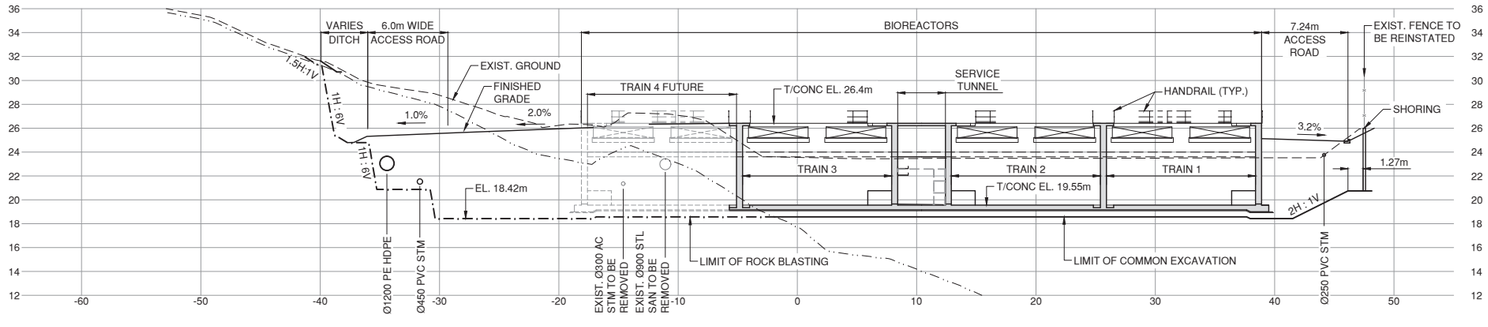
SECTION @ 0+027 (1 / C–111)
SCALE – 1:250



SECTION @ 0+045 (2 / C–111)
SCALE – 1:250



SECTION @ 0+050 (3 / C–111)
SCALE – 1:250



SECTION @ 0+090 (4 / C–111)
SCALE – 1:250

0 6.25 12.5 m
1:250

Project Management Initials: Designer: ____ Checked: ____ Approved: ____

Plotted By: leongp
Plot File Date Created: Jun/13/2016 2:23 PM
Layout-Sheet Name: C112
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\CIVIL\60343972 C111 TO C114.DWG

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	EYU	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

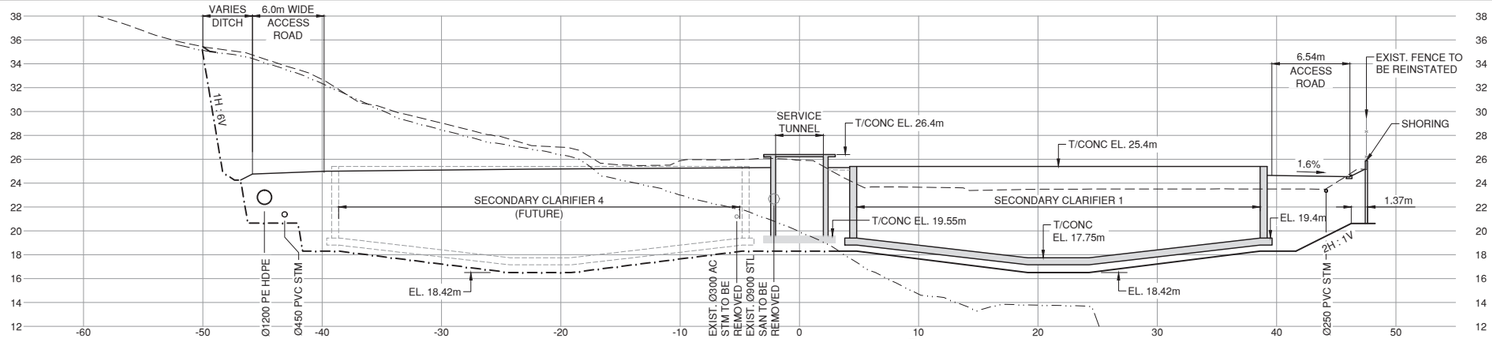
DRN BY: PTL
DES BY: KM
CHK BY: KM
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

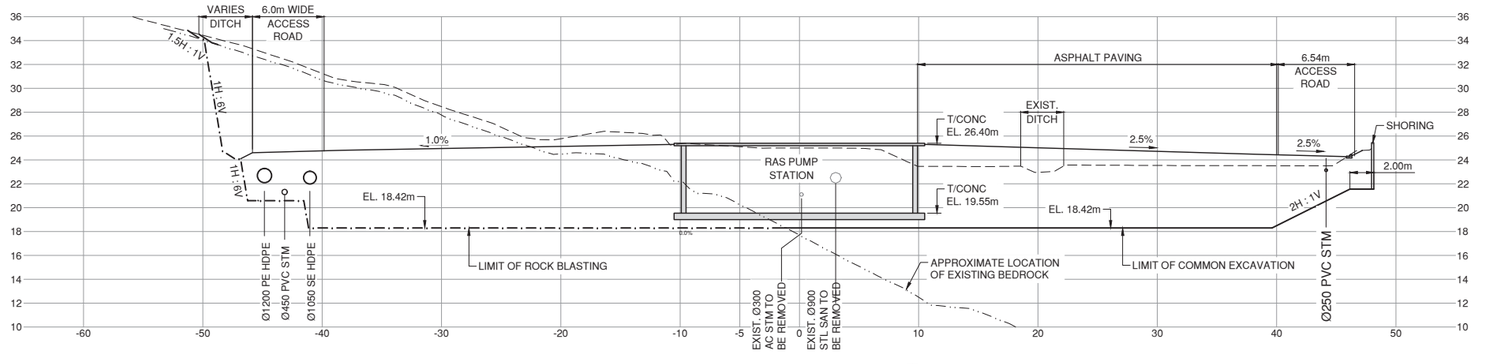
PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE SECONDARY TREATMENT UPGRADE
CIVIL
EXCAVATION SECTIONS - SHEET 1
SECTIONS 1, 2, 3 AND 4

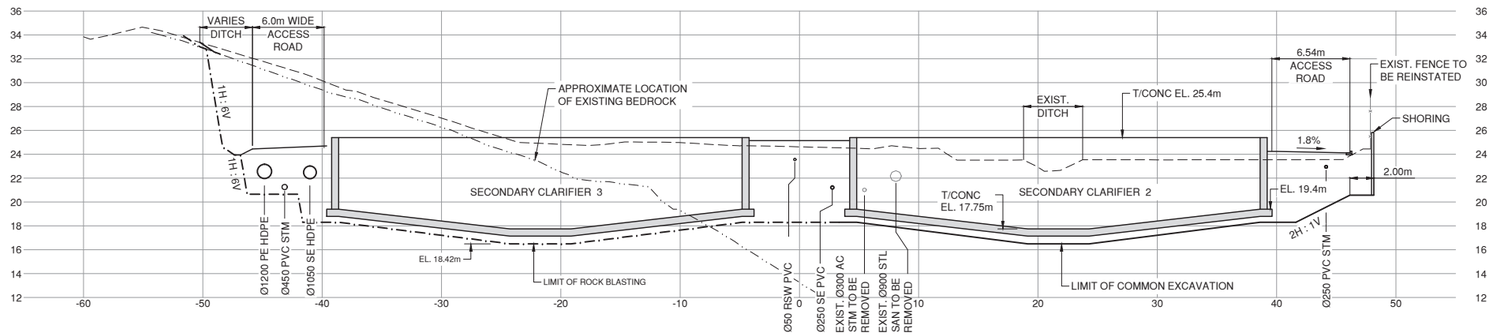
PROJECT START DATE (M / Y): MAY / 2015
PROJECT NO.: 60343972
FILENAME: 60343972 C111 to C114.dwg
RDN DRAWING No.:
DRAWING No.: C-112



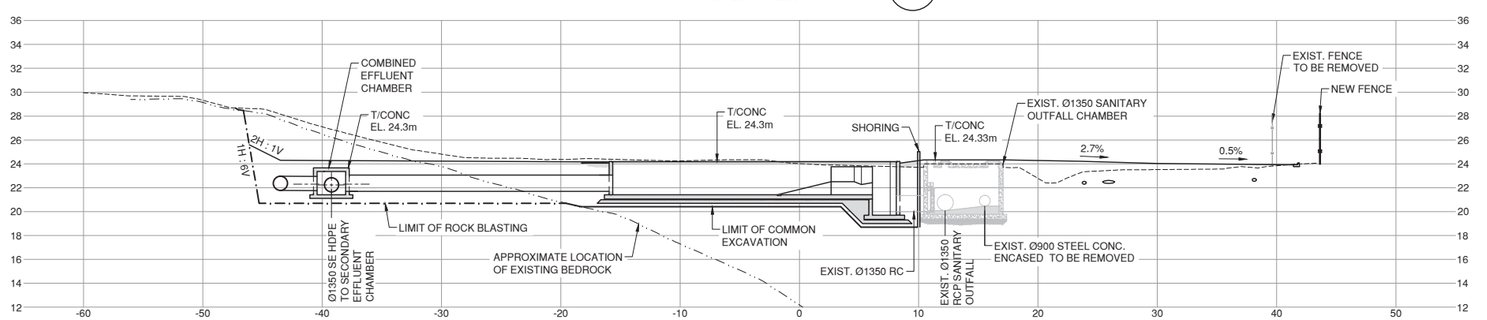
SECTION @ 0+125 5
SCALE – 1:250 C–111



SECTION @ 0+146 6
SCALE – 1:250 C–111



SECTION @ 0+166 7
SCALE – 1:250 C–111



SECTION @ 0+196 8
SCALE – 1:250 C–111

0 6.25 12.5 m
1:250

Project Management Initials: Designer: ____ Checked: ____ Approved: ____

Plotted By: leongp
Plot File Date Created: Jun/12/2016 3:34 PM
Layout–Sheet Name: C113
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\CIVIL\60343972 C111 TO C114.DWG

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	EY	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

DRN BY: PTL
DES BY: KM
CHK BY: KM
APP BY: RJK

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
CIVIL
EXCAVATION SECTIONS - SHEET 2
SECTIONS 5, 6, 7 AND 8

PROJECT START DATE (M / Y)
MAY / 2015
PROJECT NO.
60343972
FILENAME
60343972 C111 to C114.dwg
RDN DRAWING No.
DRAWING No.
C-113

Project Management Initials: Designer: Checked: Approved:

FOR CONTINUATION - SEE DRAWING C-122

KEY NOTES

1. TIE–IN TO EXISTING 300 DIA. D.I. THICKENER OVERFLOW PIPE.
2. EXISTING 100 DIA. STEEL SCUM, 150 DIA. STEEL DS AND 150 DIA. AC DRAIN LINES ARE ABANDONED AND TO BE DEMOLISHED. REFER TO DRAWING C–107 FOR FURTHER DETAILS.
3. EXISTING 2 x 100 DIA. STEEL SLUDGE LINES, 100 DIA. PVC CENTRATE LINE, 2 x 65 DIA. STEEL HRS/HRR (INSULATED) LINES TO BE DEMOLISHED. MAINTAIN IN SERVICE PRIOR TO DEMOLITION AND INSTALLATION OF NEW LINES. REFER TO DRAWING C–107 FOR FURTHER DETAILS.
4. TIE–IN TO EXISTING 65 DIA. PE NATURAL GAS LINE.
5. TIE–IN TO EXISTING 150 DIA. PVC POTABLE WATER LINE

FOR CONTINUATION - SEE DRAWING C-123

McGUFFIE ROAD

PARKING LOT
150–SAN–PVC
150–PW–PVC
ELEC/CONTROL BUILDING
GENSET
OPERATOR SERVICE BUILDING
65–G–PE
PARKING
50–HRR–STL
50–HRS–STL
78–TEL
78–ELEC
78–SPARE
78–FIBRE
BOILER BUILDING
150–STM–PVC
ENTRANCE SIGN
ENTRY GATE
PARKING
PRIMARY SEDIMENTATION TANKS 1–3
900–PE–RC (ABANDONED)
1200–PE–RC
375–STM–PVC
PRIMARY SEDIMENTATION TANK 4
6 x 103 ELEC.
75–PSW–GS
25–HPA–GS
75–PS–DI
MH 2 (ABANDONED)
PE MH 6
200–STM–PVC
250–STM–PVC
AERATED GRIT TANKS 1–3
CONC. PLUG
HEADWORKS
250–STM–PVC
350–FOA–PVC
1500 1650 RC BOX CULVERT
PE MH 7
1x53 ELEC
PE BYPASS CHAMBER
0+000
900–PE–ST
BIOFILTERS
Ø1800 FE HDPE IN: 22.72
2x53 ELEC
1x103 ELEC
DIGESTER 1
OPERATIONS BUILDING
DIGESTER 2
GRAVITY THICKENER 1
GRAVITY THICKENER 2
GRAVITY THICKENER 3
GRAVITY THICKENER 4
CO
300–TO–DI
INV. 27.80
INV. 26.55
INV. 24.32
INV. 24.30
BIOREACTOR 3
BIOREACTOR 2
BIOREACTOR 1
65–NG–PE
200–STM–PVC
150–PW–PVC
INV. 26.55
2–600 STM RC CULVERTS (TO BE DEMOLISHED)
MIXED SLUDGE TANK
EX. ROOF DRAIN (TYP.)
LSG GAS HOLDER
SCADA SERVER ROOM
INV. 27.70
300–TO–PVC (CONC. ENCASED)
CARBON SCRUBBER
SCREENING BUILDING
DIGESTER 3
SLUDGE CONTROL BUILDING
150–STM
INV. 27.10
INVERTS
NW 26.46
NE 26.46
SE 26.48
AERATION AND THICKENING BUILDING
SUBSTATION
FUEL TANK
150–STM–PVC
INV. 26.55
NW INV. 26.33
NE 26.36
SE 26.31
300–STM–PVC
NW INV. 25.80
EXISTING MAIN POND

0 6.25 12.5 m
SCALE IN METRES

PLAN
1:250

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	PTL	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

DRN BY: PTL
DES BY: KM
CHK BY: JTK
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

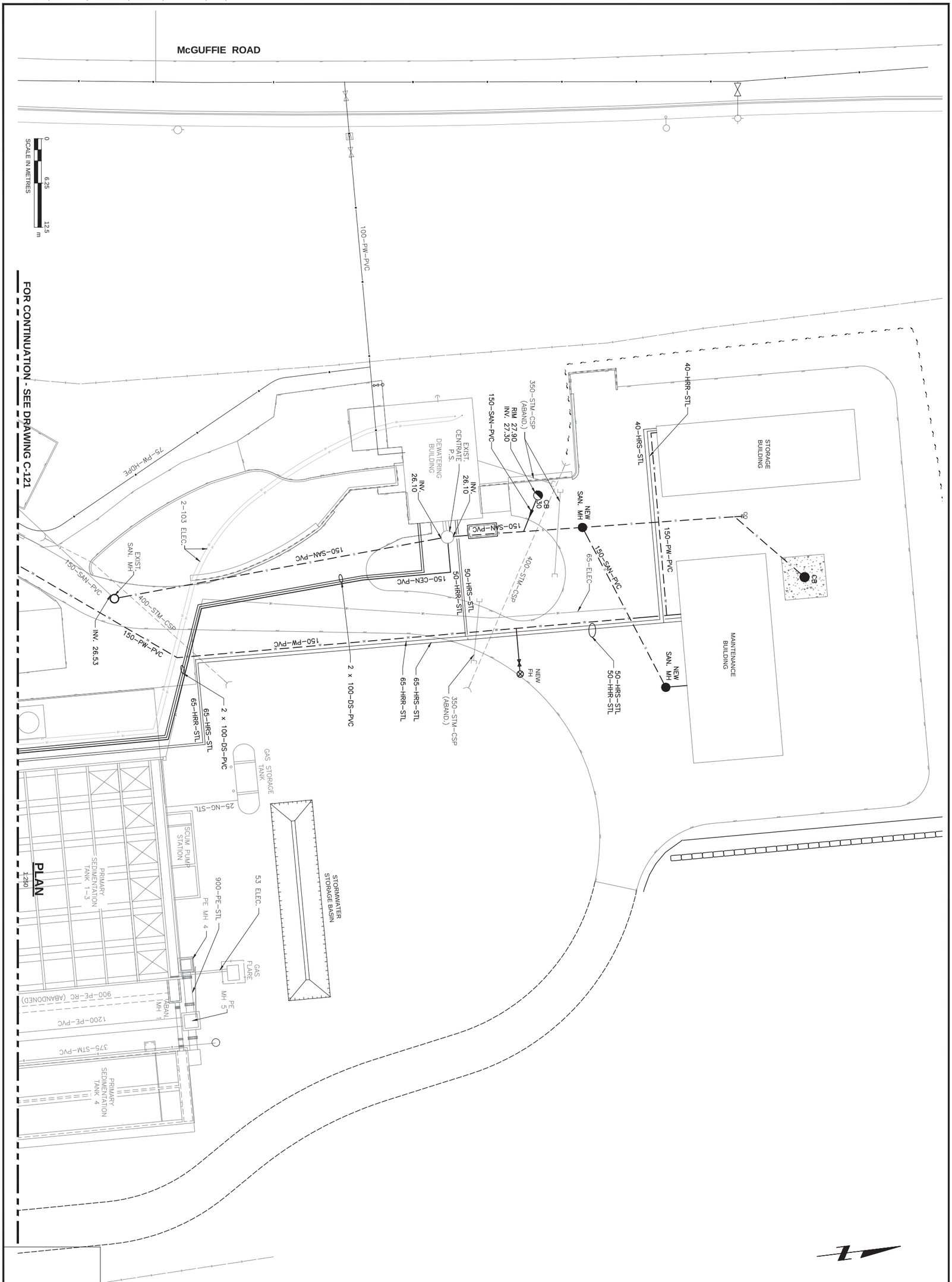
CIVIL
YARD PIPING PLAN
SHEET 1

PROJECT START DATE (M / Y)	MAY / 2015
PROJECT NO.	60343972
FILENAME	60343972 C121_122_123 YP Plans.dwg
RDN DRAWING No.	
DRAWING No.	C-121

Plotted By: leongp
Plot File Date Created: Jun/12/2016 2:17 PM
Layout–Sheet Name: C121
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\CIVIL\60343972 C121_122_123 YP PLANS.DWG

Plotted By: leongp
Plot File Date Created: Jun/12/2016 2:24 PM
Layout-Sheet Name: C122
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\CIVIL\60343972 C121_122_123 YP PLANS.DWG

Project Management Initials: Designer: _____ Checked: _____ Approved: _____



DRN BY:	30 mm — VERIFY SCALE IF PLAN SHEET IS REDUCED				
PTL					
DES BY:					
KM					
CHK BY:					
JTK	B	ISSUED FOR 90% DETAILED DESIGN REVIEW			
APP BY:	A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29
RJK	REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

CIVIL
YARD PIPING PLAN
SHEET 2

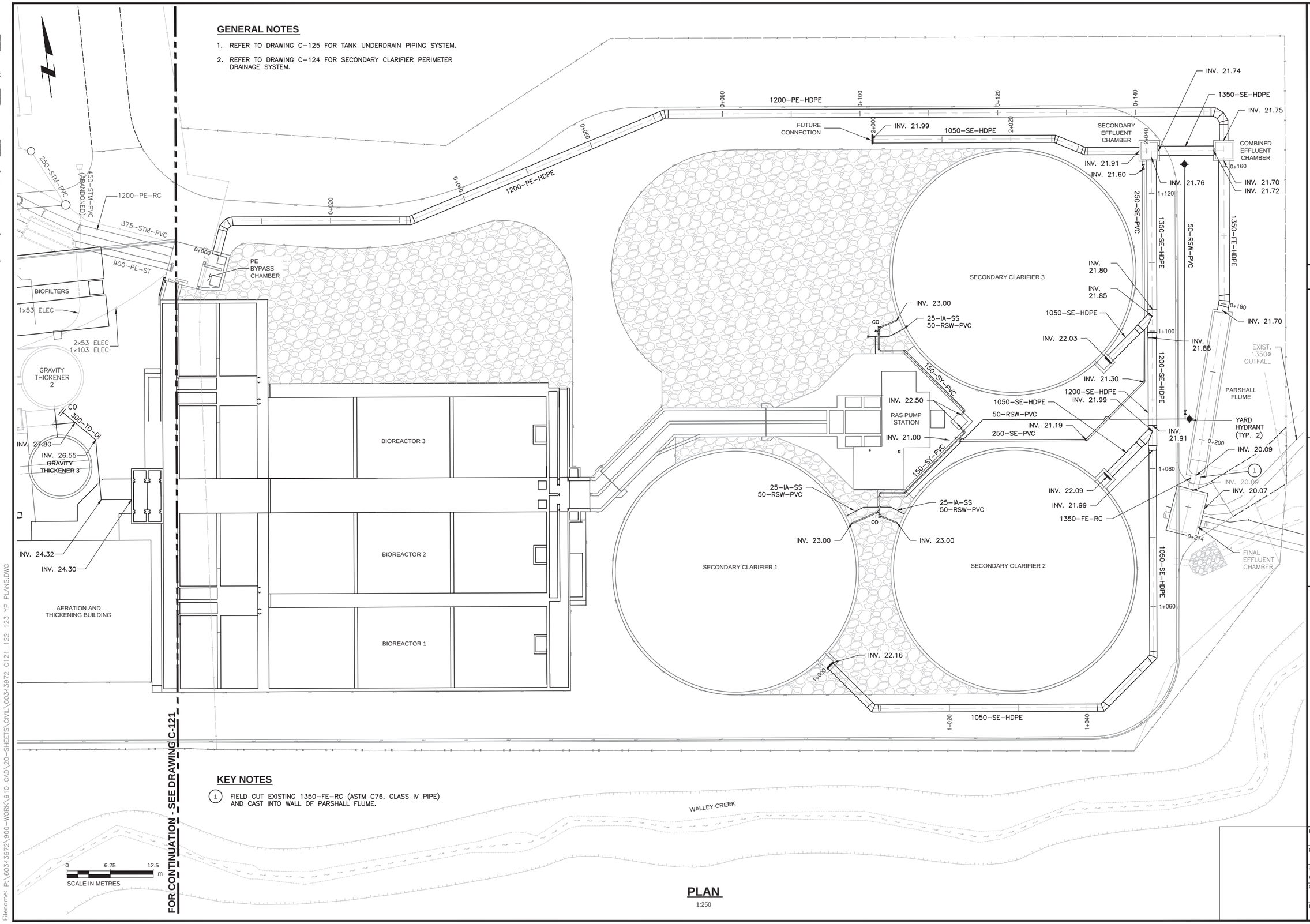
PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PROJECT START DATE (M/Y): MAY/2015
PROJECT NO.: 60343972
FILENAME: 60343972 C121_122_123 YP Plans.dwg
RDN DRAWING No.:
DRAWING No.: C-122

GENERAL NOTES

1. REFER TO DRAWING C-125 FOR TANK UNDERDRAIN PIPING SYSTEM.
2. REFER TO DRAWING C-124 FOR SECONDARY CLARIFIER PERIMETER DRAINAGE SYSTEM.



KEY NOTES

(1) FIELD CUT EXISTING 1350-FE-RC (ASTM C76, CLASS IV PIPE) AND CAST INTO WALL OF PARSHALL FLUME.

PLAN

1:250

DES	CHK	DATE (Y/M/D)
PTL	KM	2016/06/10
PTL	KM	2016/01/29
DRN	CHK	DATE (Y/M/D)

B ISSUED FOR 90% DETAILED DESIGN REVIEW
A ISSUED FOR 60% DETAILED DESIGN REVIEW
REV DESCRIPTION

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

DRN BY: PTL
DES BY: KM
CHK BY: JTK
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

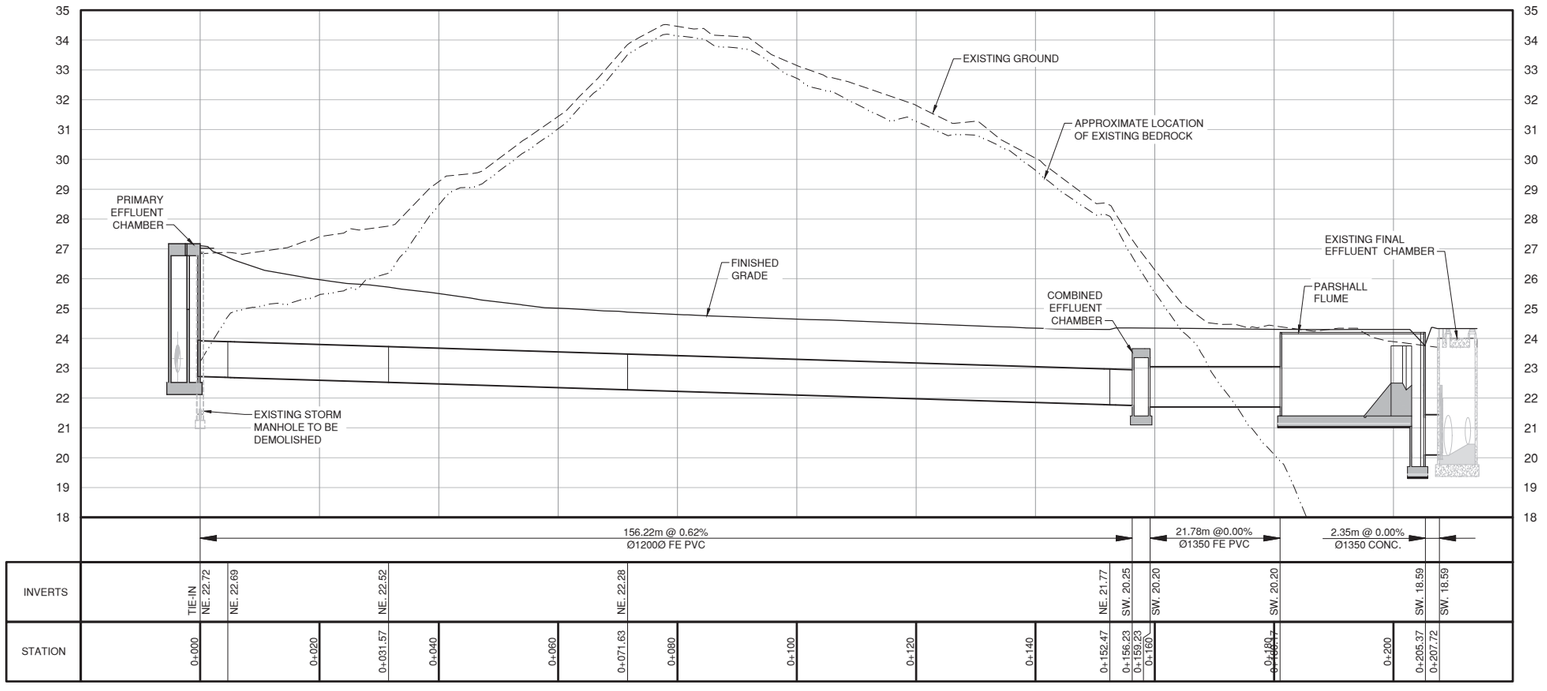
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

CIVIL
YARD PIPING PLAN
SHEET 3

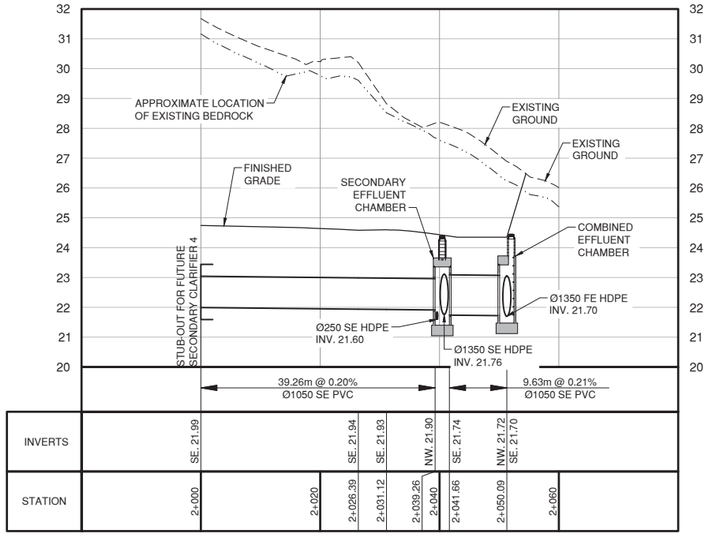
PROJECT START DATE (M / Y): MAY / 2015
PROJECT NO.: 60343972
FILENAME: 60343972 C121_122_123 YP Plans.dwg
RDN DRAWING No.:
DRAWING No.: **C-123**

Project Management Initials: Designer: ____ Checked: ____ Approved: ____

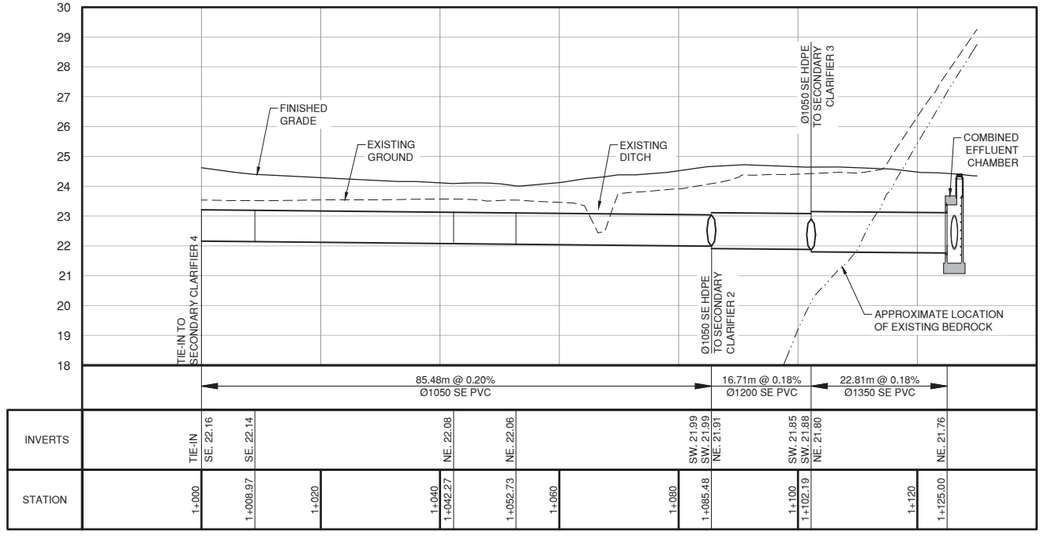
Plotted By: leongp
Plot File Date Created: Jun/12/2016 2:35 PM
Layout-Sheet Name: C123
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\CIVIL\60343972 C121_122_123 YP PLANS.DWG



PROFILE - Ø1200 FINAL EFFLUENT LINE



PROFILE - SECONDARY EFFLUENT LINE



PROFILE - SECONDARY EFFLUENT LINE

0 12.5 25 m
H. 1:500

0 2.5 5 m
V. 1:100

Project Management Initials: Designer: ____ Checked: ____ Approved: ____

Plotted By: yue1
Plot File Date Created: Jun/10/2016 1:04 PM
Layout-Sheet Name: C124
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\CIVIL\60343972 C124.DWG

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	EYU	KM	2016/06/10

DRN BY: EYU
DES BY: KM
CHK BY: JTK
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

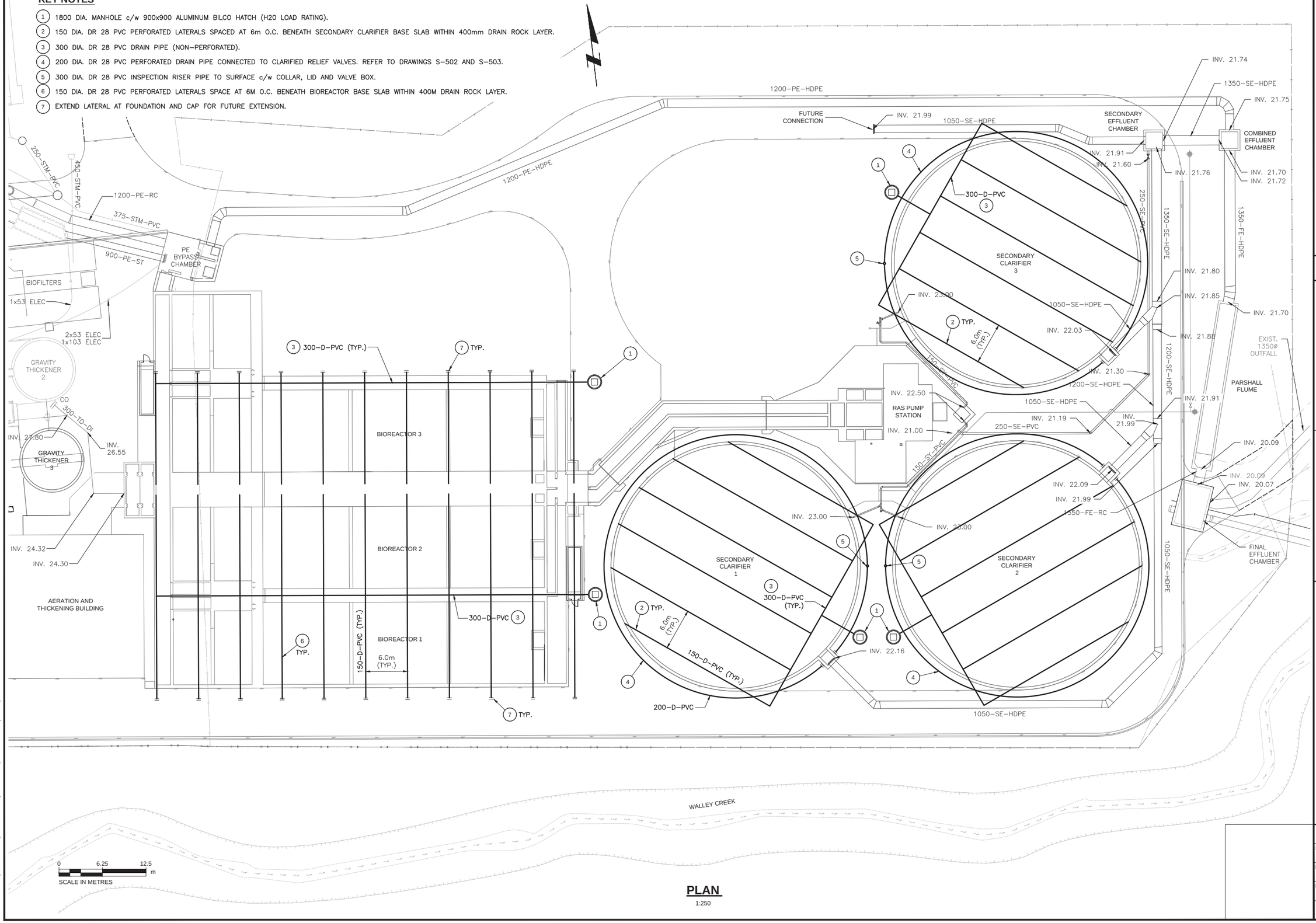
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

CIVIL
YARD PIPING PROFILES

PROJECT START DATE (M / Y): MAY / 2015
PROJECT NO.: 60343972
FILENAME: 60343972 C124.dwg
RDN DRAWING No.:
DRAWING No.: **C-124**

KEY NOTES

1. 1800 DIA. MANHOLE c/w 900x900 ALUMINUM BILCO HATCH (H20 LOAD RATING).
2. 150 DIA. DR 28 PVC PERFORATED LATERALS SPACED AT 6m O.C. BENEATH SECONDARY CLARIFIER BASE SLAB WITHIN 400mm DRAIN ROCK LAYER.
3. 300 DIA. DR 28 PVC DRAIN PIPE (NON-PERFORATED).
4. 200 DIA. DR 28 PVC PERFORATED DRAIN PIPE CONNECTED TO CLARIFIED RELIEF VALVES. REFER TO DRAWINGS S-502 AND S-503.
5. 300 DIA. DR 28 PVC INSPECTION RISER PIPE TO SURFACE c/w COLLAR, LID AND VALVE BOX.
6. 150 DIA. DR 28 PVC PERFORATED LATERALS SPACE AT 6M O.C. BENEATH BIOREACTOR BASE SLAB WITHIN 400M DRAIN ROCK LAYER.
7. EXTEND LATERAL AT FOUNDATION AND CAP FOR FUTURE EXTENSION.



PLAN
1:250

Project Management Initials: Designer: Checked: Approved:

Plotted By: leongp
Plot File Date Created: Jun/12/2016 2:42 PM
Layout-Sheet Name: C-125
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\CIVIL\60343972 C125.DWG

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	PTL	KM	2016/06/10

DRN BY: PTL
DES BY: KM
CHK BY: JTK
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

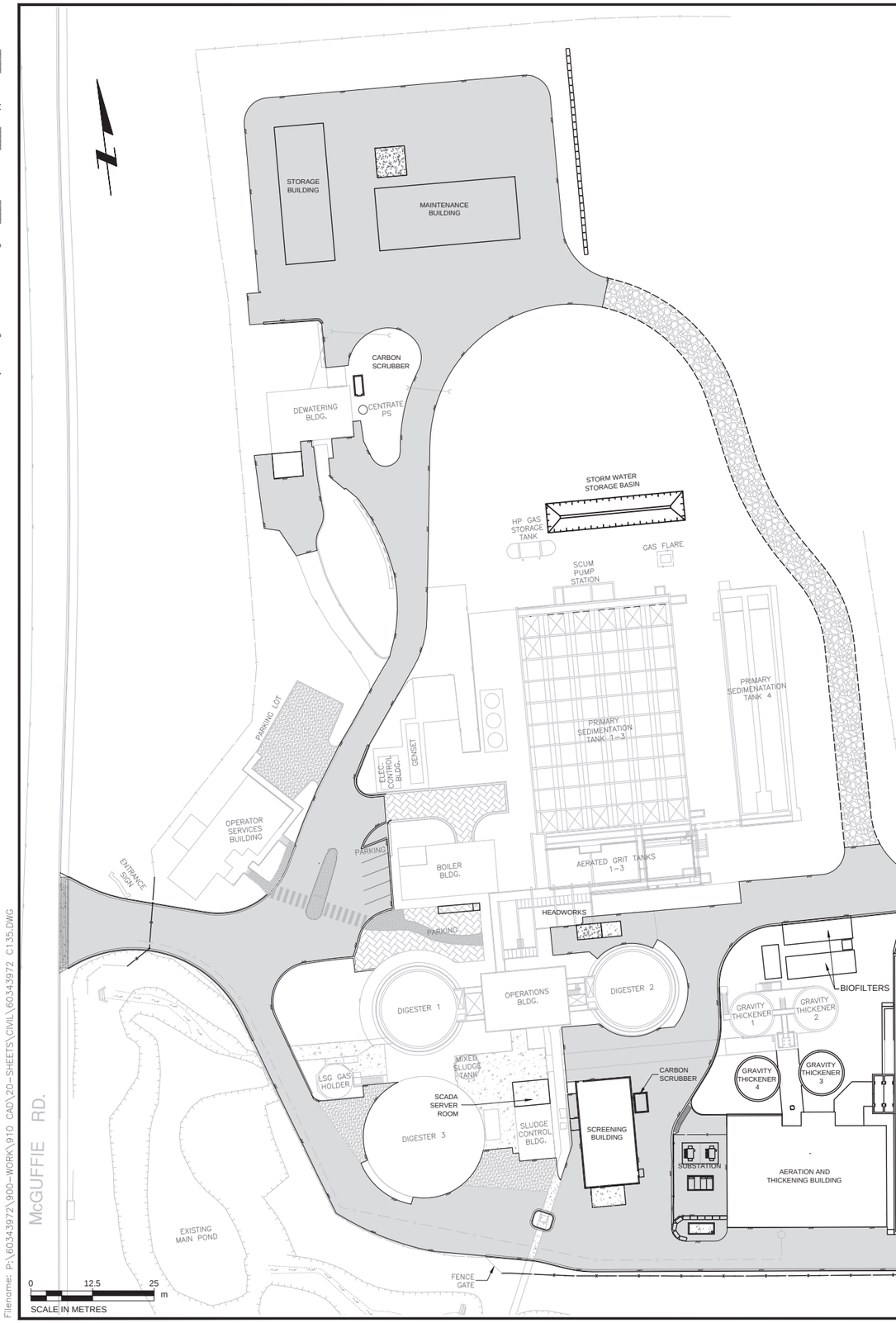
PREPARED BY: AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-5400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

CIVIL
TANK UNDERDRAIN PLAN

PROJECT START DATE (M / Y)	MAY / 2015
PROJECT NO.	60343972
FILENAME	60343972 C125.dwg
RDN DRAWING No.	
DRAWING No.	C-125

Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____



LEGEND:

- EXISTING ASPHALT BRICK
- EXISTING ASPHALT
- EXISTING CONCRETE
- NEW CONCRETE
- NEW ASPHALT
- NEW CRUSHED ROCK (19mm)
- NEW GRAVEL ROAD
- NEW STAMPED AND COLORED ASPHALT PATHWAY

0 12.5 25 m
SCALE IN METRES

PLAN
1:500

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	PTL	KM	2016/06/10

DRN BY: PTL
DES BY: KM
CHK BY: JTK
APP BY: RJK

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

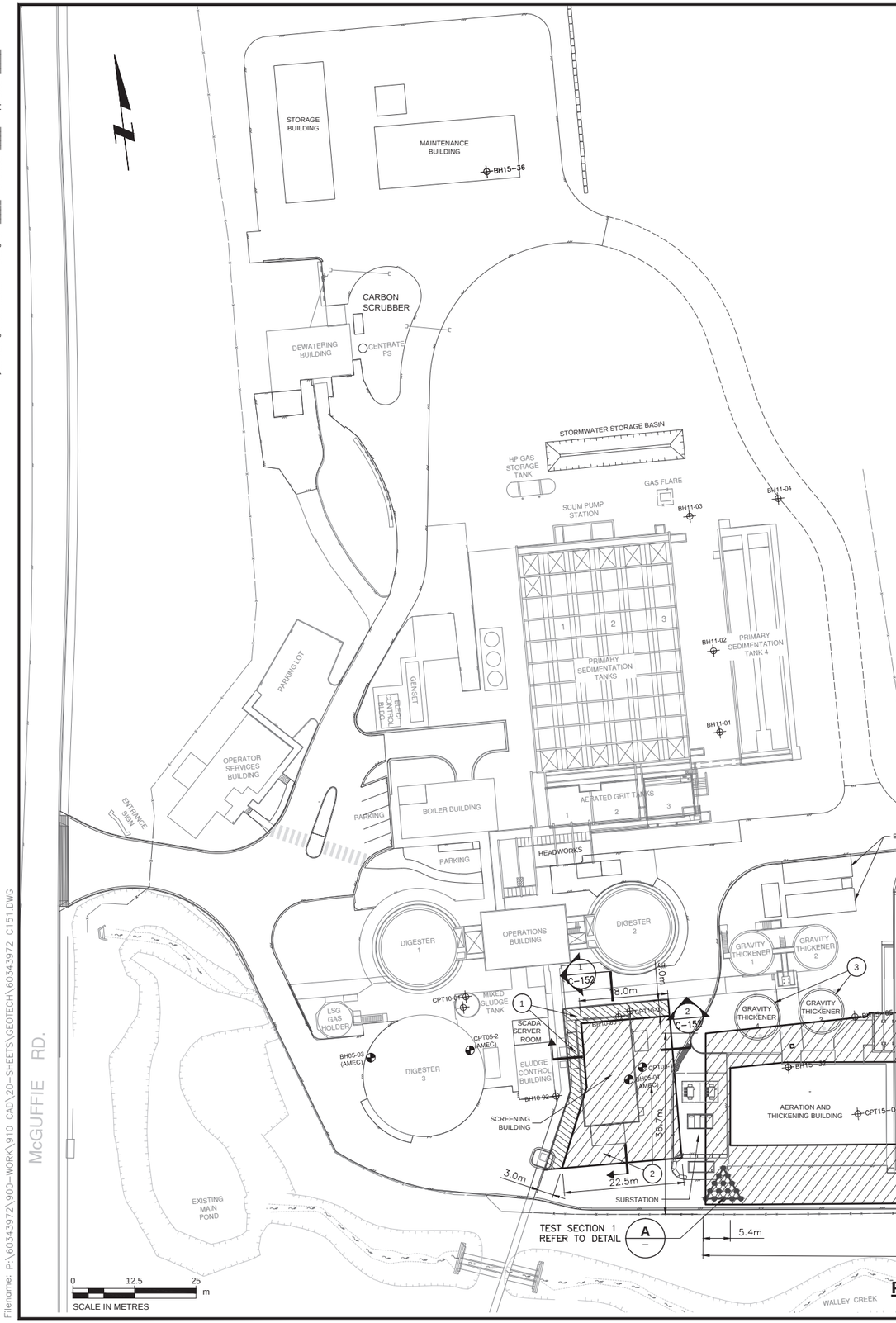
PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
CIVIL
ROADWORKS AND PAVEMENT PLAN

PROJECT START DATE (M / Y)	MAY / 2015
PROJECT NO.	60343972
FILENAME	60343972 C135.dwg
RDN DRAWING No.	
DRAWING No.	C-135

Plotted By: leongp
Plot File Date Created: Jun/12/2016 3:13 PM
Layout-Sheet Name: C-135
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\CIVIL\60343972 C135.DWG

Project Management Initials: ____ Designer: ____ Checked: ____ Approved: ____



0 12.5 25 m
SCALE IN METRES

PLAN
1:500

LEGEND:

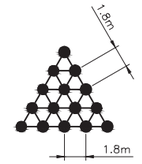
- GROUND DENSIFICATION AREA
- 3.0m CLEARANCE ZONE
- TH15-07 TEST PIT
- BH15-03 BORE HOLE
- TP15-07 CORE PENETRATING TEST HOLE

GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR DETAILS.

KEY NOTES:

1. MAINTAIN 3.0m CLEARANCE FROM EXISTING STRUCTURES.
2. GROUND IMPROVEMENT OUTLINE TO EXTEND 8.0m OUTSIDE OF BUILDING FOUNDATION.
3. REFER TO DRAWING S-701 FOR GRAVITY THICKENER 3 AND 4 STEEL PILE LAYOUT.



TYPICAL TEST SECTION CONFIGURATION

DETAIL A
SCALE – 1:250

DRN BY: DK	DES BY: DK	CHK BY: CM	APP BY: KM

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	PTL	KM	2016/06/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 20 mm

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

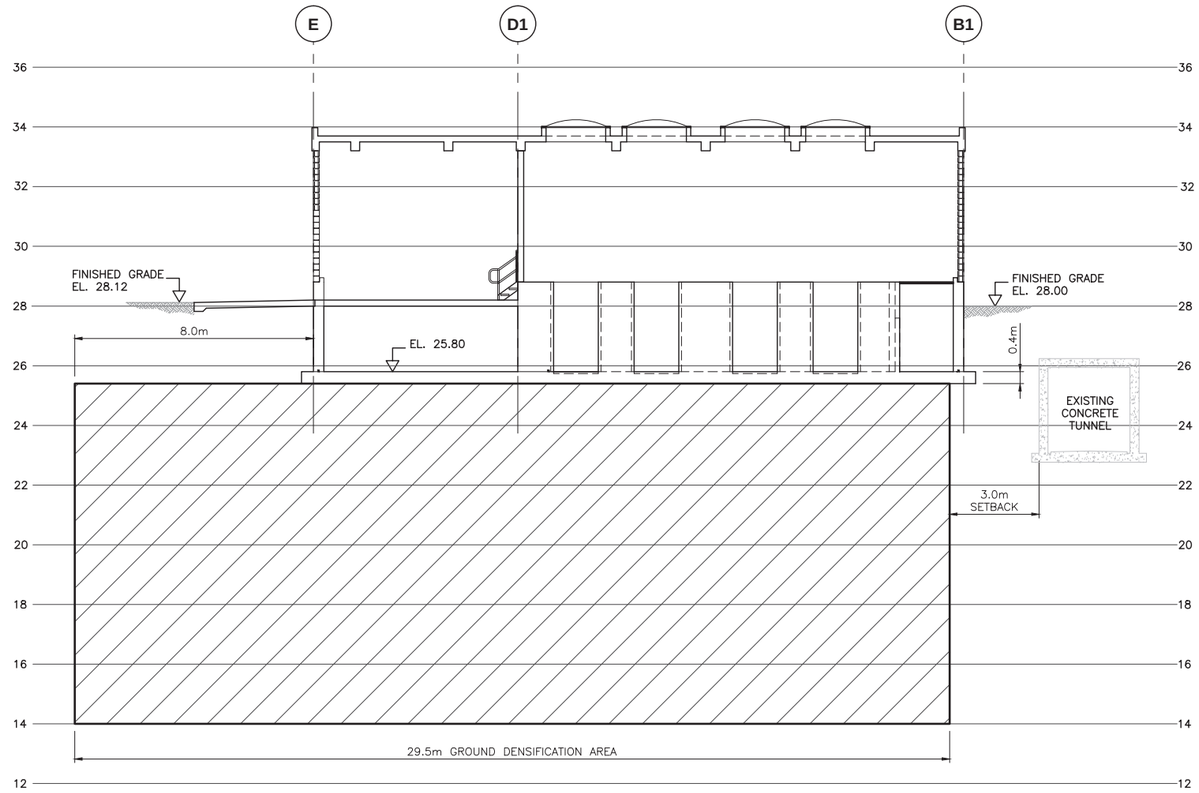
PREPARED BY:
WSP
1935 BOLLINGER ROAD
NANAIMO, B.C., V9S 5W9
250-753-1077

AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

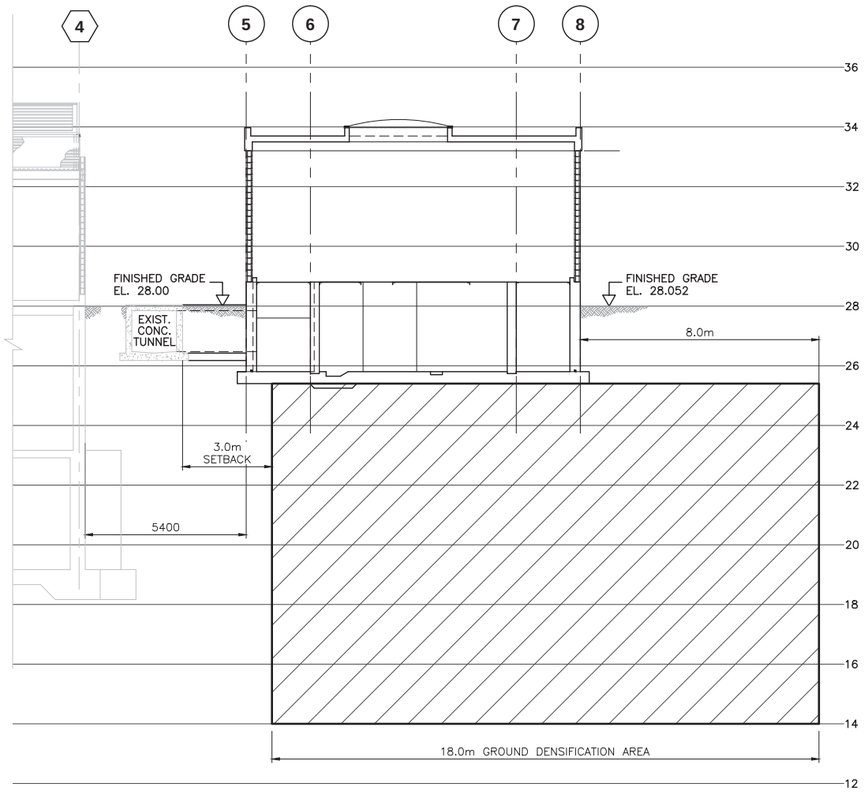
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE SECONDARY TREATMENT UPGRADE
CIVIL
GROUND IMPROVEMENT PLAN

PROJECT START DATE (M / Y)	MM/YY/2015
PROJECT NO.	60343972
FILENAME	60343972-C151.dwg
RDN DRAWING No.	
DRAWING No.	C-151

Plotted By: leongp
Plot File Date Created: Jun/29/2016 2:31 PM
Layout-Sheet Name: PLAN
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\GEOTECH\60343972 C151.DWG



SECTION 1 / C–151
SCALE 1:100



SECTION 2 / C–151
SCALE 1:100

GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR DETAILS.

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (YMD)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	PTL	KM	2016/06/29

DRN BY: DK
DES BY: DK
CHK BY: CM
APP BY: KM

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
WSP
1935 BOLLINGER ROAD
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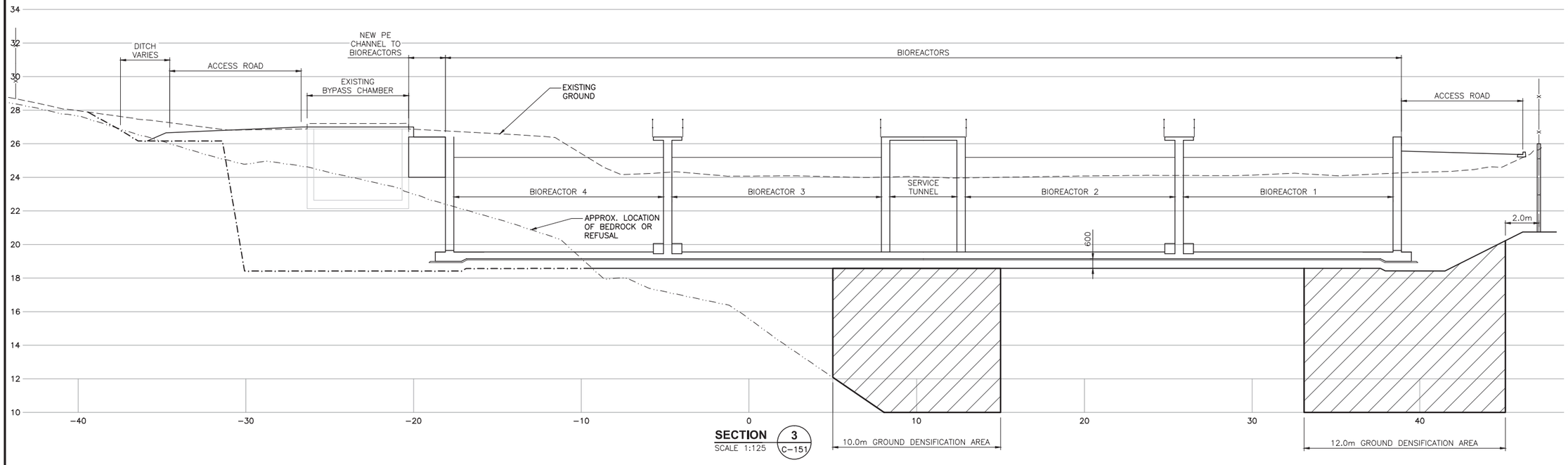
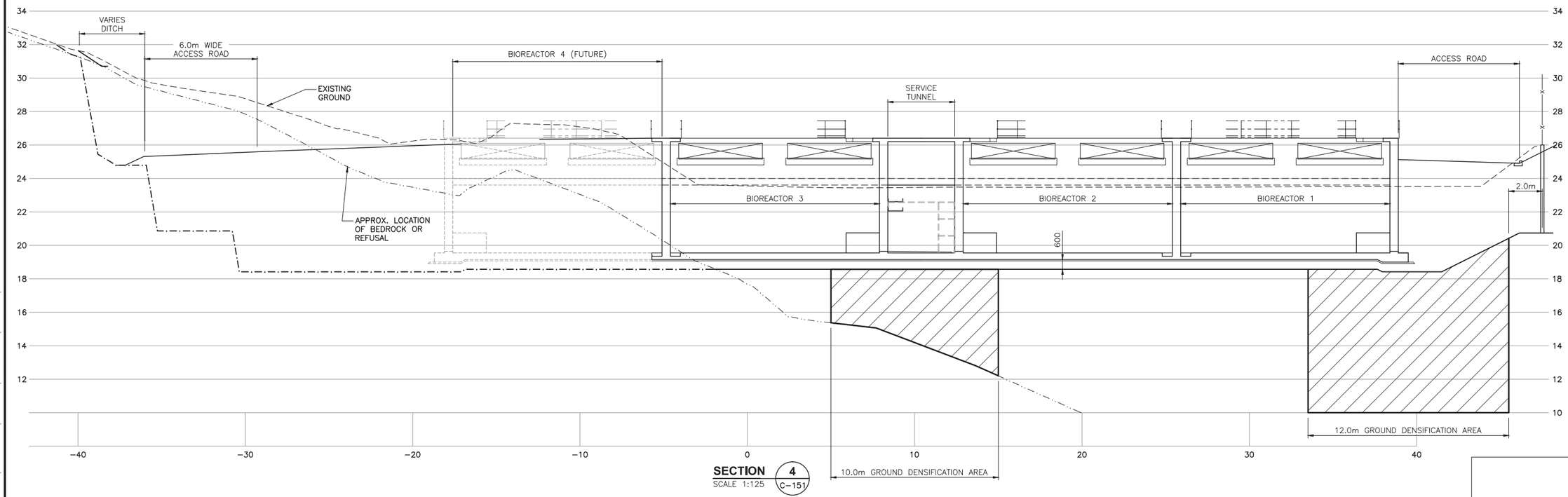
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
CIVIL
SCREENING BUILDING
GROUND IMPROVEMENT SECTIONS

PROJECT START DATE (M / Y)
~~APR~~//2015
PROJECT NO.
60343972
FILENAME
60343972 C152 to C154.dwg
RDN DRAWING No.
DRAWING No.
C-152



SECTION 3 (C-151)
SCALE 1:125



SECTION 4 (C-151)
SCALE 1:125

GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR DETAILS.

DATE (YMD)	CHK	DRN	DESCRIPTION	REV
2016/06/29	KM	PTL	ISSUED FOR 90% DETAILED DESIGN REVIEW	A

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

DRN BY: DK | DES BY: DK | CHK BY: CM | APP BY: KM

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
WSP
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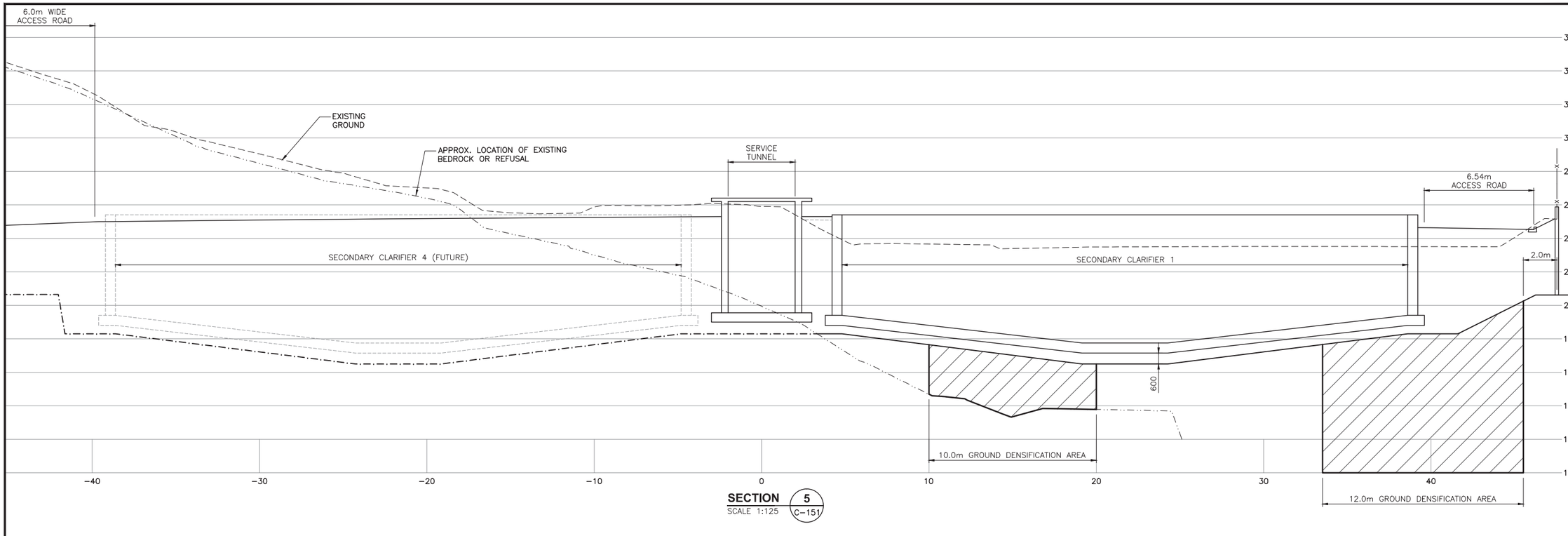
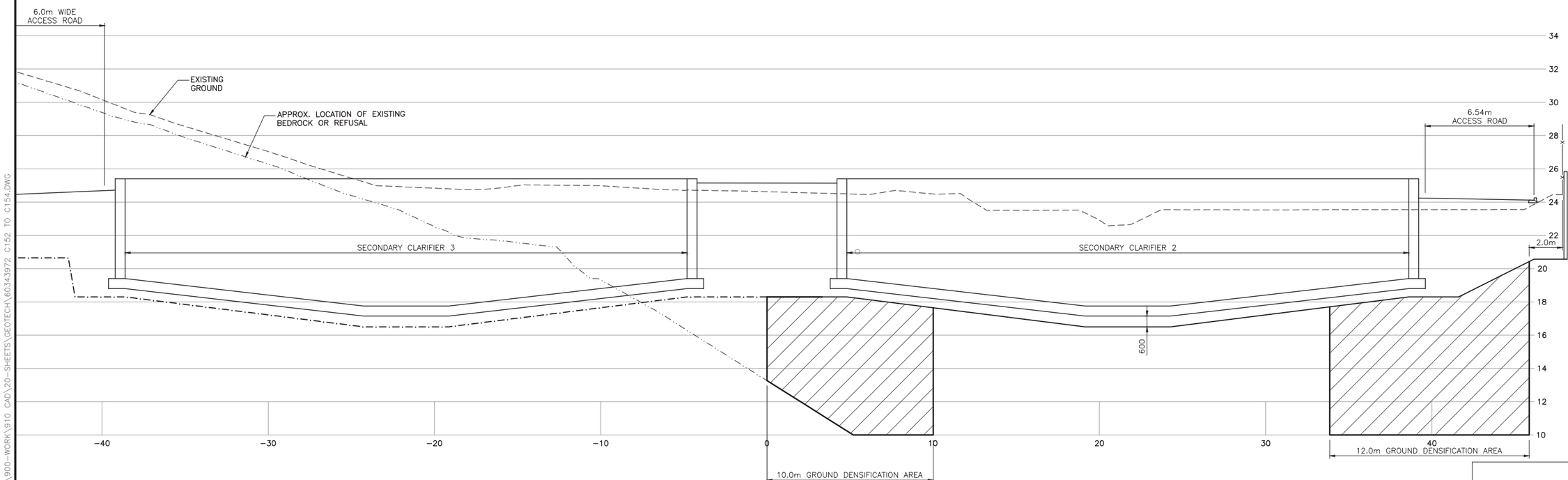
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
CIVIL
SECONDARY TREATMENT
GROUND IMPROVEMENT SECTIONS - SHEET 1

PROJECT START DATE (M / Y)	APR//2015
PROJECT NO.	60343972
FILENAME	60343972 C152 to C154.dwg
RDN DRAWING No.	
DRAWING No.	C-153



SECTION 5
SCALE 1:125 C−151



SECTION 6
SCALE 1:125 C−151

GENERAL NOTES:

1. REFER TO SPECIFICATIONS FOR DETAILS.

DRN BY:	DES BY:	CHK BY:	APP BY:
DK	DK	CM	KM

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	PTL	KM	2016/06/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

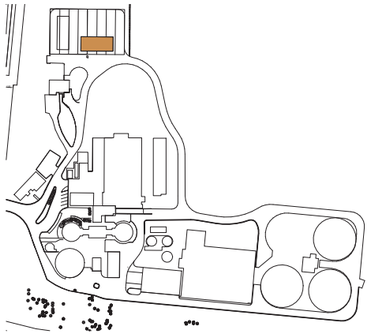
PREPARED BY:
WSP
1935 BOLLINGER ROAD
NANAIMO, B.C., V9S 5W9
250-753-1077

AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

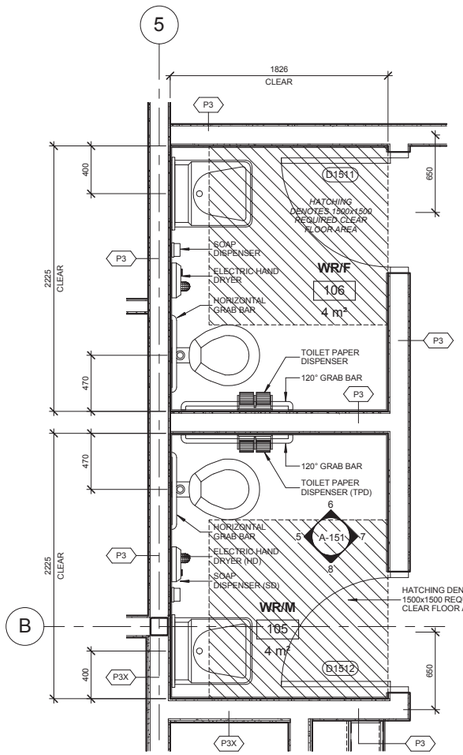
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
CIVIL
SECONDARY TREATMENT
GROUND IMPROVEMENT SECTIONS - SHEET 2

PROJECT START DATE (M / Y)	APR//2015
PROJECT NO.	60343972
FILENAME	60343972 C152 to C154.dwg
RDN DRAWING No.	
DRAWING No.	C-154

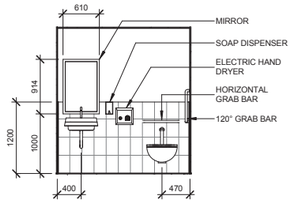
Plotted By: leongp
Plot File Date Created: Jun/29/2016 2:39 PM
Layout-Sheet Name: C-154
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\GEOTECH\60343972 C152 TO C154.DWG



1 HR FIRE RESISTANCE RATING



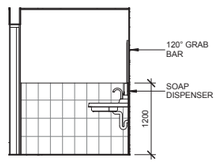
4 Washroom Detail Plans
1 : 25



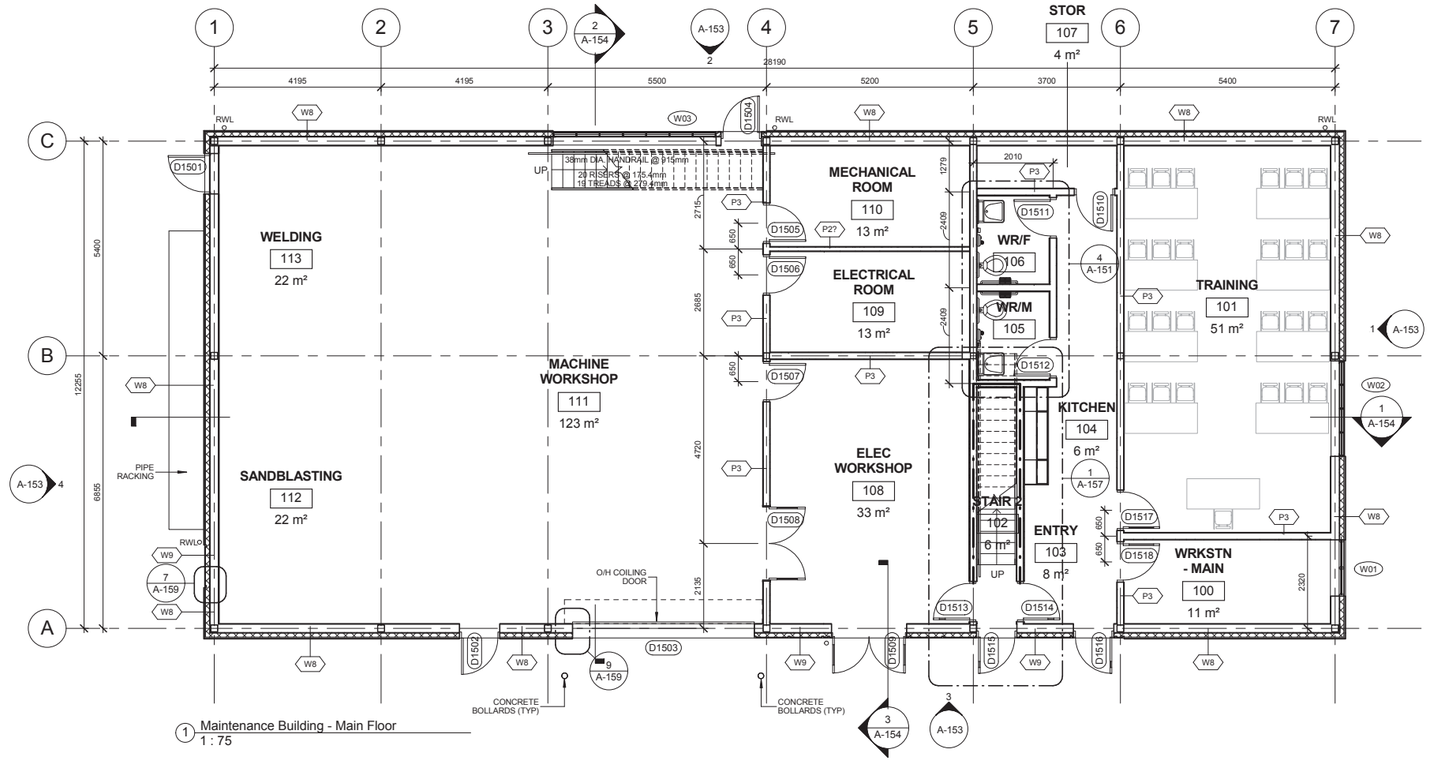
5 TYPICAL WASHROOM ELEVATION 1
1 : 50

6 TYPICAL WASHROOM ELEVATION 2
1 : 50

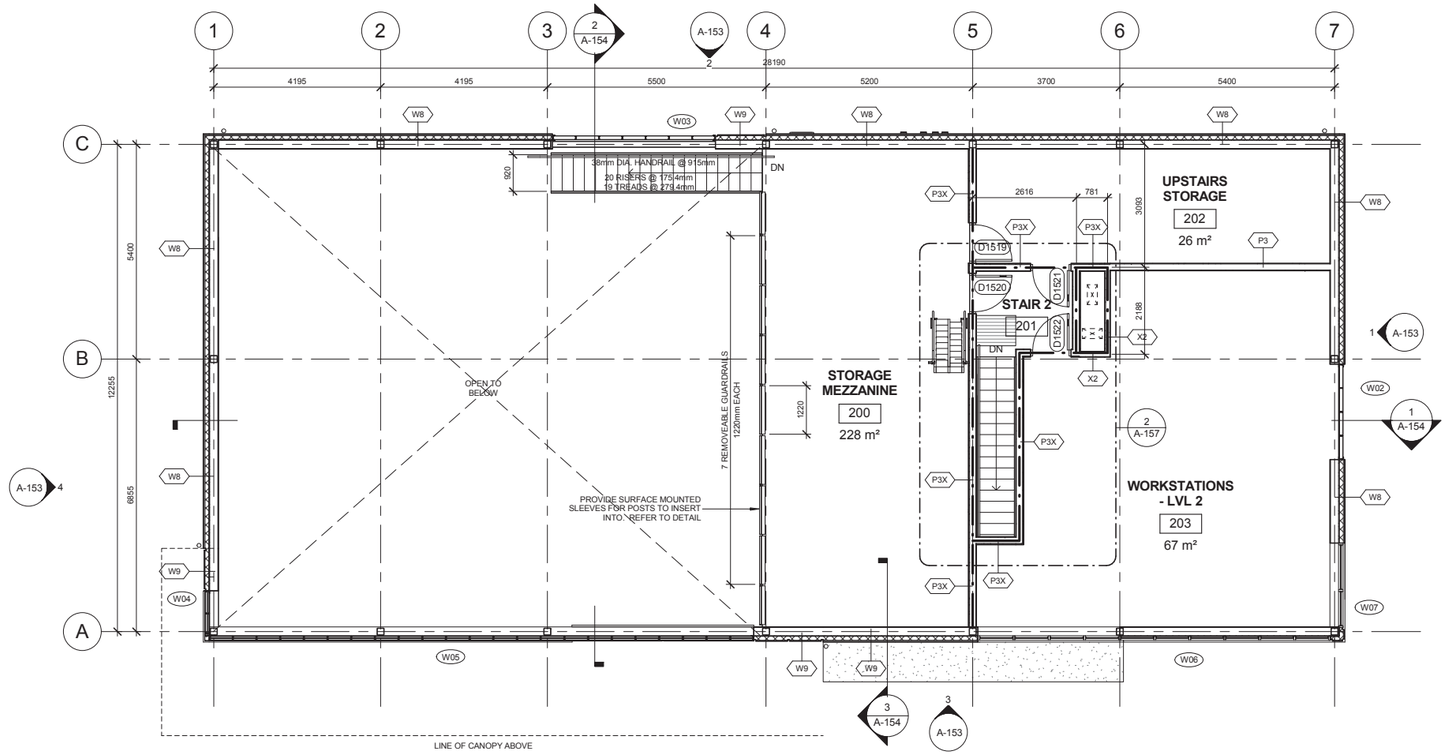
7 TYPICAL WASHROOM ELEVATION 3
1 : 50



8 TYPICAL WASHROOM ELEVATION 4
1 : 50



1 Maintenance Building - Main Floor
1 : 75



2 Maintenance Building - Second Floor
1 : 75

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	KSB	LCS	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	KSB	LCS	2016/01/29

DRN BY:
DES BY:
CHK BY:
APR BY:

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
CEI
HDR
AECOM
500
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604-687-1868
4th FLOOR,
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BURNABY, B.C., V5A 4K4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

ARCHITECTURAL
MAINTENANCE BUILDING
FLOOR PLANS

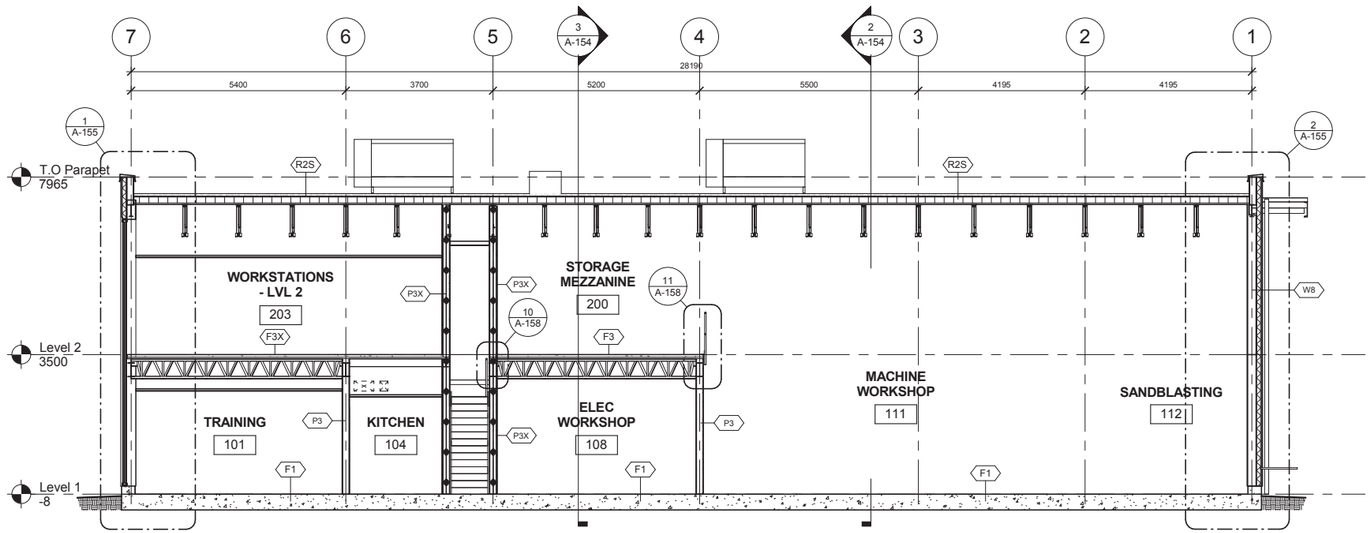
PROJECT START DATE (M / Y)

PROJECT NO. **2015-012**

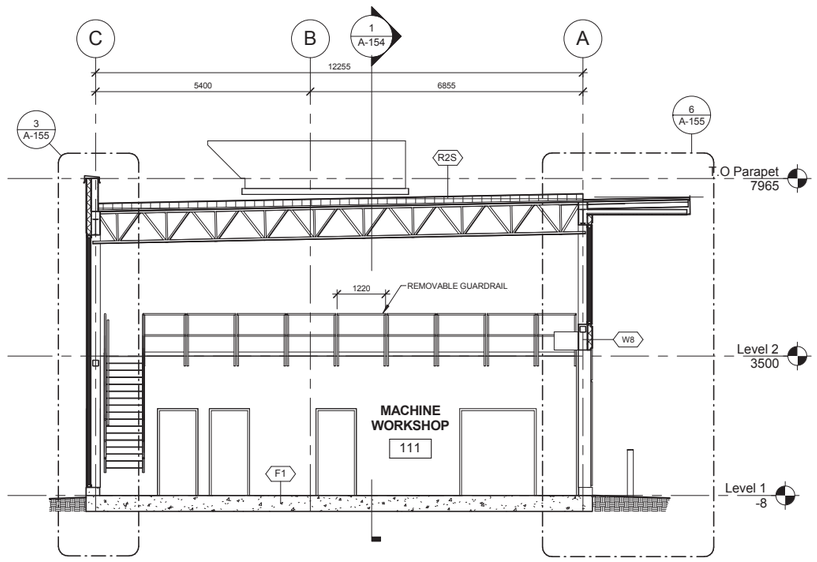
FILENAME

RDN DRAWING No.

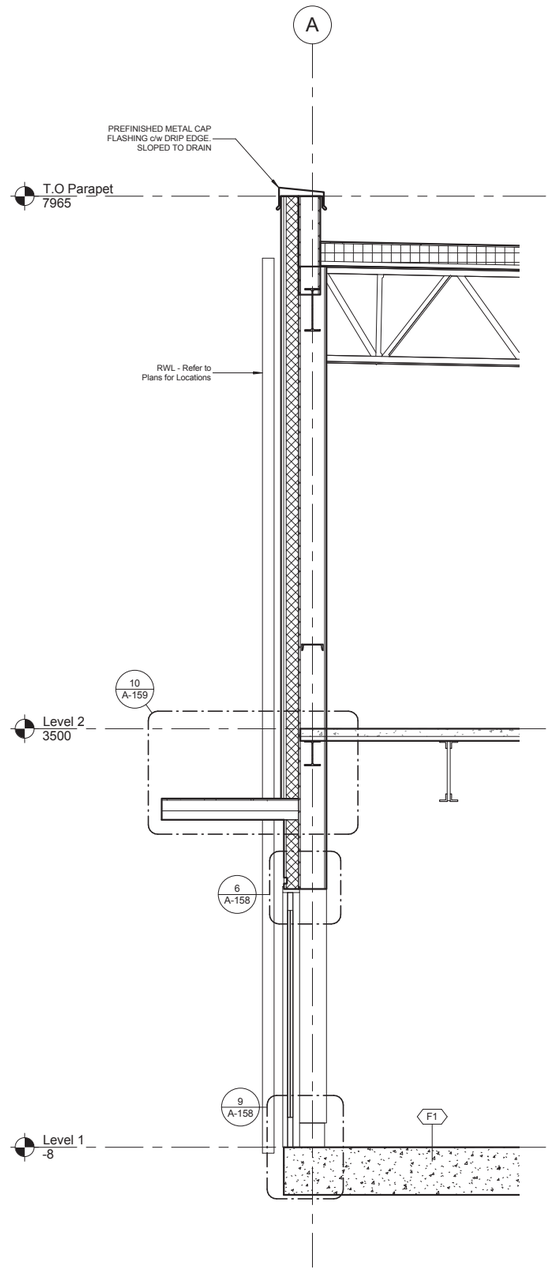
DRAWING No. **A-151**



1 Maintenance Building - Long Section
1 : 75



2 Maintenance Building - Short Section
1 : 75



3 WALL SECTION 5
1 : 25

DRN BY:	DES BY:	CHK BY:	APR BY:	REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
					VERIFY SCALE-IF PLAN SHEET IS REDUCED			
					30 mm			
				B	ISSUED FOR 90% DETAILED DESIGN REVIEW	KSB	LCS	2016/06/10
				A	ISSUED FOR 60% DETAILED DESIGN REVIEW	KSB	LCS	2016/01/29

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
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604-444-6400

HDR
500
1500 West Georgia,
Vancouver, B.C. V6G 2Z6
604-687-1868

CEI

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

ARCHITECTURAL
MAINTENANCE BUILDING
BUILDING SECTIONS

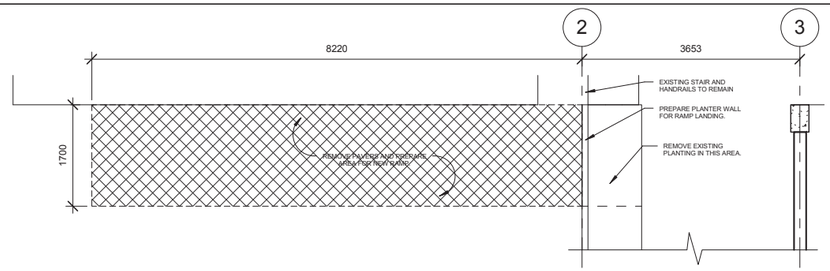
PROJECT START DATE (M / Y)

PROJECT NO.
2015-012

FILENAME

RDN DRAWING No.

DRAWING No.
A-154



Operations Building - Main Level
SCALE: 1 : 50

DEMOLITION GENERAL NOTES

1. ALL INTERIOR PARTITIONS AND FINISHES ARE TO BE COMPLETELY REMOVED UNLESS OTHERWISE NOTED

2. ALL EXISTING DOORS AND FRAMES ARE TO BE REMOVED UNLESS OTHERWISE NOTED

3. CONTRACTOR TO CONFIRM ALL ON SITE CONDITIONS. VERIFY EXTENT OF EXISTING FINISHES, TRIMS, ACCESSORIES, FIXTURES, MILLWORK, AND OTHER ITEMS NOT SHOWN ON PLAN TO DETERMINE COMPLETE DEMOLITION SCOPE

4. CONTRACTOR TO COORDINATE ALL DEMOLITION WITH MECHANICAL AND ELECTRICAL. NO STRUCTURAL ITEMS TO BE REMOVED, CUT OR ALTERED WITHOUT WRITTEN CONSENT FROM STRUCTURAL CONSULTANT

5. ALL EXISTING FURNISHINGS TO BE HANDED OVER TO THE OWNER

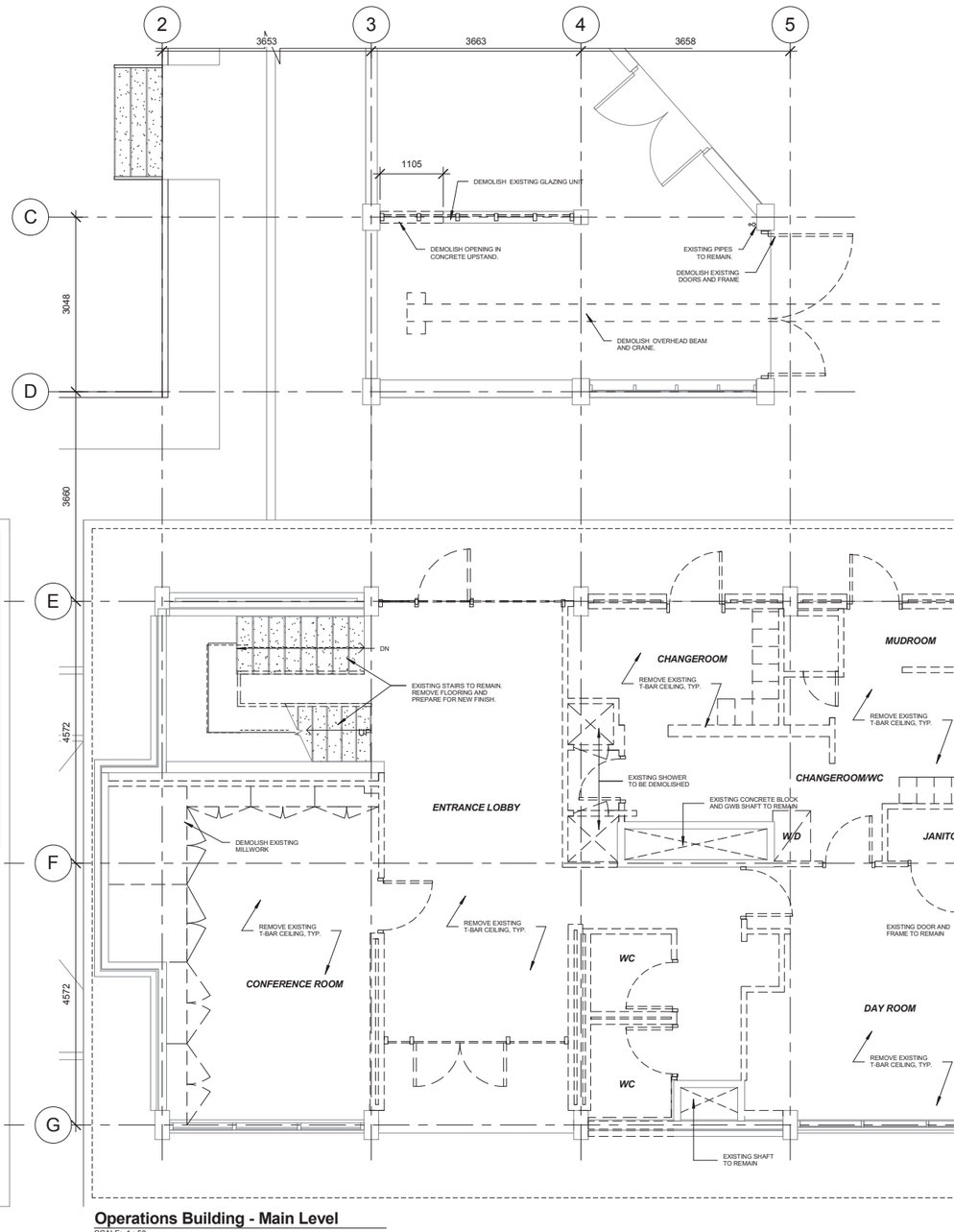
DENOTES EXISTING TO REMAIN

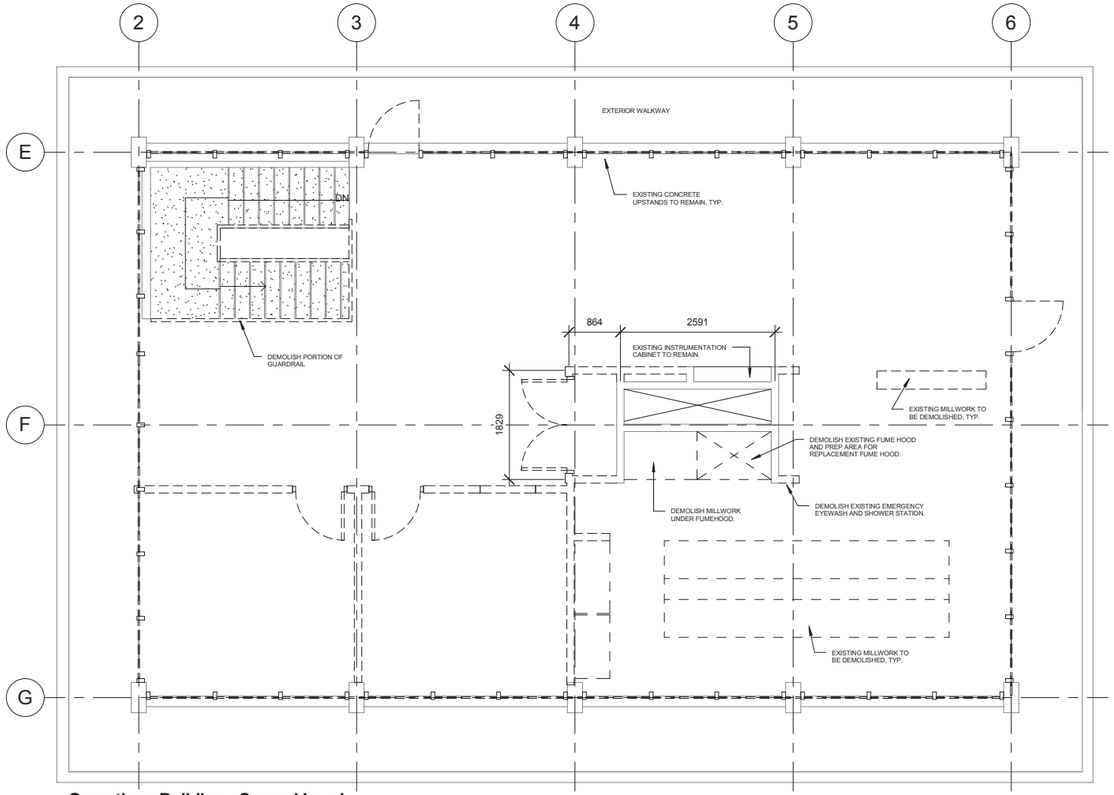
DENOTES EXISTING WALL TO BE DEMOLISHED

DENOTES EXISTING GLAZING UNIT TO BE DEMOLISHED

DEMOLITION LEGEND

1. REMOVE EXISTING DOOR AND FRAME
2. REMOVE EXISTING GLAZING AND ASSOCIATED FRAMING





Operations Building - Second Level
SCALE: 1 : 50

Operations Building - Main Level
SCALE: 1 : 50

DRN BY:	VERIFY SCALE IF PLAN SHEET IS REDUCED					
Author						
DES BY:						
Designer						
CHK BY:						
Checker	B	ISSUED FOR 90% DETAILED DESIGN REVIEW	KSB	LCS	2016/06/10
APR BY:	A	ISSUED FOR 60% DETAILED DESIGN REVIEW	WM	LCS	2016/01/29
Approver	REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)

PREPARED FOR:

REGIONAL DISTRICT OF NANAIMO

PREPARED BY:

AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

HDR | CEI
500 - 1500 West Georgia, Vancouver, B.C., V6G 2Z6
604-687-1898

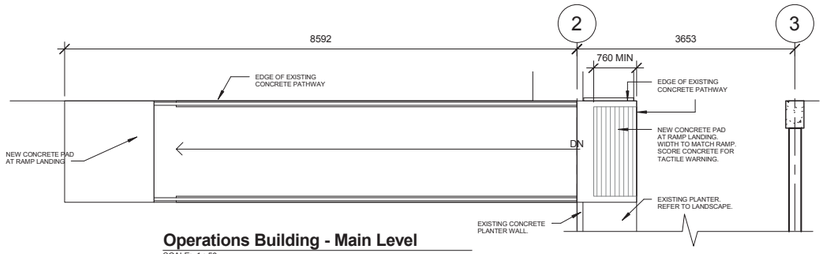
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

ARCHITECTURAL
OPERATIONS BUILDING
DEMOLITION PLANS

PROJECT START DATE (M / Y)	Issue Date
PROJECT NO.	Project Number
FILENAME:	Project Name
RDN DRAWING No.	
DRAWING No.	A-251

Plotted By: Author
Plot File Date Created: 6/10/2016 12:53:20 PM
Layout-Sheet Name: OPERATIONS BUILDING - DEMOLITION PLANS
Filename: C:\Users\Ingo\Desktop\[Project Files]\[Revit Local Files]\Operations Building_CENTRAL_Ingo.rvt

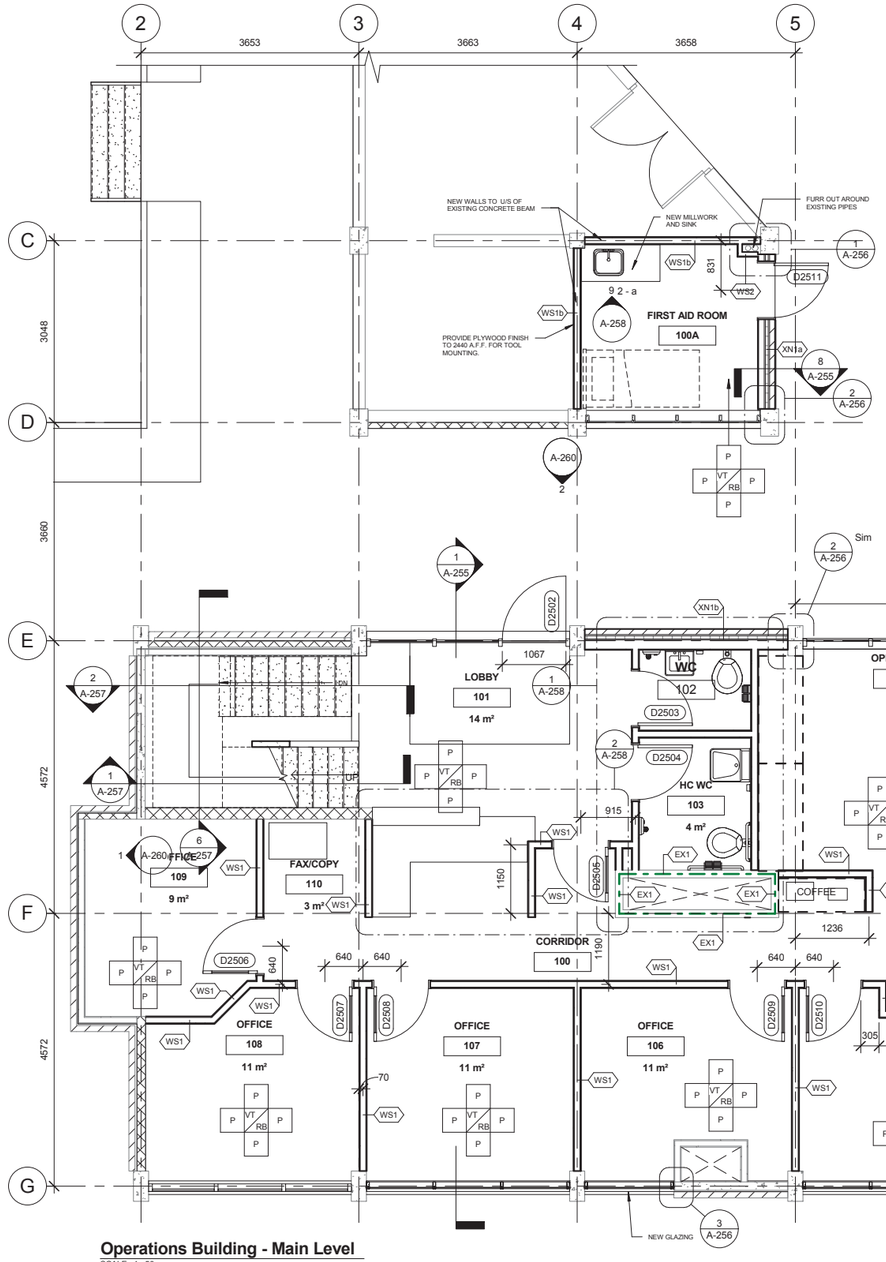
RELEASE 2.0 (JULY 2008)



Operations Building - Main Level

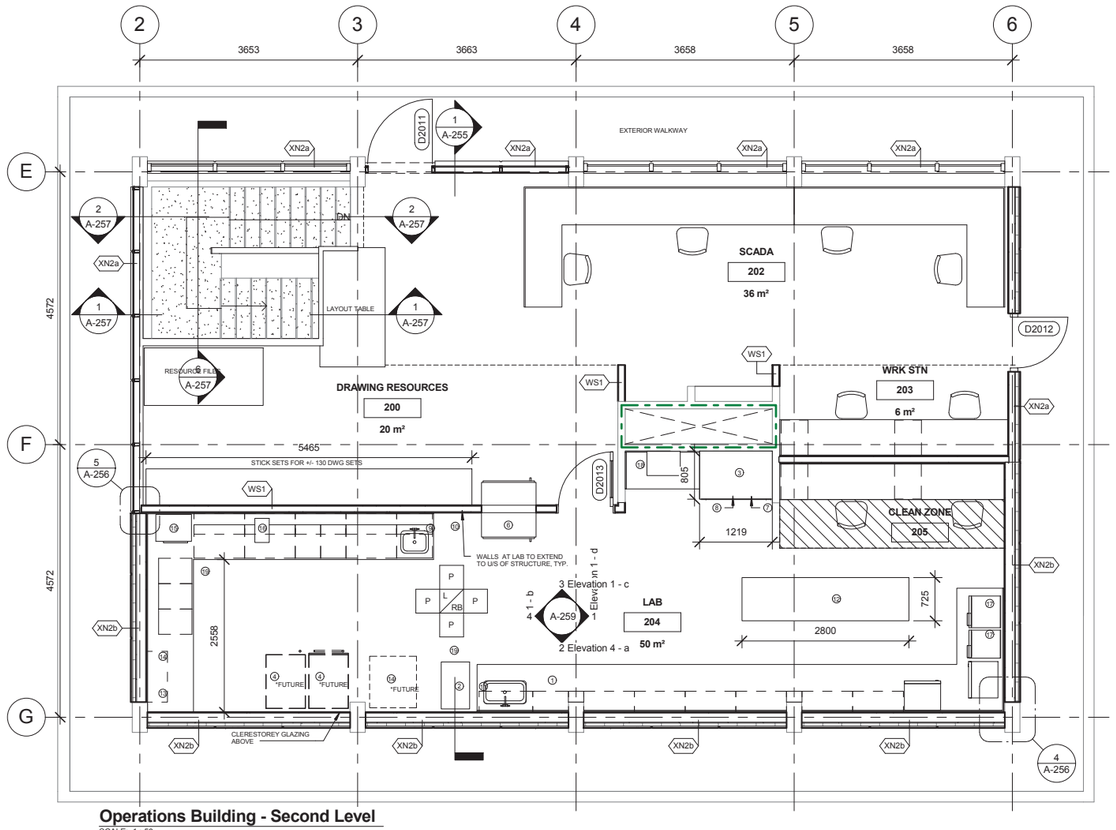
SCALE: 1 : 50

EQUIPMENT LIST	
1 DISHWASHER	11 STAINLESS STEEL LAB SINK
2 AUTOCLAVE	12 MOVABLE CABINET ON LOCKABLE CASTERS
3 FUME HOOD	13 U/C MINI FRIDGE
4 SAMPLE REFRIGERATOR	14 BOD INCUBATOR
5 SPECIALTY REFRIGERATOR	15 MUFFLE FURNACE
6 STAINLESS STEEL PASS-THRU CABINET	16 CENTIFUGE
7 ACID STORAGE CABINET	17 LAB OVEN
8 FLAMMABLE STORAGE CABINET	18 WATER DE-IONIZER
9 EMERGENCY EYEWASH STATION	19 EXHAUST EXTRACTOR
10 EMERGENCY SHOWER STATION	



Operations Building - Second Level

SCALE: 1 : 50



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Plot File Date Created: 6/10/2016 12:53:22 PM
Layout-Sheet Name: OPERATIONS BUILDING - MAIN AND SECOND FLOOR PLANS
Filename: C:\Users\tngo\Desktop\Project Files\Revit Local Files\Operations Building_CENTRAL_tngo.rvt

RELEASE 2.0 (JULY 2008)

DRN BY: Author	DES BY: Designer	CHK BY: Checker	APR BY: Approver	REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
					VERIFY SCALE IF PLAN SHEET IS REDUCED 30 mm			
				A	ISSUED FOR 90% DETAILED DESIGN REVIEW	KSB	LCS	2016/06/10

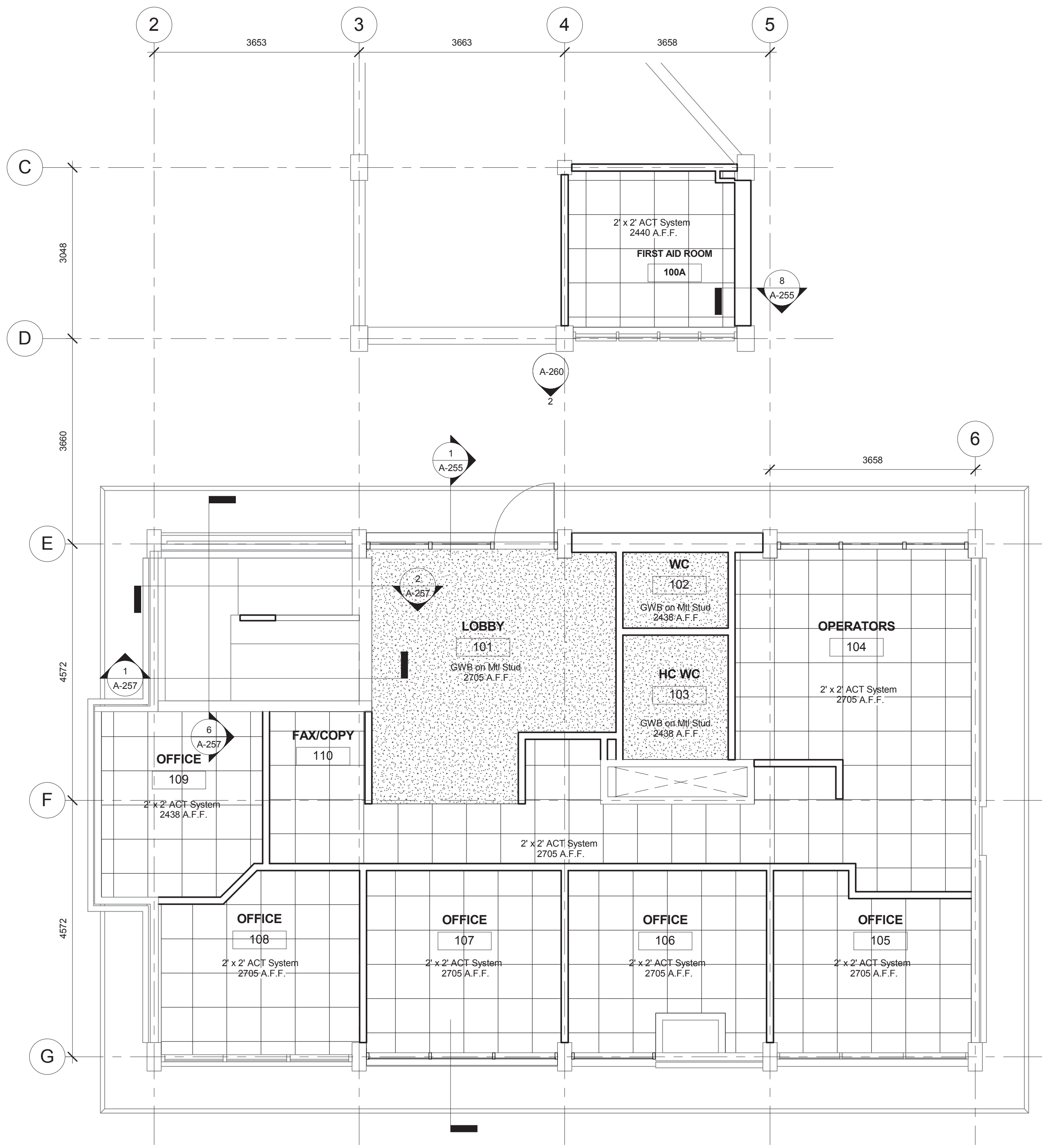
PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C. V5A 4K4
604-444-6400
HDR
500 1500 West Georgia, Vancouver, B.C. V6G 2Z6
604-687-1868

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

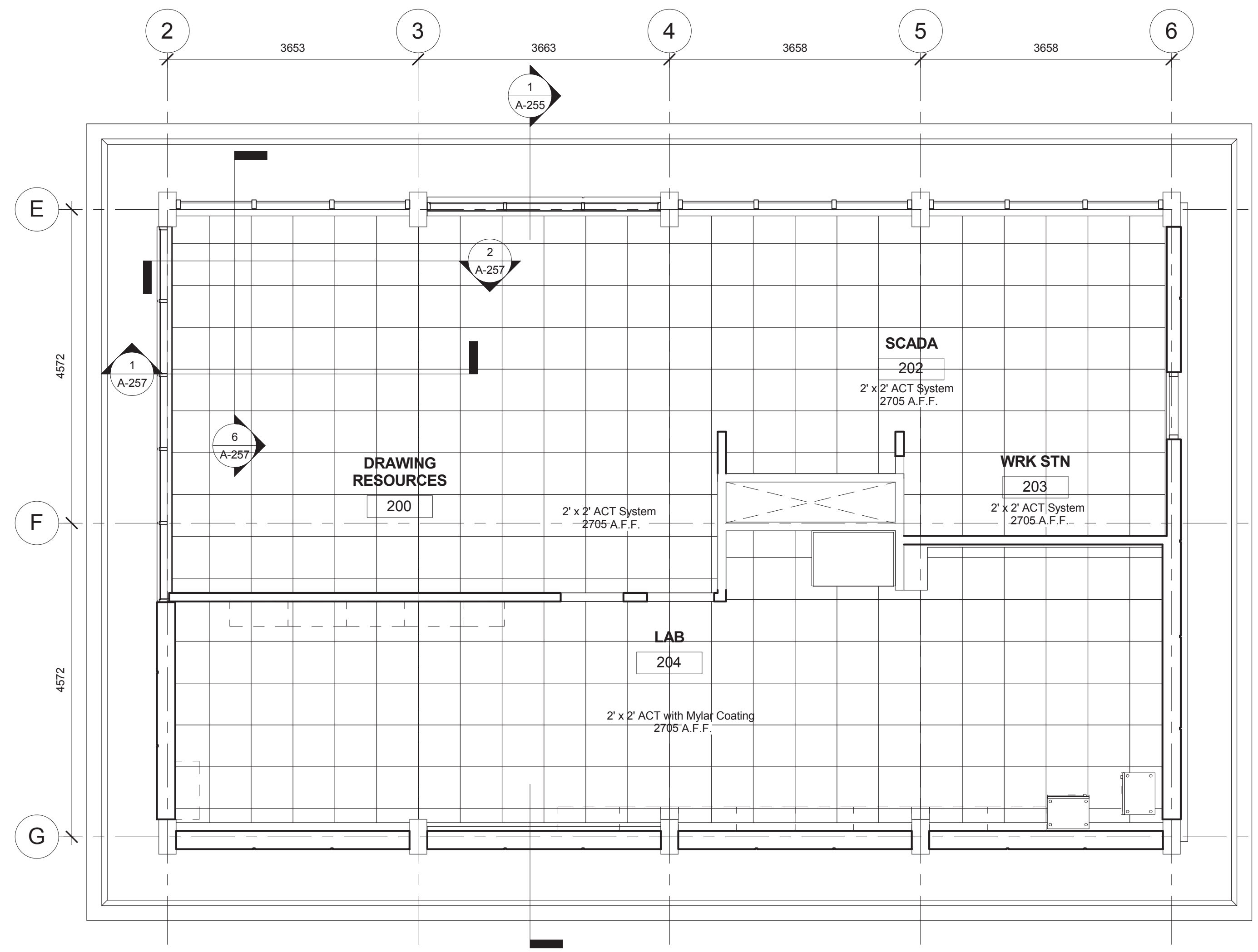
ARCHITECTURAL
OPERATIONS BUILDING
MAIN AND SECOND FLOOR PLANS

PROJECT START DATE (M / Y): Issue Date
PROJECT NO.: Project Number
FILENAME: Project Name
RDN DRAWING No.:
DRAWING No.: **A-252**



Operations Building - Level 1 Ceiling Plan

SCALE: 1 : 50



Operations Building - Level 2 Ceiling Plan

SCALE: 1 : 50

Plotted By: Author
Plot File Date Created: 6/10/2016 12:53:22 PM
Layout-Sheet Name: OPERATIONS BUILDING - REFLECTED CEILING PLANS
Filename: C:\Users\tngo\Desktop\[Project Files]\[Revit Local Files]\Operations Building_CENTRAL_tngo.rvt

RELEASE 2.0 (JULY 2008)

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	KSB	LCS	2016/06/10

30 mm — VERIFY SCALE IF PLAN SHEET IS REDUCED

DRN BY: Author
DES BY: Designer
CHK BY: Checker
APR BY: Approver

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
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3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
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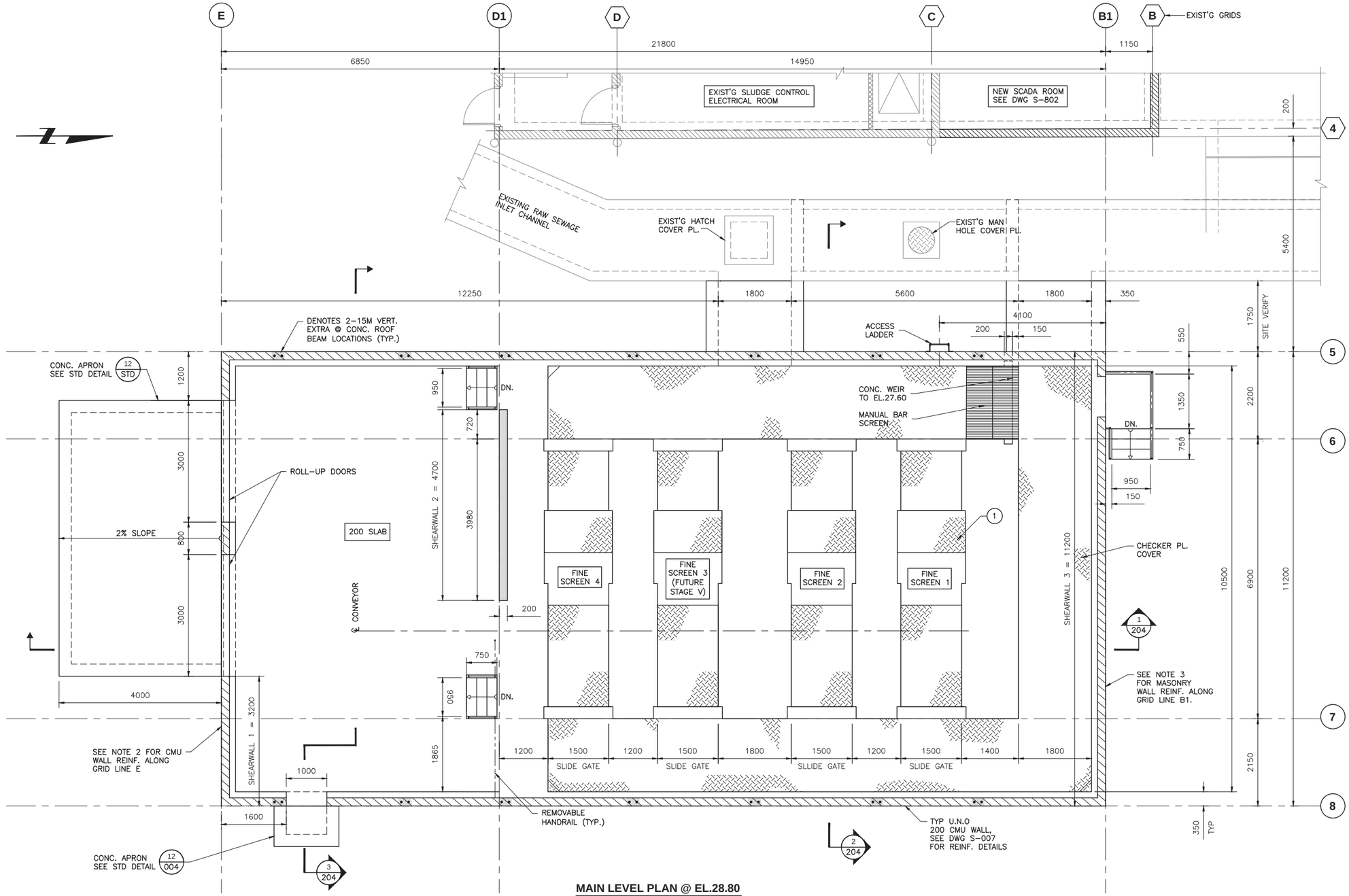
1500 West Georgia,
Vancouver, B.C., V6G 2Z6
604-687-1898

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

ARCHITECTURAL
OPERATIONS BUILDING
REFLECTED CEILING PLANS

PROJECT START DATE (M / Y): Issue Date
PROJECT NO.: Project Number
FILENAME: Project Name
RDN DRAWING No.:
DRAWING No.: **A-253**



MAIN LEVEL PLAN @ EL.28.80

SCALE:1:50

KEY NOTES

1. CHECKER PL. FOR SCREENS CHANNELS TO COVER ENTIRE CHANNEL. COORDINATE WITH SCREEN SUPPLIER FOR CHECKER PL. COVERED AREA & SCREEN OPENING.
2. VERTICAL: 200mm CMU 15M @ 200 FULLY GROUTED.
   HORIZ.: PROVIDE BOND BEAM WITH 2-15M @ 200 O.C. AND TOP OF WALL.
3. VERTICAL: 200mm CMU. 15M @ 200 FULLY GROUTED.
   HORIZ: BOND BEAM WITH 2-15M @ 400. AND TOP OF WALL.

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	LP	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	GG	KM	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

DRN BY: GG
DES BY: JK
CHK BY:
APP BY: KM

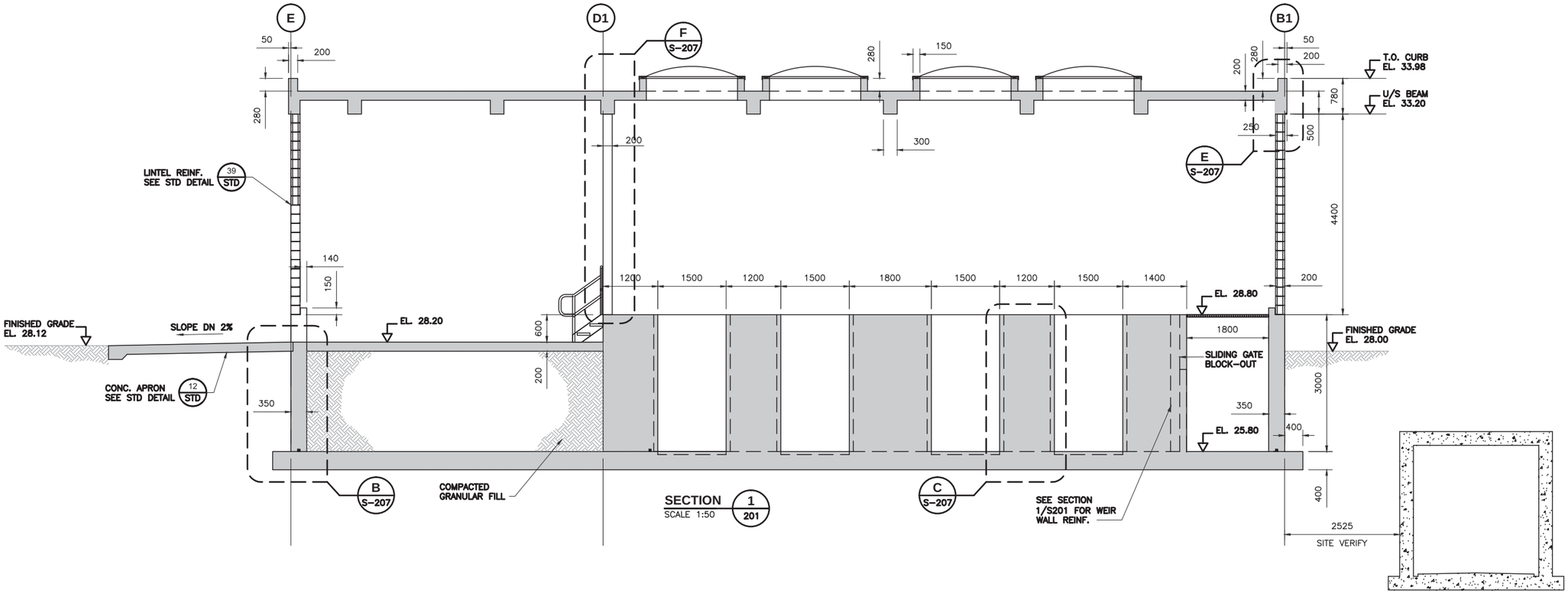
PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

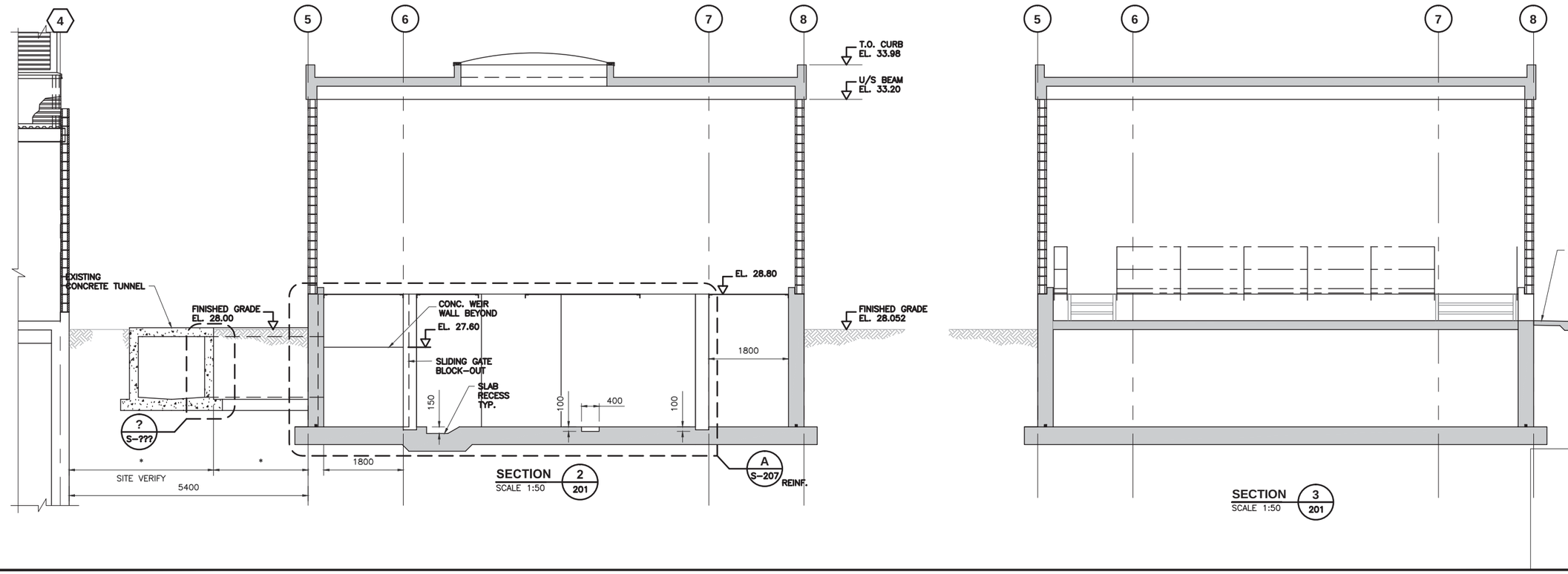
PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE SECONDARY TREATMENT UPGRADE
STRUCTURAL
SCREENING BUILDING
MAIN FLOOR PLAN

PROJECT START DATE (M / Y)	APR / 2015
PROJECT NO.	60343972
FILENAME	
RDN DRAWING No.	
DRAWING No.	S-202

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:42 PM
Layout-Sheet Name: S-202
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\STRUCTURES\60343972 S-202.DWG





VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	LP	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	GG	KM	2016/01/29

DRN BY: GG
DES BY: MN
CHK BY:
APP BY: KM

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-5400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
STRUCTURAL
SCREENING BUILDING
SECTIONS

PROJECT START DATE (M / Y)	APR / 2015
PROJECT NO.	60343972
FILENAME	
RDN DRAWING No.	
DRAWING No.	S-204

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:42 PM
Layout-Sheet Name: S-204
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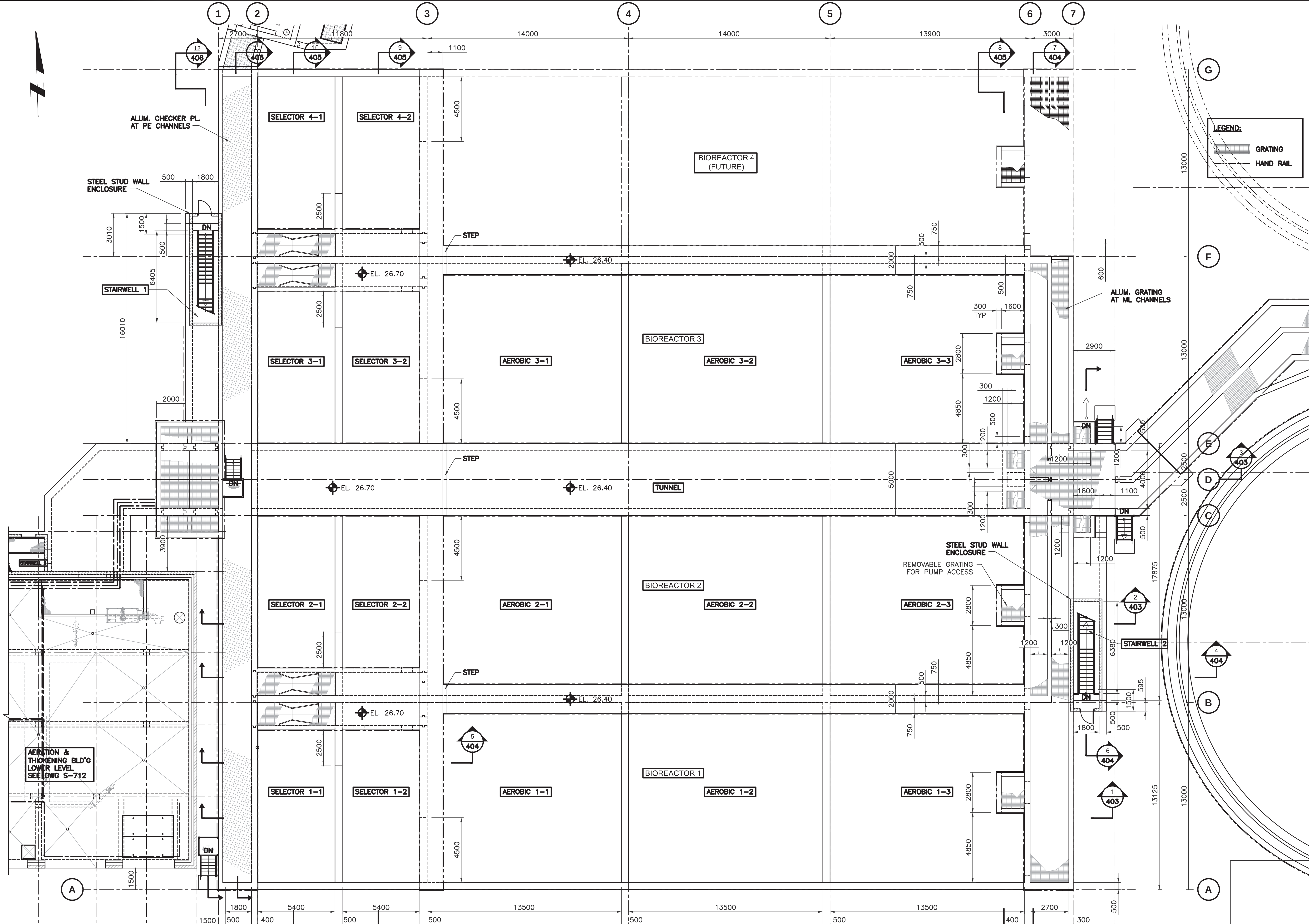

UPPER LEVEL PLAN @ EL.26.70

SCALE:1:125

REGIONAL DISTRICT OF NANAIMO

GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

STRUCTURAL
BIOREACTORS 1 to 3
UPPER LEVEL FLOOR PLAN

PREPARED BY: AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	LP	KM	2016/06/10
A	ISSUED FOR DETAILED DESIGN REVIEW	LP	KM	2016/01/29

DRN BY: LP
DES BY: MN
CHK BY: WHM
APP BY: KM

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

PROJECT START DATE (M / Y) APR./2015
PROJECT NO. 60343972
FILENAME 60343972 S-402.dwg
RDN DRAWING No.
DRAWING No. S-402

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:43 PM
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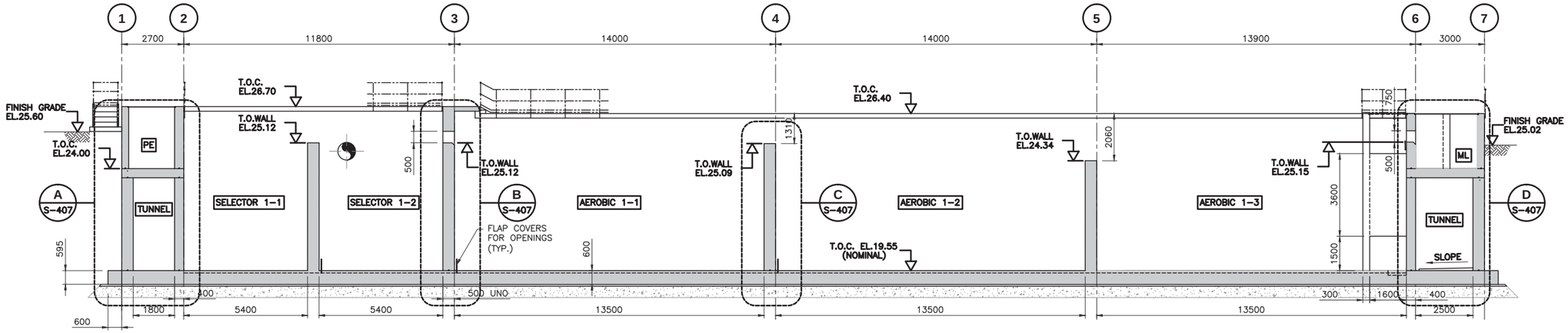
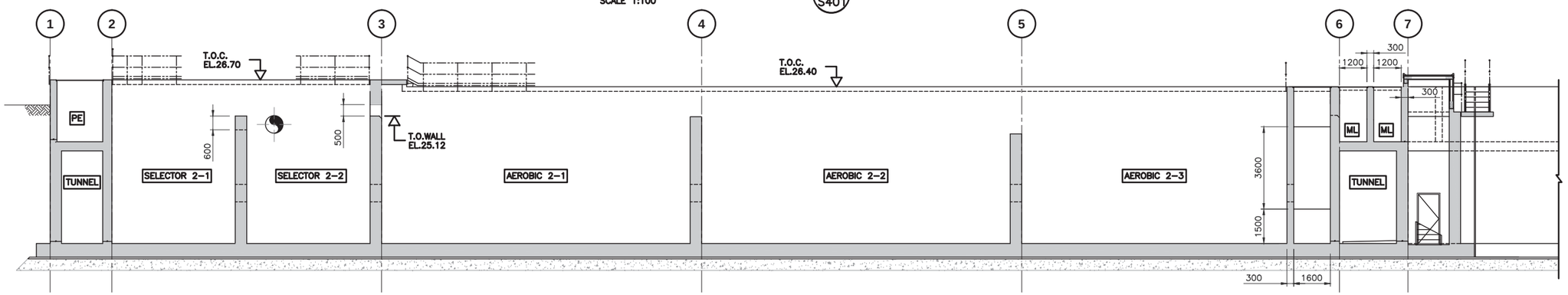


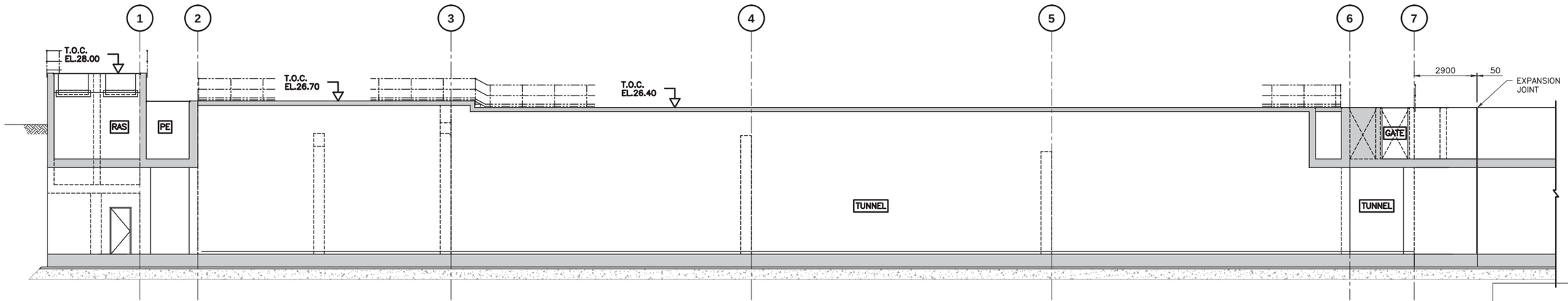
SECTION (BIOREACTOR 1)
SCALE 1:100

1 / S401



SECTION (BIOREACTOR 2)
SCALE 1:100

2 / S401



SECTION (TUNNEL)
SCALE 1:100

3 / S401

VERIFY SCALE IF PLAN SHEET IS REDUCED — 20 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	LP	KM	2016/01/29
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	LP	KM	2016/06/10

DRN BY: LP
DES BY: MN
CHK BY: WHM
APP BY: KM

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

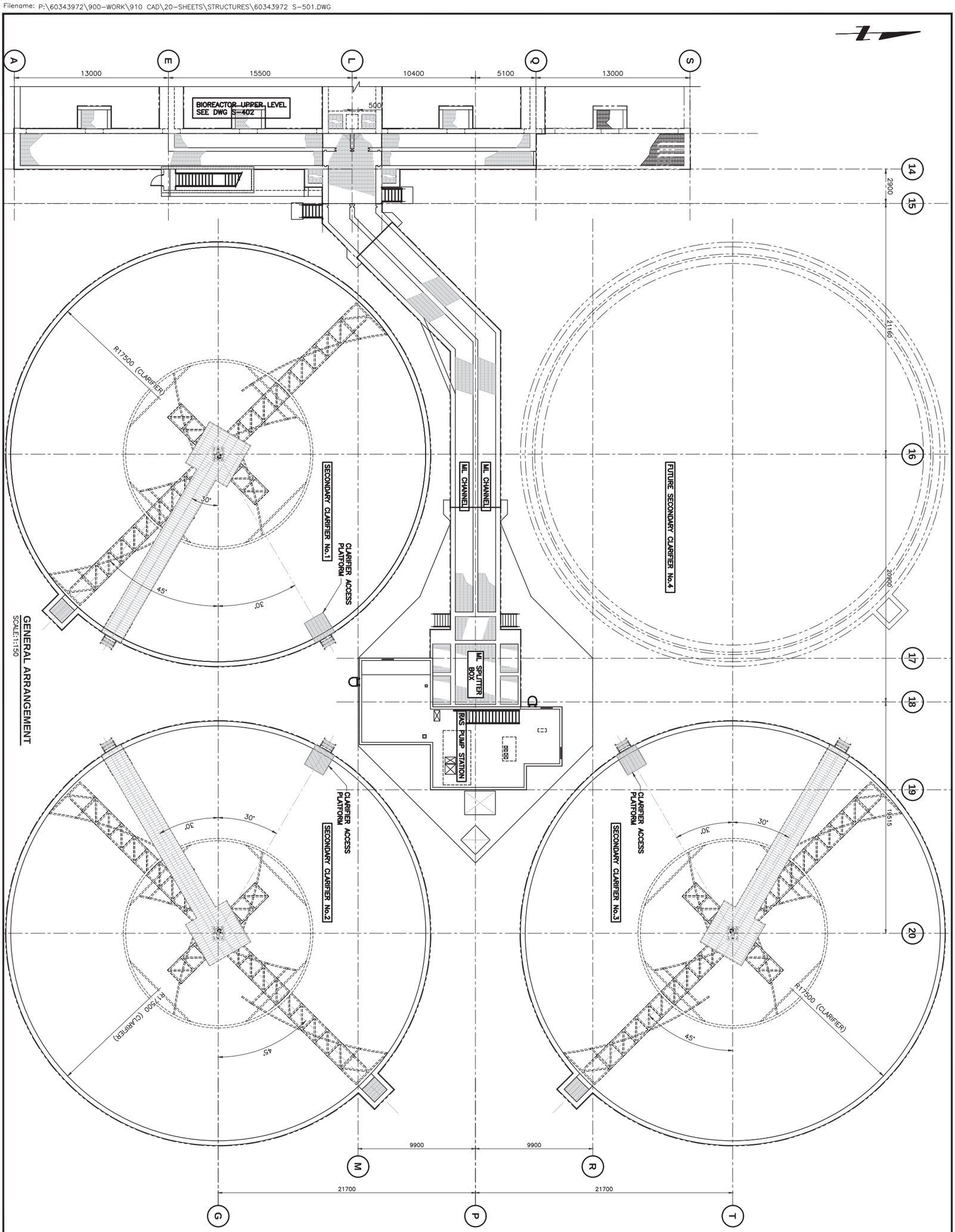
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

STRUCTURAL
BIOREACTORS 1 to 3
SECTIONS - SHEET 1

PROJECT START DATE (M / Y)	APR./2015
PROJECT NO.	60343972
FILENAME	60343972 S-403 S-404 S-405 S-406.dwg
RDN DRAWING No.	
DRAWING No.	S-403

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:43 PM
Layout–Sheet Name: S–403
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\STRUCTURES\60343972 S–403 S–404 S–405 S–406.DWG

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:44 PM
Layout-Sheet Name: S-501
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\STRUCTURES\60343972 S-501.DWG



GENERAL ARRANGEMENT
SCALE:1:150

DRAWING No.	S-501	PROJECT START DATE (M / Y)	APR./2015		
RDN DRAWING No.		PROJECT NO.	60343972		
		FILENAME	60343972 S-501.dwg		

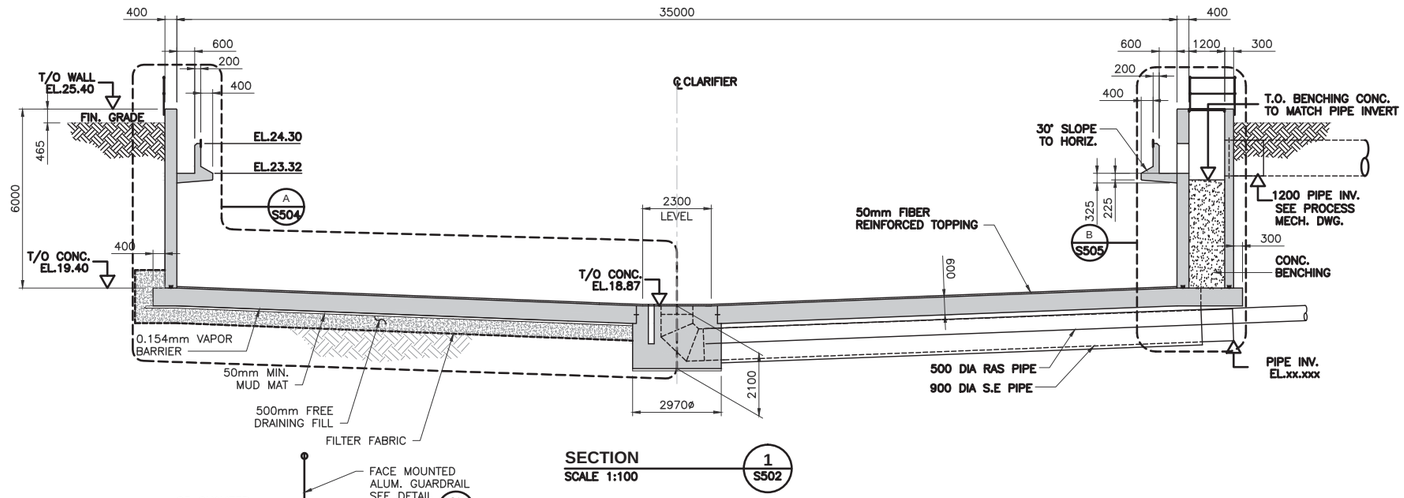
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

STRUCTURAL
SECONDARY CLARIFIERS
GENERAL ARRANGEMENT PLAN

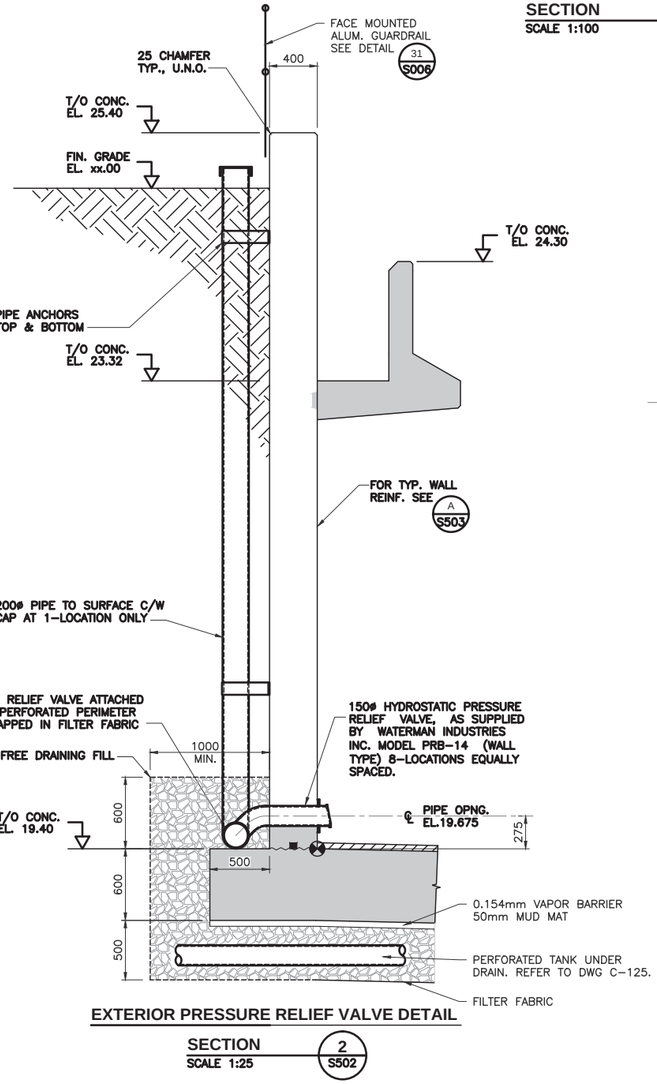
PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

DRN BY:	30 mm — VERIFY SCALE IF PLAN SHEET IS REDUCED				
LP					
DES BY:					
SZ					
CHK BY:					
WHM	B	ISSUED FOR 90% DETAILED DESIGN REVIEW	LP	KM	2016/06/10
APP BY:	A	ISSUED FOR 60% DETAILED DESIGN REVIEW	LP	KM	2016/01/29
KM	REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)

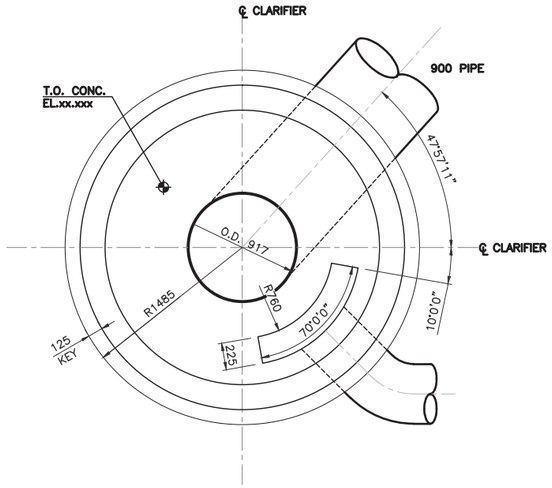


SECTION SCALE 1:100 — 1 / S502



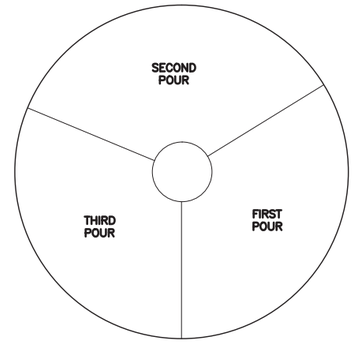
EXTERIOR PRESSURE RELIEF VALVE DETAIL

SECTION SCALE 1:25 — 2 / S502



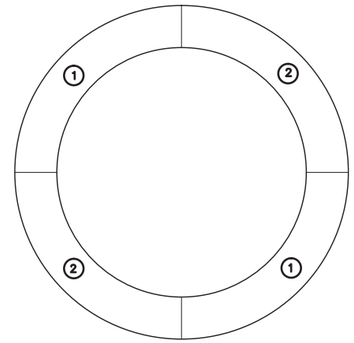
CENTRE FOUNDATION DETAIL SCALE 1:25 — A / S502

NOTE: VERIFY WITH EQUIPMENT SUPPLIER.



B / – **FOUNDATION SLAB POUR SEQUENCE**

NOTE: CONTRACTOR MAY PLACE BASE MAT AS SINGLE PLACEMENT.



C / – **LAUNDER SLAB POUR SEQUENCE**

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	LP	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	LP	KM	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 20 mm

DRN BY: LP
DES BY: WHM
CHK BY: SZ
APP BY: KM

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

STRUCTURAL
SECONDARY CLARIFIERS
SECTIONS AND DETAILS

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972 S-503.dwg
RDN DRAWING No.:
DRAWING No.: S-503

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:44 PM
Layout-Sheet Name: S-503
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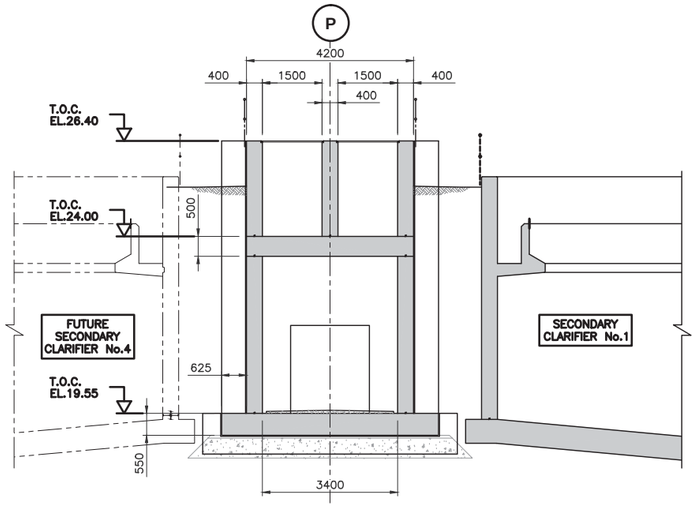
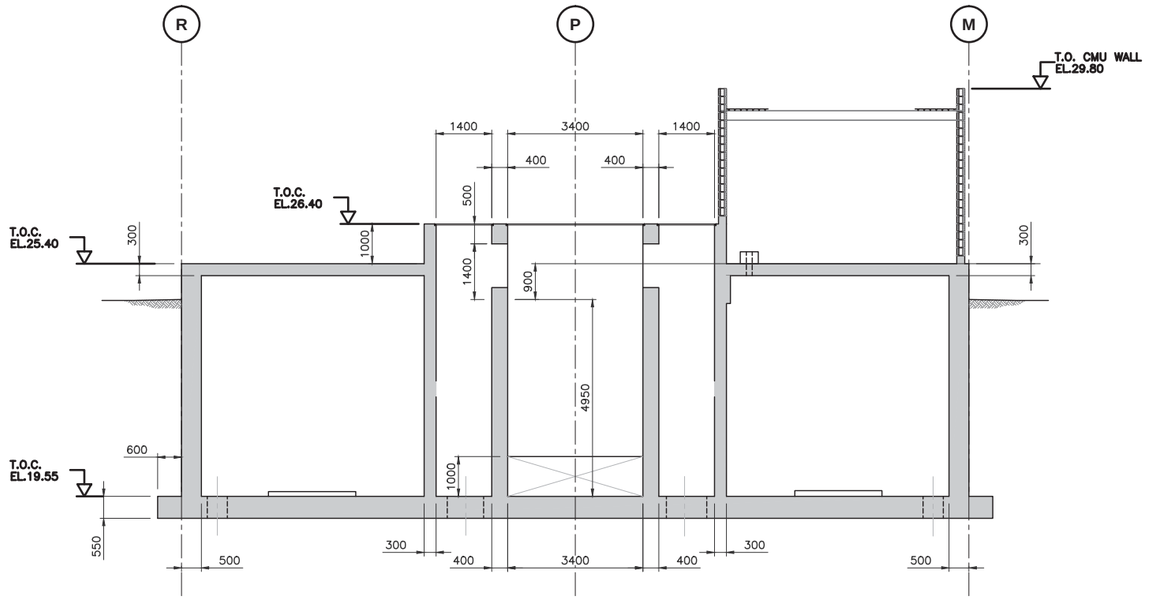
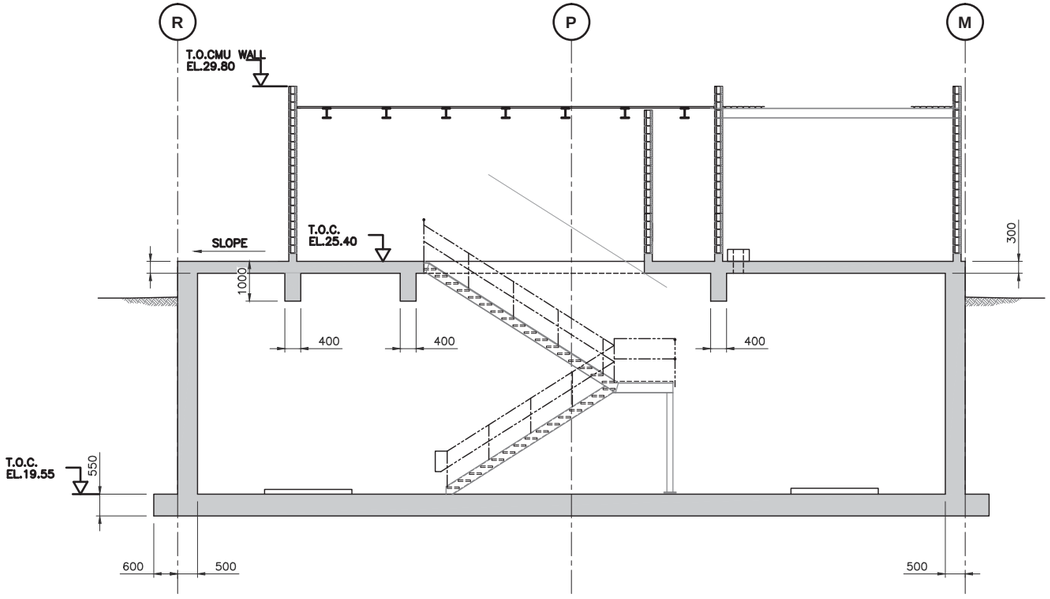


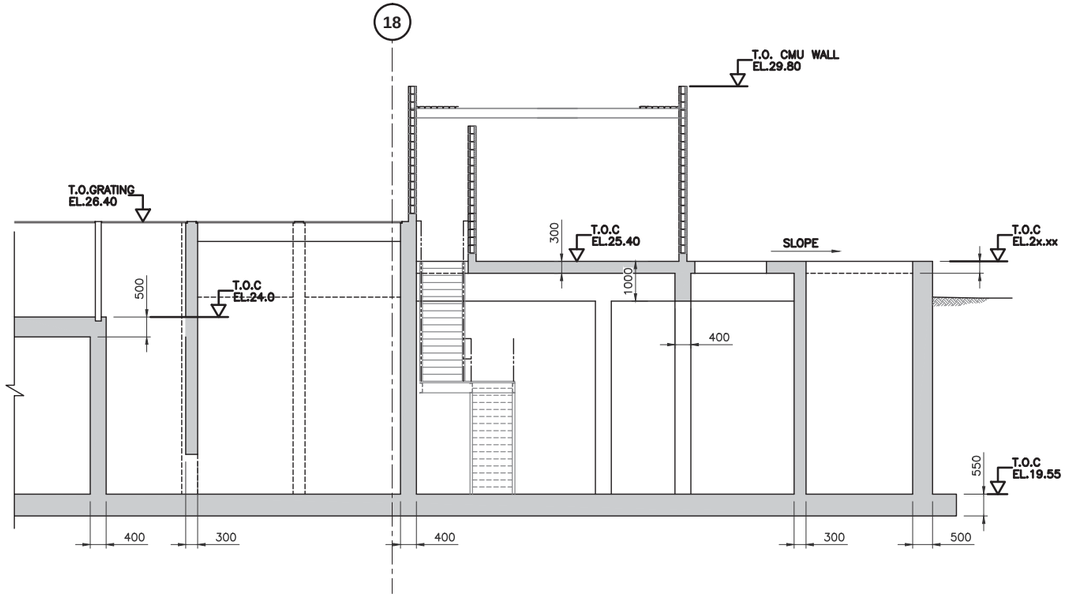
SECTION 1 / S511
SCALE 1:75



SECTION 2 / S511
SCALE 1:75



SECTION 3 / S511
SCALE 1:75



SECTION 4 / S511
SCALE 1:75

VERIFY SCALE IF PLAN SHEET IS REDUCED — 20 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	LP	KM	2016/06/10

DRN BY: LP
DES BY: SZ
CHK BY: WHM
APP BY: KM

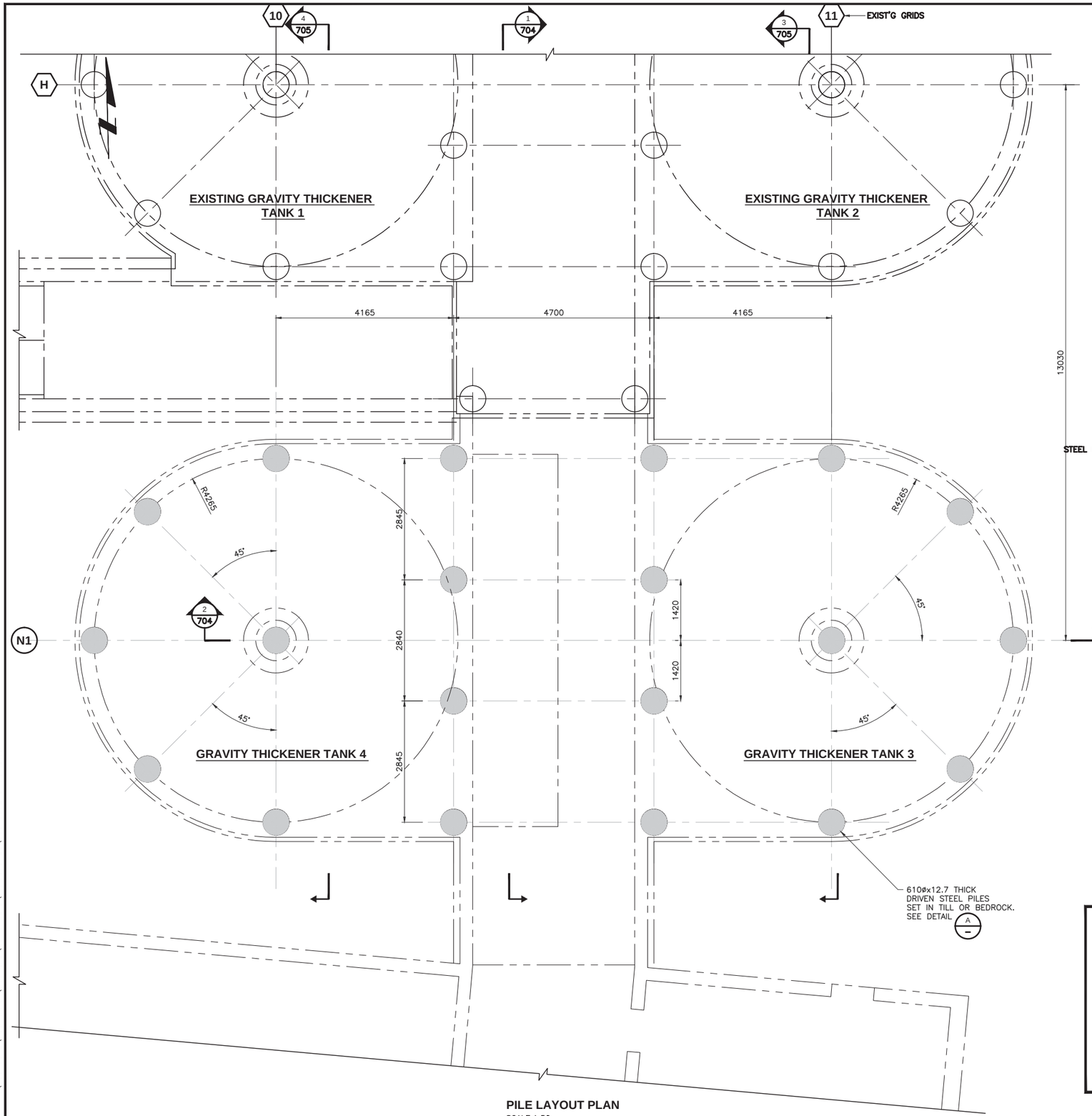
PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

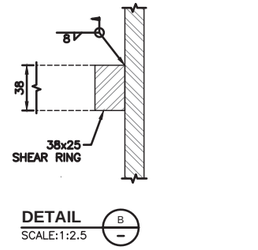
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
STRUCTURAL
RAS PUMP STATION
BUILDING SECTIONS

PROJECT START DATE (M / Y)	APR./2015
PROJECT NO.	60343972
FILENAME	60343972 S-514.dwg
RDN DRAWING No.	
DRAWING No.	S-514

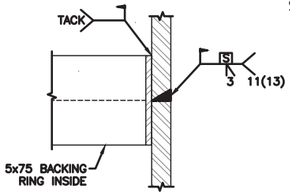
Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:44 PM
Layout-Sheet Name: S-514
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\STRUCTURES\60343972 S-514.DWG



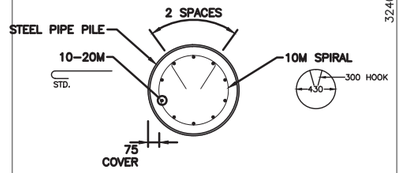
PILE LAYOUT PLAN
SCALE:1:50



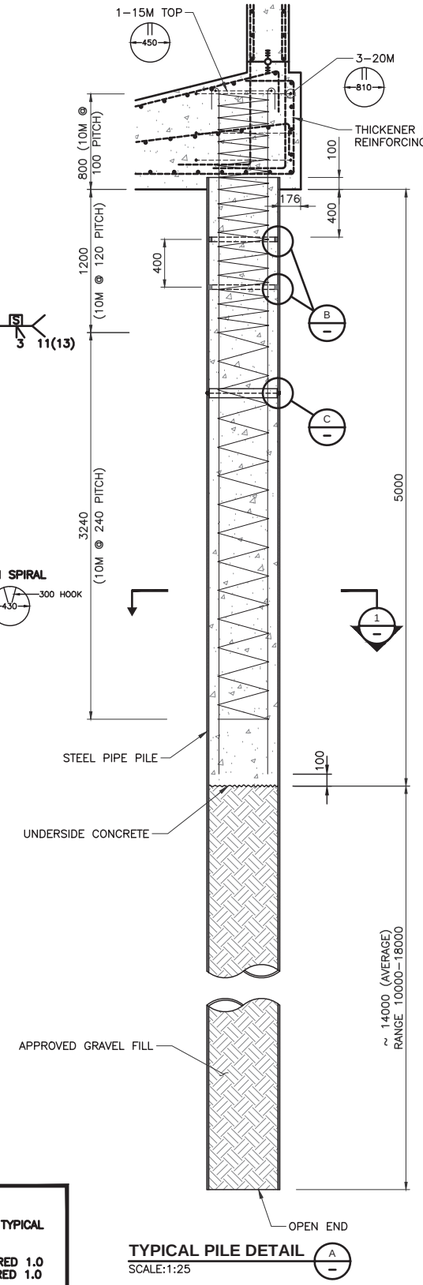
DETAIL B
SCALE:1:2.5



DETAIL C
SCALE:1:2.5



SECTION 1
SCALE:1:20



TYPICAL PILE DETAIL A
SCALE:1:25

PILE NOTES:

1. STEEL PIPE PILE 610ø x 12.7 THICK TYPICAL ASTM A252 GRADE 3.
2. WORKING LOAD: 750 kN VERT. FACTORED 1.0
   350kN HORIZ. FACTORED 1.0
3. ULTIMATE CAPACITY: 2750kN
   MIN. HAMMER WEIGHT = 2500kg
   MIN. DROP = 3000
   MIN. SET = 6 BLOWS FOR LAST 25mm.
4. FILL TOP 5000 w/ CONCRETE, 35MPa, SAME MIX AS FLOOR.
5. BOTTOM, OPEN ENDED.
6. PILES INSTALLED VERTICAL.

REV	DESCRIPTION	DRN	CHK	DATE (YMD)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	GG	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	GG	KM	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

DRN BY: LP
DES BY: SZ
CHK BY: WHM
APP BY: KM

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-5400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

STRUCTURAL
GRAVITY THICKENER 3 & 4
PILE LAYOUT

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972 S-701.dwg
RDN DRAWING No.:
DRAWING No.: S-701

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:44 PM
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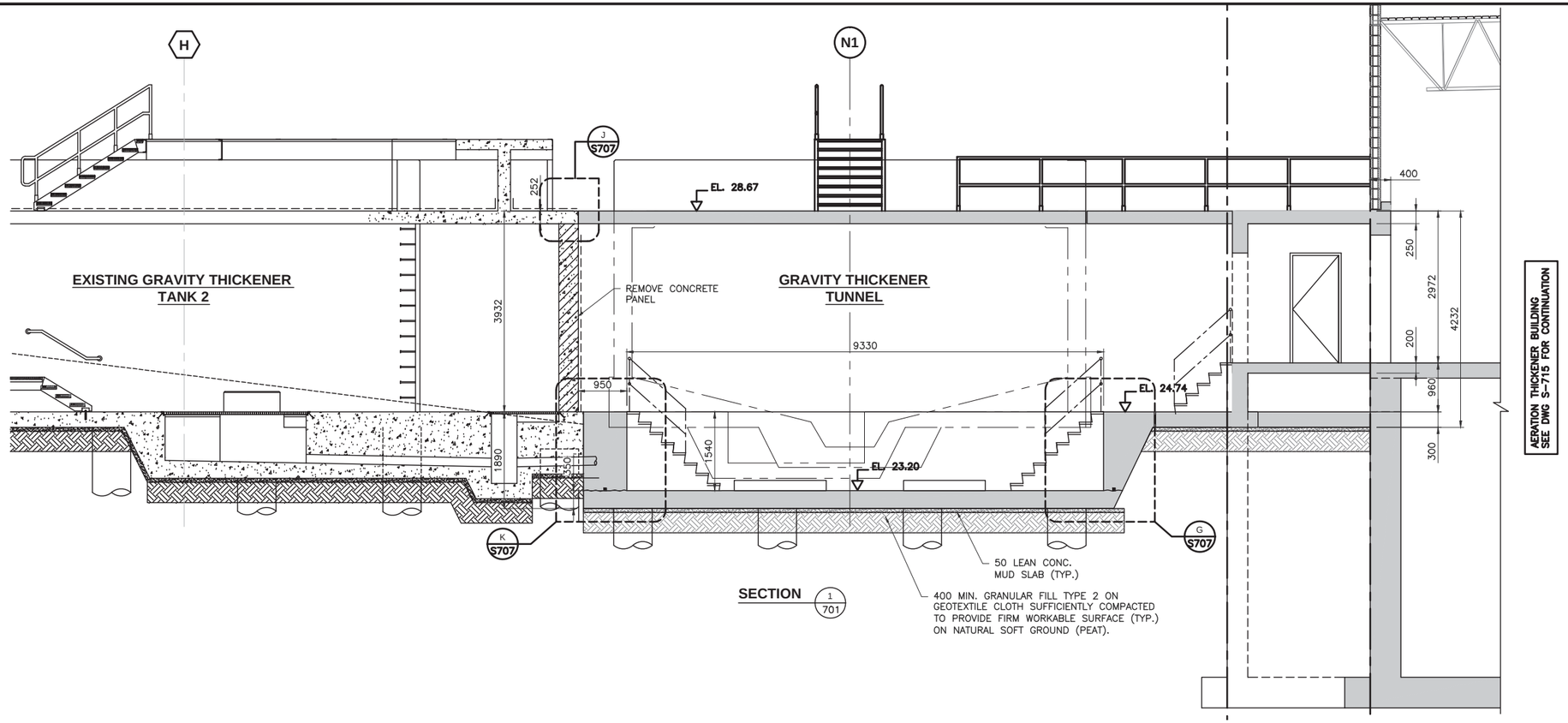
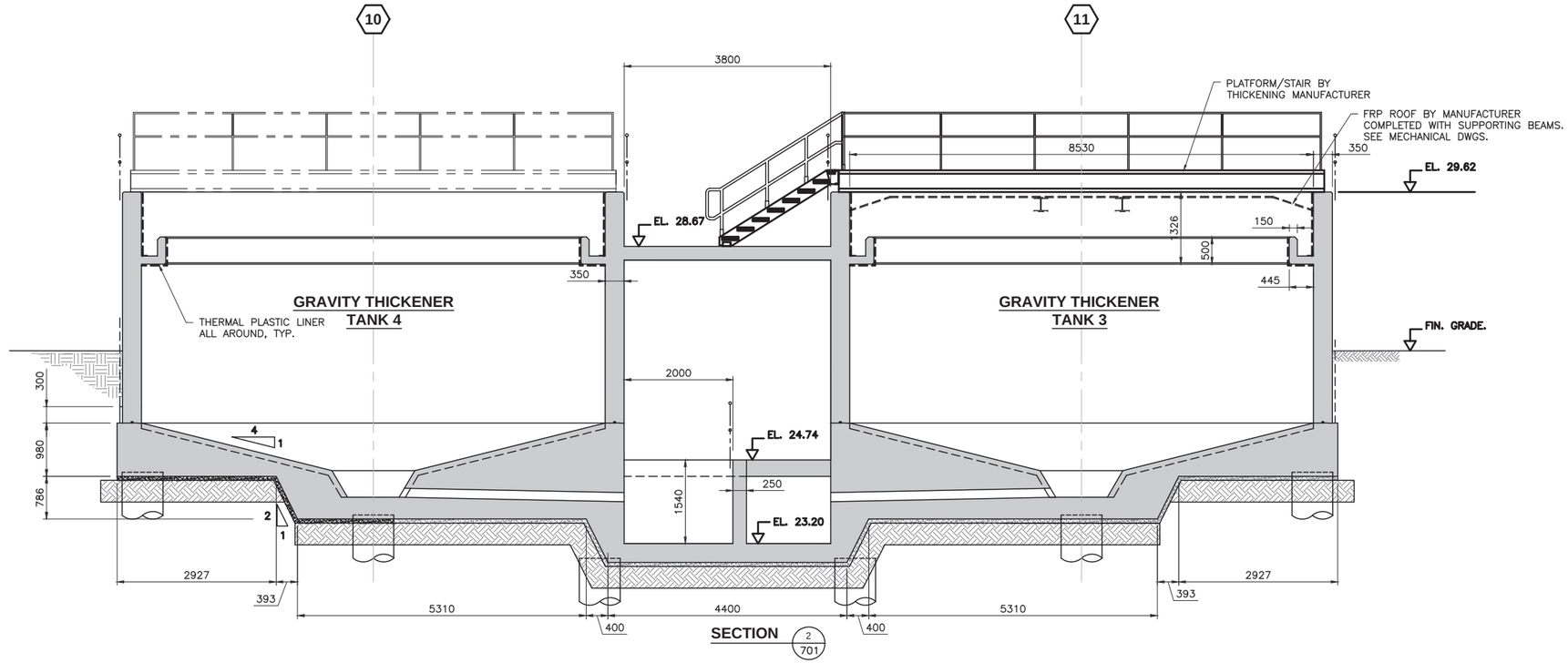
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\STRUCTURES\60343972 S-701.DWG



SECTION 1/701



SECTION 2/701

VERIFY SCALE IF PLAN SHEET IS REDUCED — 20 mm

DRN BY:	DES BY:	CHK BY:	APP BY:	REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
LP	SZ	WHM	KM	B	ISSUED FOR 90% DETAILED DESIGN REVIEW	GG	KM	2016/06/10
				A	ISSUED FOR 60% DETAILED DESIGN REVIEW	GG	KM	2016/01/29

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
STRUCTURAL
GRAVITY THICKENER 3 & 4
SECTIONS & DETAILS

PROJECT START DATE (M / Y)	APR./2015
PROJECT NO.	60343972
FILENAME	60343972 S-704.dwg
RDN DRAWING No.	
DRAWING No.	S-704

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:44 PM
Layout-Sheet Name: S-704
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\STRUCTURES\60343972 S-704.DWG

DESIGN CRITERIA:

DESIGN LOADS (AERATION AND THICKENING BUILDING)

1. LIVE LOADS:

FLOOR LIVE LOADS:	4.8 kPa + EQUIPMENT
ROOF LIVE LOAD:	1.0 KPa

2. SNOW LOADS:

IMPORTANCE CATEGORY		HIGH
IMPORTANCE FACTOR,	Is	(ULS) = 1.15
	Is	(SLS) = 0.9
1/50 YEAR GROUND SNOW LOAD,	Ss =	2.3 kPa+DRIFT
1/50 YEAR ASSOCIATED RAIN LOAD,	Sr =	0.4 kPa

3. WIND LOAD:

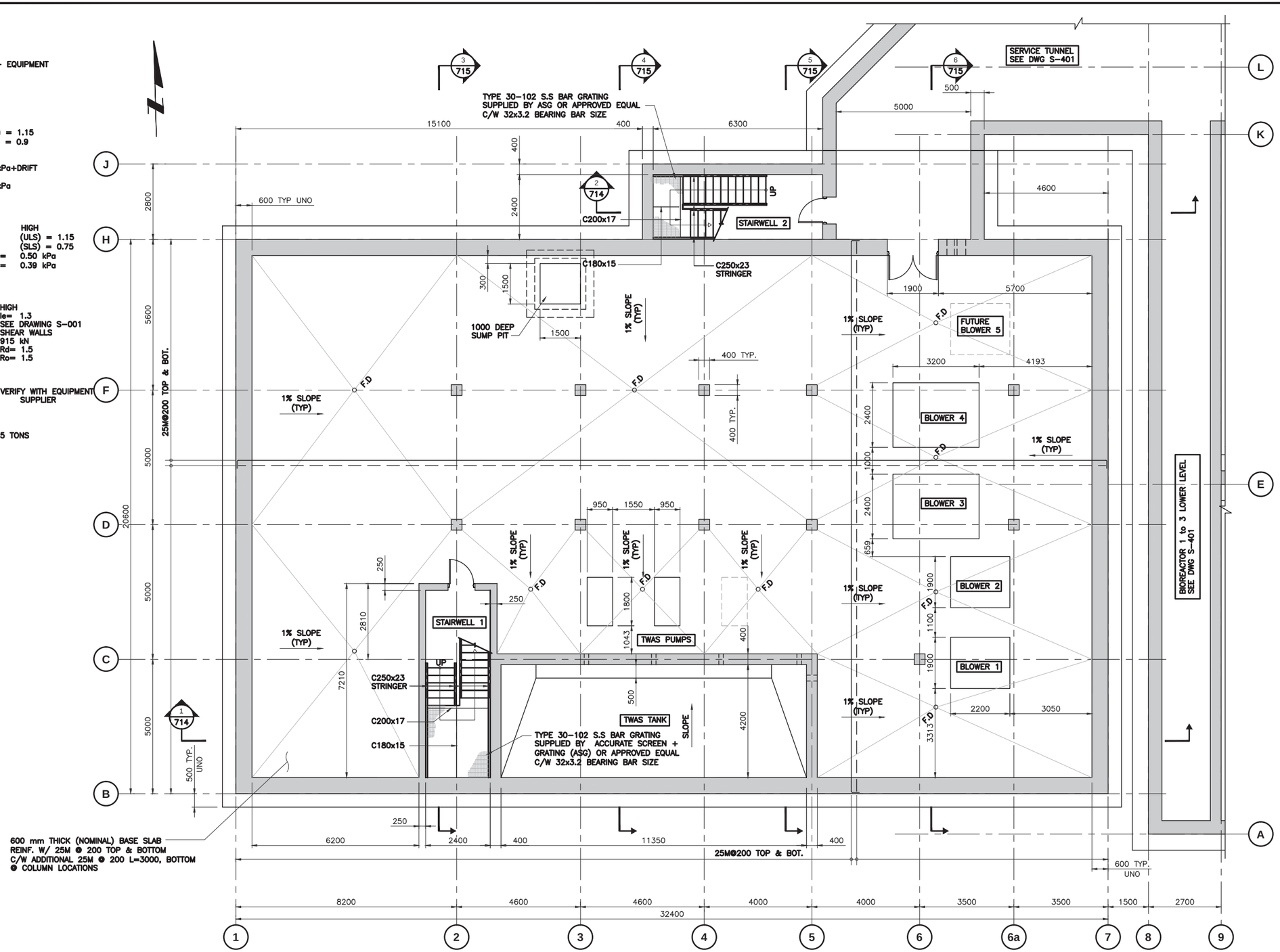
IMPORTANCE CATEGORY		HIGH
IMPORTANCE FACTOR,	Iw	(ULS) = 1.15
	Iw	(SLS) = 0.75
1/50 HOURLY WIND PRESSURE	q50 =	0.50 kPa
1/10 HOURLY WIND PRESSURE	q10 =	0.39 kPa

4. SEISMIC DESIGN DATA:

IMPORTANCE CATEGORY:	HIGH
IMPORTANCE FACTOR:	Ie= 1.3
FOR SEISMIC DATA:	SEE DRAWING S-001
BASIC SEISMIC FORCE RESISTING SYSTEM:	SHEAR WALLS
DESIGN BASE SHEAR:	915 kN
RESPONSE MODIFICATION FACTOR:	Rd= 1.5
	Ro= 1.5

5. OTHER LOADS:

MECHANICAL EQUIPMENT:	VERIFY WITH EQUIPMENT SUPPLIER
HOIST AND CRANE CAPACITIES (DOES NOT INCLUDE HOISTING EQUIPMENT WEIGHT AND IMPACT):	5 TONS



LOWER LEVEL PLAN @ EL.19.55
SCALE:1:75

REV	DESCRIPTION	DRN	CHK	DATE (YYMD)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	LP	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	LP	KM	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

DRN BY: LP
DES BY: MN
CHK BY: WHM
APP BY: KM

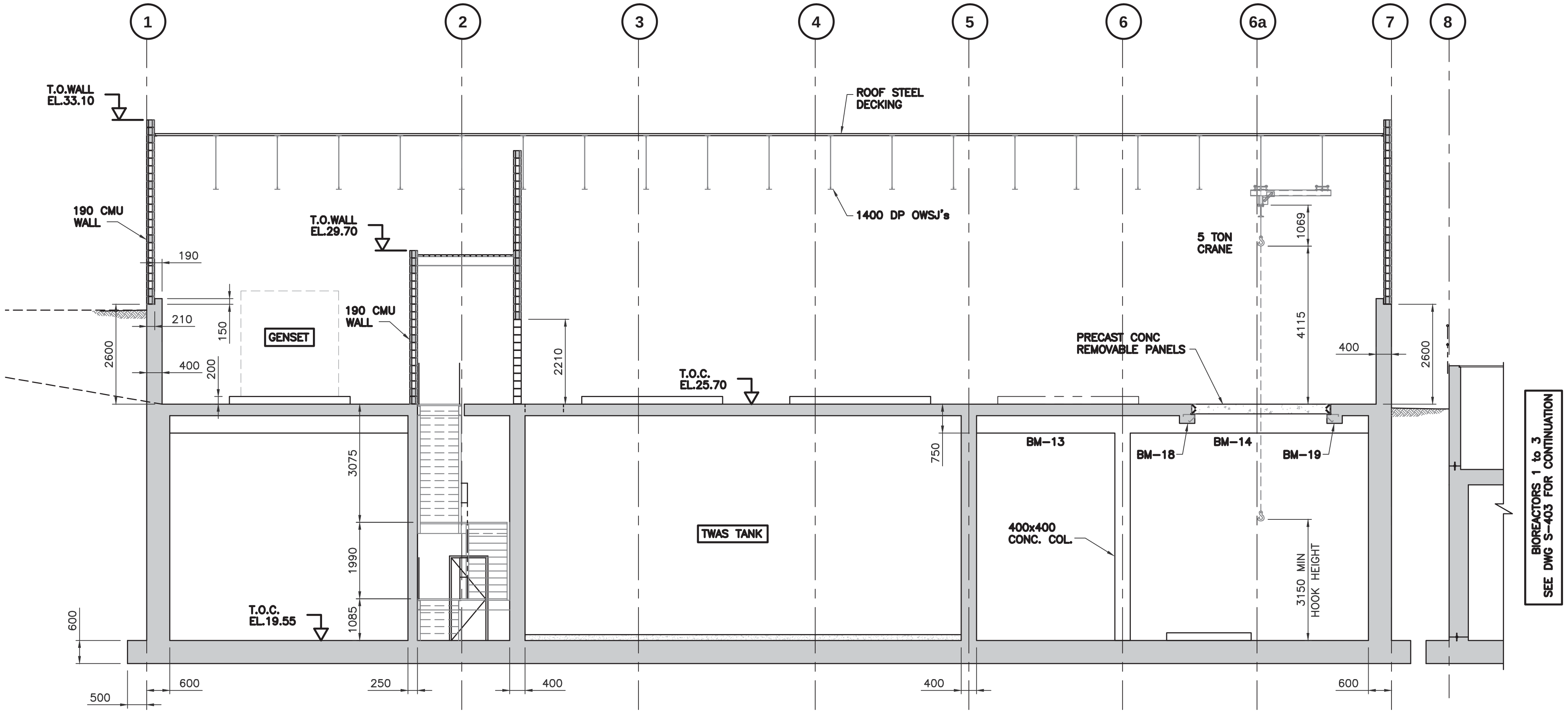
PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

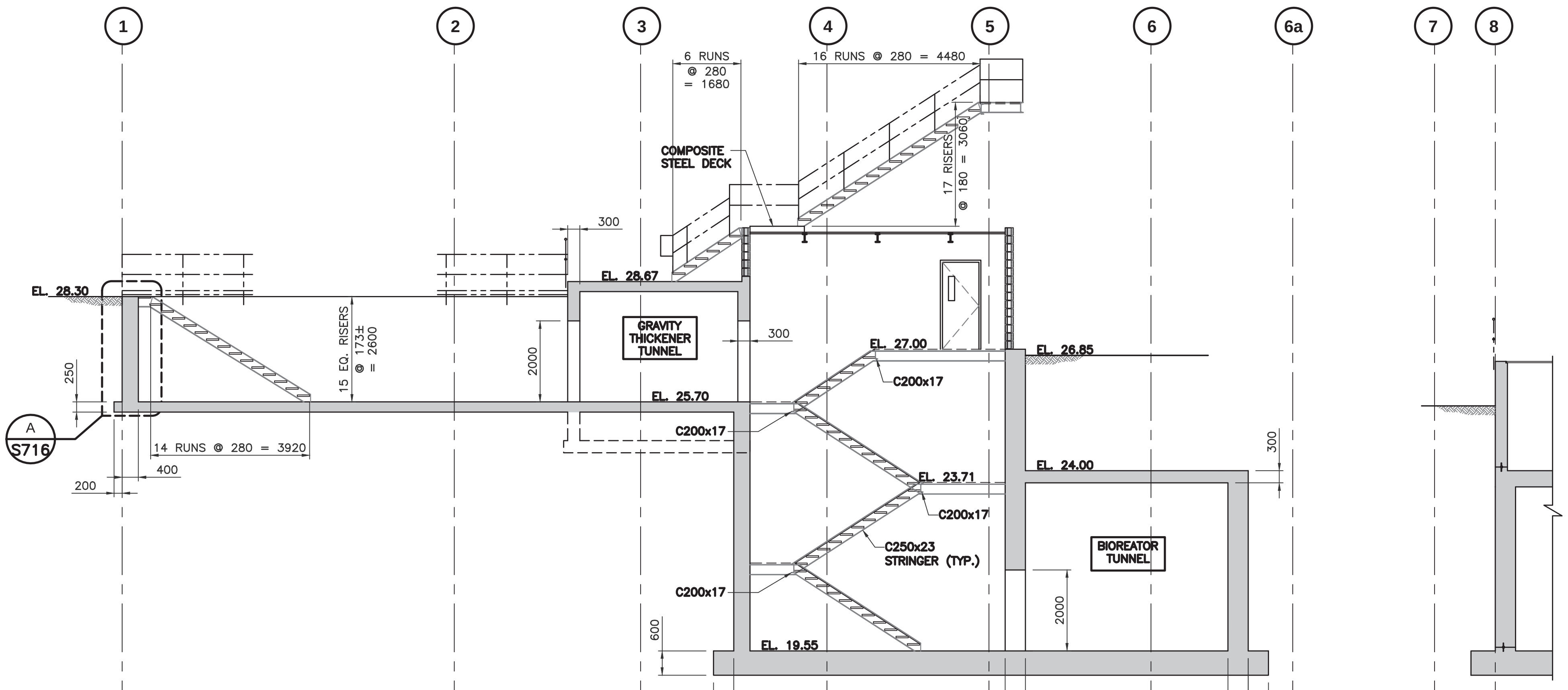
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
STRUCTURAL
AERATION AND THICKENING BUILDING
LOWER LEVEL FLOOR PLAN

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972 S-711.dwg
RDN DRAWING No.:
DRAWING No.: S-711

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:45 PM
Layout-Sheet Name: S-711
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\STRUCTURES\60343972 S-711.DWG



SECTION 1/S711
SCALE 1:75



SECTION 2/S711
SCALE 1:75

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	LP	KM	2016/06/10

30 mm — VERIFY SCALE IF PLAN SHEET IS REDUCED

DRN BY: LP
DES BY: MN
CHK BY: WHM
APP BY: KM

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
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3292 PRODUCTION WAY,
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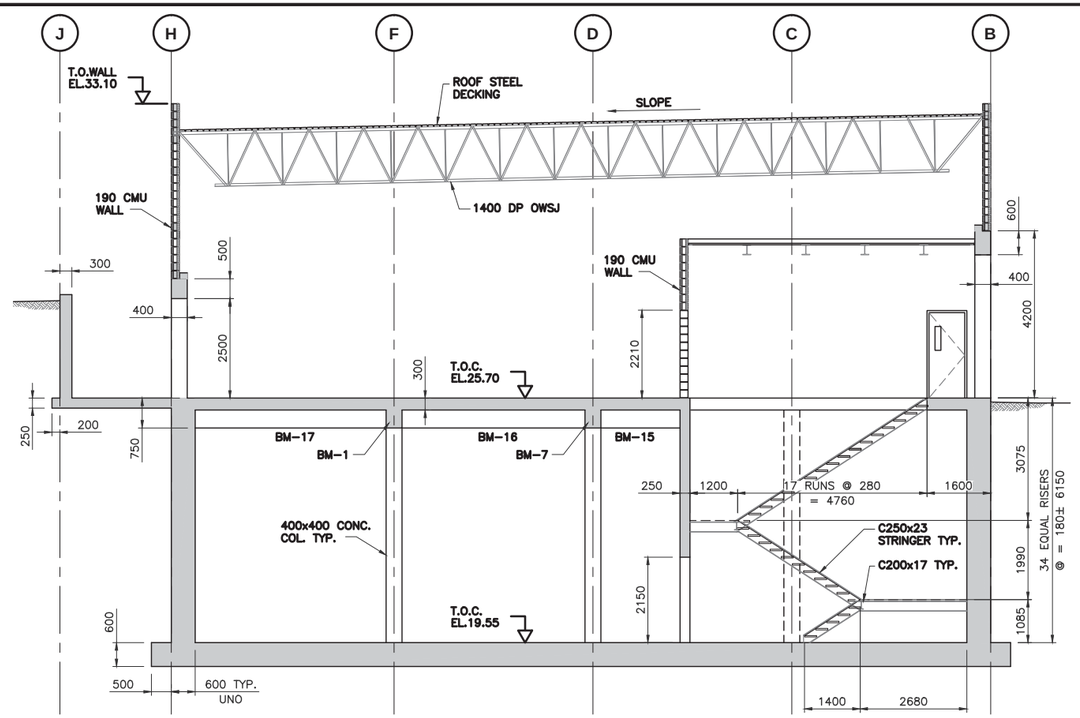
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

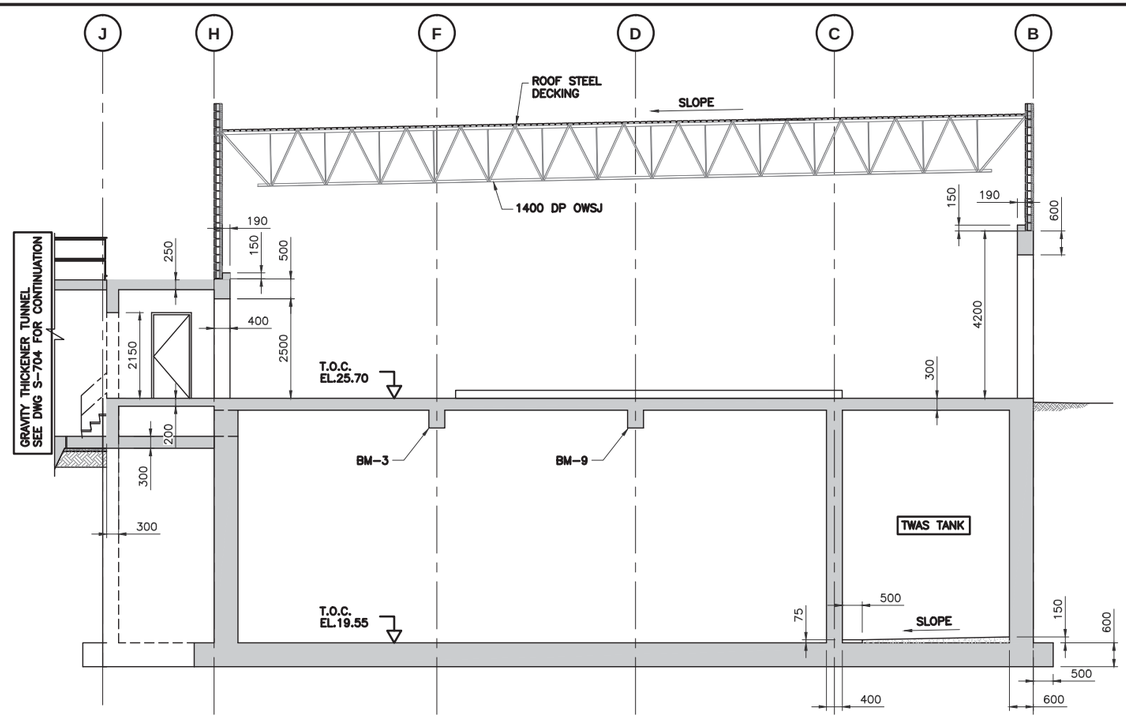
STRUCTURAL
AERATION AND THICKENING BUILDING
SECTIONS & DETAILS

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972 S-714 S-715.dwg
RDN DRAWING No.:
DRAWING No.: **S-714**

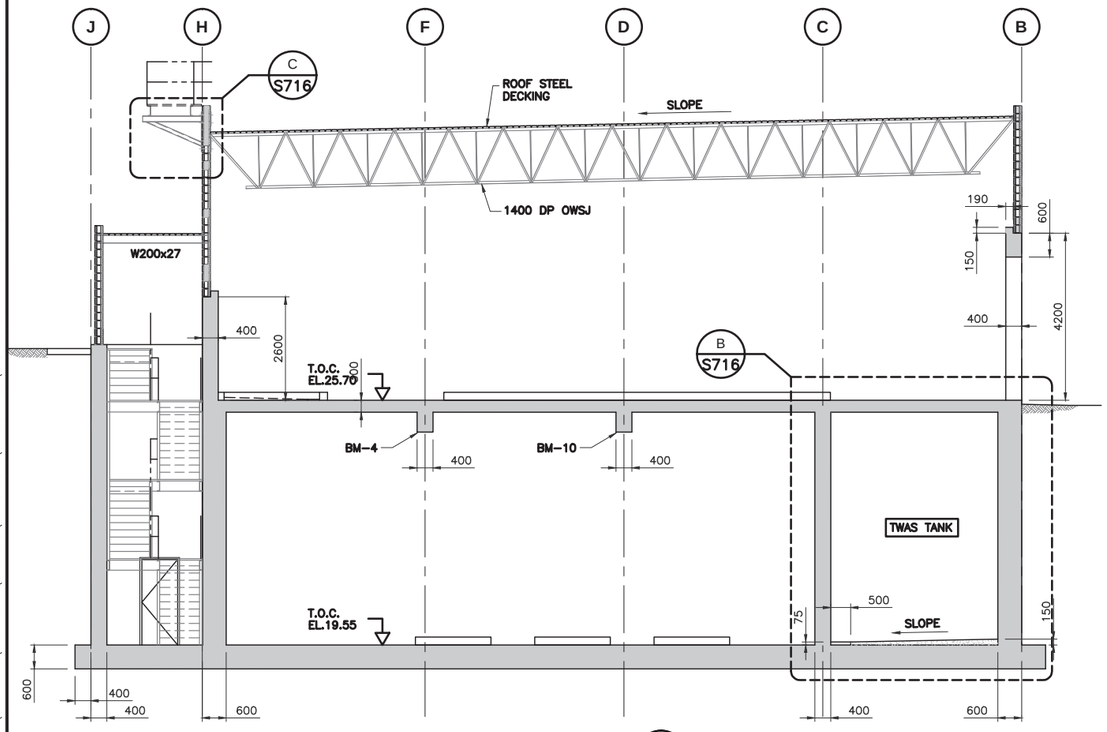
Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:45 PM
Layout-Sheet Name: S-714
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\STRUCTURES\60343972 S-714 S-715.DWG



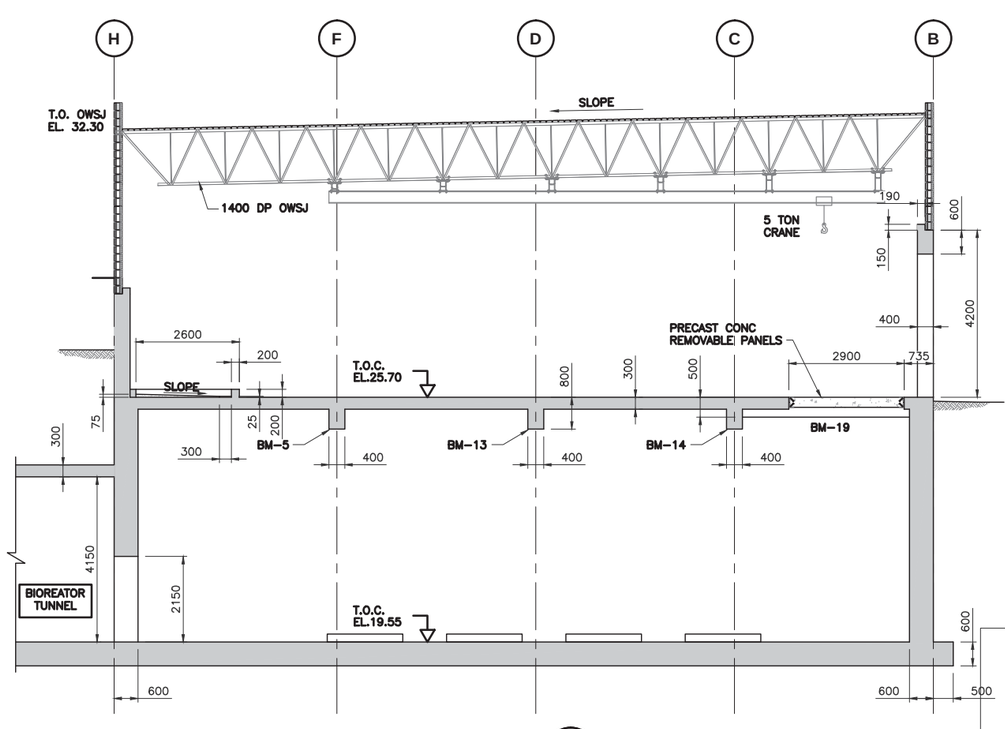
SECTION 3 S711
SCALE 1:75



SECTION 4 S711
SCALE 1:75



SECTION 5 S711
SCALE 1:75



SECTION 6 S711
SCALE 1:75

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
A	ISSUED FOR 90% DETAILED DESIGN REVIEW	LP	KM	2016/06/10

VERIFY SCALE IF PLAN SHEET IS REDUCED — 20 mm

DRN BY: LP
DES BY: MN
CHK BY: WHM
APP BY: KM

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
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4th FLOOR,
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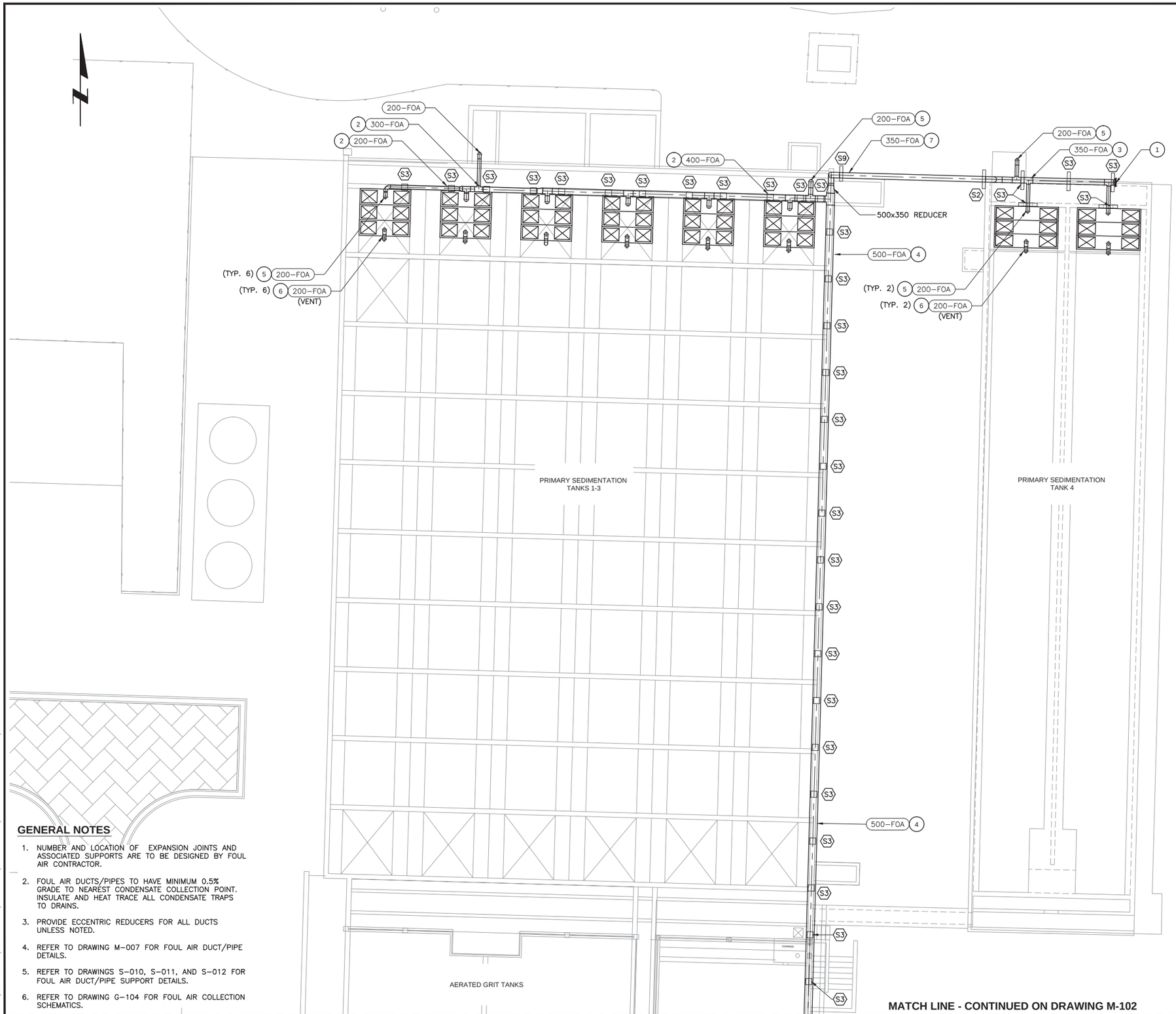
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

STRUCTURAL
AERATION AND THICKENING BUILDING
SECTIONS & DETAILS

PROJECT START DATE (M / Y)	APR./2015
PROJECT NO.	60343972
FILENAME	60343972 S-714 S-715.dwg
RDN DRAWING No.	
DRAWING No.	S-715

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:45 PM
Layout-Sheet Name: S-715
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\STRUCTURES\60343972 S-714 S-715.DWG



KEY NOTES

1. BLIND FLANGE FOR FUTURE EXPANSION.
2. SUPPORT FOA DUCT FROM TOP OF EXISTING CONCRETE BEAM (TOC EL 30.63m). REFER TO DETAIL C/SHEET S–010. MAXIMUM SPACING 4.0m O/C.
3. DUCT SUPPORT (S3) WITH SADDLE BASE PLATE FASTENED TO TOP AND SIDES OF PST WALL.
4. SUPPORT FOA DUCT FROM TOP OF EXISTING CONCRETE ROOF BEAM (TOC EL. 30.78m). REFER TO DETAIL C/S–010. MAXIMUM SUPPORT SPACING 4.0m O/C.
5. FOA DROP c/w BUTTERFLY VALVE. CUT HOLE IN EXISTING CHANNEL CHECKER PLATE AND INSTALL FOUL AIR DUCT. SIZE AS SHOWN.
6. BUTTERFLY DAMPER ON GOOSENECK INLET VENT (TYPICAL).
7. INSTALL 10m LONG PIPE SUPPORT BRIDGE AS PER DETAIL B/S–012 AND BRIDGE BRACKET AT END WALL.

GENERAL NOTES

1. NUMBER AND LOCATION OF EXPANSION JOINTS AND ASSOCIATED SUPPORTS ARE TO BE DESIGNED BY FOUL AIR CONTRACTOR.
2. FOUL AIR DUCTS/PIPES TO HAVE MINIMUM 0.5% GRADE TO NEAREST CONDENSATE COLLECTION POINT. INSULATE AND HEAT TRACE ALL CONDENSATE TRAPS TO DRAINS.
3. PROVIDE ECCENTRIC REDUCERS FOR ALL DUCTS UNLESS NOTED.
4. REFER TO DRAWING M–007 FOR FOUL AIR DUCT/PIPE DETAILS.
5. REFER TO DRAWINGS S–010, S–011, AND S–012 FOR FOUL AIR DUCT/PIPE SUPPORT DETAILS.
6. REFER TO DRAWING G–104 FOR FOUL AIR COLLECTION SCHEMATICS.

MATCH LINE - CONTINUED ON DRAWING M-102

0 1250 3750 6250mm

SITE PLAN
SCALE: 1:125

VERIFY SCALE IF PLAN SHEET IS RESIZED — 30 mm

REV	DESCRIPTION	DRN	CHK	DATE (YMD)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	DDF	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

DRN BY: PTL
DES BY: MC
CHK BY: KM
APP BY: RJK

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

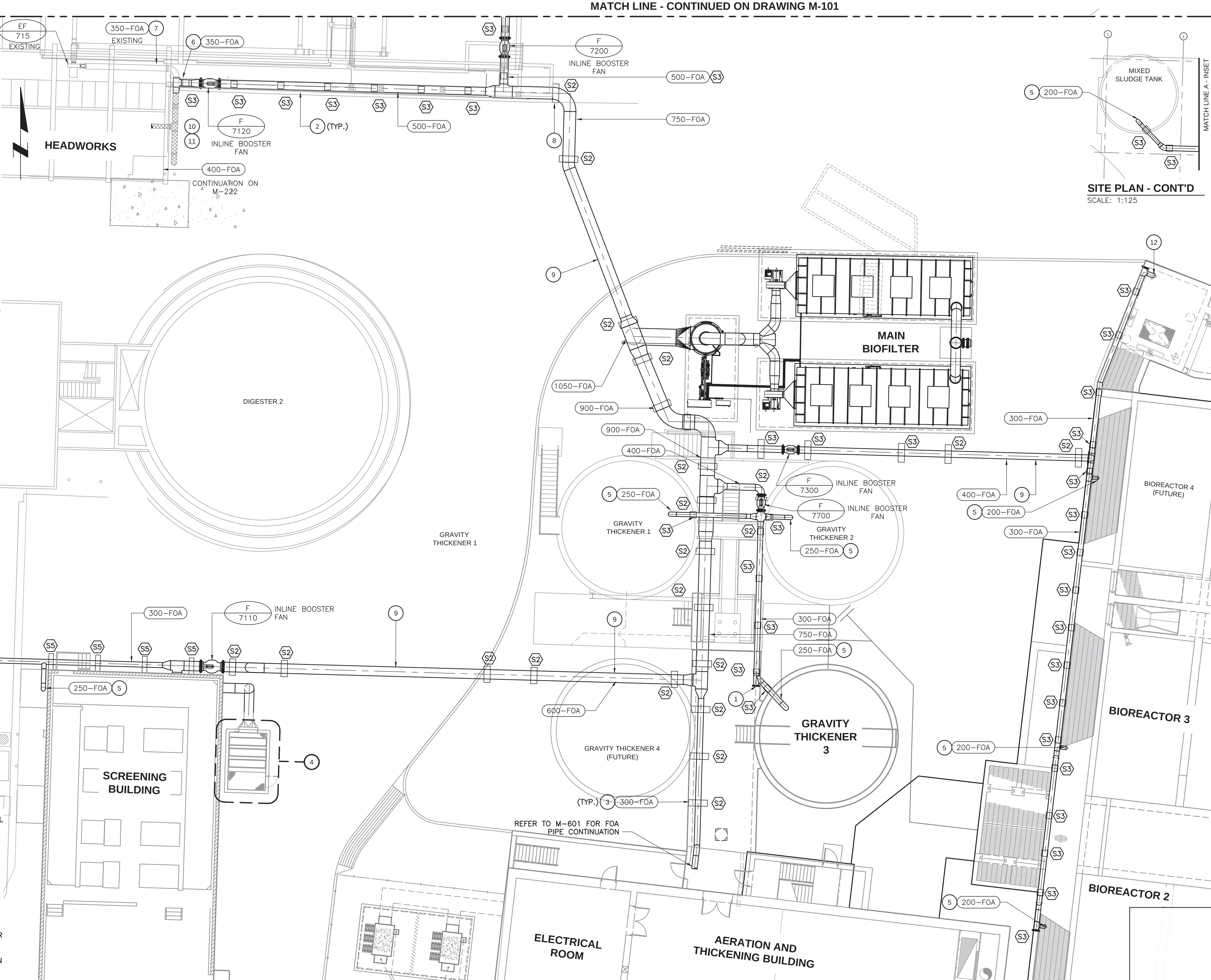
REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
FOUL AIR COLLECTION SYSTEM
PARTIAL SITE PLAN - SHEET 1 OF 2

PROJECT START DATE (M / Y)
APR./2015
PROJECT NO.
60343972
FILENAME
60343972-M-101.dwg
RDN DRAWING No.
DRAWING No.
M-101

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:51 PM
Layout-Sheet Name: M-101
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\PROCESS MECHANICAL\60343972-M-101.DWG

MATCH LINE - CONTINUED ON DRAWING M-101



SITE PLAN
SCALE: 1:125

SITE PLAN - CONT'D
SCALE: 1:125

KEY NOTES

1. BLIND FLANGE FOR FUTURE EXPANSION.
2. SUPPORT FOA DUCT FROM EXISTING WALL BEAM. REFER TO DETAIL C/S–010. MAXIMUM SPACING 4.0m o/c.
3. FREESTANDING FOA DUCT SUPPORT. REFER TO DETAIL B/S–010. MAXIMUM SPACING 4.0m O/C.
4. SCREENING BUILDING CARBON SCRUBBER. REFER TO M–194.
5. FOA DROP c/w BUTTERFLY VALVE FOR BALANCING BY CONTRACTOR. SIZE AS SHOWN.
6. TIE EXISTING 350 DIA. PVC FOA DUCT INTO NEW 350–FOA DUCT.
7. INSTALL MULTI–VANE DAMPER ON EXISTING FAN IN ACCORDANCE WITH STD DETAIL M37/M–008.
8. S2 DUCT SUPPORT MOUNTED TO OUTSIDE OF EXISTING CONCRETE CHAMBER WALL.
9. FOA DUCT SUPPORTED BY BRIDGE. REFER TO STRUCTURAL DRAWING S–012.
10. REMOVE EXISTING 350 DIA. PVC FOUL AIR DUCT MOUNTED TO OUTSIDE WALL.
11. DEMOLISH ABOVE GROUND PORTION OF EXISTING DUCT. CAP DUCT AT GROUND. REMOVE EXISTING BOLLARDS.
12. CONNECT 250 DIA. DUCT TO EXISTING 350 DIA. SS FLANGED CONNECTION.

GENERAL NOTES

1. NUMBER AND LOCATION OF EXPANSION JOINTS AND ASSOCIATED SUPPORTS ARE TO BE DESIGNED BY FOUL AIR CONTRACTOR.
2. FOUL AIR DUCTS/PIPES TO HAVE MINIMUM 0.5% GRADE TO NEAREST CONDENSATE COLLECTION POINT. INSULATE AND HEAT TRACE ALL CONDENSATE TRAPS TO DRAINS.
3. PROVED ECCENTRIC REDUCERS FOR ALL DUCTS UNLESS NOTED.
4. REFER TO DRAWING M–007 FOR FOUL AIR DUCT/PIPE DETAILS.
5. REFER TO DRAWINGS S–010, S–011, AND S–012 FOR FOUL AIR DUCT/PIPE SUPPORT DETAILS.
6. REFER TO DRAWING G–104 FOR FOUL AIR COLLECTION SCHEMATICS.

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:52 PM
Layout-Sheet Name: M–102
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\PROCESS MECHANICAL\60343972-M-102.DWG

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	DDF	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

DRN BY: PTL
DES BY: MC
CHK BY: KM
APP BY: RJK

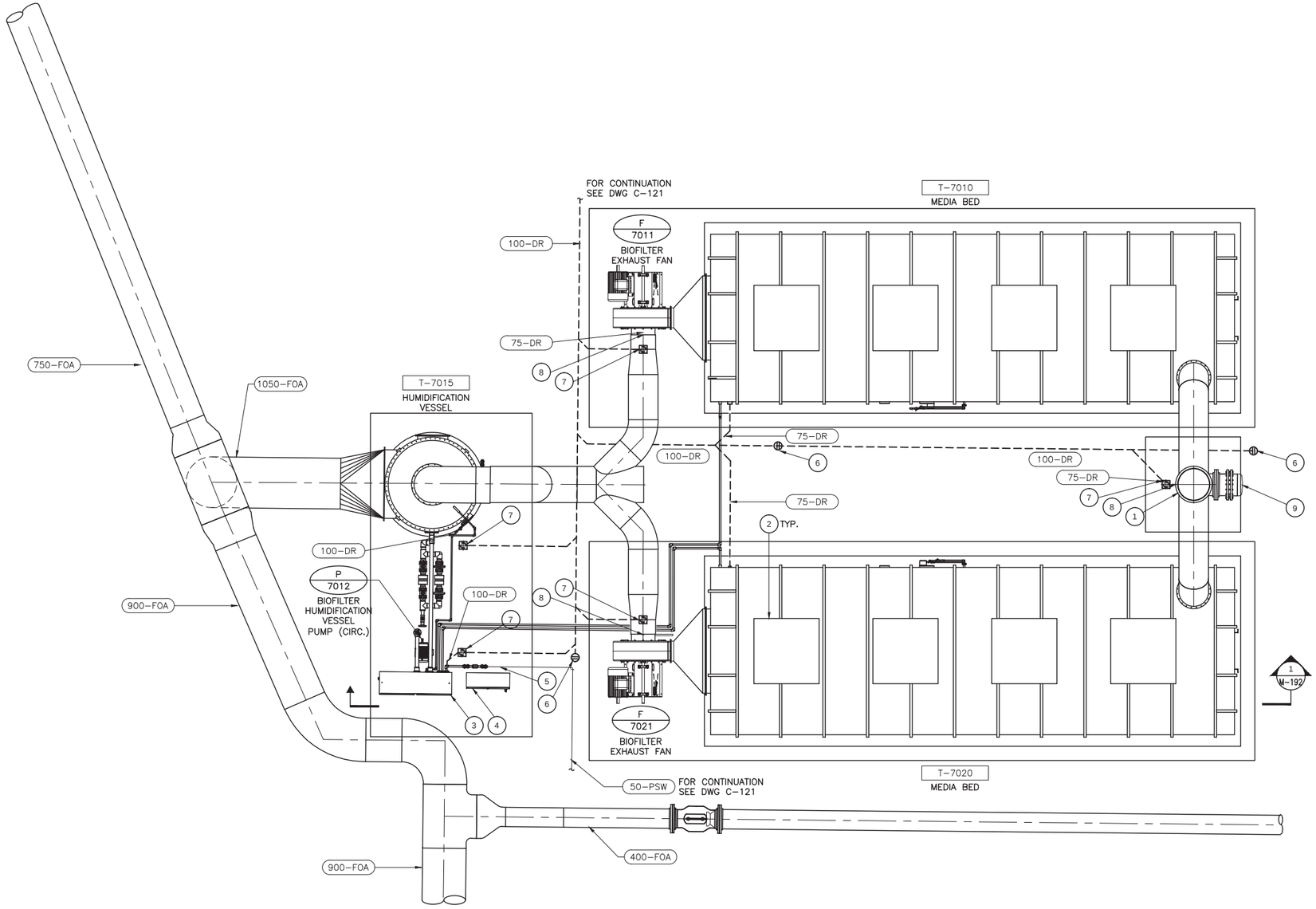
PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
FOUL AIR COLLECTION SYSTEM
PARTIAL SITE PLAN - SHEET 2 OF 2

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972-M-102.dwg
RDN DRAWING No.:
DRAWING No.: M-102



BIOFILTER - PLAN
SCALE: 1:50

GENERAL NOTES

1. BIOFILTER EQUIPMENT PACKAGE BY A SINGLE VENDOR.
2. COORDINATE LOCATION OF DRAINS AND WATER PIPING WITH EQUIPMENT VENDOR.
3. INSULATE AND HEAT TRACE ALL WATER PIPING AND DRAINS TO PREVENT FREEZING. EQUIPMENT SHALL BE FULLY WINTERIZED FOR AN OUTDOOR INSTALLATION IN THE NANAIMO, BC CLIMATE.

KEY NOTES

1. 750ømm EXHAUST STACK 9.0m TALL.
2. SYNTHETIC MEDIA BED IN FRP VESSEL.
3. WATERBOX SUPPLIED AS PART OF BIOFILTER EQUIPMENT PACKAGE. REFER TO SPECIFICATIONS SECTION XXXX.
4. CONTROL PANEL SUPPLIED AS PART OF BIOFILTER EQUIPMENT PACKAGE. REFER TO SPECIFICATIONS SECTION XXXXX.
5. TIE 50–PSW INTO WATERBOX. WATER PIPING DESIGN FROM WATERBOX TO BIOFILTER COMPONENTS IS THE RESPONSIBILITY OF THE EQUIPMENT MANUFACTURER. PROVIDE FREEZE PROTECTION INCLUDING INSULATION AND HEAT TRACING FOR ALL EXPOSED OUTDOOR PIPING.
6. SANITARY CLEANOUT, SIZE TO MATCH DR PIPING.
7. FUNNEL FLOOR DRAIN CONNECTION. SIZE TO MATCH DR PIPING.
8. EQUIPMENT DRAIN c/w ISOLATION BALL VALVE.
9. 300mm DIA. HINGED INSPECTION PORT.

0 500 1500 2500mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	DDF	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

DRN BY: PTL
DES BY: MC
CHK BY: KM
APP BY: RJK

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
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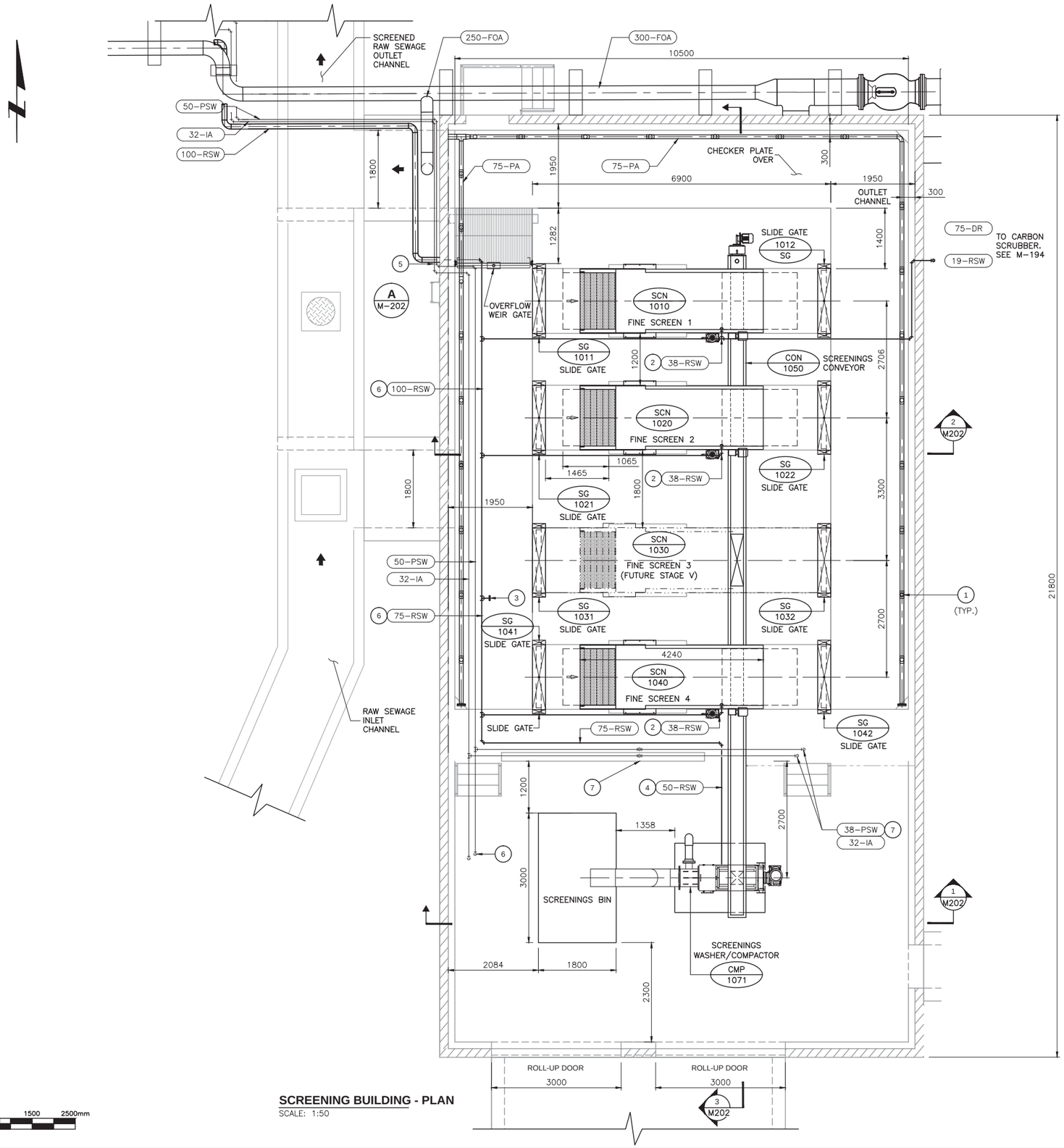
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
BIOFILTER
PLAN

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972-M-191.dwg
RDN DRAWING No.:
DRAWING No.: **M-191**



KEY NOTES

1. 20mm DROP c/w BALL VALVE, UNION AND TIDEFLEX TFA–1.50 DIFFUSER. INSTALL AT 1500mm SPACING O/C.
2. SCREEN WASH–WATER CONNECTION c/w ISOLATION BALL VALVE, Y–STRAINER, PRV, PRESSURE GAUGE, SOLENOID, AND UNION.
3. 32–RSW STUB FOR FUTURE CONNECTION c/w ISOLATION BALL VALVE AND THREADED CAP.
4. WASHER COMPACTOR WASH–WATER CONNECTION c/w ISOLATION BALL VALVE, Y–STRAINER, AND SOLENOID.
5. INSULATE AND HEAT TRACE OUTDOOR RSW AND PSW PIPING RUN ALONG WALL AND OVERHEAD OF SCREENING BUILDING.
6. IA & PSW HOSE STATION MOUNTED TO WALL. REFER TO STD 402/M–006.
7. HANDRAIL MOUNTED HOSE STATION. REFER TO STD 404/M–006.

SCREENING BUILDING - PLAN
SCALE: 1:50

0 500 1500 2500mm

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	DDF	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

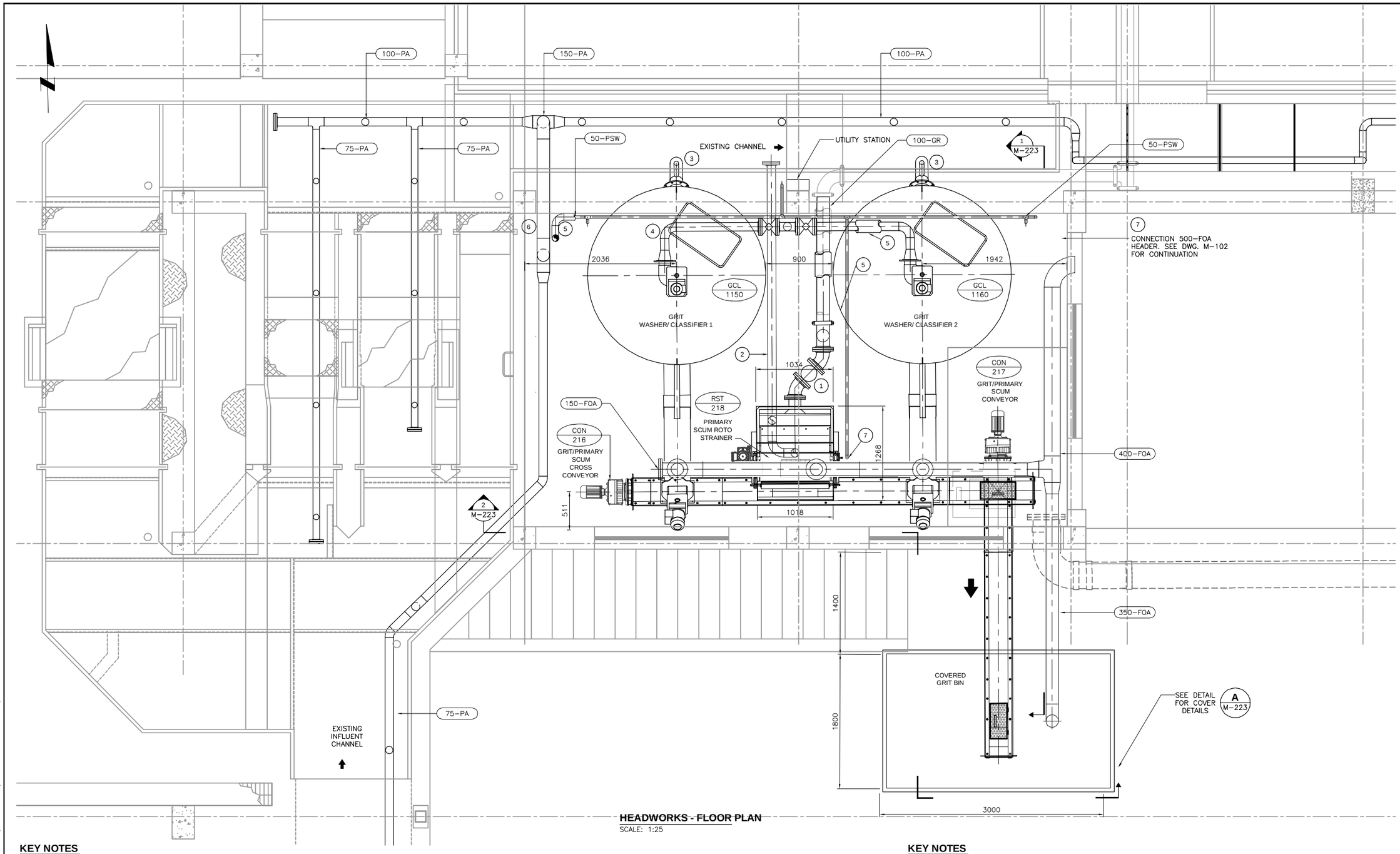
DRN BY: PTL
DES BY: LN
CHK BY: KM
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C. V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
PROCESS MECHANICAL
SCREENING BUILDING
MAIN FLOOR ARRANGEMENT PLAN

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972-M-201.dwg
RDN DRAWING No.:
DRAWING No.: M-201



HEADWORKS - FLOOR PLAN

SCALE: 1:25

KEY NOTES

1. RELOCATED BALL VALVE.
2. ROTO STRAINER OVERFLOW PIPE TO BE ROUTED UNDER FLOOR SLAB. TIE INTO GRIT INFLUENT CHANNEL DURING PLANT SHUTDOWN. COORDINATE SHUTDOWN WITH ENGINEERS. SEAL CHANNEL PENETRATION WITH GROUT.
3. 150mmø OVERFLOW TO BE PIPED INTO INFLUENT CHANNEL THROUGH CHECKER PLATE GRATING. MODIFY GRATING WITH MINIMUM 25mm HIGH WELDED SLEEVE. MAKE PENETRATION THROUGH CHECKER PLATE AIR TIGHT WITH SEALANT.
4. 100mmø GRIT FEED. ROUTE PIPING AS SHOWN FROM LOWER LEVEL THROUGH FLOOR. ROUTING MAY VARY DEPENDING ON GRIT CYCLONE VENDOR. COORDINATE ROUTING WITH ENGINEER.
5. ELECTRICAL HEAT TRACING INSTALLED AT ALL EXPOSED 100–GR, 150–PY AND 25–PSW PIPING INSULATED WITH PRE–FORMED 25mm FIBERGLASS INSULATION c/w ALUMINUM JACKETING.
6. CONNECT TO EXISTING 25–PSW.
7. CONNECT PLANT HOT WATER PIPING TO RST–218 AS SHOWN ON P–205. FIELD RUN PIPING HOT WATER PIPING FROM EXISTING BIN ROOM IN HEADWORKS BASEMENT SEAL PIPING PENETRATION IN FLOOR.

0 250 750 1250mm

KEY NOTES

1. REFER TO M–225 FOR PA PIPING AND COARSE BUBBLE AERATION PIPING DESIGN.

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	DDF	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	PTL	KM	2016/01/29

DRN BY: PTL
DES BY: JTK
CHK BY: MC
APP BY: KM

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
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604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
HEADWORKS
MAIN FLOOR ARRANGEMENT - PLAN

PROJECT START DATE (M / Y)	APR./2015
PROJECT NO.	60343972
FILENAME	60343972-M-221_M-222.dwg
RDN DRAWING No.	
DRAWING No.	M-222

KEYNOTES

1. UTILITY STATION MOUNTED TO WALLS. REFER TO DETAIL STD/402 ON DRAWING M–006.

BIOREACTOR 4 (FUTURE)

BIOREACTOR 3

BIOREACTOR 2

BIOREACTOR 1

SELECTOR 4-1 | SELECTOR 4-2 | AEROBIC 4-1 | AEROBIC 4-2 | AEROBIC 4-3

SELECTOR 3-1 | SELECTOR 3-2 | AEROBIC 3-1 | AEROBIC 3-2 | AEROBIC 3-3

SELECTOR 2-1 | SELECTOR 2-2 | AEROBIC 2-1 | AEROBIC 2-2 | AEROBIC 2-3

SELECTOR 1-1 | SELECTOR 1-2 | AEROBIC 1-1 | AEROBIC 1-2 | AEROBIC 1-3

300–DUF DUF UP INTO PE CHANNEL

MXR 3310 MIXER 1

MXR 3320 MIXER 2

MXR 3210 MIXER 1

MXR 3220 MIXER 2

MXR 3110 MIXER 1

MXR 3120 MIXER 2

P 3330 ML RECYCLE PUMP

P 3230 ML RECYCLE PUMP

P 3130 ML RECYCLE PUMP

P 3530 WAS PUMP 3

P 3520 WAS PUMP 2

P 3510 WAS PUMP 1

P 8401 SUMP PUMP 1

P 8401 SUMP PUMP 2

P 8301 SUMP PUMP 1

P 8302 SUMP PUMP 2

300–RAS 750 RAS UP TO RAS SPLITTER BOX

750–RAS

100–DR

100–DR TYP.

750–ML

150–ML DRAIN

150–WAS

200–WAS

300–WAS

65–PWD

300–DUF

300–SY

DUCKBILL

UTILITY STN (1)

FD

CO

FINE BUBBLE DIFFUSERS

0 1250 3750 6250mm

PLAN
SCALE: 1:125

REV	DESCRIPTION	DRN	CHK	DATE (YMD)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	KJW	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	KJW	KM	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

DRN BY: KJW
DES BY: LN
CHK BY: KM
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
BIOREACTORS 1 - 3
LOWER LEVEL GENERAL ARRANGEMENT PLAN

PROJECT START DATE (M / Y)
APR./2015

PROJECT NO.
60343972

FILENAME
60343972-M-401.dwg

RDN DRAWING No.

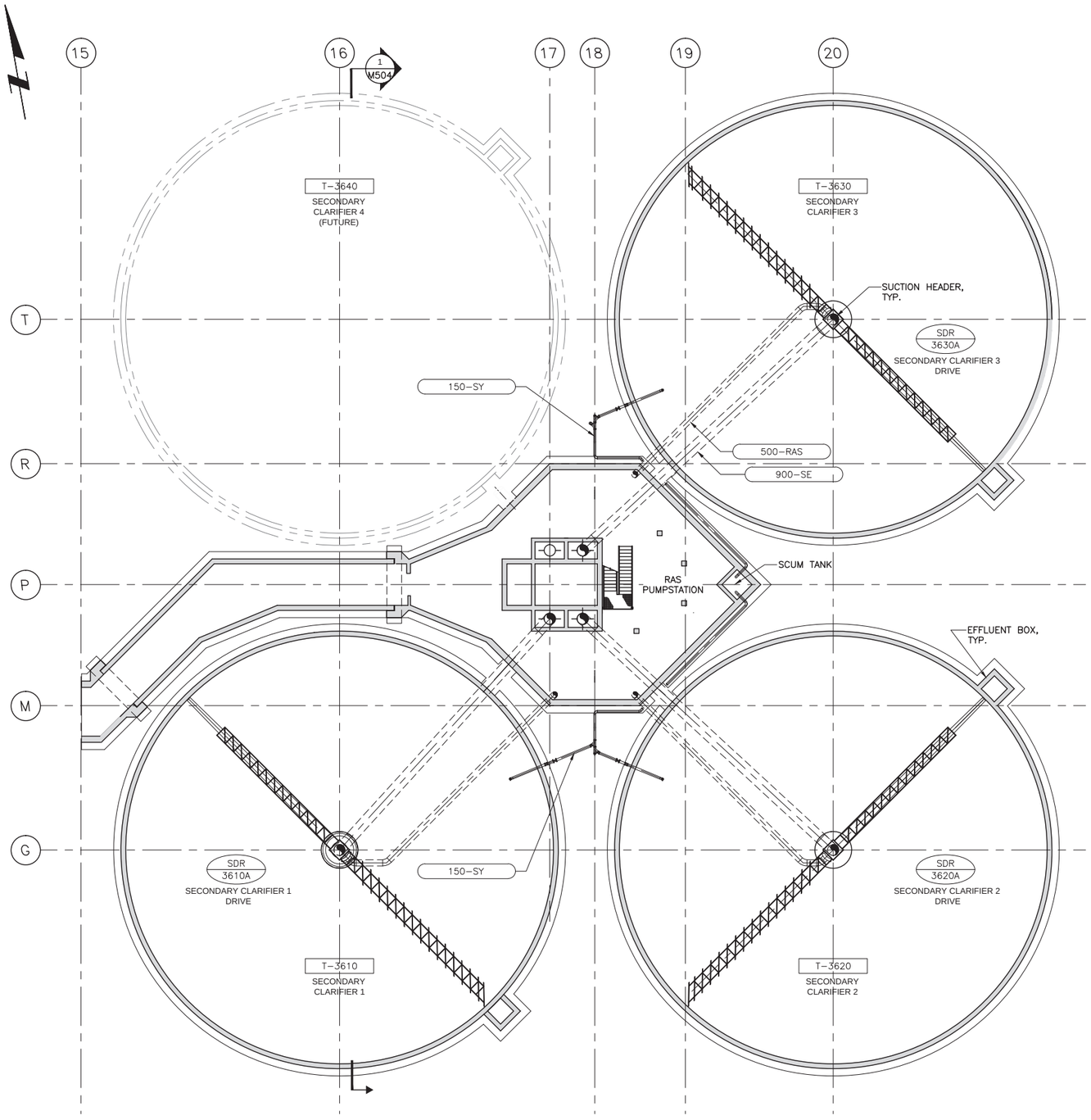
DRAWING No.
M-401

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:53 PM
Layout–Sheet Name: M–401
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\PROCESS MECHANICAL\60343972–M–401.DWG

GENERAL NOTES

1. REFER TO CIVIL DRAWINGS FOR CONTINUATION OF YARD PIPING.

KEY NOTES



GENERAL ARRANGEMENT - LOWER PLAN
SCALE: 1:200

0 5 10 m
1:200

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:53 PM
Layout-Sheet Name: M-501
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\PROCESS MECHANICAL\60343972-M-501.DWG

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	DDF	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	DDF	KM	2016/01/29

DRN BY: DDF
DES BY: LN
CHK BY: KM
APP BY: RJK

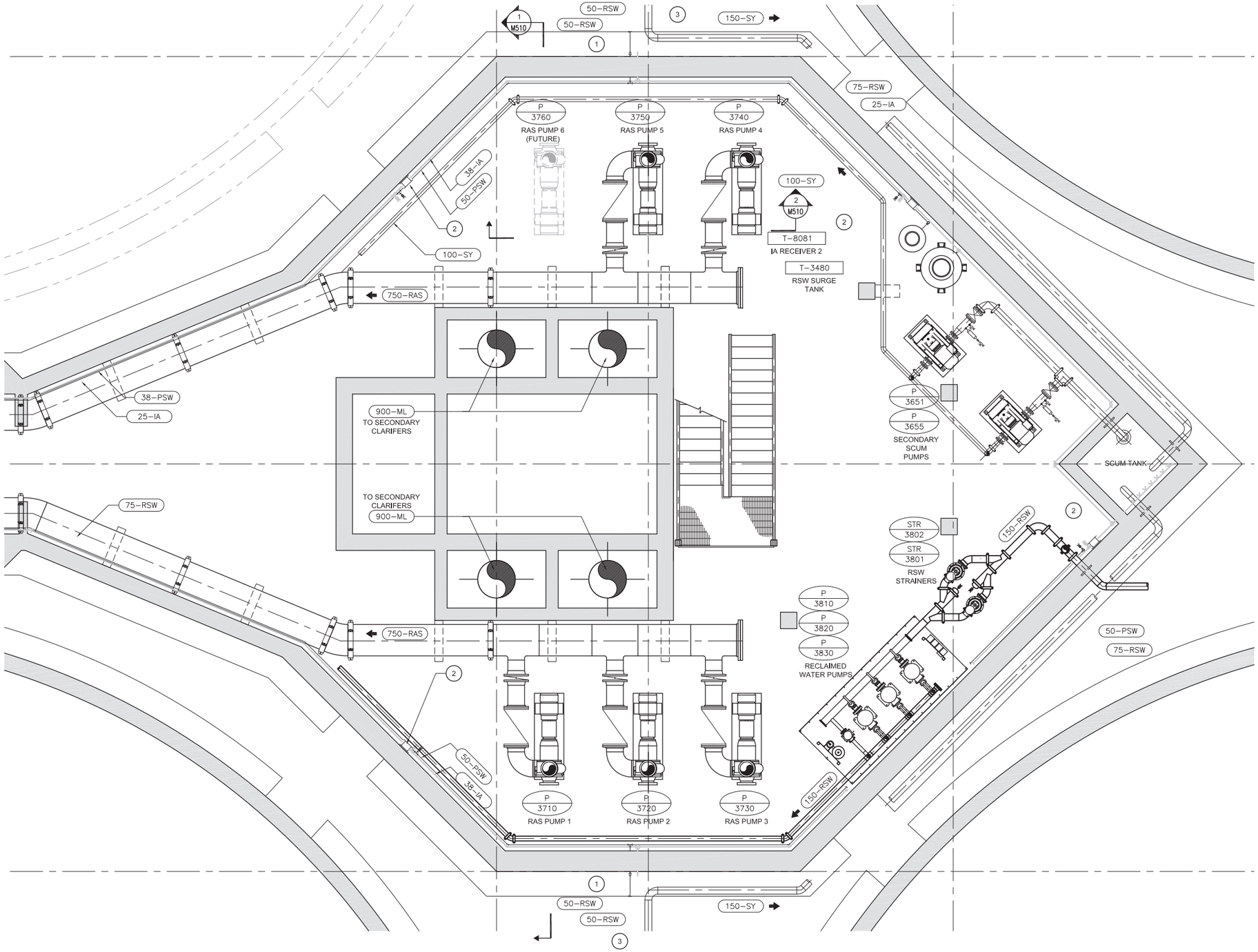
PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
SECONDARY CLARIFIERS
GENERAL ARRANGEMENT - LOWER PLAN

PROJECT START DATE (M / Y)
APR./2015
PROJECT NO.
60343972
FILENAME
60343972-M-501.dwg
RDN DRAWING No.
DRAWING No.
M-501



KEY NOTES:

1. INSTALL DRAIN c/w ISOLATION BALL VALVE TO DRAIN RSW PIPING
2. WALL MOUNTED HOSE STATION. REFER TO STD/402.
3. CONTINUATION ON DWG. C–123

0 500 1500 2500mm

RAS LOWER UPPER PLAN - LOWER PLAN AT 19.550m

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	DDF	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	DDF	KM	2016/01/29

DRN BY: DDF
DES BY: LN
CHK BY: KM
APP BY: RJK

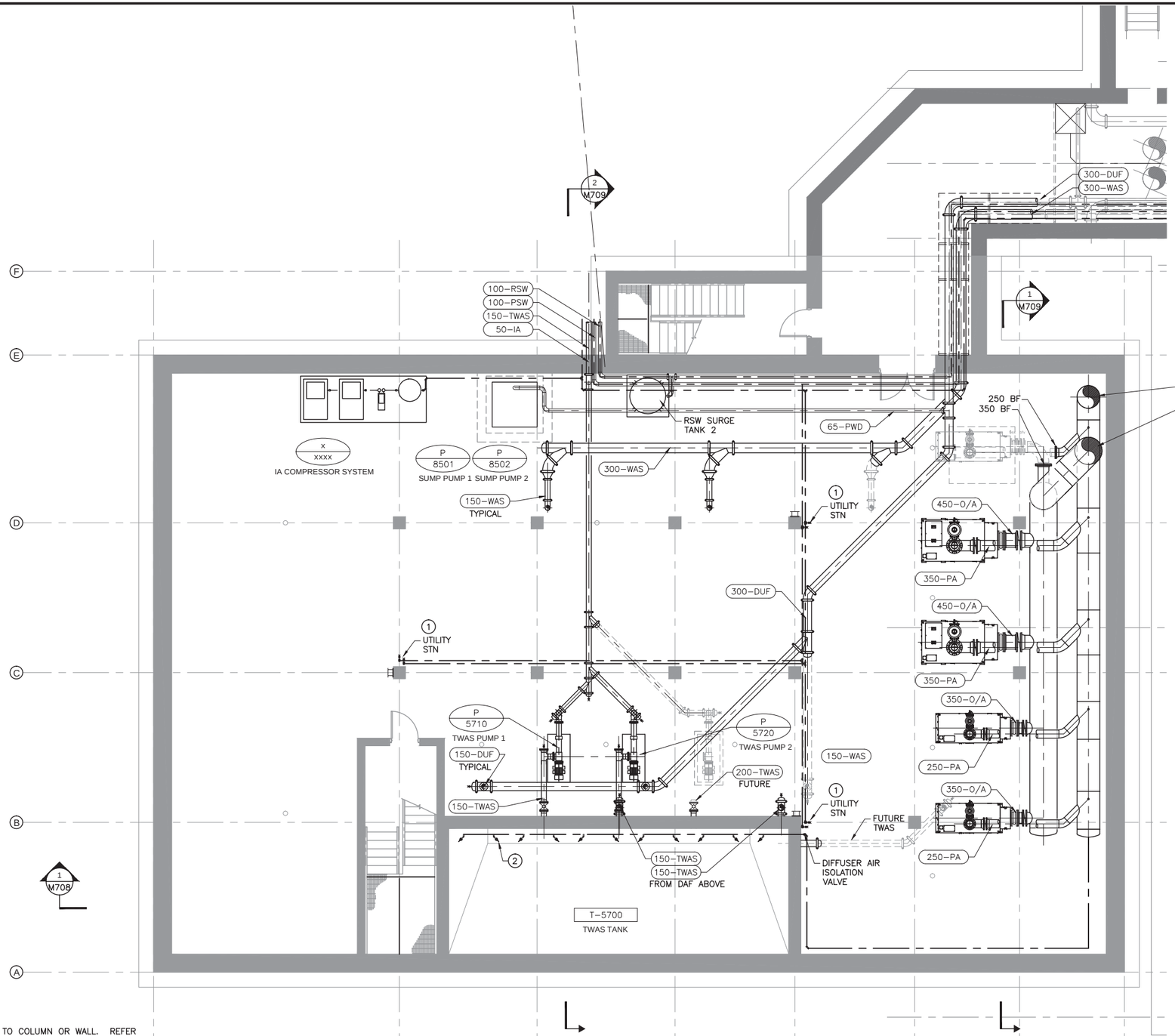
PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
PROCESS MECHANICAL
RAS PUMP STATION
RAS LOWER LEVEL PLAN AT 19.550m

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: 60343972-M-507.dwg
RDN DRAWING No.:
DRAWING No.: **M-507**

Plotted By: leongp
Plot File Date Created: Jul/07/2016 5:06 PM
Layout–Sheet Name: M–507
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\PROCESS MECHANICAL\60343972–M–507.DWG



KEYNOTES

1. SERVICE UTILITY STATION, MOUNTED TO COLUMN OR WALL. REFER TO DETAIL STD402/M–006
2. TIDEFLEX TFA–1.5 DIFFUSER c/w ISOLATION BALL VALVE AND UNION INSTALLED 1000mm O/C. ORIENT DIFFUSERS AWAY FROM PUMP INTAKE NOZZLE.

0 750 2250 3750mm

PLAN
SCALE: 1:75

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (YMD)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	KJW	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	KJW	KM	2016/01/29

DRN BY: KJW
DES BY: LN
CHK BY: KM
APP BY: RJK

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

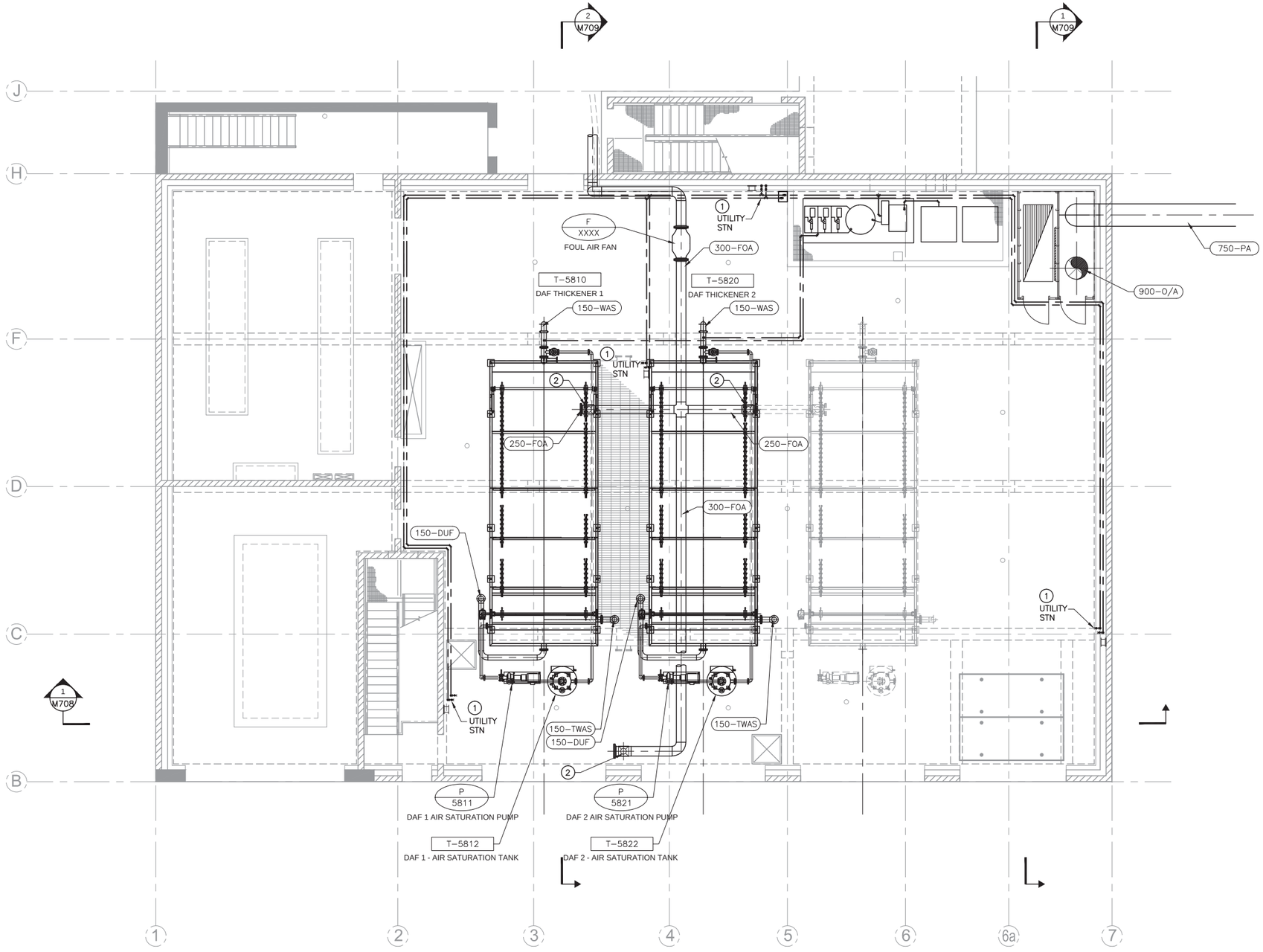
PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
AERATION AND THICKENING BUILDING
LOWER LEVEL PLAN

PROJECT START DATE (M / Y) APR./2015
PROJECT NO. 60343972
FILENAME 60343972-M-706.dwg
RDN DRAWING No.
DRAWING No. **M-706**

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:54 PM
Layout–Sheet Name: M–706
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\PROCESS MECHANICAL\60343972–M–706.DWG



PLAN

SCALE: 1:75

KEYNOTES

1. SERVICE WATER UTILITY STATION, MOUNTED TO WALL (HANDRAIL ON DAF PLATFORM). REFER TO DETAIL STD402/M–006
2. 200 FOA DROP c/w BUTTERFLY VALVE FOR BALANCING BY CONTRACTOR.

0 750 2250 3750mm

VERIFY SCALE IF PLAN SHEET IS REDUCED

30 mm

REV	DESCRIPTION	DRN	CHK	DATE (YMD)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	KJW	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	KJW	KM	2016/01/29

DRN BY: KJW
DES BY: LN
CHK BY: KM
APP BY: RJK

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C. V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
AERATION AND THICKENING BUILDING
UPPER LEVEL PLAN

PROJECT START DATE (M / Y)
APR./2015

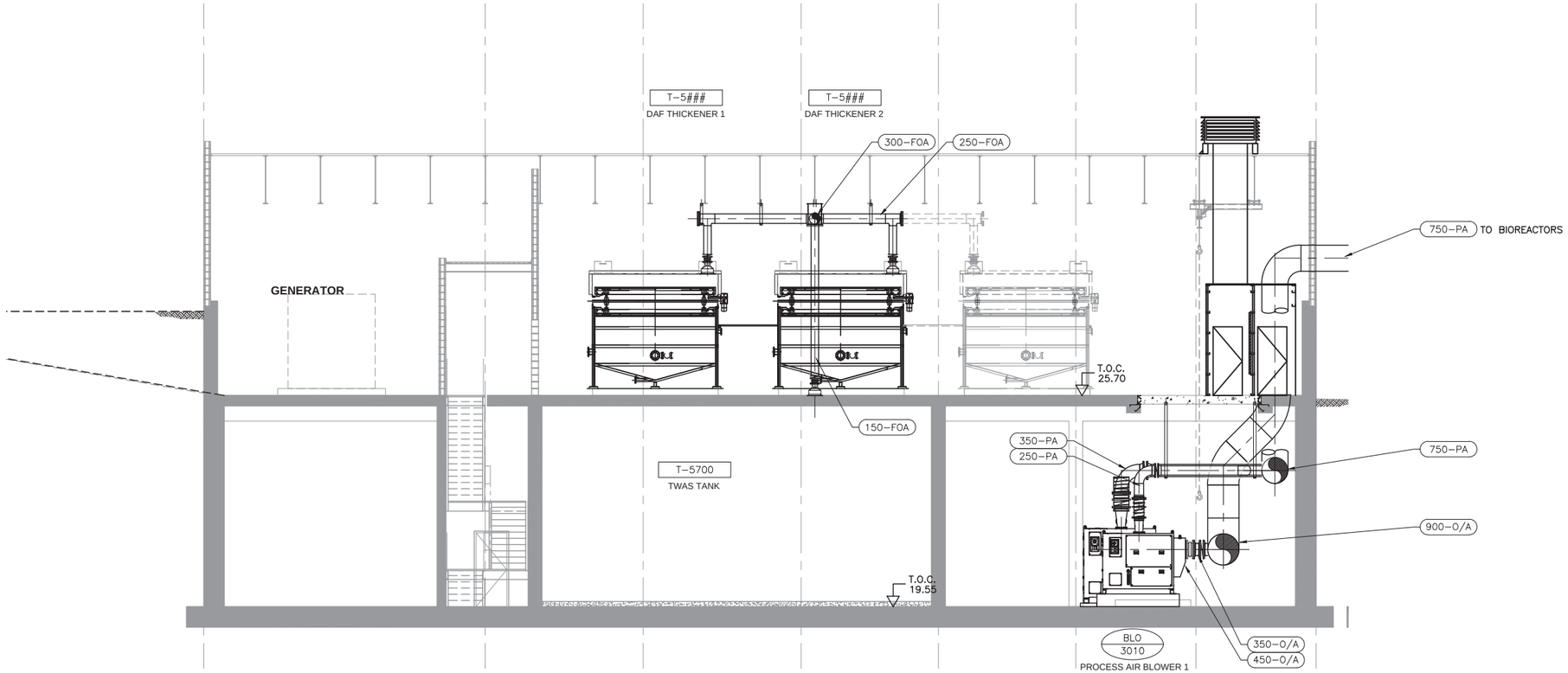
PROJECT NO.
60343972

FILENAME
60343972-M-707.dwg

RDN DRAWING No.

DRAWING No.
M-707

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:54 PM
Layout-Sheet Name: M-707
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\PROCESS MECHANICAL\60343972-M-707.DWG



SECTION 1 / M706 – 1 / M707
SCALE: 1:75

0 750 2250 3750mm

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:55 PM
Layout–Sheet Name: M–708
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\PROCESS MECHANICAL\60343972–M–708.DWG

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (YMD)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	KJW	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	KJW	KM	2016/01/29

DRN BY: KJW
DES BY: LN
CHK BY: KM
APP BY: RJK

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
AERATION AND THICKENING BUILDING
SECTIONS

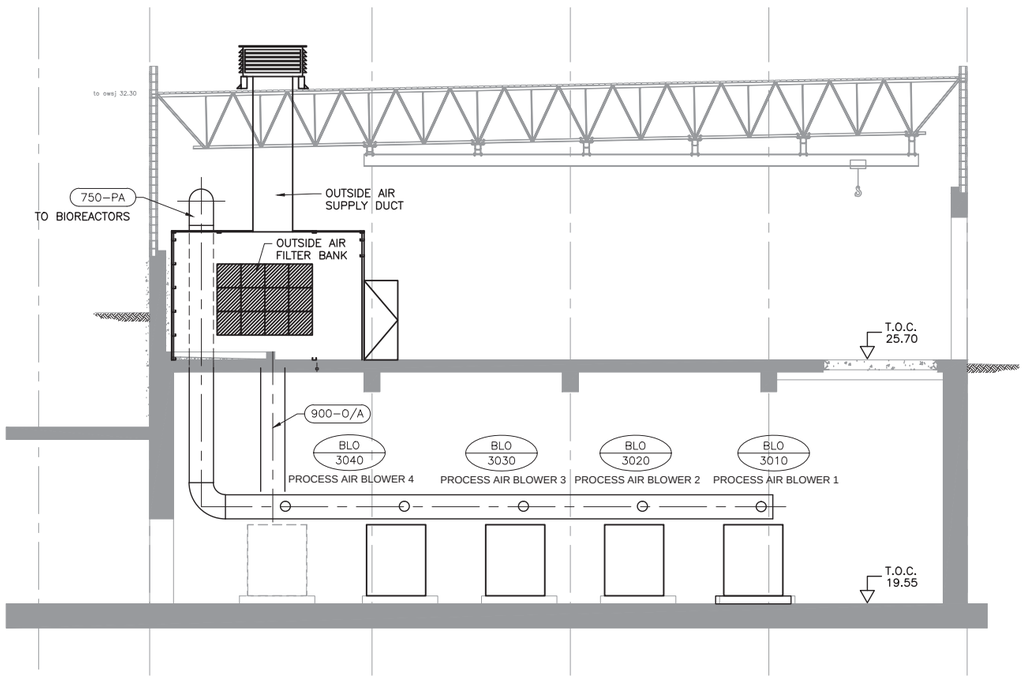
PROJECT START DATE (M / Y)
APR./2015

PROJECT NO.
60343972

FILENAME
60343972-M-708.dwg

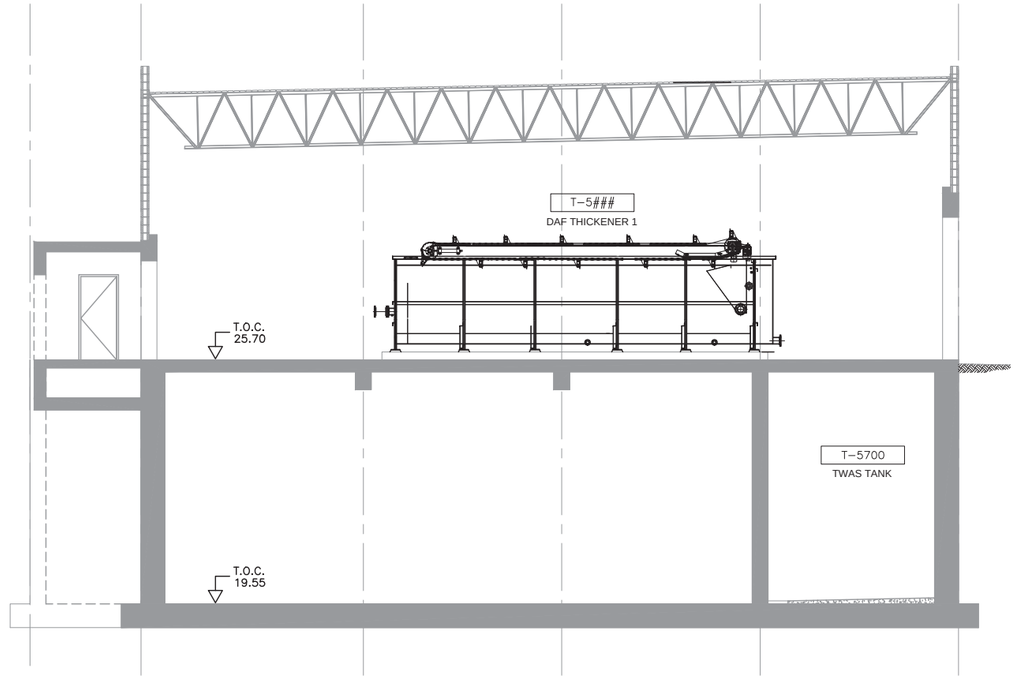
RDN DRAWING No.

DRAWING No.
M-708



SECTION
SCALE: 1:75

1 M706 / 1 M707



SECTION
SCALE: 1:75

2 M706 / 2 M707

0 750 2250 3750mm

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:55 PM
Layout–Sheet Name: M–709
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\PROCESS MECHANICAL\60343972–M–709.DWG

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

DATE (YMD)	CHK	DRN	DESCRIPTION	REV
2016/06/10	KM	KJW	ISSUED FOR 90% DETAILED DESIGN REVIEW	B
2016/01/29	KM	KJW	ISSUED FOR 60% DETAILED DESIGN REVIEW	A

DRN BY: KJW
DES BY: LN
CHK BY: KM
APP BY: RJK

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
AERATION AND THICKENING BUILDING
SECTIONS

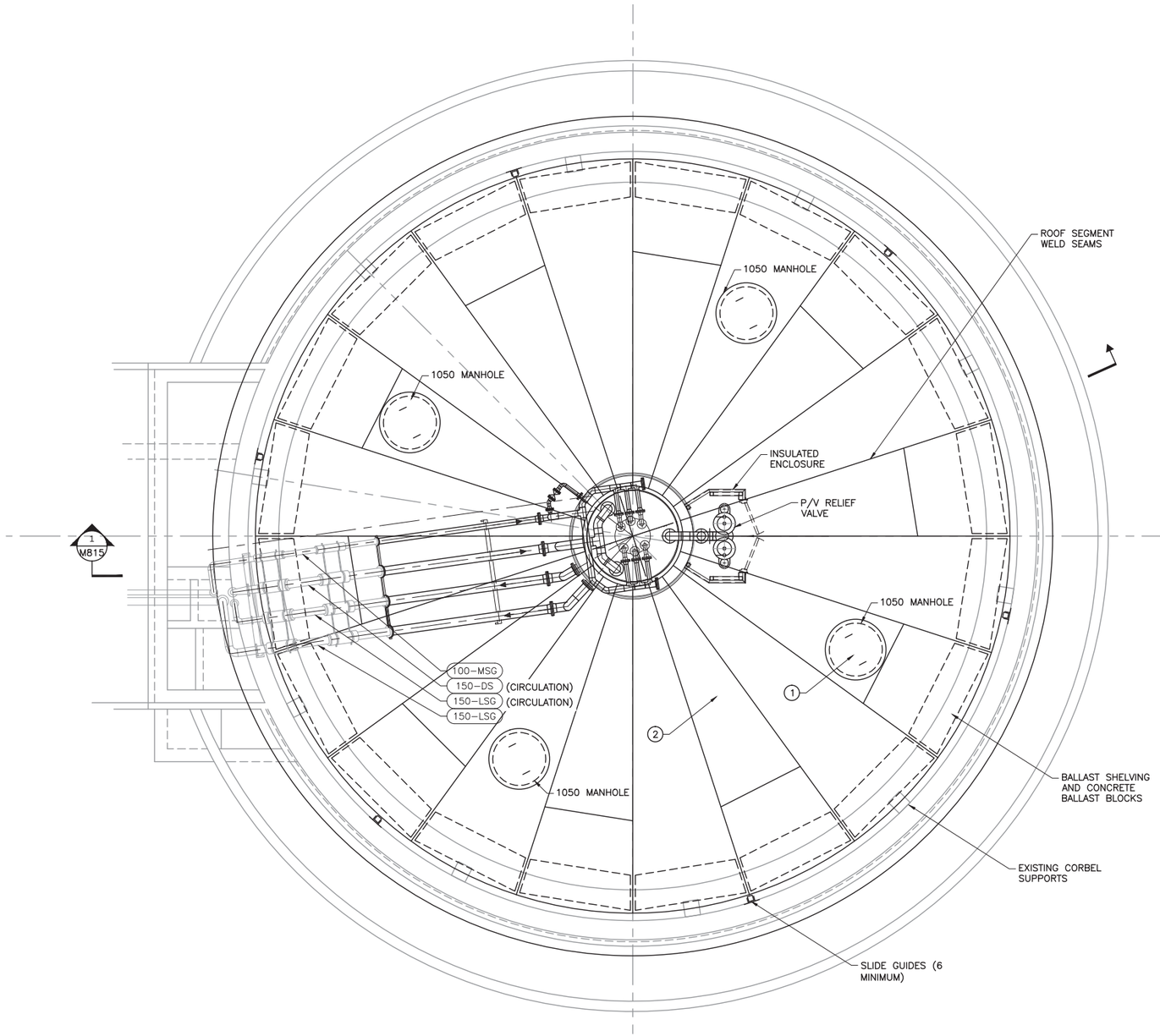
PROJECT START DATE (M / Y)
APR./2015

PROJECT NO.
60343972

FILENAME
60343972-M-709.dwg

RDN DRAWING No.

DRAWING No.
M-709



PLAN
SCALE: 1:50

KEYNOTES

1. RADIALLY ALIGN ONE ROOF MANWAY WITH EXISTING MANWAY IN DIGESTER 2 ANNULUS.
2. 75mm THICK POLYURETHANE SPRAY FOAM INSULATION WITH PROTECTIVE NON–SLIP SURFACE COATING FOR COVER, GAS DOME/COVER PLATE AND MANHOLE COVERS.

0 500 1500 2500mm

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:55 PM
Layout–Sheet Name: M–813
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\PROCESS MECHANICAL\60343972–M–813.DWG

DRN BY: KJW
DES BY: LN
CHK BY: KM
APP BY: RJK

30 mm VERIFY SCALE IF PLAN SHEET IS REDUCED

REV	DESCRIPTION	DRN	CHK	DATE (YMD)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	KJW	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	KJW	KM	2016/01/29

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
DIGESTER 2
ROOF LEVEL PLAN

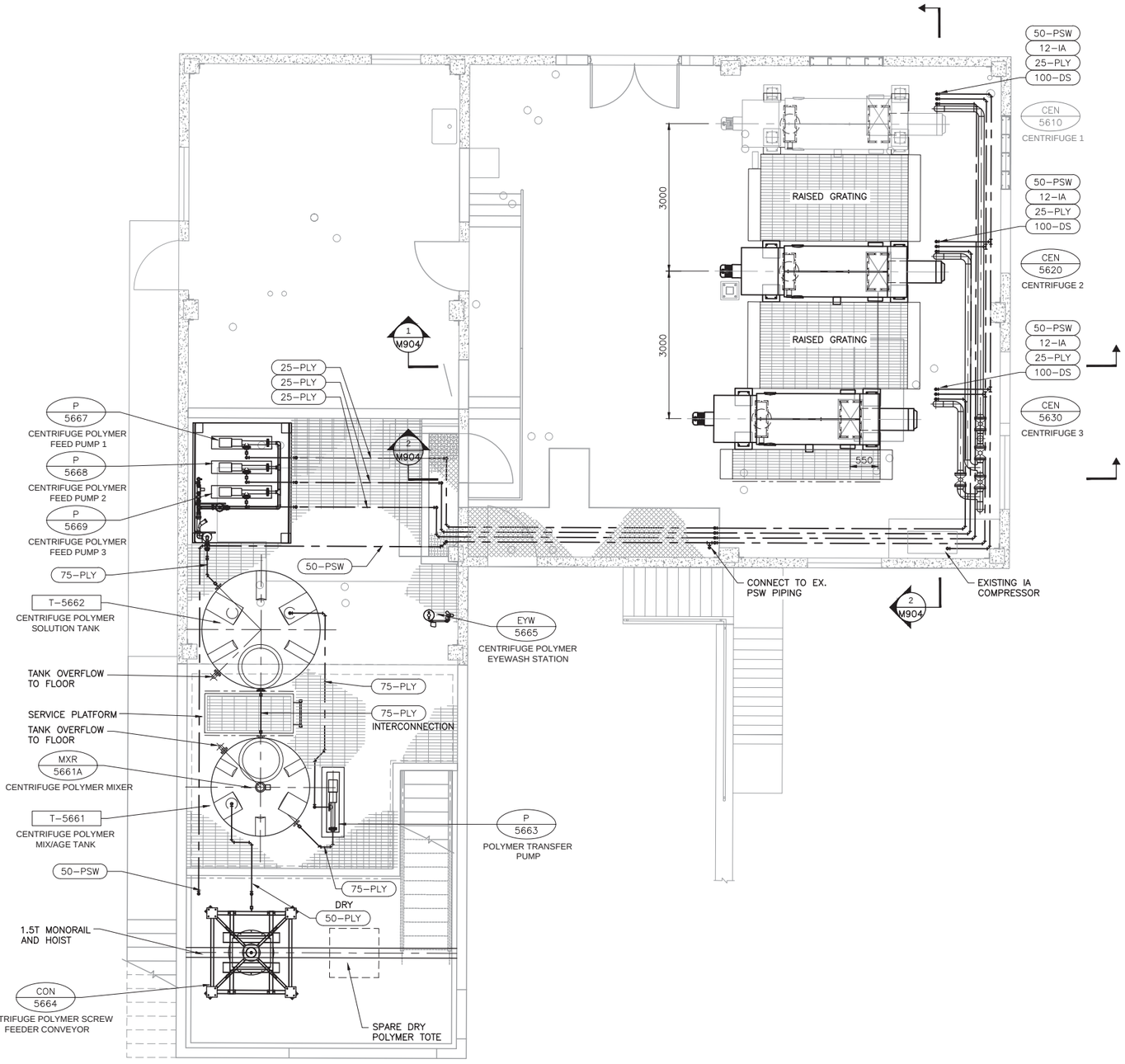
PROJECT START DATE (M / Y)
APR./2015

PROJECT NO.
60343972

FILENAME
60343972-M-813.dwg

RDN DRAWING No.

DRAWING No.
M-813



PLAN
SCALE: 1:50

0 500 1500 2500mm

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:55 PM
Layout-Sheet Name: M903
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\PROCESS MECHANICAL\60343972-M-903.DWG

REV	DESCRIPTION	DRN	CHK	DATE (YMD)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	KJW	KM	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	KJW	KM	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

DRN BY: KJW
DES BY: LN
CHK BY: KM
APP BY: RJK

PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

PROCESS MECHANICAL
SLUDGE DEWATERING BUILDING
UPPER FLOOR PLAN

PROJECT START DATE (M / Y)	APR./2015
PROJECT NO.	60343972
FILENAME	60343972-M-903.dwg
RDN DRAWING No.	
DRAWING No.	M-903

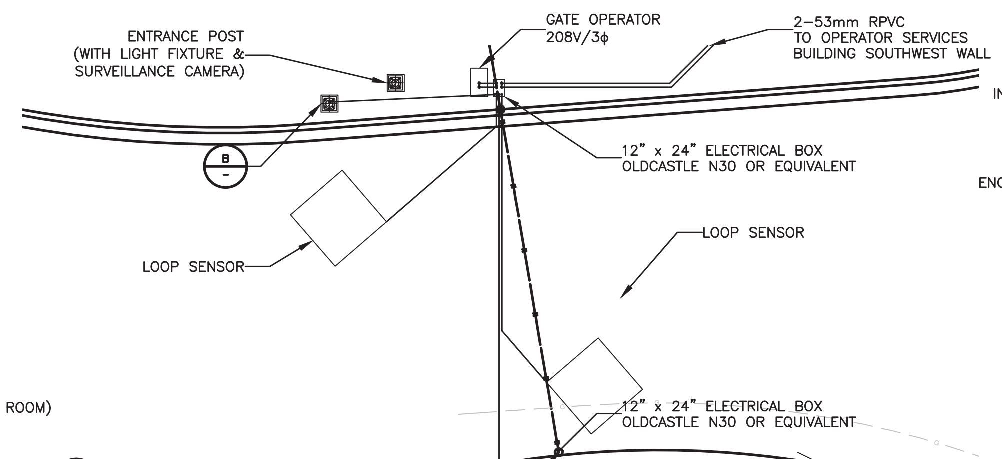
KEY NOTES

1. EMH-5 WILL BISECT THE EXISTING DUCT BANK FROM THE BOILER BUILDING TO THE OPERATOR SERVICES BUILDING.
REFER TO DRAWING E-131 DETAIL 1 FOR EXISTING DUCT BANK DETAIL.

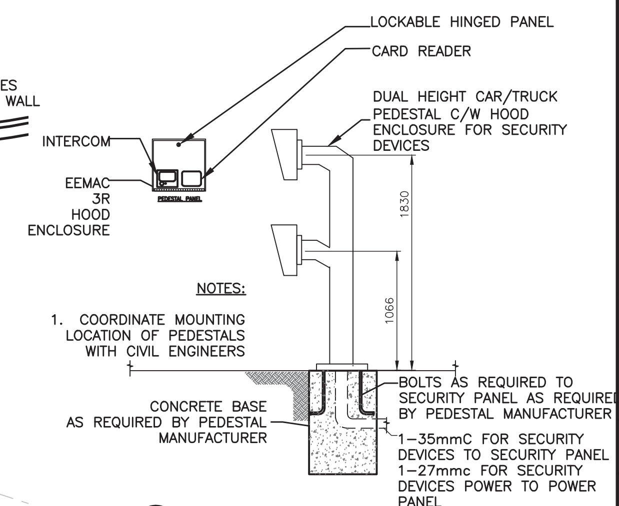
2. EMH-6 WILL INTERCEPT 2-5" UNDERGROUND DUCT FROM HEADWORKS BASEMENT ELECTRICAL ROOM TO DEWATERING BUILDNIG.

GENERAL NOTES:

1. TO ENSURE PROPER DRAINAGE. UNDERGROUND ELECTRICAL DUCTS WILL SLOPE 3% FROM CENTRE OF SPAN TO ELECTRICAL MANHOLE.
2. MAXIMUM DISTANCE BETWEEN MANHOLES TO BE 60.0 m.



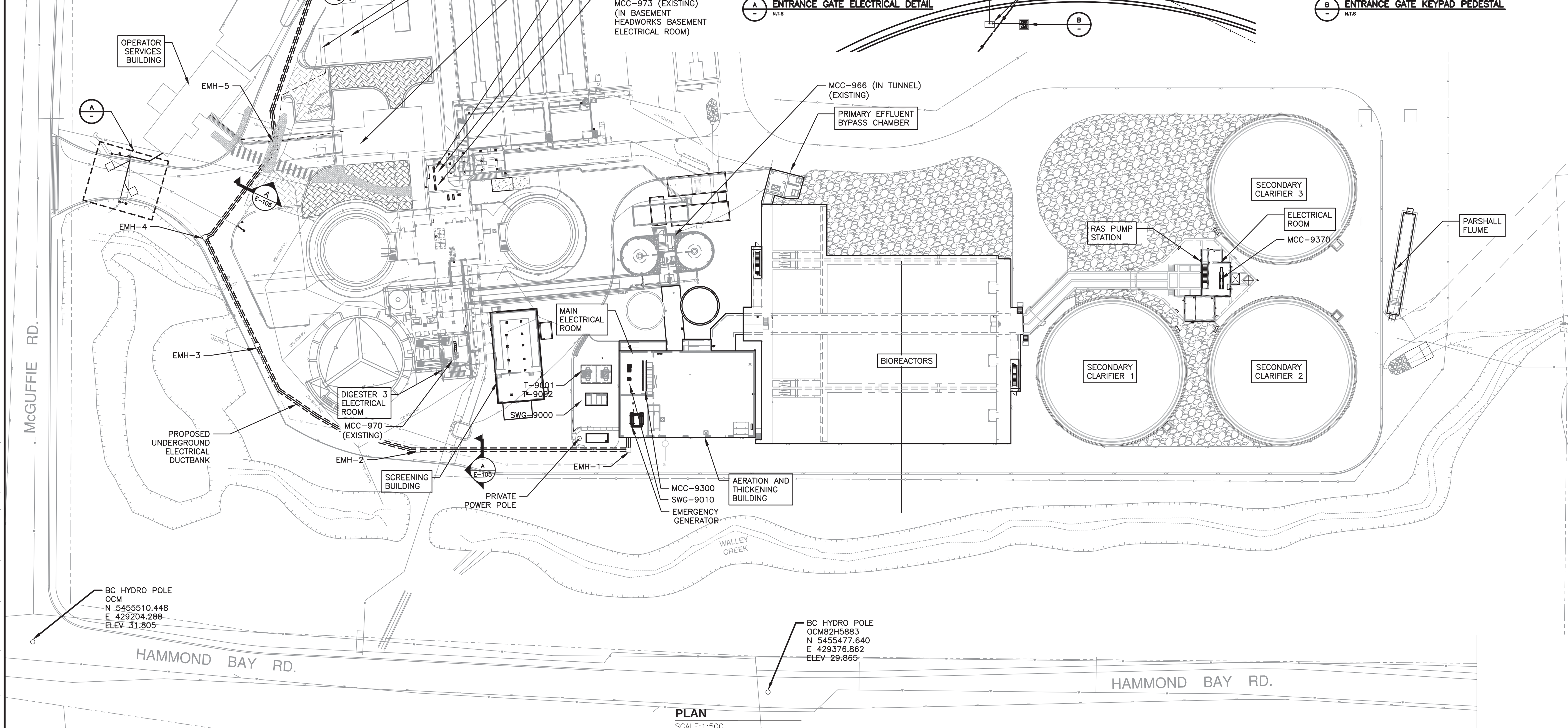
A ENTRANCE GATE ELECTRICAL DETAIL
N.T.S



NOTES:

1. COORDINATE MOUNTING LOCATION OF PEDESTALS WITH CIVIL ENGINEERS

B ENTRANCE GATE KEYPAD PEDESTAL
N.T.S



PLAN
SCALE:1:500

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:25 PM
Layout-Sheet Name: E-104
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\EIC\ELECTRICAL\E-104.DWG

VERIFY SCALE IF PLAN SHEET IS REDUCED
30 mm

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	WM	LCS	2016/01/29
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	WM	LCS	2016/01/29

DRN BY: WM
DES BY: LCS
CHK BY: LCS
APP BY: RJK

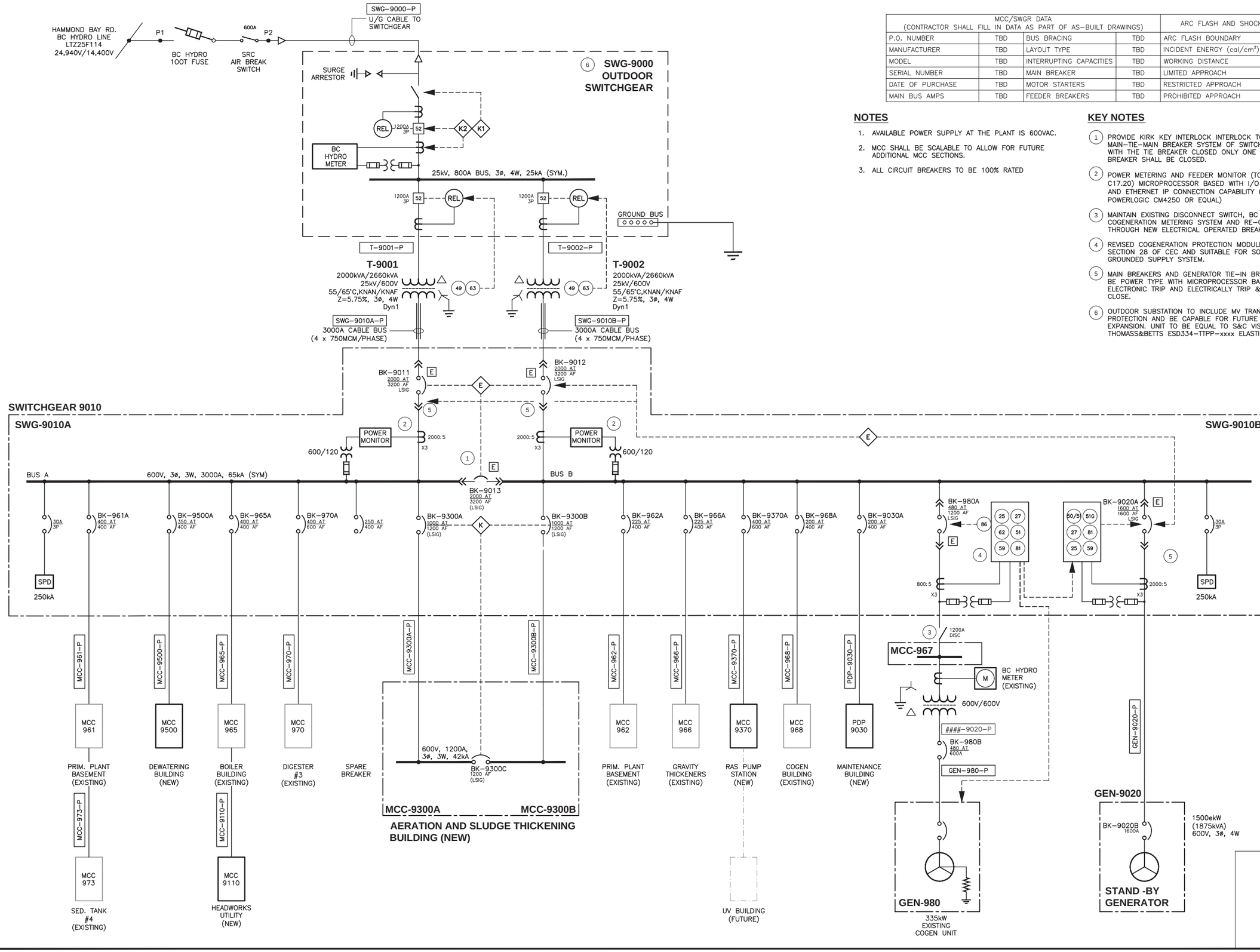
PREPARED FOR:
REGIONAL DISTRICT OF NANAIMO

PREPARED BY:
AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

ELECTRICAL
DUCT BANKS PLAN
SHEET 1 OF 2

PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: E-104.dwg
RDN DRAWING No.:
DRAWING No.: **E-104**



MCC/SWGR DATA (CONTRACTOR SHALL FILL IN DATA AS PART OF AS-BUILT DRAWINGS)				ARC FLASH AND SHOCK HAZARD	
P.O. NUMBER	TBD	BUS BRACING	TBD	ARC FLASH BOUNDARY	TBD
MANUFACTURER	TBD	LAYOUT TYPE	TBD	INCIDENT ENERGY (cal/cm²)	TBD
MODEL	TBD	INTERRUPTING CAPACITIES	TBD	WORKING DISTANCE	TBD
SERIAL NUMBER	TBD	MAIN BREAKER	TBD	LIMITED APPROACH	TBD
DATE OF PURCHASE	TBD	MOTOR STARTERS	TBD	RESTRICTED APPROACH	TBD
MAIN BUS AMPS	TBD	FEEDER BREAKERS	TBD	PROHIBITED APPROACH	TBD

NOTES

1. AVAILABLE POWER SUPPLY AT THE PLANT IS 600VAC.
2. MCC SHALL BE SCALABLE TO ALLOW FOR FUTURE ADDITIONAL MCC SECTIONS.
3. ALL CIRCUIT BREAKERS TO BE 100% RATED

KEY NOTES

1. PROVIDE KIRK KEY INTERLOCK INTERLOCK TO THE MAIN-TIE-MAIN BREAKER SYSTEM OF SWITCHGEAR 9010. WITH THE TIE BREAKER CLOSED ONLY ONE SUPPLY BREAKER SHALL BE CLOSED.
2. POWER METERING AND FEEDER MONITOR (TO ANSI C17.20) MICROPROCESSOR BASED WITH I/O MODULES AND ETHERNET IP CONNECTION CAPABILITY (SCHNEIDER POWERLOGIC CM4250 OR EQUAL)
3. MAINTAIN EXISTING DISCONNECT SWITCH, BC HYDRO COGENERATION METERING SYSTEM AND RE-CONNECT THROUGH NEW ELECTRICAL OPERATED BREAKER.
4. REVISED COGENERATION PROTECTION MODULES TO MEET SECTION 28 OF CEC AND SUITABLE FOR SOLID GROUNDED SUPPLY SYSTEM.
5. MAIN BREAKERS AND GENERATOR TIE-IN BREAKERS SHALL BE POWER TYPE WITH MICROPROCESSOR BASED ELECTRONIC TRIP AND ELECTRICALLY TRIP & OPERATED CLOSE.
6. OUTDOOR SUBSTATION TO INCLUDE MV TRANSFORMER PROTECTION AND BE CAPABLE FOR FUTURE SITE EXPANSION. UNIT TO BE EQUAL TO S&C VISTA OR THOMASS&BETTS ESD334-TTPP-xxxx ELASTIMOLD UNIT.

REV	DESCRIPTION	CHK	DATE (YMD)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	LCS	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	LCS	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 30 mm

DRN BY: WM
DES BY: LCS
CHK BY: LCS
APP BY: RJK

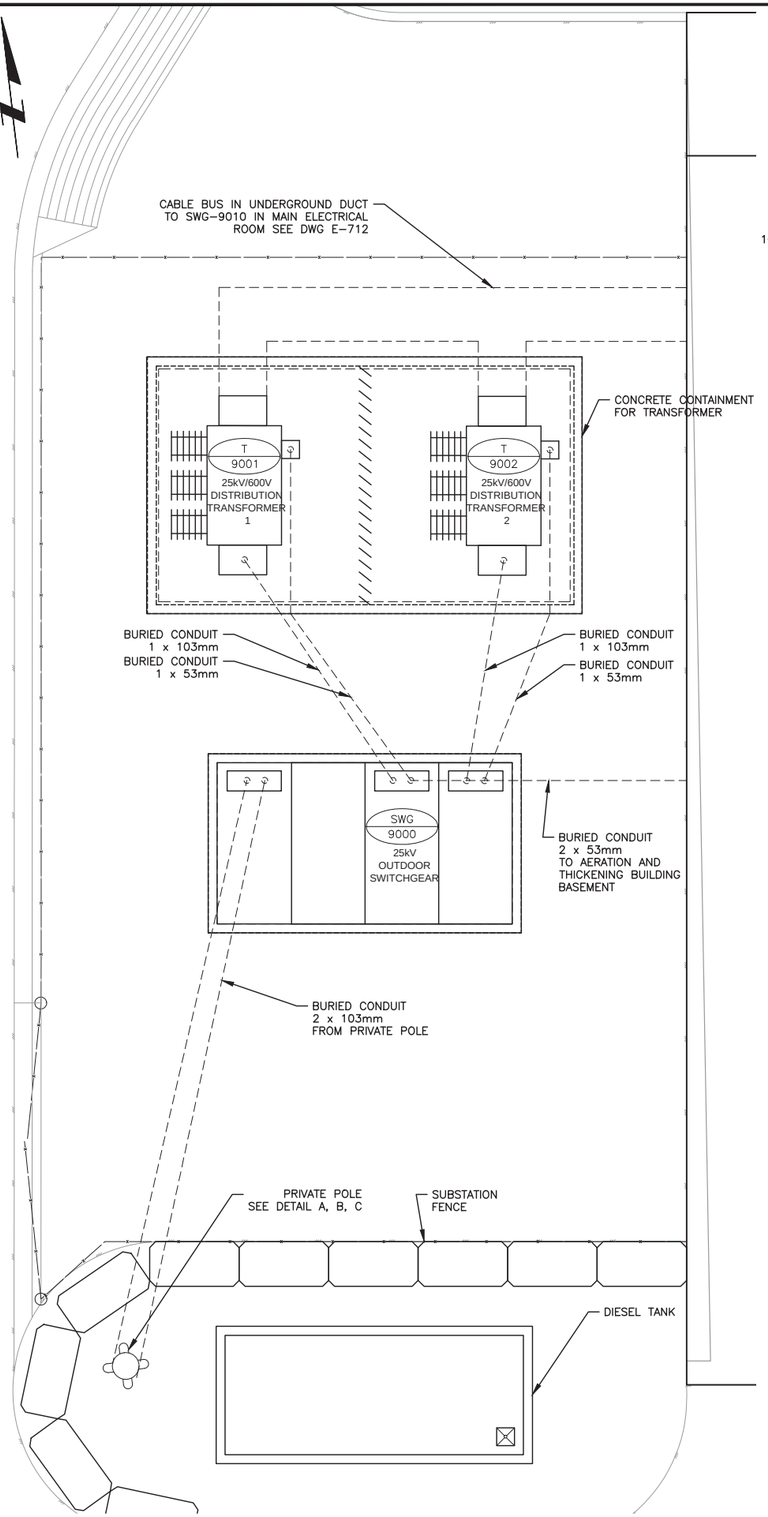
PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR,
3292 PRODUCTION WAY,
BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE
ELECTRICAL
SITE POWER DISTRIBUTION
SINGLE LINE DIAGRAM

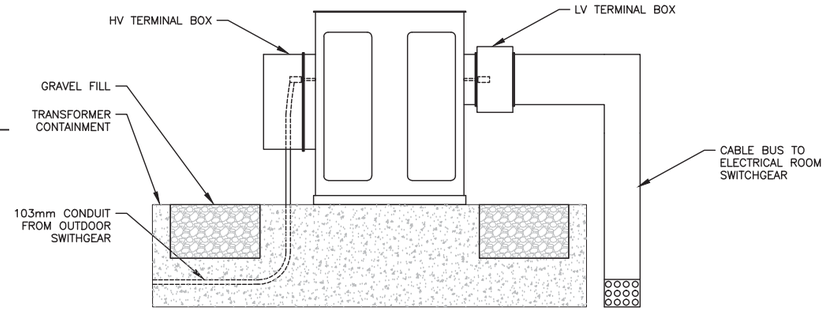
PROJECT START DATE (M / Y): APR./2015
PROJECT NO.: 60343972
FILENAME: E-112.dwg
RDN DRAWING No.:
DRAWING No.: **E-112**

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:26 PM
Layout-Sheet Name: E-112
Filename: P:\60343972\900-WORK\910 CAD\20-SHEETS\EIC\ELECTRICAL\E-112.DWG



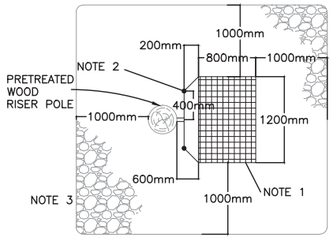
POWER DISTRIBUTION SUBSTATION PLAN

SCALE:1:50



TRANSFORMER INSTALLATION DETAIL

A –



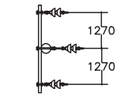
QTY.	UNIT	DESCRIPTION
1	EA	SWITCH MAT, 100mm GRID SPACING OF #4 AWG COPPER MESH, 800mm x 1200mm
2	EA	COPPER GROUND ROD 21mmø x 3000mm LENGTH (TYP. OF 2)
–	AS REQ.	WASHED, CRUSHED ROCK

NOTES:

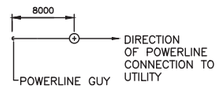
1. MAT SHALL BE INSTALLED 140mm BELOW GRADE IN 150mm DEEP CRUSHED ROCK SURFACE LAYER MATERIAL. MAT SHALL BE INSTALLED ON G.O.A.B. SWITCH OPERATOR SIDE OF POLE.
2. BURY GROUND RODS AT A DEPTH OF 300mm MINIMUM.
3. CRUSHED ROCK PROTECTIVE SURFACE LAYER 150mm DEEP, WITH A MINIMUM 3000Ω–m RESISTIVITY. INSTALLED OUT FROM SWITCH MAT AND POLE AT A MINIMUM DISTANCE OF 1000mm.
4. IF HANDLE IS 3m ABOVE GROUND, OMIT GROUND MAT AND RETAIN ONE GROUND ROD.

POLE AND SWITCH MAT PLAN

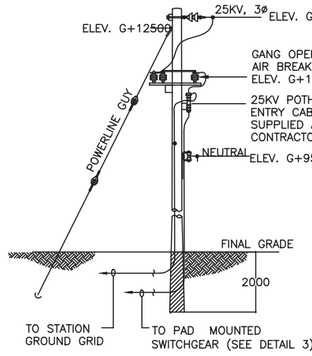
B –



POLE TOP PLAN

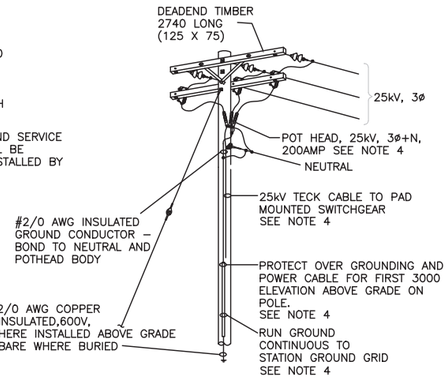


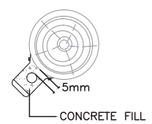
GUY PLAN



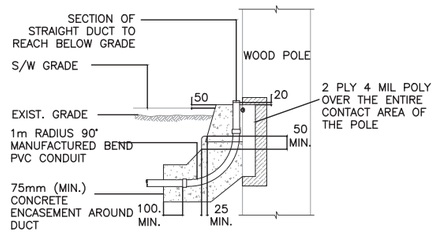
POLE ELEVATION DETAIL

C –





PLAN VIEW



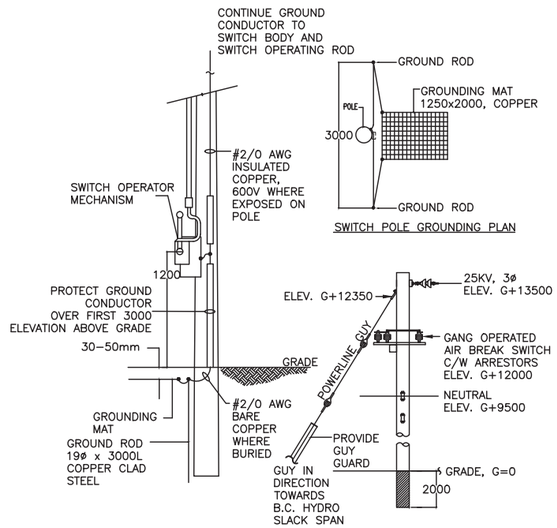
ELEVATION

NOTES:

1. COVER THE ENTIRE CONTACT AREA AT THE POLE WITH A POLNU BANDAGE.
2. INSTALL DUCT BEND AND SECURE TO THE POLE ABOVE PILASTER POSITION WITH CORD OR WIRE; PLUG OR CAP DUCT.
3. SECURE THE TOP OF THE FIBERGLASS PILASTER TO THE POLE WITH 2–3/8" X 2" LAG SCREWS AND WASHERS AND THE BOTTOM WITH SEVERAL TURNS OF STEEL TIE WIRE.
4. ENCASE THE DUCT, COUPLING AND BEND WITH CONCRETE TO 50mm (MIN.) PAST THE BOTTOM LINE OF THE PILASTER.
5. REMOVE STEEL TIE WIRE, BACKFILL TO FINISH GRADE AND FILL FIBERGLASS PILASTER WITH CONCRETE MIX.

PILASTER DETAIL

D –



POLE ELEVATION DETAIL

E –

REV	DESCRIPTION	DRN	CHK	DATE (Y/M/D)
B	ISSUED FOR 90% DETAILED DESIGN REVIEW	KSB	LCS	2016/06/10
A	ISSUED FOR 60% DETAILED DESIGN REVIEW	WM	LCS	2016/01/29

VERIFY SCALE IF PLAN SHEET IS REDUCED — 20 mm

DRN BY: WM
DES BY: LCS
CHK BY: LCS
APP BY: RJK

PREPARED FOR: REGIONAL DISTRICT OF NANAIMO

PREPARED BY: AECOM
4th FLOOR, 3292 PRODUCTION WAY, BURNABY, B.C., V5A 4R4
604-444-6400

REGIONAL DISTRICT OF NANAIMO
GREATER NANAIMO POLLUTION CONTROL CENTRE
SECONDARY TREATMENT UPGRADE

ELECTRICAL
POWER DISTRIBUTION SUBSTATION PLAN

PROJECT START DATE (M / Y)	APR./2015
PROJECT NO.	60343972
FILENAME	E-115.dwg
RDN DRAWING No.	
DRAWING No.	E-115

Plotted By: leongp
Plot File Date Created: Jul/07/2016 4:26 PM
Layout–Sheet Name: E–115
Filename: P:\60343972\900–WORK\910 CAD\20–SHEETS\EIC\ELECTRICAL\E–115.DWG